

Research Articles

Implementing Multilateral Environmental Agreements: An Analysis of EU Directives

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Introduction

The past three decades have witnessed the rapid proliferation of multilateral environmental agreements (MEAs). Indeed, judged by the number of MEAs, the period since the Second World War has been a spectacular success for proponents of multilateralism.¹ Less successful, however, has been the implementation of these agreements. While many governments have been willing to join MEAs, evidence suggests that they have not always fully honored their legal obligations to put supranational commitments into practice, i.e., by incorporating treaties into domestic law, promulgating regulations, and establishing an adequate monitoring and enforcement infrastructure.² The result has been a complex geography of legal compliance,³ characterized by spatial and temporal variations in the implementation of multilateral environmental policies.

Such variations have not escaped the attention of academics who have advanced a number of theoretical models to explain why states comply or fail to comply with their legal obligations to implement MEAs. Most relevant in the present context are what are broadly termed the domestic adjustment, reputational, constructivist and managerial models. Within the literature, each of these theoretical models (or approaches) is advanced as providing a distinctive account of variations in states' (non-)compliance with multilateral legal obligations. In reality, however, many scholars accept that these models are not necessarily mutually exclusive.⁴ Rather, as Underdal suggests, different models focus

1. Mitchell 2003.

2. Faure and Lefevre 2005; Hønneland and Jørgensen 2003; Raustiala 2001; Sands 2003; and Weiss and Jacobson 1998.

3. In this article we use the terms legal compliance and implementation interchangeably.

4. Beach 2005; Cardenas 2004; Knill 2001; Raustiala and Slaughter 2002; and Simmons 1998.

on different aspects of non-compliant behavior, and therefore should be seen as potentially complimentary.⁵

Yet, despite no shortage of theoretical debate,⁶ very little empirical work has been undertaken to evaluate whether all four models contribute significantly to explaining variations in the implementation of MEAs.⁷ To be sure, existing research has found evidence compatible with elements of each model. Consistent with the domestic adjustment model, empirical studies have identified high economic compliance costs as a major factor impeding states' implementation of MEAs.⁸ Similarly, past work has found that reputational concerns have underpinned countries' efforts to faithfully implement multilateral environmental commitments.⁹ Empirical support for the constructivist perspective, which emphasizes the role of socialization, learning and norms in fostering implementation of MEAs, has proved more elusive. Yet the influence of normative factors has been documented in other contexts.¹⁰ Finally, confirming managerial expectations, past work has identified an important role for administrative capacity and/or quality in determining states' ability to comply with MEAs.¹¹

Because these studies are based on different policies, methodologies and samples, it is difficult to draw comparable conclusions from them. Finding evidence for one or the other model hardly constitutes conclusive evidence that all four models are important determinants. Indeed, without controlling for the influence of other determinants, simply focusing on the relationship between implementation and individual explanatory models runs the risk of generating spurious results.¹²

We seek to overcome these shortcomings by including several variables—representing different theoretical approaches to explaining (non-)compliance with legal obligations—within a single econometric model. Our multivariate research design allows us to determine whether all four models are statistically robust predictors of implementation of MEAs. For example, it is quite possible that variables capturing predictions from managerial models might lose their explanatory power once variables associated with domestic adjustment, reputational or constructivist approaches are taken into account. Importantly, our multivariate, statistical approach allows us to evaluate whether each explanatory approach adds in a statistically significant way to the overall explanatory power of the model.

Our empirical focus is the implementation of European Union (EU) environmental directives. Although originally a predominantly economic agree-

5. See Underdal 1998.

6. Downs and Jones 2002; Neumayer 2001a; and Underdal 1998.

7. Weiss and Jacobson 1998.

8. Economy 2004; and Gupta 2001.

9. Comisso et al. 1998; and Zhao 2005.

10. Beach 2005; Checkel 2001; Gulbrandsen 2003; and Solomon 2006.

11. Aguilar-Støen and Dhillon 2003; Economy 2004; Hønneland and Jørgensen 2003; Jacobson and Weiss 1998; and Vogel and Kessler 1998.

12. Mitchell 2002.

ment, the EU has gone on to develop a large number of environmental laws. We use quantitative techniques to evaluate the influence of ten hypothesized variables—chosen to examine models of legal compliance—on the number of legal infringement cases raised against 15 individual EU states¹³ for non-implementation of environmental directives. Testing theoretical models through the development and statistical analysis of hypotheses is a widely deployed approach in the social sciences. In the present context, it involves specifying independent variables believed to explain variations in state behavior (the dependent variable), derived from different causal models.¹⁴ The explanatory power of the independent variables can subsequently be examined using various econometric estimation techniques.

Quantitative approaches have been used in past studies to investigate the determinants of policy implementation within the EU, although none of these works has specifically examined environmental directives.¹⁵ Outside the EU, only a handful of studies have applied statistical techniques to understand the conditions facilitating and/or impeding the domestic implementation of MEAs.¹⁶ Instead, the majority of studies—whether focused on EU environmental directives or other regional and/or international environmental agreements—have taken the form of qualitative case-studies, typically involving a small number of countries, policies and/or regimes.¹⁷

Yet a large-N quantitative approach offers considerable advantages in the present context. Econometric estimation techniques allow us to investigate large numbers of cases, comprising multiple years, states and environmental policies. They therefore yield insights that are potentially more generalizable than small-N qualitative studies.¹⁸ This is of particular advantage in testing theoretical models of compliance where we are interested in clarifying whether specific causal relationships hold across a range of contexts.¹⁹ Inevitably, there are trade-offs in our approach, not least because of the limited availability of data. We cannot measure several institutional variables identified in the literature as potential correlates of MEA implementation and, furthermore, are forced to rely on several proxies which provide an imperfect measure of underlying mechanisms.²⁰ Inevitably, these factors restrict our analysis, meaning that our results should only be read as indicative. Still, we believe that our approach makes a useful contribution to current understanding. Indeed, to our knowledge, our study is the first to use econometric techniques to explicitly investigate all four

13. The 15 members of the EU prior to the accession of 10 new states in May 2004.

14. Young 2004.

15. Guilianì 2003; Lampinen and Uusikylä 1998; Mbaye 2001; Perkins and Neumayer 2007; and Zürn and Joerges 2005.

16. Miles et al. (1998) undertake cross-national statistical analyses of MEAs, although their focus is largely on effectiveness, rather than legal implementation.

17. Börzel 2003; Bursens 2002; Knill 2001; and Wilson et al. 1999.

18. Haas 2000; and Sprinz 2004.

19. Mitchell 2006.

20. Mitchell 2002.

compliance theories—domestic adjustment, reputational, constructivist and managerial—within a single estimation model.

The rest of our article is structured as follows. The nature, enforcement and scale of member state implementation are outlined in Section 2. Section 3 briefly describes four widely discussed theoretical explanations for variations in (non-)compliance with supranational legal commitments and advances a number of variables used to capture each of these approaches. Section 4 outlines our variables and estimation model. Results are presented in Section 5. Briefly, we find that all four models contribute statistically significantly to explaining spatio-temporal differences in legal implementation. That is, our estimations suggest that the implementation of EU directives is shaped by a combination of the rational calculations of domestic compliance costs and reputational damage, domestically institutionalized normative obligations, and legal and political constraints. Finally, conclusions and discussion are provided in Section 6.

Implementing EU Environmental Law

According to Mitchell, an MEA is an “intergovernmental document intended as legally binding with a primary stated purpose of preventing or managing human impacts on natural resources.”²¹ MEAs vary considerably, both in terms of their number of participants, geographical scale, target issues and policy requirements. Yet common to the majority of agreements are a set of obligations, actions and constraints, which states consent to follow.²²

In the present study, we focus on one particular intergovernmental agreement, or rather, set of agreements. Specifically, we investigate spatio-temporal variations in the implementation of a body of European law, collectively termed EU environmental policy.²³ Although not entirely comparable with truly international environmental policy, EU environmental policy makes a useful test case for scrutinizing models of supranational legal compliance, for three reasons. First, the EU has a well-developed and diverse set of environmental policies, straddling a range of issues, sectors and regulatory approaches.²⁴ Therefore, the EU case has the potential to provide generalizable insights for a range of environmental regulations, capturing some of the diversity of MEAs currently in the international system. Second, unlike the majority of MEAs,²⁵ data exist on the implementation of EU policy. Although not a precise measure, these data nevertheless provide an indication of the relative extent of legal implementation by member states, as given by the number of infringement cases launched by the European Commission for suspected non-implementation of directives.

21. Mitchell 2003, 423.

22. Sands 2003.

23. McCormick 2001; and Weale et al. 2000.

24. Axelrod and Vig 1999.

25. Sprinz 2004.

Third, the EU is a natural laboratory for comparative social science research. As a collection of countries with important shared characteristics, but which differ along a number of recognizable and well-documented dimensions, the EU provides researchers with an excellent opportunity to identify the determinants of cross-national variations in state behavior. Indeed, differences in member state implementation of EU environmental policy have previously been used to derive wider lessons about the determinants of MEA implementation.²⁶

Our specific focus in the present article is the most important instrument of European environmental policy, namely, the directive. In common with many "hard law" MEAs, European environmental directives do not automatically become part of a state's legal system.²⁷ Rather, in order to become operational, they must first be transposed into domestic law by competent national and/or subnational authorities. Likewise, directives only specify the broader goals and objectives of environmental action, a characteristic shared with many MEAs. The precise ways and means to achieve these obligations are left to competent domestic authorities.²⁸

While granting states considerable discretion, such flexibility also increases the opportunities for non-compliance with treaty obligations.²⁹ In extreme cases, governments can ignore directives altogether, although this is rare.³⁰ More commonly, non-compliance arises from the late, incomplete or incorrect transposition of directives into national law; or the failure of competent authorities to establish adequate implementation and enforcement mechanisms.³¹

Under Article 211 of the Treaty of Rome, legal responsibility for ensuring compliance with directives falls to the European Commission.³² The commission monitors the implementation of EU law by individual member states. In cases of suspected non-implementation, it also initiates infringement proceedings. Invariably, these proceedings begin informally, with a series of bilateral negotiations between the commission and the concerned state. Typically, this is sufficient to settle legal disputes, with the majority of suspected breaches of EU law resolved without formal recourse.³³

Where dialogue and mediation fail to produce a satisfactory conclusion, proceedings may move to a formal stage, comprising three sequential steps. In the first (the "formal letter" stage), the commission sends a "formal letter of notice," detailing the grounds of the suspected infringement and inviting feedback from the concerned member state. If a satisfactory response is not forthcoming, the commission may deliver a "reasoned opinion," laying out its view of how member state action remains inadequate, and establishing a deadline to rectify

26. Vogel and Kessler 1998; and Raustiala and Slaughter 2002.

27. Jacobson and Weiss 1998.

28. McCormick 2001.

29. Bursens 2002.

30. Dimitrakopoulos 2001.

31. Grant et al. 2000.

32. Hattan 2003.

33. Davies 2001.

the infringement (the “reasoned opinion” stage). Failure to comply with the reasoned opinion may result in a third stage (“referral to the ECJ”) wherein the case is referred to the European Court of Justice (ECJ).

In reality, only a small proportion of actual legal breaches result in infringement proceedings. In fact, anecdotal evidence suggests that member states frequently implement directives late, without evoking a formal investigation by the commission.³⁴ However, because there is little concrete evidence to suggest that the detection and/or prosecution of non-compliance is systematically biased against particular member states,³⁵ it is possible to use the number of infringement cases as a relative measure of legal implementation between member states.³⁶ Indeed, national infringement counts have been adopted as the dependent variable in several recent statistical studies of member state compliance with European law,³⁷ although none of these studies specifically investigates environmental directives.

In the present article, we similarly make use of infringement statistics, specifically, the annual number of reasoned opinions against individual member states for non-implementation of environmental directives. We opt for reasoned opinions because, of the three possible stages, they best capture differences in genuine breaches of EU law related to member states’ willingness and/or ability to comply. Thus, reasoned opinions largely exclude ambiguous infringements arising from misunderstandings between the member state and the commission, but equally, do not simply count the most persistent and intransigent cases of non-implementation that end up in the hands of the ECJ. Table 1 reports the number of reasoned opinions related to environmental directives issued to individual member states—aggregated into three-year averages to smooth over yearly variations—for the period 1979–2000. The table shows that all states have been the subject of proceedings. Yet it also reveals considerable variation in the number of breaches of EU environmental law, both within and between different member states over time.

While we use these variations in infringement proceedings in the present article to further understanding of the conditions under which states implement MEAs, it is important to note that the EU case is unique in several respects. Most notably, environmental directives are legally enforceable by courts at the national and European level,³⁸ although as with other MEAs, legal disputes within the EU are often resolved through mediation.³⁹ Additionally, the states comprising the EU are arguably less diverse—in terms of characteristics such as their administrative capacity and cognitive setting—than is the case for truly interna-

34. Pagh 1999.

35. Börzel 2001.

36. Bursens 2002; and Sverdrup 2004.

37. Guilianì 2003; Mbaye 2001; and Perkins and Neumayer 2007.

38. Readers should note that the assumed superiority of binding vis-à-vis non-binding forms of supranational environmental law remains a subject of ongoing debate; see Victor (2006) and Skjærseth et al. (2006) for relevant insights.

39. Faure and Lefevre 2005.

Table 1

Number of Reasoned Opinions Issued (Aggregated over Three-Year Periods)

<i>Year</i>	<i>1979– 1982</i>	<i>1983– 1985</i>	<i>1986– 1988</i>	<i>1989– 1991</i>	<i>1992– 1994</i>	<i>1995– 1997</i>	<i>1998– 2000</i>
Austria	—	—	—	—	—	3	19
Belgium	4	12	15	17	8	41	40
Denmark	0	0	5	2	2	0	5
Finland	—	—	—	—	—	3	11
France	1	8	13	7	11	19	32
Germany	0	5	22	10	25	16	22
Greece	0	14	21	37	15	15	26
Ireland	1	5	17	13	21	10	36
Italy	8	8	33	34	29	21	42
Luxembourg	5	4	15	11	12	11	16
Netherlands	3	3	5	11	14	5	8
Portugal	—	—	0	10	17	40	46
Spain	—	—	4	25	18	33	28
Sweden	—	—	—	—	—	2	8
UK	2	3	12	6	15	10	28

Source: Centre for European Integration, Free University Berlin.

tional MEAs. Yet, in many other respects, EU environmental policy and non-European MEAs share important similarities. Both are characterized by spatio-temporal variations in implementation;⁴⁰ both require participants to make potentially costly domestic adjustments; both make demands on states' legal, political and bureaucratic apparatus; and, to a greater or lesser extent, both appeal to states' normative obligations to ensure compliance. Hence, we believe that the EU case contains important, generalizable lessons for MEAs both at the regional and international level.

Deriving Theoretical Predictions

What explains variation in the implementation of MEAs? Why do certain states fully implement environmental agreements, while others do so incompletely or not at all? At a theoretical level, a number of models (or approaches) have been advanced to answer such questions. We focus on four widely discussed approaches in the present article, namely, domestic adjustment, reputational, constructivist and managerial. In reality, considerable diversity exists within each of these explanatory schools, as well as a degree of overlap between them.⁴¹ Still, it

40. Yet, as in the EU case, it is important not to overstate the scale of implementation failure. See Chayes and Chayes 1993; and Neyer 2004.

41. See Checkel 2001; Raustiala and Slaughter 2002; and Sterling-Folker 2000.

is possible to identify a number of distinctive assumptions underpinning each approach, although we readily admit that not everyone would agree with our definitions.

In the rest of this section, we detail each of these models and formulate hypotheses designed to capture the dynamics of each model. The text is structured into four parts, corresponding to individual theoretical explanations. We begin with domestic adjustment approaches.

Domestic Adjustment Model

The domestic adjustment model⁴² takes its cue from theories of rational choice. Thus, explanations rooted in domestic adjustment conceptualize states as rational, calculative and self-interested actors who make implementation decisions by weighing-up the material costs and benefits associated with compliance. A central prediction is that adjustment costs imposed on domestic stakeholders are a key factor influencing the implementation of legal commitments.⁴³ As the costs of implementing policy rise, so it is suggested that actors face growing incentives to delay, dilute or even ignore their legal obligations.⁴⁴ These dynamics are potentially significant in the present context to the extent that the costs of implementing multilateral environmental commitments are likely to vary spatially and temporally.⁴⁵ We expect two such factors to influence the costs of implementing EU environmental directives.

The first is the level of ambient environmental quality, with overall compliance costs likely to be higher in states with a higher pollution load, not least because of the need for larger investments in abatement equipment.⁴⁶ Of course, EU environmental policy is extensive, covering a range of media, resources and discharges. However, directives governing pollution emissions and/or ambient standards are likely to be especially susceptible to domestic resistance, owing to the fact that they have historically impacted politically influential groups comprising citizens (i.e., voters) and industry.⁴⁷ A second—and closely related—factor influencing compliance costs is manufacturing intensity. Manufacturers have been the targets of a large number of EU environmental policies, many of which have potentially significant cost implications.⁴⁸ While agricultural producers have also been subject to environmental directives, such policies have often been accompanied by offsetting payments. We therefore expect, all else equal, manufacturing-intensive states to encounter higher overall compliance costs in seeking to implement environmental directives.

42. For examples of this reasoning, see Börzel 2003; Underdal 1998; and Vogel and Kessler 1998.

43. Beach 2005; Jacobson and Weiss 1998; Tallberg 2002; and Underdal 1998.

44. Börzel 2003.

45. Downie 2005.

46. Zito 2000.

47. The importance of business opposition in undermining the effective implementation of supranational environmental policy obligations is well documented in the literature, e.g., Weinthal and Parag 2003.

48. Grant et al. 2000.

Together, the above suggests that regulated parties in heavily polluted and/or manufacturing-intensive states will be more likely to mobilize against the introduction of new environmental policies. This, in turn, increases the risk of legal infringements as politicians and regulators respond to pressures from nonstate actors to defy, delay and/or dilute environmental directives. Manufacturers are likely to be especially influential in this respect⁴⁹ since they have received comparatively few side-payments from the EU and are typically represented by strong and well-organized lobby groups.⁵⁰

Hence:

Hypothesis 1. The higher the pollution load, the lower the implementation of environmental directives.

Hypothesis 2. Implementation will be lower where manufacturing intensity is higher.

Reputational Model

A second broad approach, which we label reputational, is most often associated with theories of neoliberal institutionalism.⁵¹ In common with domestic adjustment approaches, reputational ones assume rational, calculative and egoistic behavior. However, the latter widen the scope of self-interest, focusing on external reciprocity, strategic legitimacy and reputational calculus. Thus, states comply with their legal obligations anticipating that the long-term costs from non-compliance in terms of reputational damage outweigh any short-term gains.⁵² More positively, it is suggested that compliance offers states an opportunity to prove their credentials as reliable and legitimate partners in cooperative ventures, with potentially positive payoffs for economic, political and military security.⁵³

Within the EU context, we argue that such concerns are likely to be especially important for recent entrants. Keen to prove their credentials as good European citizens, and therefore dependable collaborators in EU affairs, newcomers will make greater efforts to faithfully implement environmental directives.⁵⁴ Moreover, recent entrants are likely to anticipate higher losses from renegeing on their treaty commitments. Thus, against a backdrop of limited reputational capital, newcomers will be concerned about the negative ramifications—for example, in terms of reduced political influence within EU decision-making institutions—arising from a widely publicized record of non-compliance with European law.

49. Of course, manufacturers do not always oppose new environmental policies (e.g., see Wurzel 2002). Yet, across the majority of environmental directives, we expect the predominant pattern to be one of resistance.

50. Grant et al. 2000.

51. Downs and Jones 2002; and Keohane 1984.

52. Simmons 1998.

53. Chayes and Chayes 1993.

54. Guilianì 2003.

Long-established member states, on the other hand, are unlikely to rely so heavily on compliance for their legitimacy, standing and reputation. Their position as legitimate members of the EU is frequently taken for granted, owing to their founding status and/or long history of political engagement. Indeed, confident of their standing and with an accumulated stock of reputational capital, long-term members may be tempted to prioritize the protection of domestic economic interests over the legal goals of EU integration.⁵⁵

These predictions are consistent with theoretical expectations that emphasize the importance of faithful compliance amongst new states for signaling their reputation as reliable partners in future cooperative ventures.⁵⁶ They are also in line with the literature on Europeanization, which emphasizes the strategic intent of new accession states to gain legitimacy.⁵⁷ Additionally, our expectations are supported by empirical evidence. Several qualitative studies therefore document how concerns to nurture international legitimacy and a reputation as cooperative and responsible actors have led several developing and transition countries to make concerted efforts to fully implement MEAs.⁵⁸ More specifically, the idea that more recent entrants to the EU should have a better record of implementing directives is supported by past quantitative work, which has found a positive relationship between membership length and number of legal infringements.⁵⁹

Another claim made in the literature is that the significance of reputational capital is influenced by power status. Underlying this argument is the idea that more powerful states command international legitimacy and influence on account of their political, economic and/or military size, lessening the strategic importance of reputation for cooperative ventures. Along similar lines, it is claimed that powerful countries are more autonomous, in that they are better able to resist international pressures to comply from supranational organizations, nongovernmental organizations and other sovereign states.⁶⁰

Applied to the EU context, these insights suggest that more powerful members will be better positioned to defy costly and/or disruptive EU environmental laws.⁶¹ Their economic, political and environmental weight means that influence in EU affairs is unlikely to depend greatly on their reputation as faithful implementers. They can, in other words, afford to defect. At the same time, powerful states are less likely to face hostile responses from fellow member states, particularly weak ones. Fearing negative economic and/or political consequences, weak states might be expected to avoid threatening their self-interests by mobilizing shame against their larger, more powerful counterparts.

Conversely, unable to rely on economic and/or political power for influ-

55. Olsen 2002.

56. Downs and Jones 2002.

57. Lægreid et al. 2004.

58. Comisso et al. 1998; and Zhao 2005.

59. Guilianì 2003; and Mbaye 2001.

60. Cardenas 2004.

61. Sverdrup 2004.

ence, weaker states are likely to depend to a far greater extent on their reputation as cooperative, reliable and committed member states. Indeed, their ability to wield political influence may crucially depend on maintaining such a reputation. An important corollary is that less powerful states face greater incentives to establish and maintain a reputation as good European partners through the timely and/or proper implementation of EU law.

A similar argument has been applied to explain the greater propensity of larger, more powerful member states to breach the Stability and Growth Pact rules of European Monetary Union.⁶² Specifically, it is claimed that smaller states are less able to afford the loss of reputational capital arising from non-compliant behavior compared to their larger counterparts. Likewise, the ability of the United States to defy international environmental law has been attributed to its hegemonic status, which has allowed domestic elites to resist external pressure for compliance.⁶³ Hence, we expect more powerful states to violate EU environmental laws more frequently, an expectation consistent with past quantitative studies into the implementation of all directives.⁶⁴

To summarize:

Hypothesis 3. More recent entrants to the EU will have a better record of implementation of environmental directives.

Hypothesis 4. More powerful member states are likely to have a worse record of implementation.

Constructivist Model

A third approach used to explain (non-)compliance with legal obligations, constructivism, emphasizes the normative basis of compliance.⁶⁵ According to constructivists, choices governing legal implementation are fundamentally guided by norms, beliefs and rules, which collectively provide the foundation for individuals' interests.⁶⁶ Constructivist accounts adopt a process-based ontology.⁶⁷ Hence, it is suggested that normative commitments are not prefigured, but are frequently learned, internalized and embedded through a process of transnational engagement.⁶⁸ Accordingly, constructivists predict that compliance happens where legalized norms are internalized, meaning that they "resonate and are considered legitimate locally" and therefore become institutionalized into accepted practice.⁶⁹

Within the recent literature, considerable importance has been attached to

62. Buti and Pench 2004.

63. Falkner 2005.

64. Mbaye 2001; and Sverdrup 2004.

65. Sterling-Folker 2000.

66. Beach 2005; Chayes and Handler Chayes 1993; and Faure and Lefevre 2005.

67. Palan 2004.

68. Kostakopoulou 2005; and Underdal 1998.

69. Cardenas 2004, 215.

the normative identities, preferences and beliefs of civil society.⁷⁰ Thus, it is suggested that civil society plays a pivotal role in embedding, mobilizing and sanctioning normative obligations at the domestic level. Constructivist scholars within the European context have similarly emphasized the importance of national publics in determining the normative “pull” of European law.⁷¹ One claim is that positive citizen values, attitudes and beliefs towards Europe enhance the domestic legitimacy of EU forms of polity and governance.⁷² In doing so, they increase political actors’ acceptance of EU legal norms “as being legitimate and part of the ‘law of the land’”⁷³, and working from a “logic of appropriateness,”⁷⁴ their implementation of directives as a matter of normative obligation.⁷⁵ Indeed, these ideas are consistent with notions of Europeanization that emphasize the cognitive basis of institutional change.⁷⁶ Hence, we expect that countries in which the public are more supportive of the EU, in the sense of more approving of its existence, modalities and actions, will be the subject of fewer infringements for non-implementation of environmental directives.

Yet it is not only civil society that is widely implicated in the domestic incorporation of compliance norms. For constructivists working within an International Relations tradition, national political elites internalize new and/or strengthened normative commitments through “participation in a norm-governed process.”⁷⁷ Involvement in international polity, politics and policy, in particular, is believed to support social communication, learning and the development of new normative understandings. What this suggests is that countries’ involvement in international and/or regional environmental agreements might plausibly shape compliance. With a history of international engagement, signatories to multiple MEAs might be expected to have reconfigured their preferences further from unilateralism, recognizing that they hold common interests and stand to gain from common solutions. As a result, they are more likely to be accepting of the normative force and legitimacy of multilateral governance, and therefore comply with resulting obligations.⁷⁸ Indeed, it seems improbable that signatories to multiple MEAs would be peculiarly adverse to EU directives on the grounds that they represent an unacceptable challenge to national sovereignty.⁷⁹ More specifically, domestic political actors in states that are party to larger numbers of MEAs are more likely to have internalized norms regarding environmental policy as a legitimate and worthwhile focus for multilateral policy intervention, fostering institutionalized compliance behavior. We therefore

70. Cardenas 2004; and O'Neill et al. 2004.

71. Checkel 2001; and Laffan 2001.

72. Mbaye 2001.

73. Beach 2005, 124.

74. March and Olsen 1979.

75. Dyson 2000; and Laffan 2001.

76. Knill and Lehmkuhl 2002.

77. Raustiala and Slaughter 2002, 546.

78. Lægsgreid et al. 2004.

79. Brunnée 2004.

anticipate that the implementation of environmental directives and states' cumulative experience of MEAs will be closely linked. Hence:

Hypothesis 5. Implementation of environmental directives will be better the higher the approval rate of the EU in a member state's population.

Hypothesis 6. Signatories to a larger number of MEAs are likely to have a better record of implementation.

Managerial Model

Even where states are compelled, coerced and/or obligated to implement international law, there is no guarantee that they will be able to do so.⁸⁰ A fundamental claim of the fourth and final approach considered here, the so-called managerial perspective, is that compliance problems may continue to arise on account of various constraints.⁸¹ In reality, managerialist accounts capture a broad set of dynamics, several of which are potentially compatible with domestic adjustment, reputational and constructivist models. We restrict our focus here to three constraints widely discussed in the literature on supranational legal implementation and compliance. The first is the domestic political structure. A popular argument is that the number of political veto points has an important influence on the implementation of multilateral agreements. Underlying this belief is the observation that veto players may oppose the introduction of new supranational policy requirements and, therefore, their incorporation into national law.⁸² Since the likelihood of delays is expected to rise with the number of veto players in government, we expect political executives in states that are more constrained by the existence of veto players to find it more difficult to implement multilateral policy requirements. This prediction is supported by case-study evidence,⁸³ together with recent statistical analyses of EU directives, which have found that states with more veto players have been subject to more formal infringement proceedings.⁸⁴

Another constraint hypothesized to impede compliance with supranational legal commitments is a country's domestic legal system, traditions and culture.⁸⁵ According to several scholars, implementation is likely to run into opposition and/or delays where legal systems are more litigious, complex or tolerant of non-compliance.⁸⁶ Conversely, where a country's legal system settles disputes quickly, is respectful of international law and/or is compliance-oriented, implementation will proceed more smoothly.⁸⁷ Within the EU, it is the Nordic

80. Chayes and Chayes 1993; Faure and Lefevre 2005; and Haas 2000.

81. Dimitrakopoulos 2001.

82. Haverland 2000; Ho 2002; and Scruggs 2003.

83. Falkner 2005; and Weale et al. 2000.

84. Guiliani 2003.

85. Ho 2002; and Simmons 2000.

86. Alter 2000.

87. c.f. Scruggs 2003, 143.

states whose (Scandinavian) legal systems, traditions and culture embody these characteristics most closely.⁸⁸ Indeed, their peculiar approach to conflict management and norms of faithful compliance with international law have previously been identified as factors underlying the comparatively low number of infringement proceedings raised against them, particularly beyond the first formal stage of proceedings known as the formal letter stage.⁸⁹

A third set of constraints is administrative in nature. A common suggestion is that making the adjustments required to implement multilateral environmental policy commitments depends on administrative capacity, including an adequate supply of lawyers, bureaucrats and scientists.⁹⁰ Along similar lines, it is suggested that the quality of the administrative resources is also important.⁹¹ Of particular relevance in this respect is the ability of government departments, agencies and personnel to facilitate and/or enact the steps—e.g., legal transportation, promulgation of regulations, creation of enforcement agencies—required to implement treaty obligations. Indeed, these claims are largely consistent with past empirical studies, which have identified administrative capacity and/or quality as a constraint on the correct and/or timely implementation of both international MEAs⁹² and EU environmental directives.⁹³ We therefore expect states with weak or inefficient bureaucratic capacity to encounter more difficulties in implementing EU environmental law.

To summarize:

Hypothesis 7. Countries in which national governments are more constrained by veto players are likely to have a worse record of implementing environmental directives.

Hypothesis 8. States with a Scandinavian legal system are likely to have a better record of implementation.

Hypothesis 9. Greater administrative capacity renders implementation more likely.

Hypothesis 10. Bureaucratic quality will be positively correlated with implementation.

Empirical Research Design

Dependent Variable

Our dependent variable—that is, measure of the extent to which states implement environmental directives—is the annual number of environment-related

88. Bengtsson et al. 2004; and Goldsmith and Larsen 2004.

89. Bursens 2002; Sverdrup 2004.

90. Carter 2001; Downie 2005; Jacobson and Weiss 1998; and Raustiala and Slaughter 2002.

91. Vogel and Kessler 1998.

92. Comisso et al. 1998; Hønneland and Jørgensen 2003; and Weiss and Jacobson 1998.

93. Bursens 2002; Falkner et al. 2004; Lampinen and Uusikylä 1998; and Weale et al. 2000; see Perkins and Neumayer 2007 for all directives.

infringement proceedings taken against individual member states over the period 1979–2000. It is important to note that infringement data do not provide a true measure of the actual number of legal breaches committed by member states in any one year. Instead, infringements only record cases of non-implementation detected by the commission and currently under investigation, whether or not the breach was committed during that year. In reality, these comprise a fraction of the overall number of legal breaches by member states.⁹⁴

Providing that “unrevealed” cases are randomly distributed across the sample, however, they should not invalidate the use of infringement data as a measure of legal implementation. Börzel investigates this assumption and finds little evidence for the existence of systematic bias.⁹⁵ Thus, neither societal activism nor state monitoring capacity—two factors that could plausibly bias the detection and reporting of non-implementation between countries—are correlated with the number of national infringements received by individual member states. Similarly, she finds no consistent relationship between country rankings by total infringements to any of the factors—such as state power or level of Euro-skepticism—previously hypothesized to influence the commission’s willingness to pursue formal proceedings. These observations do not rule out the possibility of systematic bias, but do suggest that several of the potential biases posited in the literature⁹⁶ may be relatively unimportant.

As explained earlier (see “Implementing EU Environmental Law”), infringement proceedings take place over three sequential stages: formal letter, reasoned opinion and referral to the ECJ. Of these three stages, we opt for the number of infringement cases at the reasoned opinion stage. Our choice was guided by a number of considerations. First, unlike formal letters, reasoned opinions exclude a substantial share of infringement cases arising from ambiguities and misunderstandings between the member state and the commission,⁹⁷ neither of which are relevant in the context of our four explanatory models. At the same time, reasoned opinions do not exclude potentially instructive cases of non-compliance, as is the case with ECJ referrals. Only the most intransigent cases of non-implementation end-up being referred to the ECJ, meaning that they fail to capture a large number of genuine breaches settled earlier on.⁹⁸ Indeed, precisely because there are very few ECJ referrals, and therefore limited variability in the data, they are poorly suited to econometric analysis.

Independent Variables

Beginning with domestic adjustment costs, our measure of a country’s pollution performance (H1) is the average per capita pollution load index (PLI) for car-

94. Börzel 2001; Bursens 2002; and Davies 2001.

95. Börzel 2001.

96. See Hattan 2003; and Mastenbroek 2003.

97. Davies 2001.

98. Börzel 2001.

bon dioxide, nitrogen oxides and sulfur dioxide emissions.⁹⁹ The PLI index measures the average emission load per capita relative to the EU average, expressed in percentage terms. Values above (below) zero mean higher (lower) than average EU pollution load.¹⁰⁰ For example, a value of 80 means that the country's per capita pollution load was 80 per cent above the EU average, whereas a value of -20 means that it was 20 per cent below the EU average. Ideally, we would have liked to use a more comprehensive measure of pollution load, going beyond air pollution. However, such data are unavailable for our period of study, with comparable indicators for water only available from 1990 onwards. Still, it is plausible to assume that a country's per capita air emissions will be closely correlated with other forms of pollution. As our measure of the manufacturing-intensity of a country's economy (H2), we take the manufacturing value-added share of GDP.¹⁰¹

With regard to reputational variables, our measure of membership length (H3) is the number of years the country has been a member of the European Union or its predecessors. We take the natural log of this variable since we believe that the impact of reputation on a country's non-compliant behavior will decrease with the passage of time. In order to measure a country's power status (H4), we use population size.¹⁰² Because it is unlikely that a country's power status will have a linearly increasing influence on its ability to shirk treaty obligations to implement EU environmental directives, we use the natural log of this variable.

Moving on to our variables capturing expectations derived from constructivist theories, we measure public approval for the EU (H5) using the percentage of the population stating that membership of their country in the European Union is "a good thing." Data are taken from the Mannheim Eurobarometer Trend File 1970–2002.¹⁰³ For our measure of engagement with MEAs (H6), we use the percentage share of multilateral environmental agreements (MEAs) a country has ratified.¹⁰⁴

In order to measure managerial restrictions imposed on executive authority by the domestic political structure (H7), we use an index of political constraints developed by Henisz.¹⁰⁵ Building on a simple spatial model of political interaction, the index captures the structure of government in a given country, together with the political views represented by different levels of government. It measures the extent to which political actors are constrained in their future policy choices by the existence of other political actors with veto power. A dummy variable captures the effect of the prevailing Scandinavian civil law sys-

99. As calculated by Klein 2005.

100. There is substantial variation across EU countries—see Neumayer 2001b.

101. Data from World Bank 2003.

102. Data from World Bank 2003.

103. Schmitt et al. 2005.

104. CIESIN 2004. Due to lack of data, values for 1998 onwards are as 1997.

105. Henisz 2000.

tem in Denmark, Finland and Sweden (H8). Rather than lumping the remaining countries together, we allow for more flexibility in the estimations by further distinguishing between French civil law (Belgium, France, Greece, Italy, Luxembourg, Netherlands, Portugal and Spain), German civil law (Austria and Germany) and common law (Ireland and United Kingdom) countries. With a set of exclusive and complete dummy variables, one dummy must be omitted from the estimations to serve as the reference category. In our case, this is the Scandinavian civil law dummy.¹⁰⁶

We measure administrative capacity (H9) using per capita income expressed as gross domestic product in purchasing power parity and constant US dollars.¹⁰⁷ Although an indirect measure, it makes sense that states with greater wealth should command (all else equal) more administrative resources to implement environmental directives, an assumption confirmed in past empirical studies.¹⁰⁸ Our fourth managerial variable, bureaucratic efficiency (H10), is measured using a score provided by the International Country Risk Guide,¹⁰⁹ which runs from 1 (worst) to 4 (best). These data are only available from 1984 onwards, meaning that we use the 1984 value for prior years. However, because there is little variation in expert assessments of bureaucratic quality over time, this should not represent a major problem.

Additionally, we include a control variable to account for the so-called “newcomer” effect, whereby new entrants have historically been exempted from infringement proceedings for a period of approximately two years.¹¹⁰ Granted by the commission in recognition of the difficulties faced by new member states in adjusting to a large number of directives, we expect the newcomer effect to have a negative influence on the number of infringement cases. Our dummy variable is set to one for the first two years of EU membership. Table 2 provides summary descriptive variable information.

Estimation Model

We estimate the following model:

$$\gamma_{it} = \alpha + \beta_1 x_{it} + \gamma_1 T_t + u_{it}$$

The subscript i represents each member state of the EU in year t ; γ is the number of reasoned opinions; and x is the vector of explanatory variables. The year-specific dummy variables T are of particular importance in the context of the present study, capturing general developments common to all member states, but changing over time. They include annual increases in the number of environmental directives and other regulations, both of which might plausibly

106. Data from La Porta et al. 1999.

107. Data from World Bank 2003.

108. Jacobson and Weiss 1998.

109. PRS Group 2004.

110. Sverdrup 2004.

Table 2
Descriptive Statistical Variable Information

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Number of reasoned opinions	262	4.62	5.42	0	30
Air pollution load	262	22.85	58.41	−52	236
% Manufacturing	262	22.95	6.12	11.47	43
EU membership length (logged)	262	2.97	0.87	0	3.89
Population (logged)	262	16.40	1.48	12.80	18.22
EU approval rates	262	0.63	0.16	0.25	0.90
% MEAs	262	0.75	0.16	0.45	1
Index of political constraints	262	0.47	0.10	0.23	0.72
Common law	262	0.17	0.37	0	1
French civil law	262	0.60	0.49	0	1
German civil law	262	0.11	0.31	0	1
Bureaucratic efficiency	262	3.68	0.54	2	4
GDP per capita	262	18633	5174	9839	43844
Period of grace	262	0.06	0.23	0	1

impact member state compliance.¹¹¹ They also include changes in the commission's willingness to pursue infringement proceedings against member states,¹¹² developments in the European legal regime for enforcing and sanctioning non-compliance¹¹³, and institutional developments such as treaty revisions and enlargement. As long as these developments affect all member states approximately equally, they can be captured with year-specific time dummies, without the need to model each factor independently. The u_{it} is a stochastic error term.

Because the dependent variable is a discrete, strictly positive count variable, ordinary least squares (OLS) is not well-suited as an estimator as its underlying distributional assumption is that of a normally distributed continuous variable. A common technique for count data is an estimator based on the assumption that the underlying data is Poisson distributed. However, it implicitly assumes that the conditional mean and the variance functions of the dependent variable are equal. If this assumption does not hold, then Poisson regression is insufficiently conservative and hugely overestimates the statistical significance of variables.¹¹⁴ We therefore use negative binomial regression, which is more flexible than Poisson, with standard errors that are fully robust toward arbitrary heteroskedasticity and autocorrelation (clustered on countries). To deal with potential autocorrelation more directly, we also include the lagged dependent variable; however, since it sometimes absorbs a large amount of variation of the

111. Börzel 2001; and Neyer 2004.
 112. Hattan 2003.
 113. Alter 2000.
 114. Cameron and Trivedi 2005.

data, we report two regression results: one with and one without the lagged dependent variable.

Results

Table 3 shows our estimation results. With regards to our hypotheses, our findings are largely consistent with expectations. Thus, we estimate a positive, statistically significant relationship between manufacturing-intensity and number of legal infringements (i.e., reasoned opinions). Similarly, our estimated coefficient for air pollution is positive and statistically significant. That is, according to our estimations, states with a higher pollution load appear to have a worse record of implementing environmental directives.

With regard to variables measuring reputational motives, the estimations are consistent with expectations. Thus, we estimate a positive and statistically significant relationship between length of membership and the number of legal infringements. Similarly, we find that population is positively and statistically significantly correlated with legal infringements, indicating that more powerful member states are more likely to ignore and/or defy environmental treaty obligations.

Moving to constructivist variables, we find that public support for European integration is negatively and significantly correlated with the number of reasoned opinions, suggesting that governments of countries whose citizens hold favorable opinions of the EU are more likely to implement its environmental policies. We also find that states that are signatories to a larger number of MEAs have fewer infringements. Again, both results are theoretically consistent.

Finally, with respect to managerial expectations, we estimate a positive and statistically significant relationship between political constraints and the number of infringement cases. Likewise, as expected, all the non-Scandinavian legal systems (common law, French civil law and German civil law) have statistically significantly more infringements than the countries with Scandinavian civil law traditions, the omitted reference category. Our other two measures of administrative constraints—namely, bureaucratic efficiency and administrative capacity—fail to attain statistical significance. It is worth noting that, while the two variables are correlated with each other, multicollinearity is not responsible for this result. Taking out one still leaves the other variable statistically insignificant.¹¹⁵ The results thus fail to confirm part of the expectations derived from managerial theories of compliance, as well as several recent case studies.¹¹⁶ It may of course be that our highly generalized measures of administrative resources are a poor measure of the capacity/efficacy of a state's institutions involved in implementing environmental directives. Unfortunately, more sector-specific measures of administrative resources—for example, the number of em-

115. Using the log of per capita income makes no difference either.

116. Bursens 2002; and Falkner et al. 2004.

Table 3
Estimation Results

Lagged dependent variable		0.000 (0.04)
Air pollution load	0.003 (1.95)*	0.003 (1.96)**
% Manufacturing	0.039 (3.45)***	0.042 (3.74)***
EU membership length (logged)	0.234 (1.89)*	0.208 (1.68)*
Population (logged)	0.415 (3.73)***	0.416 (3.75)***
EU approval rates	-1.751 (2.94)***	-1.809 (3.06)***
% MEAs	-3.521 (3.36)***	-3.477 (3.35)***
Index of political constraints	1.185 (1.90)*	1.086 (1.76)*
Common law	0.710 (2.45)**	0.717 (2.49)**
French civil law	1.434 (5.85)***	1.446 (5.87)***
German civil law	0.729 (2.57)**	0.737 (2.62)***
Bureaucratic efficiency	0.167 (0.75)	0.162 (0.73)
GDP per capita	0.000 (1.39)	0.000 (1.54)
Period of grace	-0.729 (1.78)*	-0.615 (1.56)
Observations	262	250
Countries	15	15

Note: Estimation is by negative binomial regression with clustered standard errors. Constant and year-specific time dummies included, but coefficients not reported.

* significant at .1 level

** significant at .05 level

*** significant at .01 level

ployees working in environmental protection agencies—are unavailable for our sample countries and years.

Our dummy control variable for newcomer status is statistically significant with the anticipated positive sign. This is the only variable that becomes marginally insignificant when the lagged dependent variable is included in the estimations. Otherwise, results are robust toward inclusion of the lagged dependent variable, which itself is statistically insignificant.

What can we say about the relative explanatory power of each theory? Because the negative binomial is not a linear regression, one cannot use a measure of fit such as adjusted R-squared. Instead, one needs to employ statistical information criteria such as the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). Similar to adjusted R-squared, these information criteria assess the goodness of fit by assessing the explanatory power of non-linear models with reference to their log-likelihood, adjusting for the fact that models with more explanatory variables will usually fit the data better. The criteria differ in the extent to which they penalize model complexity (more variables typically explain more variation in the data¹¹⁷). If only the variables of each theory are entered into a regression on their own, then the managerial model has the lowest AIC and BIC, followed by the domestic adjustment, constructivist and reputational models.¹¹⁸ Since lower AIC and BIC values are preferred, this would suggest that the managerial model is the most preferred and the reputational model, the least. However, such a comparison assumes that the explanatory models are mutually exclusive, which is not necessarily true either in theory or in reality. A more pertinent question might therefore be whether each theory adds to the overall explanatory power of the model. One can test with the same criteria whether dropping the variables from any single model from the regression that includes all variables leads to a more preferred model. The test results suggest that dropping the variables of any one of the theories would lead to a less preferred model according to both AIC and BIC.¹¹⁹ The conclusion is therefore that all theories add significantly to the model and should be included together in estimation.

Discussion and Conclusions

While scholarship has gone a long way in resolving the question of why states join MEAs, far less is known about the reasons for differences in the implemen-

117. Cameron and Trivedi 2005.

118. Managerial (AIC: 1191.2; BIC: 1300 .0); domestic adjustment (AIC: 1243.3; BIC: 1336.1); constructivist (AIC: 1246.9; BIC: 1339.6); reputational (AIC: 1247.6; BIC: 1340.3).

119. The full model has an AIC of 1176.0 and a BIC of 1304.4. Dropping the domestic adjustment model variables increases the AIC to 1184.6 and the BIC to 1305.9. Dropping the reputational model variables raises the AIC to 1189.9 and the BIC to 1311.2. Excluding the managerial model variables increases the AIC to 1211.5 and the BIC to 1318.5. Finally, dropping the constructivist model variables raises the AIC to 1187.5 and the BIC to 1308.8. In all cases, the nested, more parsimonious models have higher AIC and BIC than the complete model, which renders the complete model the preferred one.

tation of these agreements.¹²⁰ Indeed, when it comes to understanding why states do—or indeed, do not—comply with their treaty obligations to implement MEAs, it would be fair to say that theorization has run ahead of empirical testing. Although scholars have advanced a number of theoretical models to explain differences in legal compliance, comparatively little research has been undertaken to validate empirically their respective predications.¹²¹

In this article, we seek to reduce this gap between theoretical and empirical understanding. To this end, we use econometric techniques to test statistically the value of four distinct theoretical approaches—domestic adjustment, reputational, constructivist and managerial—in explaining differences in the implementation of EU environmental directives. Our study makes a number of important contributions to current understanding of the conditions under which MEAs are (not) implemented. First, we provide systematic empirical support for the predictive power of two dominant rationalist explanations, notably, domestic adjustment and reputational models. While several authors have cast doubt over the idea that compliance decisions are subject to rational, calculative logic,¹²² our study suggests otherwise. Thus, we find that states with a higher share of manufacturing industry and/or air pollution load—characteristics that might plausibly increase the economic costs of implementing EU environmental policy requirements, and therefore opposition from governmental and nongovernmental actors—have a worse record of implementing environmental directives.

Similarly, our statistical estimations validate predictions derived from reputational models.¹²³ Recent entrants to the EU club, who presumably face strong self-help motives to establish and maintain a reputation as “good” European partners, are more likely to implement environmental directives. Conversely, we find that more populous states have a worse record of compliance, a finding consistent with theoretical predications regarding the lower reputational penalty faced by more powerful states in defecting from treaty obligations.

Compared with the preceding two explanations, constructivist accounts have largely been ignored in the empirical literature.¹²⁴ Our findings, however, suggest that constructivist explanations are potentially instructive in understanding cross-national variations in the implementation of MEAs. According to constructivists, therefore, we should expect political actors to internalize wider societal norms in making implementation decisions. Presumably, this explains our finding that member states whose citizens hold more positive sentiments towards EU integration have fewer infringements. According to the same perspective, we should expect norms regarding the role of supranational gover-

120. Carter 2001; Raustiala and Slaughter 2002; and Simmons 1998.

121. Raustiala and Slaughter 2002.

122. Weiss and Jacobson 1998; Chayes and Chayes 1993; and Hønneland and Jørgensen 2003.

123. Downs and Jones 2002.

124. See Börzel 2003; and Weiss and Jacobson 1998.

nance and environmental protection to influence compliance activity. Again, this is consistent with our finding that member states that have joined a larger number of MEAs have fewer infringements.

Finally, our findings lend systematic empirical support to managerial models of compliance, which emphasize various implementation constraints. Consistent with previous empirical work,¹²⁵ we find that countries where political actors are impeded by the presence of veto players in national government are less likely to implement environmental policy successfully. Similarly, we find that countries with a Scandinavian legal system have fewer infringements for non-compliance, presumably because of their compliance-oriented and less adversarial legal culture.

Yet, while our estimation results corroborate past findings highlighting the importance of political and legal constraints,¹²⁶ we find no support for the oft-made claim that administrative capacity and/or efficiency explains variations in the implementation of MEAs. Of course, it may be that our result is simply a product of our generalized measure of administrative resources or, alternatively, that our sample does not contain countries with very limited and/or inefficient bureaucratic capacity.¹²⁷ Still, our results should caution against the widely held assumption that implementation failures should be automatically blamed on administrative shortcomings. Börzel reached a similar conclusion in her study of alleged non-compliance in Southern Europe.¹²⁸

Taken together, our findings lead us to three key conclusions. First, the reasons for states' implementation—or, indeed, non-implementation—of MEAs are multiple and complex.¹²⁹ Accepting our premise that insights from the EU case are generalizable, it is clear that variations in implementation cannot be reduced to a single variable, suggesting a need for multivariate explanations. Indeed, given that the number of quantifiable variables for which data are available limits our study, we expect the underlying determinants to be even more complex than portrayed here. In particular, we expect governance-related factors such as national bureaucratic traditions or policy styles to account for some of the unexplained variations in compliance with environmental directives.¹³⁰ A challenge for future research is to investigate the role of these contextual and institutional determinants using a large-N approach.

A second important conclusion is theoretical and follows closely from the first. While different conceptual models—rational choice, reputational, constructivist and managerial—offer important insights into (non-)compliance with treaty obligations to implement environmental policy, they need not, and

125. Guiliani 2003; and Haverland 2000.

126. Haverland 2000; Lampinen and Uusikylä 1998; and Weale et al. 2000.

127. We note that past research documenting the constraining role of administrative resources on MEA implementation is largely based on case-study evidence from low-income developing countries. See for example Blaikie and Simo 1998.

128. Börzel 2003.

129. Mbaye 2001; and Raustiala and Slaughter 2002.

130. Knill 2001.

should not, be seen as mutually exclusive. By themselves, none of the models offers a satisfactory explanation for the observed variations in the implementation of EU environmental directives. Together, however, they provide a more complete account of variations in implementation. We are not the first to recognize this point.¹³¹ Yet our study is unique in providing statistical support for the value of four leading models of compliance in explaining cross-national variations in the implementation of supranational treaty obligations designed to protect the environment. Of course, this does not mean that different states comply for the same set of reasons, and that the above models will be relevant in understanding (non-)compliance in all instances. Rather, our study suggests that domestic adjustment, reputational, constructivist and managerial models offer important insights in understanding variations between countries in the degree of compliance with supranational policy commitments.

A third conclusion centers on data. Our study examines a single example of supranational environmental policy implementation, and moreover, one with very specific characteristics. Yet recognizing the variety of multilateral environmental agreements and associated governance structures, it would seem imperative to examine compliance models in a broader range of settings. Unfortunately, statistical work in this direction is restricted by a basic lack of data. We therefore finish by pointing to the urgent need to assemble new implementation datasets that cover a wide range of MEAs and include a number of different measures of compliance.

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131. See Beach 2005; Raustiala and Slaughter 2002; Sverdrup 2004; and Underdal 1998.

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