

Regions and the Ratification of Global Environmental Treaties

Colin Kuehl

Department of Political Science

UC Santa Barbara

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In recent years a growing body of literature across the study of international relations (IR) has begun to explore regions as area of substantive interest. Across issue areas, from trade and security to human rights and the environment, regions have become a topic of greater interest as it has become clearer that regional dynamics play a key role in broader global processes. Yet, very little of this work explores how regions actually shape state behavior at the international level. More often than not, the concept of region is simply used to describe interactions occurring between domestic and international levels of analysis. Regions are discussed as a microcosm of international processes (Lake, 2011) or substitute venue circumventing a lack of global level progress (Keohane and Victor 2011; Conca 2012). Examination of the region as a constituted entity impacting the behavior of states, or in other words as an independent variable, has only recently become an area of research.

This paper adds to this emerging body of scholarship. It argues that regions are influential entities shaping state behavior. This proposition is tested by examining the effect of regional membership on the likelihood of a state's environmental behavior, defined by ratification of multi-lateral environmental agreements (MEAs). The paper contends that states will be more likely to ratify MEAs when other states in their region have done so as well. Accordingly, it provides a novel contribution to our understanding of the cooperative behavior of

states by examining the importance of region as a factor outside of domestic or system level politics.

Further scrutinizing the region provides a new dimension to the traditional system versus state level of analysis common to international relations. A region can be defined as a subgrouping of multiple geographically proximate states constructed through significant interaction across multiple issue areas. Regions provide a distinct grouping for states nested within the entirety of the international system. This grouping differentiates peer states and those with similar interests, from the broader structure of the international system. Accordingly, states are more likely to be influenced by other members of their region. Regions thus provide a distinctive, yet underexplored, construct through which to examine the behavior of states. This occurs in multiple ways, as there both functional and socially constructed reasons for states to follow their regional neighbors.

Dominant approaches view treaty ratification as the product of the rational interests of domestic actors and the interests of the state at the international level. This literature identifies a range of functionalist variables including degree of vulnerability and cost of abatement domestic interest groups (DeSombre 2000), economic integration (Neumayer 2002b) and democratic responsiveness (Bernauer et al. 2010). However, a growing body of literature in international relations has begun to look to identities and norms to explain state behavior (Meyer, 1997). This paper does not contend that functional considerations are incorrect, but simply provide a framework for understanding how ideational components, like regional identity, may be part of the causal story missing from traditional functionalist accounts.

This paper asks if states ratify international environmental agreements consistent with behavior of their regional neighbors. Accordingly, states are expected to have a greater likelihood of ratifying an agreement when, quite simply, others within their region have done so as well. In order to test this proposition a data set of 49 global environmental agreements signed since 1972 was gathered and the hypothesis tested using logit analysis. The data show that in addition to the functionalist explanations of global environmental treaty ratification, regional

considerations also have a major role to play in explaining state behavior in regards to environmental treaty ratification. The evidence suggests that regions are an underexplored component to understanding when states ratify international environmental agreements.

In the following sections, I provide an overview of recent work on how scholars have come to define regions. I then show how these constructs fit with contemporary explanations of state environmental treaty ratification behavior. I then give a theoretical overview for why we can expect regions to help predict behavior. An overview of the methodology used is then presented. After reporting the results of my statistical analysis I conclude with some final thoughts on the impact of the findings and areas of additional research.

Region

Dynamics between the first and second level of analysis play an important, if under-scrutinized role in international politics. Most studies of international environmental treaty ratification, and indeed most of the IR literature, focus on either domestic or international determinants of state behavior. Along with the individual, these levels of analysis have been the accepted wisdom within IR since Waltz first clarified them in *Man, the State, and War* (1959). The logic of this approach is appealing. It is easy to identify states as coherent political actors and the entire international system as an important venue for the interaction between states. Yet between the state and system level, subgroupings of states present an underexplored arena for understanding state decision-making. Work that has been done has focused on understanding regionalization processes or regional organizations (Hurrell 1998; Acharya 2011; Hemmer and Katzenstein 2002; Katzenstein 2005; Lake and Morgan 1997; Choi and Caporaso 2002; Buzan and Waever 2003). In other words, a great deal of scholarship has explored region as the dependent variable. On the other hand, little work has examined the effect of region on the behavior of individual states or, stated differently, as the independent variable.

There are inherent challenges in classifying and defining this middle ground, and various conceptualizations have been advanced. Many top scholars have noted that despite the wide proliferation and use of regions in IR scholarship an agreed upon definition is conspicuously absent (Mansfield and Milner 1999; Katzenstein 2005; Fawn 2009). For example, in their review of regional environmental governance Balsiger and VanDeveer define a region as “all or part of at least two countries that serve as the focus of cohesive and sustained action by state and non-state groups” (Balsiger and VanDeveer 2012). In contrast, Katzenstein provides a broader interpretation common to other studies defining region as an entity “given by geography and made by politics” (Katzenstein 2005). Despite these differences, a coherent core of understandings emerges across the concepts of region, civilization, security community, and supra-national identity.

The importance of region within international relations first gained prominence in 1957 with Karl Deutsch’s work on security communities. Deutsch suggested that a security community between states exists “whenever states become integrated to the point that they have a sense of community, which, in turn creates the assurance that they will settle their differences short of war” (Barnett and Adler 1998). Deutsch’s work on security communities established a conceptual for understanding groupings of multiple states nested within the broader international system. In doing so he also employed a logic and line of thought broadly consistent with what scholars today would consider constructivism.

A decade later Bruce Russett (1967) was the first, and likely one of the last, political scientists to attempt a clear typology of regions within the international system. Other scholars in the early seventies also embarked on the effort of dividing the world into regions (Cantori and Spiegel 1970; Thompson 1973), yet after Young (1969) cogently pointed out the inherent empirical difficulties of classifying the world into regions, very little subsequent work in political science in this vein was completed in subsequent decades. Russett’s original classification scheme divided regions based on physical geography, economic interdependence, and cultural similarities, and considerations of region based on spatial proximity remain the most common understanding of region. However, as technology has advanced,

physical proximity has become less integral to region while understandings along economic and cultural lines have become more prominent. In addition, the increase in the number and scope of regional organizations over the past few decades has led to a need for understanding regions along a fourth, political, dimension as well (Choi and Caporaso 2002).

More recently, a host of overlapping concepts that move beyond the classification of regions, but describe similar constructs and processes have entered the literature. Prominent among them are regional security complexes, which “refer to the level where states or other units link together sufficiently closely that their securities cannot be considered separate from each other” (Buzan and Wæver, 2003, 43). A regional security complex does not preclude internal conflict but suggests that states’ interests within a complex are so intertwined that such states will act collectively at the global level. Though states within a region may be in conflict, their similarities at the system level suggest that states will behave in similar ways.

Another prominent framework has been the reimagining of Deutsch’s concept of security communities by Adler and Barnett (1998). By explicitly bringing in the concept of community to emphasize the social connection between states, Adler and Barnett suggest that security communities provide an alternative logic to the state-based anarchy used to describe the international system. This reflects a growing number of thinkers emphasizing ideational and social connections between states as the basis of regions and as altering expectations of state behavior. The authors employ case studies to support their argument within chosen communities, but provide little basis for how to identify and thus delineate the international system according to security communities.

Peter Katzenstein has perhaps brought the socially constructed strand of thinking about regions the farthest with his recent work on the concept of civilization (2010). Civilizations can be understood as “loosely coupled, internally differentiated, elite-centered social systems that are integrated into a global context” (2010, 5). According to Katzenstein, civilizations are defined by ideas and understandings of how the world works. As such, civilizations are both plural, with

existence of many throughout the globe, and pluralist; being comprised both divergent and convergent actors and processes.¹ His view suggests that civilizations are composed of multiple divergent actors and traditions, yet they are united in a common though evolving ideational understanding. Katzenstein's perspective adds an explicitly constructivist element to conceptualizations of the middle ground between states and the international system.

Despite the definitional ambiguity across region and related concepts, it is clear that a growing trend in the literature is to view region not strictly in geographic terms. As Acharya puts it "physical proximity or shared cultural, linguistic, political, or economic ties are no longer considered to be a sufficient condition for regionness" (Acharya 2011). Subgroupings of states are increasingly viewed not only in terms of set geographies, but are seen as the product of social processes. Mirroring the evolution in the scholarly understanding of nationalism (Anderson, 1983), Acharya contends, "regions, like-states, are imagined communities" (2013, 12).

Clearly, there is not a single approach to dividing the world into mutually exclusive regions that captures the entirety of the concept of region. The dividing lines between regions are inherently ambiguous and subject to the interpretation of the researcher and the issue area under consideration. In essence, it is clear that a pragmatic approach is necessary when studying regions. A sacrifice of the diversity within and between regions is necessary to achieve the parsimony necessary for a more general understanding. However, it also clear that there is much more to regions than simple geography. Unfortunately, when region is often used today it is a strictly geographic definition that is applied. Accordingly the definition put forward here, a subgrouping of multiple geographically proximate states constructed through significant interaction across multiple issue areas, emphasizes the constructed and interactive nature of regions. The next section shows how this understanding may help in our understanding of state ratification behavior.

¹ Katzenstein is quick to reject Samuel Huntington's(1993) "Clash of Civilizations" thesis as overly simplistic and primordial. As discussed, his view of civilizations is fluid and constructed.

The Global Environmental Regime

Contemporary approaches to understanding the politics of international environmental problems remain tightly bound within traditional theories of IR. As such, much of the work within global environmental politics has entailed applying, testing, or adjusting ideas drawn from other areas of IR to that of the environment. Accordingly, many IR constructs and their accompanying debates are reflected in the global environmental politics literature. In particular, familiar understandings of global politics as anarchic and the environment as representing a commons risking exploitation by egoistic actors (Zürn 1998; Hardin 1968) has led to a focus on interstate cooperation and global institutions.

Early scholars of cooperation looked to the transnational nature of environmental problems as an issue area that required compromise between states (Raustiala 1997; Keohane and Nye 1977; Betsill and Corell 2001). Following the first major global environmental conference in Stockholm in 1972 scholars primarily focused on the nature, function, and design of international institutions (Young, 1989). Indeed, it is through work in environmental politics that much of IR's understanding of international regimes was developed.

More recently, environmental politics has "come of age" (Cao et al. 2014) and an increasingly distinctive research program focusing on the unique aspects of environmental politics has begun to emerge (Mitchell, 2010, 7). Increasingly scholars of global environmental politics have moved away from the traditional actors and theoretical frameworks of IR's dominant subfields, security and international political economy.² Interdisciplinary work has become de rigueur, as political scientists have to come to swap insights with sociologists, economists, anthropologists, and, of course, biophysical scientists.

² At times it appears the entirety of the subfield has adopted "a postrealist consensus which holds that international institutions do matter, world politics is much more than intergovernmental politics and includes a wider range of actors than states, and world politics is not only about power and material interests but is also about nonmaterial interests, ideas, knowledge, and discourse (Zürn 1998)."

Despite the impactful contribution of other actors, it remains clear that the most important players in the international system remain states and thus firmly in the realm of international relations. Although many have pointed to lack of a state response globally, particularly to the issue of climate change, the state remains the most powerful actor within the international system. Although non-state actors are certainly of (perhaps increasing) importance, the state remains the actor with the most power to protect the global environment (Eckersly 2005). Indeed, many scholars doubt that meaningful action to prevent environmental degradation is possible without impactful state cooperation at the international level.

Traditional understandings of IR predict that states will be reluctant to take on the costs of environmental protection without guarantees that others will not free-ride, thereby putting the more environmentally friendly country at a perceived economic disadvantage. Accordingly, states pursue their environmental agenda by cooperating with their neighbors through environmental treaties or multilateral environmental agreements (MEAs). Indeed, as prominent scholar Oran Young has noted environmental treaties are the “primary mechanism through which states commit to combatting environmental ills at the global level.” Accordingly, a long strand of research has examined participation in global environmental treaties as a means to understand state behavior toward the environment (Mitchell 2002; Mitchell 2003).

Unlike other issue areas of the international system there remains no global environmental organization (Barrett 2003; Biermann 2000). Whereas the governance of the global economic system is largely managed by the remnants of the Bretton Woods system, the global environmental regime relies on a series of treaties. This “regime complex” (Keohane and Victor 2011) is composed numerous treaties and secretariats. Recent counts suggest that there are nearly 1,200

multilateral³ treaties globally focused on combatting transnational environmental problems(Mitchell 2002).⁴

Accordingly, existing research looking at states in regards to the environment has focused on their aggregate behavior toward this large population of treaties. For example, examining the process of negotiation or the treaties subsequent effectiveness. Naturally, scholars have also been interested in why states ratify some treaties and not others or why some negotiation processes have been successful while others have floundered. The result has been a literature explaining and predicting state treaty ratification behavior of MEAs.

Before focusing on these studies it is important to differentiate between treaty ratification and other stages of the treaty process. It is useful to consider three non-exclusive stages of treaty development; negotiation, ratification, and compliance. Negotiation entails the bargaining process between representatives of governments in the hopes of achieving a consensus document specific a plan of action (Barrett 2003). Ratification is the decision of states to ratify the given agreement or not. Compliance is whether the states actually abide by their commitments or not (Mitchell 1994; A. Chayes and Chayes 1993)

Granted there is a great deal of feedback and overlap occurring between the differing stages of treaty creation and eventual compliance. Yet for the purposes of this study these aspects of the process are set aside. This project focuses on the process of individual states in their decision to accede to given treaty or not. Treaty language is not plucked objectively out of thin air. It is the product of the negotiation rules and the underlying interests of the negotiating actors. Naturally, the ex ante preferences of some actors may be reflected more than others in the final treaty text. However, the final treaty considered for ratification by each states can be considered an expression of a global consensus on how to deal with a given environmental problem. Though state behavior prior and post the decision to ratify is certainly an important aspect of their environmental behavior, the simple act of

³ This is in addition to the nearly 1,500 bilateral agreements.

⁴ Mitchell (2003) defines a MEA as “ a legally binding intergovernmental efforts directed at reducing human impacts on the environment(p. 431).

ratification is the most observable, and importantly, costly action states take the environment on the international stage.⁵ The assumption here is that ratification of environmental treaties is the most representative single act across states and issue areas of a state's environmental behavior.

State Ratification of Environmental Treaties

A majority of the research focusing on MEA ratification employs descriptive case studies of either particular issue areas, specific international negotiations, or country specific case studies. Though such studies are instructive and typical for a younger sub-discipline less work has attempted to derive broad theoretical explanations of how states approach global environmental problems, particularly using quantitative methods (Cao et al. 2014). Though these case studies are instructive for gleaning particular information about the process of ratification or how state interests play out in regards to particular issue areas only recently have global environmental politics employed large datasets to explore treaty ratification.

These studies have helped us understand some of the factors that drive MEA ratification. To begin, it is instructive to classify existing explanations of treaty ratification with the standby of IR, a two by two table. Along the vertical axis is the distinction between rationalist and constructivist approaches. States are viewed as either rational utility maximizing actors or driven by ideas, discourses, and identities. Second is the distinction between approaches focusing on domestic and international levels of analysis. The former focuses on inside out forces and the latter on outside in.⁶

⁵ Other scholars have environmental performance in terms of specified pollutants (DeSombre 2000; Binder and Neumayer 2005) or broad measures of sustainability (Ward, 2006; 2008) as an alternative measure of state environmental behavior broadly understood.

⁶ Of course, the basis of differentiation along both dimensions represents an ideal type and within each of these approaches lay a wide variety of alternative theoretical approaches, for example varying views on the importance of formal vs informal institutions within the domestic rationalist approach.

Table 1

	Domestic	International
Rationalist	Domestic Institutions (Neumayer 2002a) Interest Groups (Sprinz and Vaahtoranta 1994; DeSombre 2000; Bernauer et al. 2010) Environmental Vulnerability (Binder and Neumayer 2005; Roberts, Parks, and Vasquez 2004) Income (Meyer et al. 1997; Sprinz and Vaahtoranta 1994)	Power (Neumayer 2002b; Sprinz and Vaahtoranta 1994; Bernauer et al. 2010)
Constructivist	Domestic Environmental Concern (Frank 1999; Binder and Neumayer 2005)	Membership in Global IOs (Meyer et al. 1997) Economic Linkages (Neumayer 2002b) Global Norms of Ratification (Meyer et al., 1997)

Within the rationalist explanations of environmental behavior at the international level, the upper right box, the most prominent example is Sprinz and Vaahtoranta's 1994 article "The Interest-Based Explanation of International Environmental Policy" in which the authors argue that a state only agrees to international environmental commitments if it is in the state's material best interest. Consistent with a rational choice perspective, state interest is determined by material cost-benefit analysis of the country's vulnerability to a given global problem and the associated costs to that country of fixing it.

Others have explored the domestic level of analysis, contained in the upper left corner of table 1. In particular, they have analyzed how interests are aggregated through institutions, especially democratic, within the state and how these determine state preferences (Neumayer, 1997). For example, Elizabeth DeSombre

(2000) has shown how various domestic economic actors, like labor unions and firms, have pushed for increasing global regulation in order to maintain their competitiveness in the global economy. Given domestic regulations, these firms have argued that the US should push more heavily for global level agreements in order to level the playing field. What unites these approaches, as stated by Sprinz and Vaahtoranta, is the idea that “each state is concerned in the first place with its own territory and pays only lip service to the idea of “spaceship” earth (1994, p. 78).”

Shifting to the bottom of the table, different scholars have adopted an approach more closely in line with the constructivist perspective. Meyer et al. define a “world environmental regime as a partially integrated collection of world-level organizations, understandings, and assumptions that specify the human relationship to nature” (1997, 623). In essence, they show that a global level understanding of environmental problems has been driven by a societal shift towards a more scientifically driven view of environmental problems and increases in world associational arenas, like the United Nations. The growth of this regime has thus created a common ideational framework from which states approach environmental problems, increasing their likelihood of adopting formal agreements (Frank, 1999). As ideational integration into the world environmental regime has increased, these scholars claim, so has the likelihood of treaty ratification across the international system.

Across the literature of treaty ratification regional effects are rarely accounted for. In the few select cases which include regions in empirical models, no theoretical explanation for inclusion is given (Stein 2008; Bernauer et al. 2010). This research seeks to fill some of these gaps. The starting point of the research is that regions are an important, yet understudied, concept for understanding how identities shape state behavior.

Why Regions Matter

The existing explanations above miss the role that the regional level of analysis plays in shaping state decision-making. But why should we care about region? It is clear that state decisions are a product of their interaction with other states. Yet, the interactions with other states are not all created equally. States are much more likely to be influenced by the behavior of other states in their region than the global system as a whole. The intuition here is clear. States are more likely to be influenced by states that are closer and with whom they have more interaction. There are two broad logics that explaining why regions affect the likelihood of treaty ratification.

Sometimes, it may simply be that states within the same region face similar functionalist considerations. In the environmental realm, this may mean that all states face similar negative consequences from climate change. However, perhaps more importantly, and less commonly explored, is the role that regional norms and ideas play in shaping decision making. States may be compelled to adopt a given treaty because a regional has been constructed that implies it is the right thing to do. Put another way, similar regional ratification patterns may result from a logic of consequences or a logic of appropriateness(March and Olsen 1998).

Under logic of consequences frame, regional neighbors may face a similar cost and benefits calculus when deciding on the ratification of treaty. This may arise in multiple forms. On the one hand, regional neighbors may be economic competitors and thus be affected by a neighbor's decision to ratify or not. If two countries are competing they may both sign on to a treaty to send a message of environmental responsibility. Or, perhaps more likely, they will refuse to sign a given MEA because of the additional costs. Thus a state would be basing its

Regional neighbors may also face a similar cost and benefit calculus if they are members of the same regional organizations. A regional organization may have adopted similar policies that make the ratification of a given MEA more or less costly. For example, the EU often has environmental regulations that exceed the requirements codified in global level agreements. In this case, all EU member states aren't required to take an additional cost when ratifying the global level agreement and, thus, are more likely to do so.

Another logic of consequences explanation lies in the actual physical environment of a country. Similar eco-systems, climates, etc. may often mean that the costs and benefits of signing on to a given agreement are similar. For example, for island countries in the South Pacific the costs of adapting to climate change are simply higher than those countries in Central Asia. Or, for example, the hole in the ozone disproportionately affected states in the Southern hemisphere suggesting their willingness to take on the costs of reducing ozone-depleting substances would be higher.

Outside of weighing the consequences of a given action in terms of the material costs and benefits, states may also be driven by a logic of appropriate behavior. Constructivist scholars argue that identities and norms shape state behavior in meaningful ways not captured by purely materialist considerations. In this case, states may ratify a MEA because they are following a regional norm. The regional norm is driven by a regional identity. Indeed, a norm is a “a standard of appropriate behavior for actors with a given identity” (Finnemore and Sikkink 1998).

This view of what may drive region effects aligns more closely with the modern understandings of what defines a region discussed above. Acharya’s conception of “regional imagined communities” aligns closely with an understanding of a common identity driving behavior. Thus, as regional identities are constructed states are driven to adopt a given environmental treaty because it is the right thing to do for all states sharing in that same identity.

This section has provided a brief explanation for the theoretical expectation that as the number of states within a region ratifying a given environmental agreement increases the likelihood that other states in the regional will also ratify will also increase. The next section explores the methodology used to test this hypothesis. However, before explaining the data there are a couple limitations to keep in mind. First, ratification of MEAs is multi-causal. There are a number of reasons why states decide to ratify a given environmental agreement. Region is just one aspect of a much larger calculus. Second, it is difficult, if not impossible, to differentiate between the different mechanisms discussed above through which

regions may shape ratification decisions. The purpose of this paper is not differentiating the independent effects of each mechanism, rather to simply show that regions matter in how states decide on environmental policy.

Methodology

The theoretical section above lays out a conceptual framework for how regions may shape state behavior in regards to the ratification (or not) of global environmental treaties. In order to test this proposition a novel dataset consisting of the ratification decisions of 182 countries in regards to 49 global environmental treaties was constructed. In order to test the proposition above a pooled logit model controlling for established alternative explanations. The result is consistent with theoretical expectations above, as the ratio of states within a region ratifying a given agreement increases, the likelihood of the remaining state also ratifying increases.

The sample is composed of the 49 environmental treaties signed between 1972, the year of the Stockholm conference, and 2010 with more than 20 signatories.⁷ Only agreements that can be reasonably considered to be global in scope and thus plausibly open to all countries were included in the sample. Accordingly, agreements that have a specific regional delineation, such as combating a regional air pollution issue, were not included. In addition, by limiting the analysis to only those agreements that have at least 20 ratifications the effects of treaties with a minimal number of signatories or those that may, in theory, be open to all states, but in practice are limited to a single region or group of states with specialized interest were limited. Treaty ratification data was gathered from the Environmental Treaties and Resource Indicators (CIESIN, 2013) and from International Environmental Agreements Database project (Mitchell, 2014).⁸

The unit of analysis is country-treaty. Accordingly, each country is paired with each potential treaty with the outcome being binary, ratification (a value of 1)

⁷ For a list of treaties, coding decisions, or other supplemental material please contact the author directly.

⁸ These sampling procedures reduce the number of treaties to 49 from the 215 that Bernauer et al. (2010) use in their study.

or not (0).⁹ This binary serves as the dependent variable and as a result I use a logit model. Figure 2 shows a histogram of the relative frequencies of the proportion of states within a region ratifying a given agreement. Consistent with theoretical predictions, a majority of treaties have either a high proportion or low proportion of “coregionalist” ratifying. Figure 3 shows the same data but for total ratifications. We can see that although a similar pattern emerges, it is not nearly as pronounced as the regional effects.

The primary explanatory variable of interest was the ratio of states in a region that had ratified a given treaty. Region was coded using multiple classifications, discussed below, and the percentage of states within a given state’s region that had ratified the treaty was calculated. As Figure 1 suggests, most treaties either had a high or low ratio of “coregionalist” ratifications. We can assume that when large percentage of states within a given region ratifies an agreement a regional calculus suggests others are more likely to follow. Likewise, if few states within a region ratify an agreement it suggests that the expected action is for states not to ratify.

Figure 1

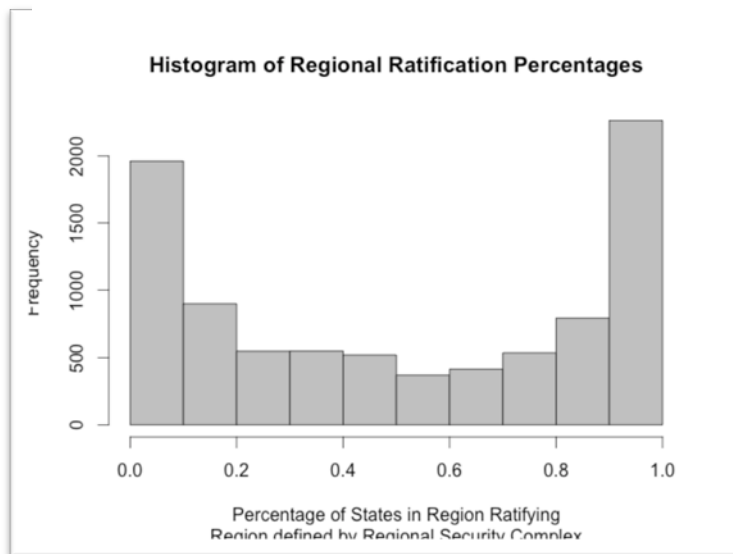
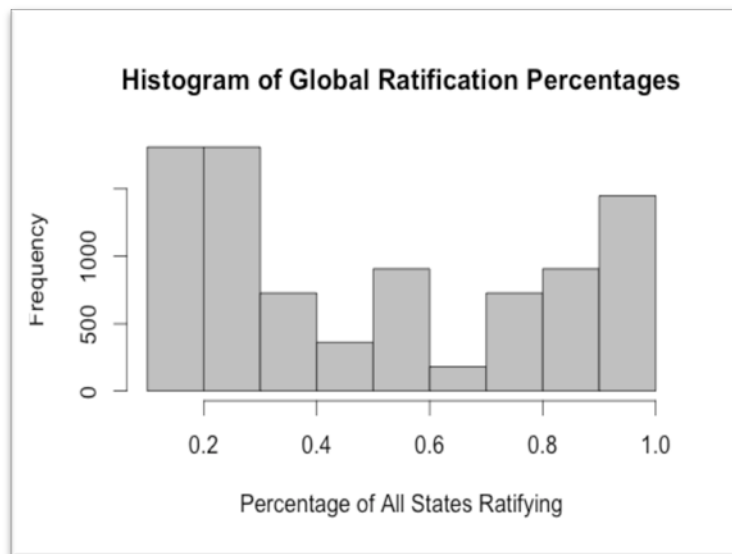


Figure 2



⁹ For the purposes of this study states that were only signatories or that had ratified and then withdrawn from the treaty were not considered as ratified.

As discussed above, a clear definition of region remains elusive. Similarly, an agreed upon taxonomy dividing the states of the international system into regions remains even more difficult. Given the inherent difficulties in building these classifications I examine two different existing classifications of regions. First are regional security complexes developed by Buzan and Waever (2003). Unlike other discussions of region in international relations Buzan and Waever actually provide a map of the world cleanly divided into regions. Second, I use the regional classification used by the United Nations. This is a standard UN classification consistent primarily with geographic considerations (UN Stats, 2012). Unsurprisingly, there is significant correlation between these two variables, however subtle differences do present different results.¹⁰

Of course, states within a given region share many of the same characteristics and thus may be subject to the same functionalist considerations when deciding to ratify a given agreement or not. Accordingly additional factors that the literature has shown to predict ratification decisions are also controlled for. Naturally, separating the effects of social factors, like identity, from functional factors, like costs and benefits, is one of the most challenging in social science and has come to be known as Galton's problem (Jahn, 2006). Consistent with the work of Bernauer et al. (2010), this work does not view each factor in isolation, instead taking into account both domestic and international considerations at the same time.¹¹

Control Variables

Democracy – (Polity IV) - Public expectations in democracy are more likely to favor environmental mitigation (Neumayer 2002a). Additional research suggests that democracies are also more likely to engage in international commitments more broadly (Milner and Rosendorff 2002). Bernauer et al. (2010) caution that evidence

¹⁰ Regions were also coded by income group (World Bank) and UN Sub-region. Results with these classifications are consistent with those observed here.

¹¹ Control variables were all collected for the year 2005 and thus do not reflect changes over time. This limits explanatory power but gathering time-series data was beyond the scope of this initial investigation.

linking democracy to environmental behavior is mixed, but overall democracies are expected to have a greater likelihood of treaty ratification.

Economic Linkages to World Economy- (World Bank)- Linkage to the world economy is measured by summing the total imports and exports of a country as a percentage of their total GDP (Bernauer et al. 2010). States with greater connection to the world economy are expected to have an increased likelihood of ratifying agreements (Roberts 1996; Neumayer 2002b).

Membership in International Organizations – (Correlates of War Database) – Measured by the total number of international organizations, defined by the correlates of war database, a state was a member of 2005. Greater involvement in organizations is expected to increase the likelihood of ratification (Frank, 1999).

Income; logged GDP per Capita– (World Bank) – An increase in income strengthens a states ability to pay the costs of environmental abatement as the state has greater resources at its disposal to take on environmental concerns. An increase in income is expected to lead to an increased likelihood of treaty ratification.

Environmental quality – (World Bank) – As a measure of domestic environmental quality the carbon dioxide emissions per dollar of GDP is used. No agreed upon measure of domestic environmental quality exists, yet CO2 emissions are a common form of air pollution and the target of a great deal of domestic environmental legislation.

Power – (World Bank)- Total GDP is used as a proxy measure for state power. More powerful states may be more likely to join international agreements. Neumayer (2002) argues that powerful states “demonstrate their importance” by signing onto agreements. Though the consequences may be mixed, it is important to control for the potential effects of power.

Results

Table 1: Pooled logistic¹² regression model

	Regional Security Complex (Std Errors)	UN Regional Classification (Std Errors)
Region (% within region Ratifying)	4.3608*** (.1870)	4.1322*** (.2108)
Democracy (Polity IV)	.0374*** (.0071)	.0274*** (.0069)
Economic Linkages (World Bank)	.0007 (.0004)	.0003* (.0004)
IO Membership (COW Project)	.0231*** (.0231)	.0215*** (.0033)
GDP per Capita/1000 (World Bank)	.0018 (.0012)	.0031* (.0013)
CO2 per \$ of GDP (World Bank)	.1641* (.0659)	.0517 (.0665)
GDP total (logged)	.1380*** (.0297)	.1326*** (.0289)
Total Ratifications	2.4236*** (.2292)	2.483*** (.2534)
Constant	-8.5007*** (.6202)	-8.0177*** (.6034)
N	6517	6517

¹² Equivalent regressions including dummy variables for each country were also run. The use of dummy variables controls for the overall ratification behavior of each country. The results were consistent with the pooled model above. All three classifications of region remained highly statistically significant and positive.

Analysis

The pooled logistic regression models in table 1 largely reflect the theoretical expectations discussed above. The table contains a model with a standard set of control variables for each typology of region discussed above. Using both classifications the model shows region to be highly statistically significant and positively related to states ratification of environmental treaties. Accordingly, as the percentage of other countries in a region ratifying a given agreement increases the likelihood that other states in that region will do so as well increases, even when controlling for alternative explanations.

Of particular interest is that in all three models the size of the coefficient for region is significantly larger than that for total ratifications. Both of these variables are on the same scale (0 to 1) and thus comparisons of magnitude are possible. This result suggests that the effects of region are larger than those of the globe as whole. States behave significantly more in line with countries within their region, than the world as a whole. This lends support to the argument that regions are an important factor, outside of traditional domestic and international approaches, affecting state behavior.

In comparing the differing classifications of region the size of the coefficients and statistical significance are similar across all bot regional classifications. However, it is also noteworthy that the UN geoscheme coding has a smaller coefficient than that of regional security complexes. This implies that definitions based primarily on geography, as the UN's is, may not be as well suited to assessing regional effects as those that bring in an ideational component as well.¹³

Although these results are promising, it is also worth noting that the significance and magnitude of the effect of region are quite high. The model as a whole attempts to control for alternative explanations, but it is likely that additional regional factors, like similar ecosystems, that make ratification more likely across

¹³ Additional models were run using the World Bank's income group classification. Income groups have no geographic restrictions and the coefficient was 3.29. Consistent with the literature discussed above this indicates that geography also plays an important role.

the region are also included within this estimate. This suggests that although region is an important explanatory variable, this particular model may be overestimating its true effects. More precise models for each region are needed to clarify which aspects are clearly attributable to region and which may be resulting from other factors. Despite these reservations, the high level of statistical significance suggests that region certainly play a large role.

In regards to control variables, results were in agreement with previous scholarly work. The democracy variable suggests that as countries become more democratic they are more likely to sign agreements. The same is true for connection to the world economy, though not highly significant, and membership in international organizations. This supports the argument that the countries that have increased linkages to the rest of the world are generally more likely to sign on to environmental agrees.

GDP per capita, on the other hand, is not statistically significant in both the regional security complex and regional trade agreement models. Increases in GDP per capita signify an increased ability to pay for environmental mitigation, however they also are correlated with higher levels of development and thus increased dependence on activities that lead environmental harm. This may explain why although coefficients remain positive in all three models, it is only statistically significant in the case of UN regions.

CO2 emissions per dollar of GDP was also statistically insignificant in all but one of the models. The admittedly crude nature of this measure may partially explain why we don't see clearer relationship in the level of environmental degradation within a country and their likelihood ratifying agreements. The positive coefficients do however indicate that states that take on more of the cost of environmental degradation are more likely to sign on the agreements, yet it is clear that better measures of country level environmental degradation are necessary to better clarify this relationship.

Total GDP was statistically significant in both the regional security complex classification and UN geoscheme classification. This indicates that more powerful countries are more likely to adopt global environmental treaties. They may be

attempting to lead by example or alternatively may have a greater role in the negotiation of treaties and thus are able to design them in a way that aligns with more powerful interests. That being said, total GDP is a common but imperfect measure of a country's overall power so any conclusions should be taken with a grain of salt. Overall, the three models above control for the most common explanations of why states ratify global environmental agreements. Yet, region still has a sizable and statistically significant impact on the likelihood of ratification.

Conclusion

This paper has proposed that regions matter in the MEA ratification decisions of states. The evidence suggests that, indeed, regions are a significant predictor of the ratification behavior of individual states. To many observers the idea that states behave consistent with those in their region may not be unexpected. Yet, this paper suggests that regional impacts deserve more analysis. As the study of regionalization processes and debates over regional versus global dynamics become more important across the discipline a better understanding of how regions shape state behavior across a variety of issues areas becomes more important.

Of course, this paper has served only as a primary test and additional work disentangling the precise mechanisms through which regions affect state environmental treaty ratification behavior is necessary. As previously mentioned, though the logit model allows us to control for the dominant domestic and international explanations of treaty ratification behavior, it does not allow for clear distinctions between the mechanisms through which region may be having an effect. Additional analysis of case studies focusing on particular treaties, specific countries, or regions is needed to pick out the precise mechanisms.

Another key component of the story is how time affects ratification decisions. The theoretical framework above implies temporal differences as a key component, yet the data as currently structured does not allow for observing changes over time. Further expansion of the dataset would allow for the use of survival analysis as well as the use of various binary time-series cross sectional techniques. Though other authors examining environmental treaty ratification have used these techniques

(Bernauer et al. 2010; Frank 1999; Stein 2008) with results consistent with those reported here, showing evidence of changes over time is particularly important for demonstrating how a logic of appropriateness alters state behavior.

In addition, it is clear that further research is again needed to ascertain the best means through which to classify regions. Significant case study work crossing comparative politics and international relations has been done examining regions in isolation, yet it is clear that a global approach to classifying global regions is necessary. New techniques like network analysis may provide an increasingly data based definition of regions based on cluster or principal component analysis. Furthermore, disentangling intra-regional processes deserves more attention. For example, how might the ratification behavior of a regional hegemon affect the decisions of smaller states? In addition the copious work on the process of regionalization may provide insights on how regions are constructed and how they subsequently affects state's global behavior independent of regional organizations.

Using evidence from an original dataset of international environmental treaties this paper has shown how regions impact the ratification behavior of states. In doing so it has demonstrated that regions are pivotal in shaping how states behave within the context of the international system. Regions, and related concepts, are an important component outside of traditional domestic vs international levels of analysis deserving of further scholarly research and consideration.

Works Cited

- Acharya, Amitav. 2011. "The Emerging Regional Architecture of World Politics." *World Politics* 59 (04): 629–52.
- Balsiger, Jörg, and Stacy D VanDeveer. 2012. "Navigating Regional Environmental Governance." *Global Environmental Politics* 12 (3). MIT Press: 1–17.
- Barnett, Michael, and Emanuel Adler, eds. 1998. *Security Communities*. Cambridge Univ Press.
- Barrett, Scott. 2003. *Environment and Statecraft : the Strategy of Environmental Treaty-Making*. Oxford University Press.
- Bernauer, Thomas, Anna Kalbhenn, Vally Koubi, and Gabriele Spilker. 2010. "A Comparison of International and Domestic Sources of Global Governance Dynamics." *British Journal of Political Science* 40 (03): 509–38.
- Betsill, Michele M, and Elisabeth Corell. 2001. "NGO Influence in International Environmental Negotiations: a Framework for Analysis." *Global Environmental Politics* 1 (4): 65–85.
- Biermann, Frank. 2000. "The Case for a World Environment Organization." *Environment: Science and Policy for Sustainable Development* 42 (9): 22–31.
- Binder, S, and E Neumayer. 2005. "Environmental Pressure Group Strength and Air Pollution: an Empirical Analysis." *Ecological Economics* 55: 527–38.
- Buzan, Barry, and Ole Waever. 2003. *Regions and Powers*.
- Cantori, Louis J, and Steven L Spiegel. 1970. "The International Relations of Regions." *Polity* 2 (4). Palgrave Macmillan Journals: 397–425.
- Cao, X, H V Milner, A Prakash, and H Ward. 2014. "Research Frontiers in Comparative and International Environmental Politics: an Introduction." *Comparative Political Studies* 47 (3): 291–308.
- Chayes, Abram, and Antonia Handler Chayes. 1993. "On Compliance." *International Organization* 47 (02). Cambridge Univ Press: 175–205.
- Choi, Y J, and J A Caporaso. 2002. "Comparative Regional Integration." In *Handbook of International Relations*, edited by Walter Carlsnaes, Thomas Risse, and Beth A Simmons, 1:480–99. London: Handbook of International Relations.
- Conca, Ken. 2012. "The Rise of the Region in Global Environmental Politics." *Global Environmental Politics* 12 (June): 127–33.
- DeSombre, Elizabeth R. 2000. *Domestic Sources of International Environmental Policy*. The MIT Press.
- Fawn, Rick. 2009. "'Regions' and Their Study: Wherefrom, What for and Whereto?." *Review of International Studies* 35 (S1): 5–34.
- Finnemore, Martha, and Kathryn Sikkink. 1998. "International Norm Dynamics and Political Change." *International Organization* 52 (4): 887–917.
- Frank, David John. 1999. "The Social Bases of Environmental Treaty Ratification, 1900-1990." *Sociological Inquiry* 69 (Fall 1999): 523–50. dGoertz, G, and J Hafner-Burton, Emilie M, Miles Kahler, and Alexander H Montgomery. 2009. "Network Analysis for International Relations." *International Organization* 63 (3). Cambridge University Press: 559–92.

- Hardin, Garrett. 1968. "The Tragedy of the Commons." *Science*.
- Hemmer, Christopher, and Peter Katzenstein. 2002. "Why Is There No NATO in Asia? Collective Identity, Regionalism, and the Origins of Multilateralism." *International Organization* 56 (May): 575–607.
- Hurrell, Andrew. 1998. "Explaining the Resurgence of Regionalism in World Politics." *Review of International Studies* 21 (April): 331–58.
- Katzenstein, Peter J. 2005. *A World of Regions*. Cornell Univ Pr.
- Keohane, R O, and J S Nye. 1977. "Power and Interdependence: World Politics in Transition."
- Keohane, Robert O, and David G Victor. 2011. "The Regime Complex for Climate Change." *Perspectives on Politics* 9 (01): 7–23.
- Lake, David A, and Patrick M Morgan. 1997. *Regional Orders: Building Security in a New World*. University Park: The Pennsylvania State University Press.
- Mansfield, Edward D, and Helen V Milner. 1999. "The New Wave of Regionalism." *International Organization* 53 (3): 589–627.
- March, James G, and Johan P Olsen. 1998. "The Institutional Dynamics of International Political Orders." *International Organization* 52 (4): 943–69.
- Meyer, John W, David John Frank, Ann Hironaka, Evan Schofer, and Nancy Brandon Tuma. 1997. "The Structuring of a World Environmental Regime, 1870-1990." *International Organization* 51 (4). Cambridge Univ Press: 623–51.
- Mitchell, Ronald B. 1994. *International Oil Pollution at Sea: Environmental Policy and Treaty Compliance*. Cambridge: The MIT Press.
- Mitchell, Ronald B. 2002. "A Quantitative Approach to Evaluating International Environmental Regimes." *Global Environmental Politics* 2 (4).
- Mitchell, Ronald B. 2003. "International Environmental Agreements: a Survey of Their Features, Formation, and Effects." *Annual Review of Environment and Resources* 28 (1): 429–61.
- Neumayer, Eric. 2002a. "Do Democracies Exhibit Stronger International Environmental Commitment? a Cross-Country Analysis." *Journal of Peace Research* 39 Sage Publications, Ltd.: 139–64.
- Neumayer, Eric. 2002b. "Does Trade Openness Promote Multilateral Environmental Cooperation?" *The World Economy* 25 (6): 815–32.
- Raustiala, Kal. 1997. "States, NGOs, and International Environmental Institutions." *International Studies Quarterly* 41 (4). Wiley Online Library: 719–40.
- Roberts, J Timmons. 1996. "Predicting Participation in Environmental Treaties: a World-System Analysis." *Sociological Inquiry* 66 (1): 38–57.
- Roberts, J Timmons, Bradley C Parks, and Alexis A Vasquez. 2004. "Who Ratifies Environmental Treaties and Why? Institutionalism, Structuralism and Participation by 192 Nations in 22 Treaties." *Global Environmental Politics* 4 (3). MIT Press: 22–64.
- Sprinz, Detlef, and Tapani Vaahutoranta. 1994. "The Interest Based Explanantion of International Environmental Policy." *International Organization* 48 (1): 77–105.
- Stein, Von, J. 2008. "The International Law and Politics of Climate Change: Ratification of the United Nations Framework Convention and the Kyoto Protocol." *Journal of Conflict Resolution* 52 (2): 243–68.
- Thompson, William R. 1973. "The Regional Subsystem: a Conceptual Explication and

- a Propositional Inventory." *International Studies Quarterly* 17 (1): 89.
- Waltz, Kenneth. 1959. *Man, the State, and War*. Columbia University Press
- Wapner, Paul. 1995. "Politics Beyond the State Environmental Activism and World Civic Politics." *World Politics* 47 (03). Cambridge University Press: 311–40.
- Zürn, Michael. 1998. "The Rise of International Environmental Politics: a Review of Current Research." *World Politics* 50 (04): 617–49.