Institutional Departure and Environmental Agreements

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Abstract

Under what conditions do governments depart from international environmental agreements and make new agreements at alternative forums? In this paper, I provide an explanation for what I call “institutional departure,” under which parties depart from existing international environmental agreements in pursuit of greater cooperation on the issues for which those agreements were negotiated. The argument emphasizes negative externalities and the participation of critical parties in environmental agreements. The empirical analysis draws upon a new dataset of international environmental agreements with an original measure of institutional departure, as well as an in-depth process-tracing analysis of international climate change governance. The findings indicate that non-participation by critical parties is positively associated with an increased probability of institutional departure. However, it is not systematically associated with follow-up agreements such as protocols or amendments to the agreement subject to departure. The analysis highlights a cause of fragmented environmental regimes.

Introduction

For several years, governments, environmental activists, and academic researchers have given more attention to the success of the Montreal Protocol in reducing the concentration of climate-warming gases in Earth's atmosphere. A study in the *Proceedings of the National Academy of Sciences* finds that the Montreal Protocol will do far more to reduce the concentration of climate-warming gases than the Kyoto Protocol would have achieved, even if governments were to meet their national emissions commitments over the 2008-2012 compliance period of the Protocol.[1] More observers now believe that the Montreal Protocol may become a viable legal framework and political setting for accomplishing climate protection goals, beyond those already achieved under the phase-out schedules for ozone-depleting substances (ODS).

The current debate surrounds the inclusion of hydrofluorocarbons (HFCs) under the Montreal Protocol. HFCs have no ozone-depleting potential but have a climate-warming impact 1,000 times greater than that of carbon dioxide on a per-molecule basis. Their inclusion under the Montreal framework is not an obvious extension of ongoing efforts to protect the ozone layer. Yet it does provide an avenue for achieving climate protection goals that have historically eluded the United Nations Framework Convention on Climate Change (UNFCCC).

In May 2011, the United States, Mexico, and Canada proposed an amendment to the Montreal Protocol calling for a gradual phase-down in HFCs by 15 percent below 2003 baseline levels by the year 2033, with developing countries having until 2043 to meet this goal. The US Environmental Protection Agency estimates that reaching this goal would amount to a reduction benefit of 98 gigatons of "carbon dioxide equivalent" by 2050.[2]

The proposed amendment would place new obligations on all parties in the Montreal Protocol process – a list that includes large developing countries like Brazil, China, and India that have become major emitters of HFCs over the recent decade and whose emissions are expected to climb in the coming decades. The environmental benefits of regulating HFCs have been well understood since 1997, when they were included in the Kyoto Protocol – and including the large developing countries would prevent the growing use of HFCs from undoing the climate protection achieved under the Montreal Protocol.

Yet opposition remains to their inclusion. The European Union raised concerns about the political impact on the climate change negotiations of moving the HFCs issue to the Montreal Protocol process. Several large and small developing countries have questioned the legal jurisdiction of that process to handle these gases, forming a strong line of resistance to the idea. The debate over HFCs highlights a question: since the UNFCCC process formally includes

[1] Velders et al., 2007.

[2] "North American Proposal to Phase Down Use of HFCs under the Montreal Protocol," *Government Press Releases* (USA), 9 May 2011.

provisions on HFCs as a Kyoto gas, why has there been effort within the Montreal Protocol to regulate their emission?

This narrative highlights a general phenomenon in international relations that I call *institutional departure*, under which parties to an agreement move to an alternative setting to address issues covered under that agreement. It poses a question relating to international environmental governance: under what conditions do governments depart from environmental agreements and move toward alternative forums to address the issues for which those agreements were negotiated?

I present a theoretical explanation for institutional departure that focuses on the influence and interests of critical parties and their participation in environmental agreements. Since governments make environmental agreements to reduce the negative externalities of their mutual policies, those countries that impose the most externalities represent critical parties to any effective management of the environmental problem. Governments tend to view new environmental agreements as means of securing a more favorable status quo. That is, the agreements often involve provisions for cooperative policies to mitigate the loss from unilateral un-cooperative policies. If one critical party is not involved in the agreement, others who are parties to the agreement may suffer continued negative externalities from the non-participant's policy. The scope or magnitude of the negative externalities may vary from case to case and across environmental issue-areas. Nonetheless, an agreement is generally preferable for other parties, who have an incentive to secure some agreement involving the critical non-participant.

The critical non-participant may also have an incentive to pursue a cooperative institutional settlement. However, it may find the existing agreement unsatisfactory for political, institutional, legal, or distributive reasons and may seek a different setting for new negotiations. The desire for an agreement to institutionalize a more preferable status quo and the motivations for holding negotiations outside the existing agreement together prompt institutional departure.

I evaluate this "critical non-participation" argument with a new dataset of international environmental agreements and qualitative data on the international climate change regime. The statistical findings support the main claim that critical non-participation is positively associated with agreements at alternative forums. Moreover, agreements that modify earlier agreements are not associated with critical non-participation, suggesting that this mechanism is associated with institutional departure and not with integrated regimes. A process-tracing analysis of US participation and non-participation in the agreements of the UN climate regime supports this finding – and suggests that critical non-participation may cause institutional departure as well as institutional fracturing under the existing agreement.

The next section introduces the concept of institutional departure and explains why it poses an empirical problem. The following section develops the theory in detail and poses two hypotheses stemming from the argument. Afterwards, I analyze the claim with quantitative data on environmental agreement patterns. The next section provides an in-depth process-tracing analysis of the relationships between US participation in the UNFCCC and the structure of

international climate change governance. The final section summarizes the empirical findings and identifies an area of theoretical refinement.

Institutional Departure

Institutional departure refers to when governments move away from an agreement and towards an alternative setting to further address the issue for which that agreement was negotiated. This definition presupposes two conditions. First, it presupposes the existence of an agreement involving provisions covering specific issues. Departure cannot occur if an agreement has expired, was terminated, or remains under negotiation. Second, it presupposes that parties to the agreement may modify, extend, or terminate that agreement without resorting to an alternative setting for negotiating such changes. Parties need not make a separate agreement under an alternative setting, as the existing agreement provides a platform for making changes. Therefore, departure presupposes that parties recognize that the existing agreement serves as a viable instrument for adopting new regulations but choose an alternative option despite new demands for cooperation on an issue covered under the agreement.

Generally, the existing agreement has legal force and parties believe they are bound by its terms. This distinguishes the agreement from so-called "soft law" that does not establish a legal framework for further agreements or new non-binding programs. The agreement serves as a potential platform for new meetings to occur either on an ad hoc basis or with a regularly scheduled frequency. In either case, it sets the terms for future negotiations by establishing a baseline set of provisions or principles to guide future changes.

The original agreement may establish a variety of institutional settings. For instance, global environmental conventions often provide for legalized and institutionalized platforms for negotiating new agreements. In these contexts, institutional departure entails shifting negotiations or informal discussions outside a regularly scheduled meeting, as under the various United Nations treaty processes developed at the 1992 Earth Summit. By contrast, bilateral agreements generally do not provide for the same level of legalization or institutionalized procedures as global or large regional environmental conventions.[3] In these smaller contexts, departure entails deciding not to modify an existing agreement that does not provide for regular meetings but nonetheless offers a platform for making changes. Our definition of institutional departure is broad enough to encompass this variation in the institutional circumstances of the original agreement.

Increasing Returns and Transaction Costs

[3] Notable exceptions to this include the US-Canada Great Lakes environmental protection agreements, which include monitoring and reporting mechanisms and take the form of institutionally well-developed treaty regimes.

The typical practice in international environmental governance is to build upon prior agreements when governments have new demands for cooperation on a previously regulated issue. Governments often make new agreements and non-binding programs that become embedded within a legal setting as new or outstanding issues begin to draw their attention. When these agreements come in sequences and new provisions or regulations are added to prior ones, they become parts of well-developed regimes within which governments handle a growing set of issues. The combination of functionally and legally connected agreements and institutional mechanisms produce institutionalized practices and deeper levels of policy coordination across governments.

As an example, consider the regime for marine pollution in the Mediterranean Sea. In 1976, the coastal states of the Mediterranean Sea completed a framework convention to reduce marine pollution from shipping and other sources. At the time of its negotiation, the Barcelona Convention and its accompanying protocols were not expected to address every pollution problem in the Mediterranean Sea area. Indeed, a year after the convention was completed, a study by the United Nations Environment Program (UNEP) found that pollution was more severe than previously believed.[4] Instead of drafting a new convention, parties to the Barcelona Convention negotiated a protocol in 1980 on land-based sources of pollution to more effectively address the problem. They chose to build upon the earlier convention by adding more restrictive provisions to move towards the goals outlined in their 1976 convention. Other protocols and several amendments have been added, even on non-pollution issues such as ecosystem preservation and "specially protected areas," to conserve wildlife. Thus, the parties have chosen to remain within the original legal setting instead of making discrete agreements on related issues.

From a theoretical perspective, sequential agreements follow the logic of increasing returns. Instead of building new mechanisms for monitoring state actions or disseminating information about different parties' policies, an integrated regime can meet various demands without performing superfluous or overlapping functions that require financing, negotiation, and maintenance. In other words, the parties benefit from increasing returns to the existing regime.

The reason international institutions provide parties with increasing returns is that they reduce transaction costs.[5] When an agreement on deforestation is in place but parties to the agreement are not satisfied with its effectiveness, they often view the agreement as a platform for further action on unregulated deforestation problems. The transaction costs of negotiating a new convention and developing new institutional mechanisms are often higher than those fixing problems with existing provisions or making new governance arrangements within the established political, legal, and institutional foundation. Existing institutional mechanisms have

[4] Haas 1990, 101.

[5] Keohane 1984.

already lowered those transaction costs, providing conditions that favor follow-up agreements more than *de novo* institutions.[6]

Figure 1 presents a plot of multilateral environmental agreements.[7] The right column represents modifying agreements such as protocols, amendments, and other agreements that add to the provisions of an original agreement. The left column represents conventions and convention-like agreements that are original agreements that begin a sequence of agreements on a set of environmental issues. The modifying agreements more than double the number of the conventions with subsequent agreements (570 to 274). The plot highlights that governments often build upon prior agreements when they seek minor changes to institutional provisions or to add new regulations on other issues – consistent with our expectations.

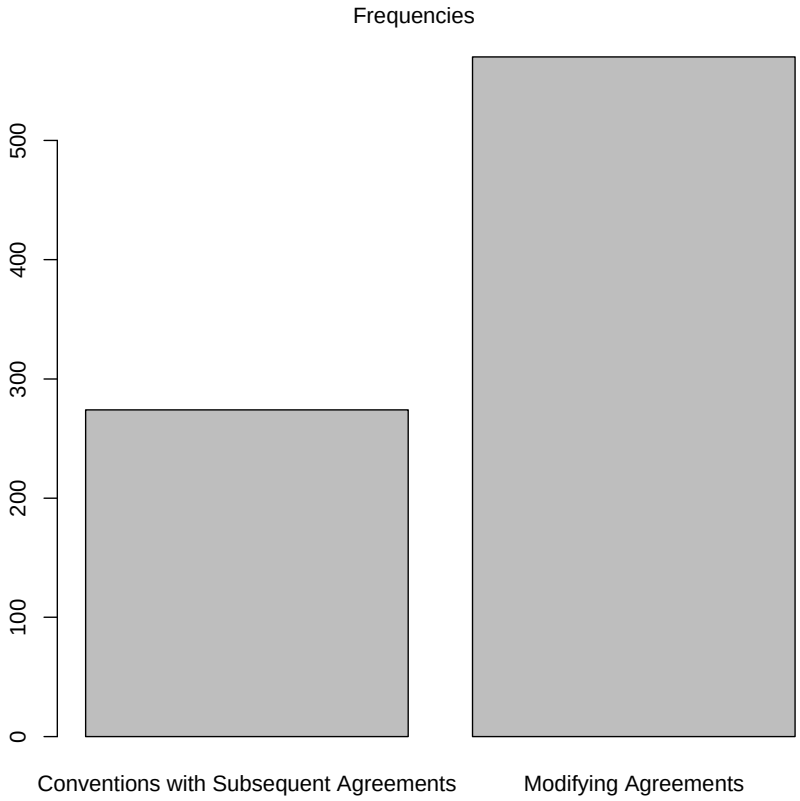

Figure 1. Distribution of Multilateral Environmental Agreements by Type.

Thus, institutional departure presents a puzzle because governments generally fix inadequacies with existing agreements by making new ones that build upon earlier ones. New of emergent problems are addressed with the aid of an existing legal framework. Instances where

[6] I thank Ron Mitchell for highlighting this point.

[7] Data for this plot are based on the International Environmental Agreements Database Project. Mitchell 2002-2011.

governments choose not to follow this course of action suggest a question about why they believe they can achieve more outside an existing agreement than inside, despite the advantages of internalizing the remaining problem within the agreement and any regime of which that agreement is a part.

This puzzle has substantive significance insofar as institutional departure has potential consequences for the original agreement. Institutionally, it can stultify the development of institutions by drawing attention and political investment away and towards other options. In rare instances, previous agreements and corresponding institutions may end altogether. In the environmental area, some organizations such as the Oslo-Paris institutions developed in the early 1970s to protect the Northeast Atlantic against marine pollution have also ended after their limitations were exposed and parties decided to create a new replacement body. In typical situations, however, alternative forums may encourage greater skepticism towards the existing agreement, particularly if the alternatives have proven efficient and useful for producing positive outcomes. For example, the United States has defended its efforts to include HFCs under the Montreal Protocol in part by referencing that treaty's success in handling ozone layer depletion. The original treaty may become less useful for governments seeking to make environmental progress after governments pursue alternative options for new regulations.

Substantively, institutional departure often entails new international environmental regulation. Parties view the alternative settings as vehicles for making effective agreements on new or outstanding issues of common concern. From a counterfactual standpoint, suppose that governments only restricted themselves to initial agreements in managing the natural environment. Under this scenario, many international regulations might not have existed because of the varied limitations hobbling the initial agreements that prompted governments to turn elsewhere. Thus, the fragmentation of international environmental governance has meant the development of new international protections that would otherwise not have existed if governments had avoided departing from earlier agreements on a given environmental issue.

Critical Non-Participation

A common argument in the literature on fragmented regimes is that *de novo* institutions arise because of dissatisfaction with the existing governance arrangement. Recent findings suggest that large countries in the energy regime complex have tended to create small groupings of likeminded countries because of dissatisfaction with larger existing institutional bodies of which they are members.[8] Changes in the climate change regime also reflect dissatisfaction with the main global institution for handling climate change – the UNFCCC.[9]

[8] Colgan, Keohane, and Van de Graaf forthcoming.

[9] Keohane and Victor 2011.

Other findings relate not to the development of new institutions but to the strategic selection among existing ones. For instance, governments tend to select existing forums for settling international legal questions arising from trade disputes in view of the precedents this would set for future disputes and in view of the immediate outcomes preferred by relevant domestic constituencies.[10] Political and strategic motivations in selecting among existing bodies also appear in human rights protection and international security cooperation.[11] Indeed, these are particularly common in global environmental governance, as the international disputes over the protection of property rights to plant genetic resources have demonstrated.[12]

This literature highlights different strategic motivations for departure and emphasizes dissatisfaction as a precondition for fragmented governance. However, I move beyond these findings to explain why "critical non-participation" prompts institutional departure. My theory attempts to explain three aspects of departure. In particular, the argument outlines (i) why new demands for environmental cooperation may emerge, (ii) why parties may be dissatisfied with existing agreements as mechanisms for satisfying those emergent demands, and (iii) why alternative settings for making new agreements may become governments' preferred option.

Critical Parties and Environmental Agreements

Governments negotiate environmental agreements to mitigate the negative externalities from their individual policies. When some parties that produce negative externalities do not participate in the governance arrangement, other parties may experience economic or environmental costs from the unilateral policies of non-participating states. Non-participation by countries that contribute to the environmental problem prevents those who experience negative externalities from achieving greater joint gains under the agreement, *to the extent the non-participant maintains a policy that generates externalities*. To borrow Stephen Krasner's phase, they are farther from the Pareto frontier because of the non-participant's actions (or inactions).[13] Thus, the agreement loses effectiveness as an instrument for remedying the externalities problem. Even after the agreement enters into force, demand for cooperation remains to the extent that non-participating country continues generating negative externalities. We may call this circumstance "critical non-participation" to reflect the importance of non-parties to the agreement's effectiveness.

In this regard, we may consider two types of critical non-participants: those that become critical after an agreement is made or who are excluded from negotiations for other reasons

[10] Busch 2007; Davis 2009.

[11] Hofman 2009; Betts 2009.

[12] Raustalia and Victor 2004.

[13] Krasner 1991.

(*excluded non-participants*), and those involved in negotiations over an agreement but become dissatisfied with the terms of that agreement (*dissatisfied non-participants*). Table 1 summarizes these two types of critical non-participation.

Types	Status as Critical Party	Causes of Non-Participation
Excluded Non-Participation	(i) Becomes critical only after the negotiation (ii) Recognized as critical by all parties to the negotiation	(i) Not considered critical to the agreement's effectiveness (ii) Not relevant to the finer details of the specific issue
Dissatisfied Non-Participation	Recognized as critical by all parties to the negotiation	(i) Agreement provisions do not protect the interests of specific domestic constituencies (i) Compliance would be costly to national economy or economic development

Table 1. Types of Critical Non-Participation.

In some situations, a critical party may be excluded because those negotiating an agreement have specific concerns relevant to themselves and not to other parties, despite the exclude state's overall contribution to the environmental management problem. For example, the Flemish region of Belgium has negotiated agreements with the Netherlands over river diversion and development issues along the Scheldt River, which flows from France through Belgium and then the Netherlands, before reaching the North Sea.[14] France was excluded from some of those agreements in part because the details of the governance arrangements did not directly pertain to it, despite France's status as the upstream state with overall control over downstream river conditions. Similarly, Iceland was an excluded non-participant in the negotiations between Norway and the Soviet Union over rights to fish for Northeast Arctic cod during the 1960s and 1970s. Iceland had not fished for cod in areas near Norway and the Soviet Union during the 1950s and 1960s, giving Norway and the Soviet Union an opportunity to split the entire stock population between them with a series of agreements.[15] Only in the 1990s did Norway and Russia decide to include Iceland in a trilateral arrangement for the cod stock.

[14] Meijerink 2008.

[15] Asgeirsdottir 2008, 129.

Besides exclusion, parties to a negotiation may become dissatisfied with the negotiated terms and decide to reject the agreement, making them *dissatisfied non-participants*. Some terms of the agreement may not reflect their positions on specific areas of the governance problem – areas they consider pivotal for any acceptable agreement on the subject. For example, Zambia is the upstream state in the Zambezi River Basin and 41 percent of the river basin is located in Zambian territory – far more than any other riparian state.[16] It has historically refused to participate in a basin-wide river management commission, under which it would need to accept terms to protect the water rights of other riparian states. The Zambian government has made tentative statements regarding a treaty that establishes a river commission, claiming that it does not adequately reflect its status along the river basin and the importance of the river to the Zambian public.[17] The government has instead chosen to make limited arrangements with Zimbabwe and Mozambique to avoid the various river allocation implications of the basin-wide commission.

Excluded non-participants and dissatisfied non-participants regard the existing agreement differently. Excluded non-participants may become more critical to the effectiveness of an existing agreement as their contribution to the subject of the agreement grows over time. However, the agreement typically does not refer to them and its terms do not reflect the policies or actions it has taken in the area. Excluded non-participants do not take part in the negotiations resulting in the agreement and do not leave a clear mark on its provisions. Rather, the provisions reflect the involvement of the negotiating parties and are intended to regulate only their policies.

By contrast, dissatisfied non-participants oppose agreements that they took part in negotiating and which relate to their policies. They oppose the agreements for one of two reasons: it either harms the interests of politically influential domestic constituencies (including local stakeholders), or it would entail high compliance costs and would negatively affect national economic interests on a broad scale. For example, the United States has opposed the Kyoto Protocol because of the economic consequences of compliance for the overall national economy and because it provides an exemption to China and other large developing economies. However, it has opposed the Convention on Biological Diversity largely because of its provisions on plant genetic resources, under which property rights over plant seeds and bioengineered foods would not provide American farmers with their preferred degree of protection over their patented seeds and foods.[18] In the former case, the objection reflects a concern for overall compliance costs; in the latter case, specific constituencies with political influence in the federal government oppose the treaty.

[16] Transboundary Freshwater Dispute Database (http://www.transboundarywaters.orst.edu/index.html), accessed 28 September 2011.

[17] "Zambia delays signing Zambezi river agreement," Xinhua New Agency, 2004.

[18] Chambers 2008, 208.

Why would governments negotiate an environmental agreement that a critical party finds unacceptable? Since the goal of the agreement is to reduce negative externalities, why would parties leave the negotiations without the support of a critical party? When they enter negotiations, critical parties do not know what provisions the agreement will ultimately include. Although governments often stake their respective positions before negotiations occur, the outcome of negotiations do not crystallize until the end when parties address different issues and make trade-offs, particularly since the typical negotiating mantra that "nothing is agreed until everything is agreed" pushes the most contentious issues until the end and countries undertake "simultaneous reciprocity," bring all issues together under a complete settlement.[19]

Consequently, a critical party does not know that it will be dissatisfied with an agreement ex ante. It only reaches that conclusion towards the end and in the immediate aftermath of the negotiation. Even parties with firm positions on issues of high national significance often view negotiations as an opportunity to secure an acceptable agreement, given their stands on a specific issue or set of issues. Therefore, they may persist in the negotiations but later refuse to accept the agreement. Egypt, for example, participated in the negotiations over a treaty for the Nile River during the 2000s but is dissatisfied that the agreement does not protect its interests.

From the standpoint of those who would prefer the critical party to participate in the agreement, not conceding to its demands threatens to weaken the agreement's effectiveness by spurring the critical party to reject the settlement. However, conceding to its demands might require provisions that the other parties find onerous or costly, either for the national economy or for local stakeholders. These parties, therefore, face a dilemma when the critical party takes an opposing position on a key issue.

In this circumstance, governments may choose to make an agreement that a critical party refuses to accept because they prefer a less effective agreement to a concession that ensures the critical party's participation. In general, when the externalities from non-participation by a critical party are minor and are limited by environmental or economic constraints, the value of making a major concession in the negotiating phase might not outweigh the value of eliminating the externalities. Thus, although the other parties might find the new agreement less effective, they may nonetheless consider the negotiating outcome as an improvement over the status quo and as a more preferable settlement than one that reflects the critical party's demands. In this regard, they may accept the critical party's refusal to join and continue to pursue an agreement, perhaps with the expectation of initiating new negotiations with the non-participant if the externalities continue or worsen over time.

[19] Keohane 1986.

The Post-Agreement Environment

In the post-agreement environment, non-participation is an "outside option." Bargaining literatures emphasize the importance of outside options – and the International Relations literature has begun to study their consequences.[20] An outside option commonly refers to an actor's best alternative to an agreement. Equilibrium bargaining outcomes generally depend on outside options to the extent they provide leverage. Attractive alternatives to an agreement raise the offers needed to secure a settlement in favor of the party with the attractive alternatives. Therefore, favorable outside options produce asymmetric bargaining situations. In our context, the higher the net gains from remaining outside the agreement, the more favorable the terms of a new agreement must be to attract the critical non-participant's involvement.

However, when the non-participant would gain from an agreement with parties to the existing agreement, all sides have an incentive to produce a new cooperative settlement. This may happen for at least one of two reasons. First, if the non-participant experiences negative externalities – perhaps those that remain following the agreement's adoption – it might find the post-agreement status quo unsatisfactory and therefore have an interest in making a new agreement. Moreover, if the non-participant does not gain from the agreement because the other parties have privatized the joint gains or have imposed other costs on non-participation, it has an incentive to come to an acceptable settlement to share in the privatized gains. Where neither of these conditions holds, the non-participant has little if any incentive to join a cooperative arrangement with parties to the agreement.

By contrast, although parties to the agreement may experience joint gains, to the extent the critical non-participant continues its policies, the agreement can only marginally mitigate the externalities. They view the post-agreement environment as a limited improvement over the pre-agreement status quo. Unlike the non-participant, they do not have an outside option as parties to the agreement that is reasonably more attractive than the agreement. Their option is to initiative new negotiations to make a new agreement.

Conditions Encouraging Institutional Departure

Under these post-agreement circumstances, there are three mechanisms of institutional departure. First, from an institutional standpoint, parties to the agreement may seek to preserve their governance arrangement because it suits their particular circumstances and environmental management problems. Therefore, they may pursue a separate agreement involving the critical non-participant. Second, the non-participant might seek to avoid accepting a convention which it rejected initially. Indeed, to participate in new negotiations under the legal purview of the

[20] See Muthoo 1999 for a general formal overview and see Voeten 2001 for an application to international politics.

existing agreement, the non-participant might first need to become party to the agreement before it could negotiate any new agreements under the legal and institutional platform it provides. And third, the non-participant might seek to avoid the existing agreement to exclude certain parties who might block its efforts to secure a favorable settlement. It might also seek to select an alternative forum where non-binding agreements are more often made than binding agreements. Table 2 summarizes these mechanisms.

Mechanism	*Principal Actor(s)*	*Goals*
Institutional	Parties to the agreement	Secure agreement with the non-participant Preserve existing agreement (not always)
Legal	Critical non-participant (excluded or dissatisfied variant)	Avoid accepting the convention in new negotiations
Political-Strategic	Critical non-participant (dissatisfied variant)	Secure more preferable terms (i) Exclude parties who block efforts to secure a favorable settlement (ii) Avoid legally binding agreement

Table 2. Mechanisms of Departure in the Post-Agreement Environment.

Particularly for *dissatisfied* non-participants, political and strategic circumstances condition the choice over whether to pursue a new agreement that serves as a follow-on to the prior one or to negotiate outside the setting of the prior agreement. Generally, dissatisfied non-participants would seek to avoid negotiating under the same set of circumstances that produced the previous agreement that it rejected. For instance, they might seek to exclude parties whose involvement in the previous negotiations contributed to the unsatisfactory outcome because of obstructionist positions. They might also seek to have more flexible and less encumbered settings where decision rules would not become obstacles to agreement. For example, the United Nations environment organizations generally operate by consensus procedures, which in theory give each of the 190+ parties an opportunity to obstruct progress and stop proposals from formal adoption.

Dissatisfied non-participants might also prefer an alternative setting where they would more likely secure a non-binding agreement. In some cases, governments might reject agreements because of their legal character, prompting them to find alternatives where soft law programs are more likely outcomes. For example, China refuses to accept binding commitments

on the Mekong River, but it has accepted several non-binding agreements developed within regional organizations that often produce non-binding arrangements.

Besides political-strategic motives for departure, many treaties only permit parties to negotiate modifications or other new agreements. That is, only parties may participate in negotiations and use the legal mechanisms of the treaty. Since non-parties are not eligible to accept protocols or amendments without accepting the original framework agreement, they must first become party to the original agreement to enter negotiations under the legal processes of the agreement. For example, Estonia could not ratify the first sulfur protocol to the Convention on Long-Range Transboundary Air Pollution (LRTAP) without first becoming a party to the original LRTAP convention. Estonia did not have legal standing within LRTAP to negotiate any protocol to the framework convention until after it had ratified the convention. If Estonia had refused to accept the original framework agreement, as either a dissatisfied or excluded non-participant, it could not have accepted the first sulfur protocol or any other protocol to the LRTAP agreement. Therefore, to the extent that a non-participant refuses to accept the original convention with this legal restriction – perhaps because of onerous or unfavorable provisions – its only option for making an agreement on the subject of the convention would be to pursue negotiations under an alternative setting.

Besides non-participants, parties to the agreement may seek to preserve their agreement and negotiate a similar yet overlapping one with the non-participant. They may have refused to accept the non-participant's demands or may have excluded the non-participant altogether. Their agreement might be tailored to the circumstances and specific environmental management concerns that warrant the critical party's exclusion. Alternatively it might include provisions that they consider acceptable. Consequently, critical non-participation does not eliminate the functional value of their agreement; rather, it only limits that value. Supplementing the existing agreement with a parallel one may be preferable to discarding the existing one altogether. In common-pool resource situations, parties to an agreement may wish to preserve their arrangement and make a separate one that is tailored to specific non-participants. Under these circumstances, parallel agreements with specific yet limited provisions might have more preferably characteristics than abandoning an earlier agreement and making a single comprehensive one.

These legal, institutional, and political-strategic motives highlight the conditions under which critical non-participation will prompt institutional departure from environmental agreements. They suggest that critical non-participation will not necessarily spur agreements outside of primary or establishing channels. Rather, departure will tend to occur under conditions *generally present* in the post-agreement environment. In particular, the demand for a new agreement at an alternative forum stems from (i) residual negative externalities in the post-agreement environment and (ii) the legal, institutional, and political-strategic circumstances of that environment. When both sets of conditions characterize the post-agreement environment,

parties have a strong incentive to depart from primary agreements. Otherwise, they do not have a strong departure incentive.

Hypotheses

To the extent that these conditions are true in post-agreement situations, the argument suggests a pair of baseline hypotheses. The first hypothesis summarizes the main implication of the argument and the second one relates to the probability of follow-up agreements such as protocols, amendments, or others with properties similar as these modifying instruments.

> H1: Non-participation by at least one critical country increases the probability of institutional departure.

> H2: Non-participation by at least one critical country does not increase the probability of modifying the agreement to which that country is not a party.

Before turning to the empirical analysis, it is important to emphasize that the argument *does not* imply that parties to the agreement will never make follow-up agreements. Indeed, they may seek to secure deeper cooperation amongst each other to compensate for the critical non-participant's absence. Non-participation might galvanize the parties to make new institutional arrangements to cope with the critical party's absence from the agreement. This would depend largely on what the parties could accomplish collectively without the non-participant.

Nonetheless, the incentive to make an agreement with the non-participant would remain whether or not they find value in making follow-on or modifying agreements under the existing agreement. Critical non-participation does not necessarily terminate all desire to make additional follow-on agreements among the parties – but it does add a new incentive to move outside the limitations of their agreement.

Quantitative Data

For the empirical analysis, the population of interest is all international agreements on environmental issue-areas involving negative externalities. This covers a wide range of issue-areas since negative externalities often represent the main motivation for environmental agreements. Table 3 enumerates the issue-areas for which this holds, numbering 19 in total. This list excludes animal or bird conservation and natural ecosystem protection, among other

environmental policy areas, because they only tangentially involve negative externalities and have incidental environmental consequences for public welfare. Otherwise, the list covers nearly the full range of international environmental issue-areas.

The population of interest only includes agreements – not political declarations, codes of conduct, memoranda of understanding, or other texts not closely corresponding to the 1969 Convention on the Law of Treaties. For simplicity, I adopt the definition of the International Environmental Agreements (IEA) Database Project, which places emphasis on texts that are binding on parties.[21] Generally, binding agreements use declarative language such as "shall" or "will" instead of suggestive language such as "should" in reference to state obligations.

Table 3 categorizes these issue-areas by their corresponding problem structures, which reflect whether the distribution of control over the environmental problem and the directional path of the problem are asymmetrical (directional) or symmetrical (common pool).[22] Issue-areas with both directional and common pool characteristics are grouped as "mixed" and all other environmental issue-areas in the table are in a fourth category labeled "other."

Directional	Common Pool
River management	Ozone layer depletion
Transboundary air pollution	Climate change
Transboundary shipment of hazardous substances	Fisheries (open water)
Open water access	Fisheries (river/closed water)
Land pollution	Marine life harvesting (whales/seals)
	Deforestation
	Lake basin development
Mixed	**Other**
Sea water pollution	Property rights over biogenetic resources
Lake water pollution	Persistent organic pollutants
Ocean pollution (oil)	
Ocean pollution (general)	
Ocean coastal water pollution	

Table 3. Population of Interest (Agreement Issue-Areas)

[21] Mitchell 2002-2011.

[22] See Mitchell and Keilbach 2001.

The unit of observation is the agreement and the sample (N=851) comes from multiple electronic and hard copy data sources, all listed in the Appendix, and covers multilateral and bilateral environmental agreements dated between 1830-2011 covering the 19 issue-areas. This sample was selected by referencing whether an agreement's subject matter falls within one of the issue-area categories listed in Table 1.

The issue-area of the agreement is reflected by the name of the agreement (e.g., "Agreement on Joint Activities in Addressing the Aral Sea"). Based on this information, agreements were included or excluded from the sample. Agreements on animal conservation and ecosystem preservation were excluded based on the title (e.g., "Convention on International Trade in Endangered Species"). In the rare instances where the title was ambiguous on the subject matter (e.g., "Convention of Bamako"), the preamble or preface was consulted for more information on the subject matter.

Dependent Variables

The two dependent variables are measures of (i) *agreements at alternative forums* and (i) *agreement type*. I model each variable because the hypotheses speak to agreements that parties negotiate through alternative channels and to agreements that build upon on or modify existing ones. Agreements at alternative forums may include legal agreements, such as those composing the sample, or "soft law" arrangements such as memoranda of understanding, accords, codes of conduct, political declarations, or other non-binding instruments. I include these non-binding arrangements to capture the broad range of institution-building activity outside the agreement originally negotiated on an environmental issue.[23]

I measure *agreements at alternative forums* (ALT AGREEMENT = 0, 1) with five criteria because the concept is not directly observable using a single indicator.[24] Each criterion is included because each represents a defining element of institutional departure. The five criteria are: (i) the later agreement must cover the same issue as the earlier one, (ii) the two agreements must cover an overlapping geographic area, (iii) the later agreement must have been made outside the decision-making rules of the earlier agreement, (iv) the later agreement must not be a legal modification or addition to the earlier agreement, and (v) the earlier agreement must remain in force when the latter one is completed. An agreement must meet all five criteria to be coded as one that countries negotiated at an alternative forum.

Data on four of the criteria come largely from the agreement texts. Data on the "outside the decision-making rules" criterion occasionally come from the agreement texts. However,

[23] Recent research suggests that non-binding environmental agreements may sometimes be more effective than legally binding treaty instruments. See Victor, Raustiala, and Skolnikoff 1998.

[24] This follows the advice of Adcock and Collier 2001 for measuring concepts.

where no information is available on whether the subsequent agreement was made outside the decision procedures based on the texts, I first checked whether an agreement satisfied the other four criteria. If it did not, checking whether it was made outside the decision rules is moot because it did not meet other criteria. If it did meet the other criteria, I used secondary sources providing information about the subsequent agreement. If no sources were found, the agreement was marked as "0" under the outcome variable. As a validation step, I consulted secondary sources to corroborate the coding.

The second outcome variable (AGREEMENT TYPE = 0, 1, 2) indicates whether an agreement modifies or follows on a prior agreement and indicates whether institutional departure occurred. To be clear, follow-on or modifying agreements are those that change or add to the provisions of the earlier agreement. These generally include protocols and amendments, although they may also include conventions that considerably alter the prior convention or that replace the prior convention wholesale. The coding of these agreements closely reflects the coding for "agreement sequences" in the IEA Database Project, which codes for the legal relationship among agreements categorized in the same legal lineage.

Thus, it captures whether there was neither a modifying or follow-on agreement nor an agreement at an alternative forum (coded as "0"), whether there was a follow-on or modifying agreement (coded as "1"), or whether there was a subsequent agreement that qualifies under the five criteria for ALT AGREEMENT (coded as "2").[25] Therefore, the AGREEMENT TYPE variable distinguishes between no agreements and modifying agreements – categories that the ALT AGREEMENT variable conflates into the reference category 0. Figure 2 displays the distributions of these variables.

Treatment Variable

The treatment variable is a binary variable indicating non-participation by at least one critical country (KEY NONPARTICIPATION = 0, 1) in an environmental agreement. Two criteria were used to measure this concept: (i) non-participation and (ii) national contribution. Non-participation occurs when a country is not party to an agreement at any point or when it is not party to an agreement when an agreement is made at an alternative forum. Therefore, a country *x* is a non-participant in agreement *y* if it is not party to *y* after it is negotiated or if it is not party to *y* when countries make an agreement at an alternative. This second possibility is included in the event that country *x* becomes a party to *y* after countries make an agreement at an alternative forum, which would mean it was a non-participant before that agreement was

[25] To be precise, the number of observations taking the value 2 equals the number taking the value 1 for ALT AGREEMENT.

adopted. Data on agreement membership come from the IEA Database Project. Supplementary data on agreement participation included webpages corresponding to agreement texts.

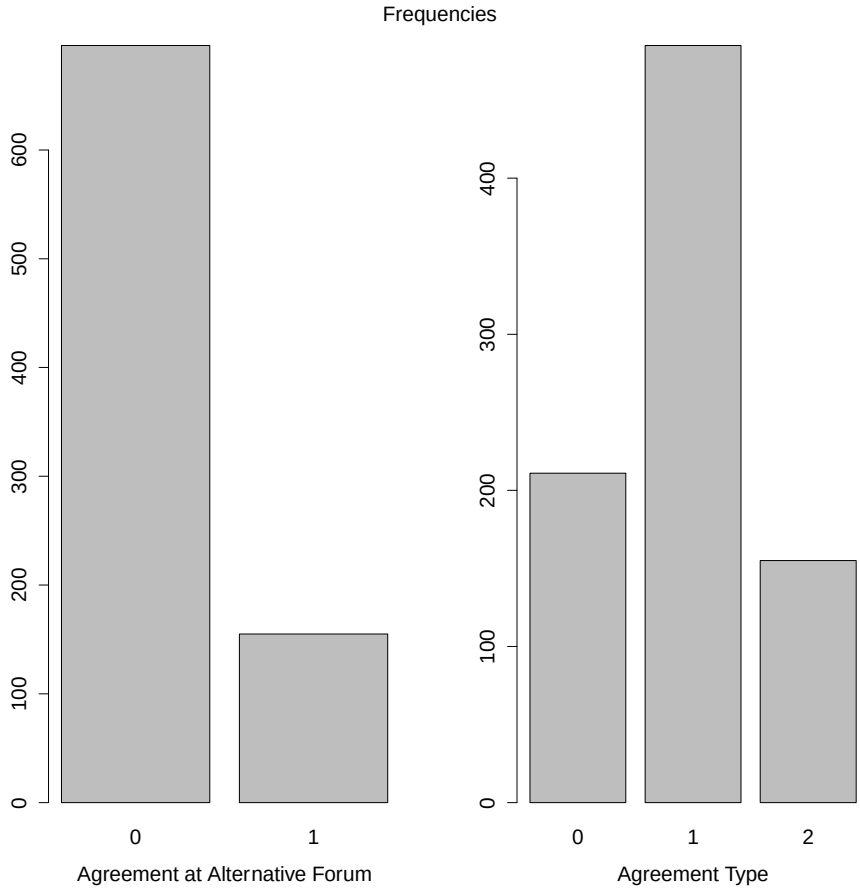

Figure 2. Outcome Variables[26]

The second criterion (national contribution) is measured by issue-area. National contribution refers to the contribution a country makes to an environmental problem. Since this varies across issue-areas, I used specific measures corresponding to specific issue-areas. The Appendix outlines the measurements used for national contributions across each of the 19 environmental issue-areas covered in the sample. Since we are only interested in the national contribution of critical countries, I catalogued the national contributions of the four main contributors to the environmental problem covered by each agreement in the sample. For example, only the four main contributors of carbon dioxide emissions are considered critical for

[26] In 155 out of 851 observations (18.2 percent), ALT AGREEMENT =1; and in 485 out of 851 observations (57 percent), AGREEMENT TYPE =1.

climate change agreements. Only the four main producers of tropical industrial round-wood are considered critical for deforestation. The Appendix lists specific data sources used to identify these leading contributors.

In cataloguing national contributions to identify critical contributors, I measured the countries over each decade of the agreement period. For example, the Montreal Protocol on Substances that Deplete the Ozone Layer was completed in 1987. For that agreement, I noted the four largest contributors of chlorofluorocarbons and halons from 1987 through 1990, through the 1990s, and through the 2000s. This provides a rough measure of which countries were major contributors to ozone depletion over ten-year periods following the completion of an agreement.

For some issue-areas, critical contributors are identified purely based on geography. Any littoral state is noted as critical for lake basin development. Any riparian state is coded as critical for river management. The Appendix also provides more details about these geographically centered measurements and the corresponding data sources.

Covariates

Covariates included in the analysis cover different properties of the agreements. One covariate is an indicator of whether the agreement is multilateral (MEA = 0, 1). Any agreement with more than two parties is multilateral; otherwise, it is bilateral. Another covariate indicates whether the agreement is global (GLOBAL = 0, 1). An agreement whose subject spans northern and southern hemispheres, as well as eastern and western hemispheres, is coded as global (GLOBAL = 1). Otherwise, it is a non-global agreement. The agreement text – and usually the preamble or preface – indicates the geographic coverage of the problem it addresses, distinguishing global from non-global agreements.

Another covariate indicates the issue-area of the agreement (ISSUE AREA = 1, …, 19). As indicated above, this coding is based on the title of the agreement. Where that title is ambiguous in this regard, the preamble or preface was used to identify which of the 19 issue-areas an agreement covers. In addition to issue-area, the problem structure (PROBLEM STRUCTURE = 0, …, 3) corresponding to an issue-area was coded according to the categorization in Table 1. Directional problems are coded as “3,” mixed problems are coded as “2,” common pool problem are coded as “1,” and other problems are coded as the reference category “0.” Directional problems have asymmetric properties in that some parties are situated, often geographically, as the source of the environmental problem and others face externalities. Common-pool resource problems generally involve greater symmetry among the effected parties. And mixed problems share both characteristics because the environmental harm travels in a directional path but each party can cause others environmental harm.

Finally, the legal lineage of the agreement, which relates its legal status to other agreements, is indicated (LINEAGE = 1, …, 462). This variable covers legally related agreements, as they are outlined in the IEA Database Project.[27] Lineages include agreements that amend, modify, supersede, or terminate prior agreements on the same subject. For example, the Vienna Convention serves as the founding treaty of the UN ozone layer regime and its Montreal Protocol adds to the Vienna Convention. The lineage variable indicates which agreements are legally related, such that they form a loosely or closely connected set of legal agreements on an environmental subject.

Statistical Analysis of Institutional Departure

Before turning to a regression analysis, we can see descriptively that critical non-participation and agreements at alternative forums are closely positively associated. Figure 3 represents a mosaic plot of their corresponding frequencies. When agreements include all critical parties, countries generally make agreements at alternative forums at a ratio of 9 to 1. However, when they do not include all critical parties, such agreements become much more prevalent at a ratio of 3 to 2.

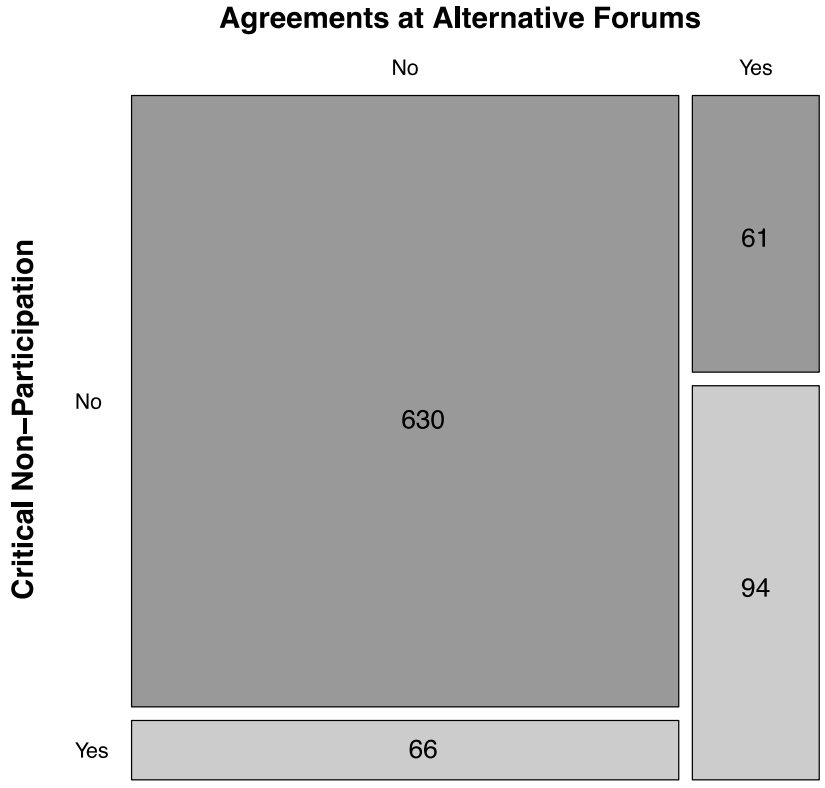

Figure 3. Critical Non-Participation and Agreements at Alternative Forums

[27] Mitchell 2002-2011.

For the regression analysis, we might suspect that the treatment variable is itself conditional on the covariates. For example, some environmental issue-areas might be particularly prone to critical non-participation. Upstream states might systematically refuse to join river treaty agreements, making the decision to reject an agreement endogenous to the characteristics of the issue-area. Climate change might be another example of an issue-area prone to institutional departure because large industrial economies face a higher economic cost from reducing their greenhouse gas emissions than others. Consequently, they might seek to avoid legal commitments under the UNFCCC.

The same might be true of the higher-order categorization of issue-areas – namely, problem structure. Directional problems might encourage systematically more critical non-participation than common-pool resource problems. The asymmetric incentive structure in directional problems such as transboundary air pollution might prompt higher rates of critical non-participation than atmospheric air pollution, where the environmental harms are diffused among the all parties, including the main contributors to the problem.

Moreover, some sets of legally related agreements forged around a specific environmental problem might experience systematically more critical non-participation than other sets of legally related agreements. This might arise because of specific obstructionist parties refusing to accept costly obligations. So might global problem, where the stakes ae generally higher and the costs of compliance might be greater for major contributors to the environmental problem, prompting critical non-participation at higher rates than in local and regional contexts.

To mitigate these selection concerns, I matched the treatment variable on the five covariates. I used exact matching, which matches each unit in the treatment group with very single unit in the control group that has identical values on the pre-treatment covariates.[28] This form of matching does not involve propensity scores and does not generate balance statistics, since the treatment and control groups are matched exactly.

Exact matching is notorious for considerably cutting down the number of observations in the sample when one includes several covariates. In this case, it reduced the sample size to 226 matched units from the original total of 851 in the full sample. I proceed with the regression analysis using the matched sample. Table 4 presents summary statistics corresponding to the full and matched samples for comparison.

Baseline Regression Analysis

In the regression analysis of the binary variable ALT AGREEMENT, I account for the possibility of clustering on the legal lineage of an agreement. Generally, lineages may experience

[28] Matching was performed using the MatchIt package in R 2.14.0. For details, see Ho et al. 2007a, 2007b.

	Mean (Pre-Matching)	Mean (Post-Matching)	SD (Pre-Matching)	SD (Post-Matching)	Min (Pre-Matching	Min (Post-Matching)	Max (Pre-Matching)	Max (Post-Matching)
LINEAGE	202	202.4	113.2981	111.7721	1	1	462	462
PROBLEM STRUCTURE	1.865	1.647	0.8944	0.9133	0	0	3	3
ISSUE AREA	5.919	7.413	4.5819	4.5394	1	1	19	15
MEA	0.5542	0.84	0.4974	0.3678	0	0	1	1
GLOBAL	0.1176	0.14	0.3224	0.3481	0	0	1	1
CRITICAL NONPARTICIPATION	0.1725	0.4	0.3781	0.4915	0	0	1	1
ALT AGREEMENT	0.1765	0.4133	0.3815	0.4941	0	0	1	1
AGREEMENT TYPE	0.9046	1.3	0.6632	0.663	0	0	2	2

Table 4. Summary Statistics for Full and Matched Samples

relatively high or low frequencies of departure, as an environmental regime might become prone to fragmentation or might prove resistant to it by meeting its parties' demands. To assess the extent to which different lineages are systematically associated with different frequencies of departure, I include a random intercept term corresponding to LINEAGE in a logit model. This turns the logit model into a mixed-effects logit model by adding a random effects intercept term for lineage. Thus, the random effects intercept term provides information about the variance among agreements categorized under different lineages with respect to the binary outcome variable.

I estimated this mixed-effects logit model with ALT AGREEMENT as the dependent variable with the treatment variable CRITICAL NONPARTICIPATION and the four covariates included, except for LINEAGE. The estimated variance of the lineage intercept term is 3.0031 and the standard deviation of that estimate is 1.7329. This estimate suggests that lineages vary with respect to their frequencies of agreements at alternative forums at the 10 percent level but not the 5 percent level, providing some evidence that agreements from different lineages might have different probabilities of being followed by institution departure.

To account for this relationship, I clustered the standard errors from a logistic regression model on LINEAGE, where the outcome variable is ALT AGREEMENT. Displayed in Figures 4 and 5, the results suggest that critical non-participation is positively associated with agreements negotiated at alternative forums, controlling for the four agreement attributes. The estimated average marginal effects of the treatment amplify the finding, suggesting that the probability of making new agreements (binding or non-binding) at an alternative forum increases approximately 40 percent under critical non-participation, with the 95 percent confidence interval ranging over 30-48 percent. This finding supports H1. The results also show that global scope is positively associated with institutional departure, although the average marginal effects are estimated to be lower than for critical non-participation at their respective means.

Modification versus Departure

The results reported in Figures 4 and 5 only provide information about the validity of H1. They do not speak directly to H2 because the ALT AGREEMENT variable conflates modifying agreements with no subsequent agreements into one reference category.

To estimate the contrasting demands for agreements at alternative forums and for modifying the earlier agreement, I use a multinomial logistic regression model of AGREEMENT TYPE, with standard errors again clustered on LINEAGE to reflect the systematic variability across these groupings. The results from the model appear in Figure 6.

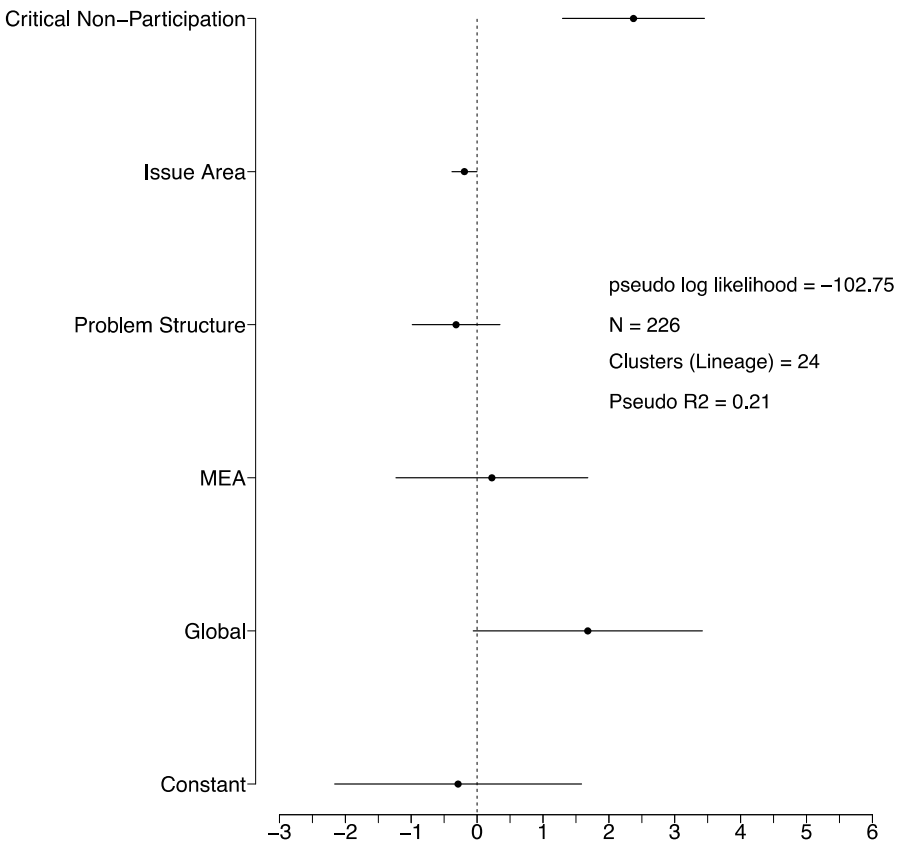

Figure 4. Coefficient estimates and with 95% confidence intervals.

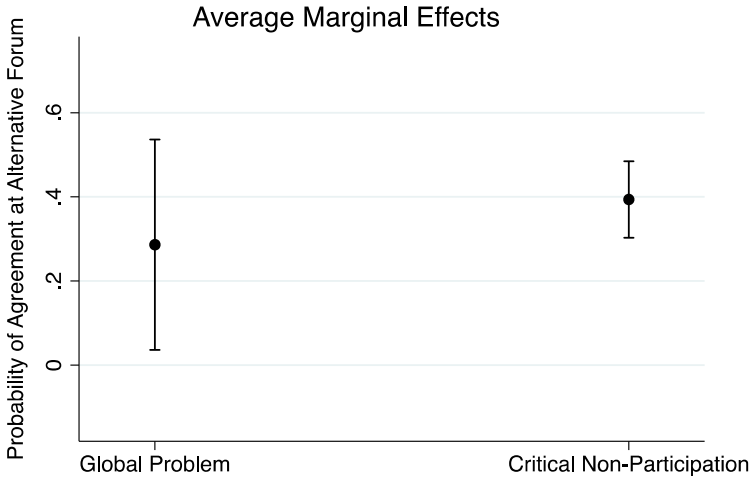

Figure 5. Estimated average marginal effects with 95% confidence intervals.

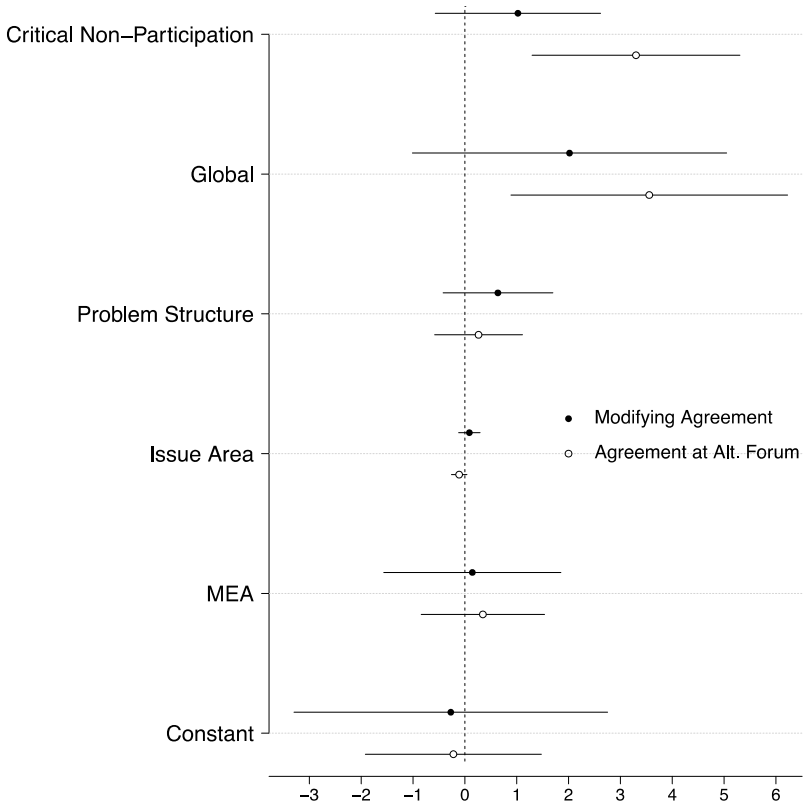

Figure 6. Coefficient estimates with 95% confidence intervals. (N = 226, clusters(LINEAGE) = 24, P-value = 0.0000, Wald χ^2 = 118.36, Pseudo R^2 = 0.1861)

The results with the disaggregated outcome variable AGREEMENT TYPE suggest that critical non-participation is positively associated with agreements at alternative forums but not with modifying agreements. The p-value for critical non-participation is 0.209 for the modifying-agreements outcome. Therefore, narrowing the confidence interval to 90 percent would not change our inference that there is no systematic positive relationship between modifying agreements and critical non-participation. These results suggest that critical non-participation is positively associated with departure from the earlier agreement but not with agreements that add to the development of those earlier agreements.

The estimated average marginal effects of critical non-participation reinforce these results. In particular, critical non-participation is associated with a 39 percent increase in the probability of agreements at alternative forums, with the 95 percent confidence interval ranging over 30-49 percent. However, it is associated with a -29 percent change in the probability of having a modifying agreement, with the 95 percent confidence interval ranging between -40 and -18. These estimates suggest that critical non-participation is associated with an increase in the

probability of institutional departure but a decrease in the probability of modifying the earlier agreement, suggesting critical non-participation detracts from the probability of having integrated regimes.

The figure also suggests that global scope is positively associated with agreements at alternative forums but not with modifying or follow-up agreements – much like the critical non-participation variable. This finding corresponding to global scope is consistent with the prior result reported in Figure 4 from the logit model. Indeed, it suggests that institutional departure may stem from a combination of different political conditions surrounding the earlier agreement.

The Institutional Development of International Climate Change Governance

To further evaluate the consequences of critical non-participation, we may consider the institutional development of the climate change regime. The climate change regime arguably began before the UNFCCC was completed but it became formalized in the United Nations Framework Convention on Climate Change in June 1992. Thus, institutional departure could have occurred at any point afterwards.

The climate change issue-area displays clear variation with regards to critical-party participation because United States policy between June 1992 and early 2001 was to engage in the UNFCCC process and to participate in the agreements generated by that process. However, after March 2001, the consistent US policy was to reject the Kyoto Protocol, the major treaty negotiated under the UNFCCC. Formally, the US was not party to the Kyoto Protocol even under the Clinton administration, following the Kyoto conference where that treaty was negotiated. However, the Clinton administration's policy was to secure enough concessions internationally to eventually make ratification of the Protocol politically feasible, despite overwhelming opposition to the treaty in the US Congress. Therefore, these two time periods (1992-2001, 2001-2010) are distinguished by US participation in all the operational treaties under the UNFCCC (period ending in 2001) and official rejection of one of the two major treaties in the regime (2001 onward).

During each period, the US was considered a critical player in the climate change regime in large part because of its high greenhouse gas emissions, which prior to 2007 were the highest in the world among all countries and since 2007 have trailed only those of China. Consequently, the US was a critical participant from 1992-2000 but became a critical *non*-participant afterwards.

Climate change governance has also featured clear variation in the dependent variable over time. During the 1990s, agreements were only negotiated within the UNFCCC, which was

the only major forum where governments regularly dealt with issues related to climate change. However, during the 2000s, the institutional governance of climate change has developed into a regime complex, involving political declarations made at G8 summits, legal amendments proposed under the Montreal Protocol, and other initiatives in regional bodies.[29] Therefore, the sustained use of alternative institutional forums has grown since the early 2000s, but was largely non-existent during the 1990s.

We may ask two questions about this case. First, what are the institutional consequences of US non-involvement in the Kyoto Protocol for the climate change regime? And second, how would the institutional characteristics of climate change governance have developed if the US had been a party to the Kyoto Protocol? Although these two questions are opposite sides of the same idea (i.e., the impact of US non-involvement), it helps to disaggregate them for analytical purposes.

The principal data source for the analysis is a series of interviews with former and current officials in two national governments (US, UK), the UNFCCC Secretariat, and the European Commission. The second main data source consists of primary documents, including summaries of UNFCCC meetings and a commissioned textual history of the Kyoto Protocol.

US Policy, 1992-2000

The United States position in the climate change negotiations has closely reflected the political party of the governing administration. Under the George H.W. Bush administration, the US was opposed to accepting limitations on greenhouse gas (GHG) emissions during the negotiations at the Earth Summit that produced the Framework Convention. However, the administration signed the Convention and the US Senate ratified it because Article 4 effectively calls on the developed country parties to make "best efforts."[30] The United States was able and willing to expand its reporting activities to provide more detailed information on GHG emission inventories to the UNFCCC Secretariat, making compliance relatively harmless to the US economy.

The Clinton administration was much more positively engaged in the negotiating process than the previous administration. According to one former State Department negotiator, the United States sought to move the process forward within the Framework Convention.[31] The

[29] For example, see Keohane and Victor 2011 for a description of some parts of the regime complex.

[30] Interview with a former Executive Secretary of the UNFCCC, by phone, 14 September 2011.

[31] Interview with a former senior State Department negotiator, in person, Washington, DC, 23 August 2011.

negotiations were largely viewed as slow-moving and cumbersome, in part because they involved many parties representing many interests. Negotiators from the State Department gave only marginal consideration to working with likeminded countries outside the UNFCCC framework.[32] Most of the multilateral discussions occurred under UNFCCC auspices at the Conference of the Parties (COP) – the supreme body of the Convention – the Subsidiary Body for Implementation (SBI), and the Subsidiary Body for Scientific and Technological Advice (SBSTA). These multilateral discussions among the major developed countries attempted to provide a counter to the more ambitious policy of the European Union member states.

Under the Clinton administration, the United States viewed the UNFCCC as the only appropriate forum for negotiating agreements on climate change. It viewed the consensus procedure for making COP decisions (agreements under the Convention) as an impediment to faster progress in the negotiations.[33] However, it actually sought to prevent negotiation from occurring outside the UNFCCC umbrella because there was "a fear that you cannot negotiate climate issues in multiple fora" and that the Framework Convention was the only appropriate body for formal climate-related negotiations.[34]

Indeed, in the meetings that led to the Kyoto conference, scheduled for 1-11 December 1997, the United States put forward institutional design proposals on how to introduce flexibility into a regime placing binding GHG emission limitations on the developed countries. Much of the design of the Protocol reflected US positions in the COP meetings and in public statements before the Kyoto meeting, especially the market-based mechanisms such as emissions trading, which Under Secretary of State Timothy Wirth proposed at COP 2.[35] One senior staff member of the UNFCCC who was at the Kyoto conference recalls,

> The Europeans were only talking at that time about the so-called common carbon policies and measures. They did not want to hear about this emissions trading [idea]. They were dead against it. It was simply the second half, the second week of negotiations in Kyoto itself, [that] the Europeans started to backtrack and say, okay if the US wants that, what can we do? The US actually insisted on having three additional gases in the Kyoto Protocol, which were not there before under the Convention. So the US had a very influential role in the development of the Kyoto Protocol.[36]

[32] Interview with a former senior State Department official, in person, Washington, DC, 21 July 2011.

[33] Ibid.

[34] Interview with a senior State Department negotiator and policymaker, in person, Washington, DC, 24 August 2011.

[35] Depledge 1999, 82.

[36] Interview with a senior UNFCCC staff member, in person, Bonn, Germany, 11 August 2011.

State Department negotiators recognized that the Byrd-Hagel Resolution passed in the US Senate earlier in July 1997 meant that the Kyoto Protocol would not be ratified. They sought to secure as many concessions as they could from other countries to make the compliance costs manageable and gain Congressional support for the agreement. They pursued a three-pronged strategy: (i) persuade Congress to accept the treaty by convincing them implementation would not be harmful to the US economy, (ii) negotiate flexibility into the Kyoto regime by operationalizing offset mechanisms and by establishing permissive emissions accounting rules, and (iii) secure as much involvement from the major developing countries as possible.[37]

Moreover, there was a common belief outside the United States and from within the UNFCCC Secretariat that even though the Byrd-Hagel Resolution prevented adoption of the Kyoto Protocol, the US would implement measures *as though* it were a party to the agreement.[38] The United States had not ratified other global environmental treaties, like the Convention on Biological Diversity and the Law of the Sea, both negotiated under United Nations auspices. However, it implemented much of these two treaties through various domestic regulatory programs – although it maintained policies and regulations in conflict with these conventions in some areas conflicting with US interests.[39]

Climate Regime Development, 1992-2000

The climate change regime was centralized in the UNFCCC following the Rio negotiations and during the 1990s. Previously, the Intergovernmental Negotiating Committee (INC) was the key multilateral location where global climate change negotiations would occur, after it was formed by a resolution of the UN General Assembly in 1990.[40] The UN General Assembly transferred the issue first to the INC, which then transferred it to the Framework Convention process. Following the Framework Convention's entry into force, parties

[37] Cass 2005, Chap. 6.

[38] Interview with a senior UNFCCC staff member, in person, Bonn, Germany, 12 August 2011.

[39] This is often true of the United States but not other countries because of the high ratification threshold for treaties in the United States. Most other countries are parties to environmental agreements with which their domestic policies are already consistent because the lower ratification/accession threshold permits a higher share of treaties to pass.

[40] Interview with a former Executive Secretary of the UNFCCC, by phone, 14 September 2011.

immediately began to negotiate how to implement the Convention's goal of preventing "dangerous anthropogenic interference in the climate system."[41]

After intense discussion at COP 1 in Berlin, the Ad Hoc Group on the Berlin Mandate (AGBM) was formed to negotiate a follow-up agreement to the Convention. The Berlin Mandate set forth the goal of negotiating legally binding caps on developed country emissions, with a compliance period after the year 2000. The creation of the AGBM meant that an ad hoc group whose jurisdiction would end at COP 3 in Kyoto became the central forum for negotiating on issues crucial to the burgeoning climate change regime. Nonetheless, the AGBM was not a body that existed outside the Framework Convention process and did not represent fragmentation into different forums.

The only major efforts towards institutional departure came at the Kyoto conference. During the intense negotiations, the problem of regulating GHG emissions from civil aviation and maritime shipping – that is, emissions not emanating from within national territories – was not addressed. Parties instead asked the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) to take on GHG emissions under their mandates. This relieved the national delegations at Kyoto from settling this complicated issue but also reflected a belief that the ICAO and IMO were reasonably appropriate bodies for regulating air pollution from civil aviation and marine shipping. Since then, the IMO and ICAO have made periodic progress reports to the UNFCCC process.

US Policy, 2001-2010

When the George W. Bush administration came to power, the policy towards the UNFCCC abruptly changed. President Bush announced that the United States would not ratify the Protocol – news that came as a shock to those who had expected the United States to remain engaged in the process, despite the Byrd-Hagel Resolution.[42] The decision meant the United States would not participate in the Kyoto process as a full party. It would thus neither be a legal party to the Kyoto Protocol process nor an active participant in the negotiations or even informal discussions relating to the Protocol under the Framework Convention. According to a former State Department negotiator, the delegation to COP 7 in Marrakesh was instructed to "pass" on Kyoto issues and only address Framework Convention issues.[43] The feeling within the UNFCCC began to quickly change, as participants had recognized that the change in administration had

[41] Article 2 of the UNFCCC.

[42] Interview with a senior UNFCCC staff member, in person, Bonn, Germany, 12 August 2011.

[43] Interview with a former State Department negotiator, in person, Washington, DC, 21 August 2011.

brought a complete change in policy, which meant the prospect of the US quietly following the Kyoto Protocol was no longer viable.[44] At COP 7, the hope remained that easing the limitations under the Protocol, including its legal structure, might change the US position.[45]

Despite the Bush administration's hardline decision, US delegates to the negotiations saw repeated questions about how the US would address the climate problem within a multilateral setting, if not under the Kyoto Protocol. According to one negotiator, "we had to come up with something."[46] Several initiatives began to emerge pertaining to smaller elements of the climate problem, and taking a more limited and practical series of steps towards addressing the issue outside the UNFCCC/Kyoto frameworks. Bilateral discussions helped to identify specific issues that larger groups of parties sought to address, including methane, hydrogen, technology cooperation, and carbon sequestration and storage.[47]

US engagement became more active outside the UNFCCC towards the second half of the Bush administration's second term, culminating in the launching of the Major Economies Meetings (MEM) and the decision to be part of the Bali consensus and support the Bali Roadmap. President Bush himself announced the formation of the MEM while at a G8 summit in Heilligendammn, Germany, in July 2007 and indicated that the US would re-engage in the UNFCCC negotiations after six years of quiet observation. Consisting of 17 of the world's largest economies, the MEM was viewed as a means of engaging major developing countries that did not have obligations to reduce emission under the Kyoto Protocol (e.g., China, India, Brazil). The MEM therefore did not have the asymmetry built into it that the "equity" and "common but differentiated responsibilities" principles under the Framework Convention had established in that forum and which the Kyoto Protocol had operationalized by placing emissions limitations only on developed countries.[48]

Having launched the MEM, the United States later at COP 12 in Bali became part of the consensus decision that established the Bali Roadmap, under which the post-2012 of the UN climate change regime would be negotiated and developed. Under the Bali Roadmap, the lines that had separated the developed countries (grouped into the Annex I group) and the developing countries in the non-Annex I group been to erode, as the Roadmap made reference to developed and developing countries, which are not defined in the Framework Convention instead of the Annex I and non-Annex I parties, which are defined in the Convention. The Executive Secretary

[44] Interview with a senior UNFCCC staff member, in person, Bonn, Germany, 11 August 2011.

[45] *Earth Negotiations Bulletin*, 12 November 2001, pg. 16.

[46] Interview with a former State Department negotiator, in person, Washington, DC, 21 July 2011.

[47] Interview with a former US head of delegation to the UNFCCC, by phone, 2 August 2011; interview with a senior State Department negotiator, in person, Washington, DC, 24 August 2011.

[48] Interview with a State Department foreign affairs officer, by phone, 22 July 2011.

of the UNFCCC likened this shift – strongly pushed by the US delegation – to the "dismantling of the Berlin Wall."[49]

Under the Obama administration, the United States has amplified the use of multilateral initiatives begun under the Bush administration. More active discussions and more frequent meetings have made the MEM, now relabeled the Major Economies Forum (MEF), part of an annual cycle of discussion among the major parties on climate change issues.[50] Moreover, early discussions within the State Department over introducing regulations on HFCs as a follow-up to amendments covering hydrochlorofluorocarbons (HCFCs) have turned into official proposals within the Montreal Protocol process, as we saw earlier.

Climate Regime Development, 2001-2010

The climate change regime changed rapidly during the second half of the 2000s. In the first half of the decade, progress within the UNFCCC was stagnant and the focus remained on the Kyoto Protocol. The European Union was galvanized to spearhead the Protocol's entry into force following the Bush administration's decision to reject the agreement and disengage from the talks. US rejection of the Protocol meant that only Russian involvement could ensure its entry into force. After securing concessions on other issues including WTO membership from the European Union, Russia ratified the Protocol, giving it enough of the world's GHG emissions at 1990 levels to enter into force.[51] As one former US negotiator remarked,

> So ironically, [President] Bush by pulling the plug on Kyoto, led to its entry into force. The rest of the world got organized … The Europeans got mad and Bush pushed the process forward, unintentionally I should say.[52]

The use of alternative forums rose in 2005-2007 and resumed again immediately after the Obama administration came to power in January 2009. The Bush administration launched the Asia-Pacific Partnership to advance cooperation on carbon sequestration and carbon storage and

[49] *Earth Negotiations Bulletin*, 18 December 2007, pg. 19.

[50] Interview with a former British diplomat, by phone, 24 August 2011.

[51] To be precise, ratification from countries contributing a total of 55 percent of global GHG emissions at 1990 levels was required to have the treaty enter into force.

[52] Interview with a former senior State Department negotiator, in person, Washington, DC, 23 August 2011.

to consumerize climate-friendly technologies. It also launched the MEM, as mentioned, which soon became an especially important and fast-moving body after the Obama administration organized meetings leading to and then following the 2009 Copenhagen Climate Conference. Despite initial reservations and even fears about the MEF, European governments came to view the new body as non-threatening and facilitative within the larger climate change regime because of the positive feedback that it provided, both from a political standpoint by providing momentum to the process and from a negotiating standpoint by spurring specific institutional ideas later formally adopted in the COP.[53]

Besides the creation of US-led forums, adaptation to climate change has become a major agenda item in UN organizations and regional bodies during the 2000s, particularly following UN Secretary-General Ban Ki-Moon's speech in 2007 urging UN agencies and organizations to devote attention and resources to different areas of the climate problem. The growth of adaptation-related activities and projects – reported within the UNFCCC process[54] – has come to reflect the wide scope and growing political significance of the climate problem, irrespective of political maneuverings by the United States as a non-party to Kyoto.

Institutional Consequences of US Non-Participation

US non-participation in the Kyoto Protocol has had political and substantive implications for the Kyoto negotiating track (or KP track) in the UNFCCC process. The European Union was galvanized to spearhead the Protocol's entry into force following the Bush administration's decision to reject the agreement and disengage from the talks. US rejection of the Protocol meant that only Russian involvement could ensure its entry into force.[55]

Moreover, US non-participation has motivated Annex B parties – that is, those that took on demanding emissions targets under the Protocol – to question why they should implement costly mitigation measures to meet their commitments. Consisting of the advanced developed countries, Annex B parties made those emissions commitments on the commonly held assumption that the US would be part of the Kyoto process. For example, Canada accepted a target much like that of he US under Kyoto but it has not followed through, as the domestic political discussion in Canada changed in regards to implementation once the Bush

[53] Interview with a former British diplomat, by phone, 24 August 2011.

[54] UNFCCC, "Adaptation-related activities within the United Nations system." Document FCCC/AWGLCA/2008/INF.2, November 2008.

[55] To be precise, ratification from countries contributing a total of 55 percent of global GHG emissions at 1990 levels was required to have the treaty enter into force.

administration withdrew from involvement and rejected the Protocol.[56] Although the EU has sustained its commitment to implementation during the first commitment period under Kyoto (2008-2012), its political position in the negotiations became precarious during the early and mid-2000s, in part because of US non-involvement and the competitiveness consequences of unilateral implementation of its Kyoto commitments.[57]

Furthermore, the institutional consequences of US non-participation in the Kyoto process have been profound for the UNFCCC, beyond their implementation consequences for the Kyoto Protocol. According to a senior staff member at the UNFCCC, the institutional arrangements of the reporting system and the basic status of Annex I parties each reflect US non-participation:

> If it had, if the US had become a party, the issues would never have come up. There would be no reason to distinguish the concept of a non-Kyoto Annex I party. There would have been one reporting system. The national reports probably would have been much more integrated. And this probably does not affect the annual inventories, but we have supplementary information, which the US doesn't play around with but which the Kyoto parties do. It has added extra layers of complexity.[58]

More importantly, the UNFCCC process itself has become *internally* fragmented because of US non-involvement and to include the large developing countries under a single mitigation regime. The process was originally conceived as fully integrated, so that the Framework Convention and the Kyoto Protocol would be managed *simultaneously* within the same body. According to a senior UNFCCC staff member,

> Well … when the Kyoto institutions were designed, the whole philosophy behind it was that it would be a second universal agreement. So there was an effort to make sure that the institutions behind the Kyoto system were as simply as possible and mirrored in fact in our wildest dreams, they would be the same institutions. In some treaty regimes, you have separate institutions. But this is where we came up with the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol. And it was basically assumed that there would be one body that would deal with everything. Like you would have in human rights or the ILO [International Labor Organization] where you have big,

[56] Interview with a senior UNFCCC staff member, by phone, 1 August 2011.

[57] Interview with a former State Department official, in person, Princeton, NJ, 22 March 2011.

[58] Interview with a senior UNFCCC staff member, in person, Bonn, Germany, 12 August 2011.

> all-encompassing governing bodies, and then you would find ways within those if you have differences of opinion among the membership. We assumed that the whole membership of the Convention would ratify the Protocol. So when the US decided not to ratify Kyoto, we had to go through a rather extensive process to disaggregate. So that all of the Kyoto institutions are distinct from the Convention … In the original scenario, it all would have blended together.[59]

Perhaps the most profound institutional fragmentation to occur within the UNFCCC process that stems in part from US non-participation occurred at Bali during COP 12, when a new negotiating track was formed that included all parties to the Convention, thereby including the United States, the Kyoto parties, and the non-Annex I developing countries. Parties to the Bali meeting recognized that negotiating a post-2012 agreement required broad participation and that the Kyoto Protocol (KP) negotiating track did not satisfy that fundamental requirement. Therefore, as in Berlin 12 years earlier at COP1, a new ad hoc body was formed to negotiate a new agreement, thereby establishing two separate and parallel tracks, each negotiating on the post-2012 period of the UN climate regime. This fracture shifted some attention away from the existing KP track and toward the Framework Convention track. Political activity and negotiations intensified in that track, reflecting the importance of engaging major emitters such as the United States.[60] Political jockeying between the two tracks complicated the negotiations.

Finally, several non-UN elements of the climate change regime have also reflected US initiatives while it was disengaged from the UNCCCC process in general and dissatisfied with the Kyoto Protocol in particular. US-led initiatives such as the MEF represented responses to dissatisfaction with the Kyoto Protocol and a desire to become more politically and diplomatically active in this issue area. To an extent, they also represented alternative institutional responses to the difficult problem of climate change. The United States delegates to international climate change meetings were repeatedly asked what the United States would do to take positive action on climate change, following the Bush administration's rejection of the Kyoto Protocol.[61] International pressure came in the form of a challenge to engage somehow, if not through acceptance and implementation of the Protocol.

Even long-standing forums such as the G8 in part reflected the US diplomatic position in the UNFCCC, as European governments used them to engage the United States directly at high-profile events on this issue, unable to do so within the Kyoto process because of US non-participation there. Other countries found the MEM and other small-group forums involving the

[59] Ibid.

[60] Interview with a former White House official, in person, Cambridge, MA, 11 July 2011.

[61] Interview with a former State Department senior official, by phone, 2 August 2011.

US as the only multilateral points of engagement involving relatively high levels of governments, which because of the US's status as a major GHG emitter and its political importance in the UNFCCC talks made them instrumentally valuable to European governments seeking to address climate change.[62]

Conclusion

Governments make environmental agreements to reduce the negative externalities of each other's policies, thereby providing public goods or preserving common-pool resources. A sequence of agreements on the same set of issues forms an integrated regime because the agreements – related both legally and functionally to one another – encompass a growing range of regulatory issues. Integrated regimes generate lower transaction costs for their parties, making the returns to the regime higher over time and, consequently, the opportunity costs of departing from the regime higher as well.

Yet governments have departed from environmental agreements, even when they formed integrated regimes involving multiple operational and regulatory functions. The extent to which governments have moved towards alternative settings to address the environmental issues for which earlier agreements were negotiated highlights that environmental regimes generate *varying degrees* of increasing returns and lower transaction costs for their parties.

This paper outlines and evaluates a theory of institutional departure to explain one of the conditions under which environmental regimes vary in these respects. In particular, the critical non-participation argument provides an explanation for several of the elements of institutional departure: why parties may have new demands for cooperation, why they may reject the existing agreement as a viable platform for meeting those demands, and why they may pursue agreements at an alternative forum.

The empirical analysis of institutional departure from international environmental agreement finds strong support for the critical non-participation argument. The empirical analysis highlights the varied institutional consequences of non-participation by critical parties in environmental agreements. In particular, critical non-participation may prompt governance fragmentation by spurring the negotiation of agreements at alternative forums. The negative externalities imposed upon other parties in the area of climate change were a driving factor in the EU's decision to engage the United States in alternative forums under the Bush administration, including the one that the administration itself launched to facilitate informal discussion among the major world economies. The statistical evidence also suggests that critical non-participation

[62] Interview with a former British diplomat, by phone, 24 August 2011; interview with a State Department negotiator, by phone, 22 July 2011.

often spurs agreements outside established channels, reflecting a mutual desire by parties and important non-parties to an agreement to find alternative settings in which to secure new agreements.

However, the theoretical analysis omits mentioning that critical non-participation may also invite institutional fragmentation under the existing agreement. As we observe in the climate change regime, the institutional composition of negotiations and the legal responsibilities of parties reflect whether key countries are parties to each main legal agreement under the regime. This internal institutional fracturing would probably not occur when the critical non-participant is outside all the agreements of the governance arrangement, which is not true of the US in the UNFCCC process, since it is a party to the Framework Convention. Therefore, it is quite possible that *partial* non-participation carries different institutional consequences from those of *full* non-participation, highlighting the potentially varied consequences of critical-party non-participation.

Finally, the quantitative and qualitative analyses both suggest that global environmental problems might be more prone to the use of alternative forums than regional or local environmental problems. This may reflect the large number of parties in global environmental regimes and perhaps the consensus rules by which they often operate and make collective decisions. It highlights another possible source of institutional departure beyond the critical non-participation argument that we have analyzed. It reinforces that the origins of institutional departure from environmental agreements are not restricted to one causal process but reflect different, possibly complementary processes.

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Appendix

[1] River management – quality, quantity, commerce/navigation

- *Critical states*: any upstream state
- *Data source*: Perry-Castaneda Library Map Collection (University of Texas at Austin), Program in Water Conflict Management and Transformation, Oregon State University

[2] Lake water pollution

- *Critical states*: any coastal state
- *Data source*: Perry-Castaneda Library Map Collection (University of Texas at Austin)

[3] Sea water pollution

- *Critical states*: any coastal state
- *Data source*: Perry-Castaneda Library Map Collection (University of Texas at Austin)

[4] Ocean coastal water pollution (coverage starting from 1961)

- *Critical states*: largest four economies (by industrial production) bordering the ocean coast
- *Data source*: World Bank, Perry-Castaneda Library Map Collection (University of Texas at Austin)

[5] Ocean general pollution (coverage starting from 1980)

- *Critical states*: national total fleet shipping tonnage (largest four on average over each decade of the agreement period)
- *Data source*: UNCTADstat

[6] Ocean oil pollution (coverage starting from 1980)

- *Critical states*: national oil tanker tonnage (largest four on average over each decade of the agreement period)
- *Data source*: UNCTADstat

[7] Fisheries – open water (coverage starting from 1950)

- *Critical states*: national fishery production in or around the fishing area (largest four on average over each decade of the agreement period)
- *Data source*: FAO, Fisheries and Aquaculture Department (Fishstat Plus computer software)

[8] Fisheries – river/closed water

- *Critical states*: national fishery production of riparian/coastal states (largest four on average over each decade of the agreement period)
- *Data source*: FAO, Fisheries and Aquaculture Department (Fishstat Plus computer software), Perry-Castaneda Library Map Collection (University of Texas at Austin)

[9] Transboundary air pollution (coverage starting from 1981 for some regulated pollutants and from 1990 for all regulated pollutants)

- *Critical states*: emissions of sulfur dioxide and nitrogen oxide on over the agreement period (and pollutant air travel patterns)
- *Data source*: Earth Trends: The Environment Information Portal (World Resources Institute), European Environment Agency, World Bank, secondary sources

[10] Transboundary shipment of hazardous substances (coverage starting from 1995 for nearly all except most African and several South American states)

- *Critical states*: national hazardous waste production (largest four globally on average over each decade of the agreement period)
- *Data source*: United Nations Statistical Databases

[11] Atmospheric air pollution – ozone depletion (coverage starting from 1989)

- *Critical states*: CFC consumption and Halon consumption summed (largest four on average over each decade of the agreement period)
- *Data source*: United Nations Environment Programme, Ozone Secretariat

[12] Atmospheric air pollution – climate change (coverage starting from 1981)

- *Critical states*: CO_2 emissions (largest four on average over each decade of the agreement period)
- *Data source*: United Nations Framework Convention on Climate Change, World Bank

[13] Deforestation (coverage starting from 1994)

- *Critical states*: national production of tropical industrial round-wood (largest four on average over each decade of the agreement period)
- *Data source*: International Tropical Timber Organization

[14] Biogenetic resources (property rights protection and transport) (coverage from 1961)

- *Critical states*: agricultural states among G77/China (four largest over each decade of the agreement period) and United States (constant)]
- *Data source*: FAOSTAT

[15] Marine life harvesting – whales (coverage starting from 1910)

- *Critical states*: national catch (largest four on average over each decade of the agreement period)
- *Data source*: IEA Database (hub for links on whaling catches by country year for main whaling countries)

[16] Marine life harvesting – seals

- *Critical states*: national catch (largest four on average over each decade of the agreement period)]
- *Data source*: secondary sources

[17] Persistent organic pollutants (coverage starting from 1990)

- *Critical states*: total consumption of pesticides among G77/China states (four largest over each decade of the agreement period)
- *Data source*: FAOSTAT

[18] Lake basin development

- *Critical states*: any coastal state
- *Data source*: Perry-Castaneda Library Map Collection (University of Texas at Austin)

[19] Open water access (navigation/commerce)

- *Critical states*: any coastal state
- *Data source*: Perry-Castaneda Library Map Collection (University of Texas at Austin)

[20] Land pollution

- *Critical states*: any contiguous states
- *Data source*: Perry-Castaneda Library Map Collection (University of Texas at Austin)