

Do Investor-State Dispute Settlement Cases Influence Domestic Environmental Regulation? The Role of Respondent State Bureaucratic Capacity

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ABSTRACT

Does international politics influence domestic politics? In the investment treaty regime, there is currently a debate about whether investor-state dispute settlement cases influence respondent state domestic regulation. We present a systematic test of this relationship. Using two unique datasets, we examine whether investor-state cases targeting environmental measures influence respondent states' environmental regulation. We make two theoretical contributions. First, we present an integrated typology of potential regulatory responses to investor-state dispute settlement cases. Second, we propose a novel, conditional theory of regulatory responses to investor-state cases. We argue that states' responses should depend on their bureaucratic capacity. In our analysis, we find that respondent state bureaucratic capacity conditions the relationship between investor-state cases and subsequent domestic regulation. There is a more pronounced negative relationship between investor-state cases and regulatory behavior in states with high bureaucratic capacity than in low-capacity states.

1. INTRODUCTION

Scholars have debated the extent to which international politics influence domestic politics for decades. Peter Gourevitch¹ held that the main international sources of domestic politics were state power and the international economic system. In this article, we analyse the conditions under which the international economic regime that governs foreign direct investment (FDI) flows—what has been labelled the

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1 P Gourevitch, 'The Second Image Reversed: The International Sources of Domestic Politics' (1978) 32(4) *International Organization* 882.

investment treaty regime²—influences domestic politics. More specifically, we assess whether investor-state dispute settlement (ISDS) cases brought against states by foreign investors under this regime influence states' propensity to regulate domestically.

Whether ISDS cases influence regulatory processes in respondent states is controversial.³ One criticism is that foreign investors use ISDS to unduly restrict domestic regulation in host states. This concern was crucial in the opposition civil society groups raised with regard to the Comprehensive Economic and Trade Agreement (CETA)⁴ and the Transatlantic Trade and Investment Partnership (TTIP),⁵ and it is central in the reform discussions about ISDS going on under the auspices of the United Nations Commission on International Trade Law (UNCITRAL).⁶

While there is an increasing amount of anecdotal and case-based evidence for various types of regulatory chill effects from ISDS,⁷ only Carolina Moehlecke has looked at this relationship systematically.⁸ Following her lead, we present a cross-country, large-N study of the relationship between ISDS claims and domestic regulation in respondent states. Analysing the broader relationship between ISDS cases and regulatory responses in respondent states can give us an indication of whether regulatory responses to ISDS are widespread or just isolated events.

In addition to this empirical contribution, we make two conceptual contributions. First, we argue that regulatory responses to ISDS can occur at different stages of arbitral proceedings, and we develop a typology to illustrate this heterogeneity. To provide a conceptual basis for future research, we argue that different empirical research

- 2 J Bonnitca, LSN Poulsen and M Waibel, *The Political Economy of the Investment Treaty Regime* (OUP 2017) 2.
- 3 K Tienhaara, *The Expropriation of Environmental Governance – Protecting Foreign Investors at the Expense of Public Policy* (CUP 2009) 151; HS Edwards, *Shadow Courts: The Tribunals That Rule Global Trade* (Columbia Global Reports 2016); J Calvert, 'Constructing Investor Rights? Why Some States (Fail To) Terminate Bilateral Investment Treaties' (2018) 25(1) *Review of International Political Economy*; M Sattorova, *The Impact of Investment Treaty Law on Host States: Enabling Good Governance?* (Hart Publishing 2018); G Van Harten, *The Trouble with Foreign Investor Protection* (OUP 2020) 99.
- 4 A 2013 statement against CETA, supported by more than 100 civil society groups, went as far as to ask whether 'Canada and the EU want to put a chill on effective climate change policy?' See <https://www.epso.org/sites/default/files/article/files/Stop_the_Corporate_Giveaway_-_A_transatlantic_plea_for_sanity_in_the_EU-Canada_CETA_negotiations.pdf>
- 5 In December 2013, a letter signed by more than 200 civil society groups against the inclusion of ISDS in TTIP was made public. The letter is especially concerned with ISDS cases that 'directly attack public interest and environmental policies'. See <https://corporateeurope.org/sites/default/files/attachments/ttip_investment_letter_final.pdf>
- 6 Developing states in particular have expressed worries over 'reputational harm and regulatory chill' associated with ISDS cases. See, for example, South African interventions during UNCITRAL proceedings on ISDS reform in Vienna, 2018. Prior to the same deliberations, Indonesia also circulated a paper that discussed concerns related to regulatory chill. See <<https://www.iisd.org/itn/2018/12/21/multilateral-isds-reform-is-desirable-what-happened-at-the-uncitral-meeting-in-vienna-and-how-to-prepare-for-april-2019-in-new-york-martin-dietrich-brauch/>>
- 7 K Tienhaara, 'Regulatory Chill and the Threat of Arbitration: A View from Political Science' in C Brown and K Miles (eds), *Evolution in Investment Treaty Law and Arbitration* (CUP 2011); K Tienhaara, 'Regulatory Chill in a Warming World: The Threat To Climate Policy Posed by Investor-State Dispute Settlement' (2018) 7(2) *Transnational Environmental Law*; JL Tobin, 'The Social Cost of International Investment Agreements: The Case of Cigarette Packaging' (2018) 32(2) *Ethics & International Affairs*.
- 8 C Moehlecke, 'The Chilling Effect of International Investment Disputes: Limited Challenges to State Sovereignty' (forthcoming) *International Studies Quarterly*.

methods are appropriate for the study of different types of regulatory responses to ISDS.

Second, we hypothesize that systematic regulatory reactions to ISDS should depend on respondent states' bureaucratic capacity. More specifically, we argue that pending ISDS cases should lead to a more severe drop in regulatory activity in states with a high bureaucratic capacity than in states with low bureaucratic capacity. Our key point is that uncertainty over having to pay monetary awards under pending ISDS claims may influence respondent states' regulatory behavior. However, for pending ISDS cases to influence regulatory processes, it is necessary that different government agencies exchange information and coordinate their actions. We therefore argue that in states with high bureaucratic capacity—that is, in states with high policy monitoring capacity, and intra-ministerial coordination and communication systems based on transparency and clearly codified rules⁹—identification of risk to regulation, *and* communication of this risk between different branches of the state is more likely than in low-bureaucratic capacity states.

In our analysis, we combine two unique datasets. The first is a novel sample of 146 ISDS cases challenging environmental policy measures in host states. The second is a dataset on domestic environmental regulations across the world. We study the effect of ISDS cases on environmental regulation because ISDS cases challenging environmental measures are relatively prominent in the global ISDS caseload (approximately 15% of all ISDS cases). Moreover, the environment has been tabbed as an area of public policy particularly prone to regulatory chill.¹⁰ As such, it represents a most-likely policy area for observing regulatory responses to ISDS claims.

We find robust evidence suggesting that the relationship between pending ISDS cases and respondent state regulation is contingent upon bureaucratic capacity in respondent states. An increase in pending ISDS cases is most negatively associated with environmental regulation in states with high bureaucratic capacity. This negative effect on regulation from pending ISDS cases however, only holds the first few years after a case is brought. Somewhat surprisingly, when using these models to estimate predicted ISDS cases for states with different bureaucratic capacity levels, we also find that increases in the pending ISDS caseload against states with a medium-to-low bureaucratic capacity are associated with *more* regulation.

These findings are relevant for the ongoing policy discussions about ISDS. First, it could be discussed whether it is worrisome that high-capacity states regulate less when facing more ISDS claims. On the one hand, this tendency might be an expression of the fact that investors successfully manage to deter regulation through the use of 'strategic litigation'.¹¹ On the other hand, it might be an expression of prudent

9 D Andersen, J Møller and SE Skaaning, 'The State-Democracy Nexus: Conceptual Distinctions, Theoretical Perspectives, and Comparative Approaches' (2014) 21(7) *Democratization*; TA Brambor and others, 'The Lay of the Land: Information Capacity and the Modern State' (2020) 53(2) *Comparative Political Studies*.

10 SG Gross, 'Inordinate Chill: BITs, Non-NAFTA MITs, and Host-State Regulatory Freedom. An Indonesian Case Study' (2003) 24 *Michigan Journal of International Law*; DF Behn and M Langford, 'Trumping the Environment? An Empirical Perspective on the Legitimacy of Investment Treaty Arbitration' (2017) 18 *Journal of World Investment and Trade*.

11 K Pelc, 'What Explains the Low Success Rate of Investor-State Disputes?' (2017) 71(3) *International Organization* 568.

risk management in an international legal system associated with unprecedented levels of ambiguity.

Second, and relatedly, the fact that our models predict that medium-to-low bureaucratic-capacity states regulate more when facing increasing amounts of ISDS claims may indicate that the underlying issues driving incoming claims are not managed or resolved. Not managing ISDS risks may in turn lead to more, unnecessary, ISDS cases. We conclude however, that more systematic research is needed to establish whether our findings on regulatory *responses* to ISDS are in fact evidence of regulatory *chill*.

We structure the article as follows. We first review the existing empirical literature. Next, we develop our theory and generate our testable hypothesis, before we present our research design and findings. We conclude by discussing policy implications and avenues for future research.

2. THE INVESTMENT TREATY REGIME, ISDS, AND DOMESTIC GOVERNANCE

A decentralized network of over 3300 international investment agreements (IIAs) governs global FDI flows.¹² At their core, IIAs grant investors from one contracting party substantive rights when investing in the other party's jurisdiction¹³ and access to ISDS to challenge potential breaches of these substantive rights. ISDS is a widespread phenomenon, involving investors of different sizes and industries, and a wide range of respondent states and investor home states.¹⁴

Between the 1960s and 1990s, the signing of IIAs remained largely uncontroversial, mainly because ISDS cases were almost non-existent (see [Figure 1](#)). Developed states saw IIAs as tools to protect business interests abroad while also depoliticizing investment disputes, whereas developing countries saw IIAs as pathways to attract more FDI.¹⁵ IIAs were also used as tools to promote diplomatic relations among the signatories.¹⁶ While states have been signing IIAs since the early 1960s, the first treaty-based ISDS was registered in 1987. The caseload remained limited in the following decade (see [Figure 1](#)).

At the turn of the century, however, things started changing. While the peak of IIA signing occurred in the mid-1990s, with over 200 IIAs signed annually, the ISDS cases filed in the late 1990s raised awareness about how extensive protections under IIAs actually were. A raft of cases followed. As one commentator noted:

12 See <<https://investmentpolicy.unctad.org/international-investment-agreements>>.

13 Substantive obligations in IIAs include, among others, relative standards—such as most-favored-nation treatment and national treatment—and absolute standards—such as fair and equitable treatment and expropriation clauses.

14 RL Wellhausen, 'Recent Trends in Investor-State Dispute Settlement' (2016) 7(1) *Journal of International Dispute Settlement*.

15 Bonnitca, Poulsen and Waibel (n 2) 193; T St John, *The Rise of Investor-State Arbitration: Politics, Law and Unintended Consequences* (OUP 2018) 199.

16 LNS Poulsen and E Aisbett, 'Diplomats Want Treaties: Diplomatic Agendas and Perks in the Investment Regime' (2016) 7(1) *Journal of International Dispute Settlement*.

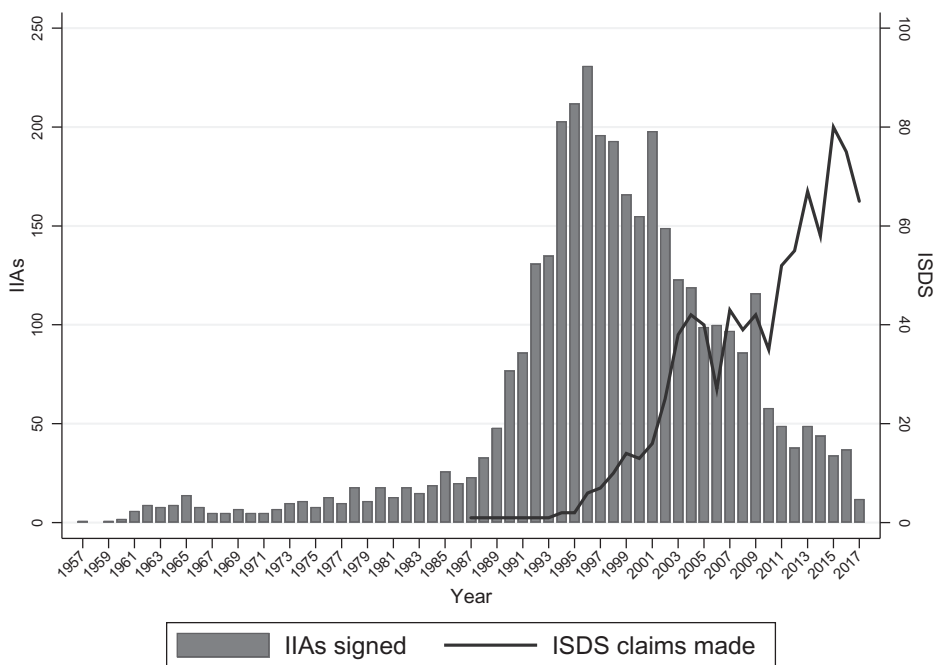


Figure 1. IIAs Signed and ISDS Claims, 1957–2017.

It became clear that the substantive scope of investment obligations was quite broad. It was not just actual expropriation or nationality-based discrimination that was covered, but also regulatory expropriation and treatment of foreign investors that was considered unfair or unjust in some general sense. As a result, claims could be brought against a wide range of government actions, even in domestic policy areas such as environmental protection and public health.¹⁷

From the early 2010s, voices within and outside academia begun to question the regime's legitimacy.¹⁸ One strand of critique focuses on IIAs' failure to achieve their objectives, such as depoliticization of investment disputes,¹⁹ or promoting foreign investment to developing countries.²⁰ Another strand of criticism revolves around the relationship between ISDS cases and domestic governance in respondent states.

17 See <<https://www.ictsd.org/opinion/the-isds-controversy-how-we-got-here-and-where-next>>.

18 M Waibel and others, *The Backlash against Investment Arbitration: Perceptions and Reality* (Kluwer Law International 2010); P Eberhardt and C Olivet, *Profiting from Injustice: How Law Firms, Arbitrators, and Financiers are Fueling an Investment Arbitration Boom* (Corporate Europe Observatory 2012); Edwards (n 3).

19 G Gertz, S Jandhyala and LNS Poulsen, 'Legalization, Diplomacy, and Development: Do Investment Treaties De-Politicize Investment Disputes?' (2018) 107 World Development.

20 Bonnitca, Poulsen and Waibel (n 2) 158.

Some find this relationship to be problematic,²¹ while others argue that ISDS cases have positive effects on domestic governance.²²

A key concern is that decision makers, facing uncertainty about the costs and consequences of their actions because of the constraints of IIAs with ISDS, defer from passing otherwise desirable legislation.²³ Research on the effects of trade agreements notes similar concerns,²⁴ but the core critique in the context of ISDS is that investor claims may unduly influence host states' willingness to adopt measures that are in the public interest.

The empirical literature on the effects of ISDS on domestic regulations tends towards case studies, and its findings are varied.²⁵ Some studies look at the degree to which regulators internalize the potential costs of ISDS. One study from Canada²⁶ concludes that 'there is no consistent observable evidence to suggest the possibility of regulatory chill'. Another study of regulatory processes in the Canadian province of Ontario found that regulators altered their regulations, particularly environmental measures, because of concerns over ISDS.²⁷ A series of case studies from Nigeria, Turkey and Uzbekistan find that regulators rarely take the risks of IIAs into account when drafting new regulations.²⁸

A number of studies also look at the regulatory response to hallmark ISDS cases such as the claims challenging plain tobacco packaging legislation in Australia and Uruguay.²⁹ While pending, these cases led other countries, fearing lawsuits, to put similar legislation on hold.³⁰ When New Zealand explored plain packaging legislation in 2013, a government representative noted the 'risk that tobacco companies will try and mount legal challenges against any legislation, as we have seen in Australia' and that 'the Government acknowledges that it will need to manage some legal risks'.³¹ New Zealand ended up delaying implementation of its plain packaging law until 2016, following Australia's successful defense in the ISDS case brought by Philip Morris. More generally, Moehlecke finds that countries around the globe have been

21 Tienhaara (n 3) 151, Calvert (n 3).

22 R Dolzer, 'The Impact of International Investment Treaties on Domestic Administrative Law' (2005) 37 *New York University Journal of International Law and Policy*; S Schill, *The Multilateralization of International Investment Law* (CUP 2009) 377.

23 C Tietje and F Baetens, 'The Impact of investor-state-dispute settlement (ISDS) in the Transatlantic Trade and Investment Partnership' (2014) 40, study prepared for the MFA, The Netherlands.

24 F De Ville and G Siles-Brügge, 'Why TTIP is a Game-Changer and its Critics have a Point' (2017) 24(10) *Journal of European Public Policy*; E Aisbett and M Silberberger, 'Tariff Liberalization and Product Standards: Regulatory Chill and Race to the Bottom?' (forthcoming) *Regulation & Governance*.

25 Van Harten (n 3) 99.

26 C Côté, *A Chilling Effect? The Impact of International Investment Agreements on National Regulatory Autonomy in the Areas of Health, Safety and the Environment*. (2014) PhD Thesis, London School of Economics and Political Science, 187.

27 G Van Harten and DN Scott, 'Investment Treaties and the Internal Vetting of Regulatory Proposals: a Case Study from Canada' (2016) 7(1) *Journal of International Dispute Settlement*.

28 Sattorova (n 3).

29 *Philip Morris Asia Limited v The Commonwealth of Australia* PCA Case No 2012-12; *Philip Morris Brand Sàrl (Switzerland), Philip Morris Products S.A. (Switzerland) and Abal Hermanos S.A. (Uruguay) v Oriental Republic of Uruguay*, ICSID Case No ARB/10/7.

30 Tienhaara (n 7); Tobin (n 7).

31 See <<https://www.beehive.govt.nz/release/government-moves-forward-plain-packaging-tobacco-products>>

slower to pass anti-smoking regulations challenged under ISDS, than anti-smoking laws not challenged.³²

Other studies document cases where governments have backtracked from plans to introduce regulations or laws after threats of ISDS. Ghana allowed a small group of companies to carry out mining in protected forests after receiving threats of ISDS cases.³³ Similarly, the Indonesian government allowed open-pit mining in protected forests after ISDS threats from multinational corporations with active operations or undeveloped exploration contracts on the island.³⁴

To sum up, most case-based research establishes convincing within-case linkages between ISDS and respondent state regulatory activity. Moehlecke represents the only systematic, large-N study of regulatory responses to ISDS to date.³⁵ Below, we use large-N data to assess the relationship between environmental ISDS cases and domestic environmental regulation. Before presenting our analysis, we develop a typology of regulatory responses to ISDS, and a theory of why state responses to ISDS should vary with their levels of bureaucratic capacity.

3. THEORY

Regulatory responses to ISDS are often discussed under the umbrella of regulatory chill, and we therefore find it useful to build on the conceptual apparatus from this literature.³⁶ However, it should be noted that our data does not allow us to study regulatory chill directly—that is, to distinguish undue changes in environmental regulation stemming from ISDS cases from legitimate changes in such regulation. Instead, we study regulatory *responses* to ISDS, that is, the tendency of governments, under some circumstances, to increase, revoke, freeze, or delay regulation as a response to ISDS.³⁷

The formulation ‘under some circumstances’ is crucial, because we argue that states’ regulatory responses to ISDS should be conditional upon factors internal to the states themselves. However, regulatory responses to ISDS could occur at different stages of arbitral proceedings, and through different pathways.³⁸ In Figure 2, we have developed a typology to illustrate this heterogeneity, while suggesting which empirical research methods are most appropriate for studying different types of regulatory responses to ISDS.

The first type of response, *anticipatory response*, captures situations where policy makers take the potential for ISDS into account while drafting regulations, a kind of anticipatory internalization of the threat of ISDS.³⁹ The second type of regulatory response, *direct response*, happens when policy makers respond to the concrete

32 Moehlecke (n 8).

33 K Tienhaara, ‘Mineral Investment and the Regulation of the Environment in Developing Countries: Lessons from Ghana’ (2006) 6(4) *International Environmental Agreements* 388.

34 Gross (n 10) 895.

35 Moehlecke (n 8).

36 Tienhaara (n 7); Bonnitcha, Poulsen and Waibel (n 2); A Schram and others, ‘Internalisation of International Investment Agreements in Public Policymaking: Developing a Conceptual Framework of Regulatory Chill’ (2018) 9(2) *Global Policy*.

37 Tienhaara (n 7) 610.

38 Tietje and Baetens (n 23) 41.

39 Van Harten (n 3) 123.

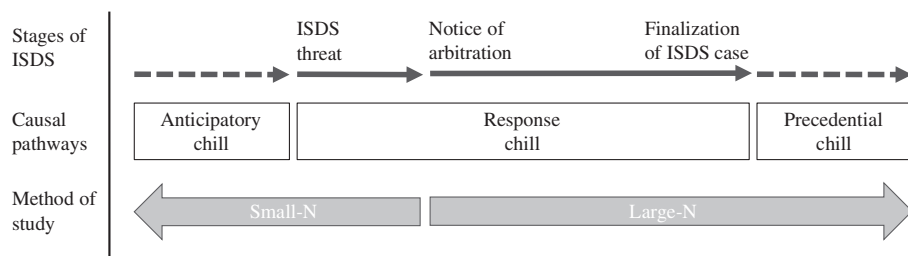


Figure 2. Stages of ISDS Cases, Causal Pathways of Regulatory Responses to ISDS, and Methods of Study.

possibility of a dispute, whether expressed as a threat of ISDS or through an actual notice of arbitration. The third type of response, *precedential response*, occurs when states respond to rulings in finalized cases.

There are a number of empirical challenges to studying different types of regulatory responses to ISDS. Analysing anticipatory responses at the large-N level is challenging, because it is difficult to construct comprehensive, representative data on the behavior of regulators. Moreover, regulators may respond to ISDS cases in other countries, creating a possible contagion effect. It is therefore most appropriate to study anticipatory responses to ISDS qualitatively, as illustrated by, among others, Sattorova.⁴⁰

Direct responses to ISDS may result from investors threatening to file ISDS claims, or from actual ISDS cases. Direct responses to ISDS threats are also difficult to observe at the large-N level, because data on threats are inherently inaccessible; neither investors nor states have any particular incentives to be open about ISDS threats. What existing data allow us to do in a large-N setting is to assess direct responses to initiated ISDS cases,⁴¹ and precedential responses to finalized ISDS cases. In this article, we focus on the former.

A. Hypothesis

When a state becomes aware of an ISDS claim, it should weigh the benefits of the challenged measure against the costs of following through with the measure.⁴² In both the plain tobacco packaging cases and the cases involving challenges to regulations affecting multinational mining operations discussed above, states were open about assessing the potential costs of pending ISDS cases in their future regulations.⁴³

The regulatory chill literature argues that states respond to ISDS cases differently. Developing countries are viewed as most prone to be chilled by ISDS because of their domestic financial constraints.⁴⁴ We argue that it is necessary to look inside the

40 Sattorova (n 3).

41 Moehlecke (n 8).

42 Bonnitca, Poulsen and Waibel (n 2) 137; Pelc (n 11) 568.

43 Van Harten (n 3) 101. Possible costs include the potential monetary award owed to the investor in the ISDS case, the cost associated with legal defense in ISDS, tribunal costs, and/or the reputational costs of being party to an ISDS case.

44 Tienhaara (n 7); Bonnitca, Poulsen and Waibel (n 2) 241.

black box of states' bureaucratic systems to understand the circumstances under which ISDS cases trigger systematic domestic regulatory responses. More specifically, we posit that negative regulatory responses to pending ISDS cases should be more pronounced in states with a *high* bureaucratic capacity than in states with a *low* bureaucratic capacity, because the former are more likely to engage in risk-assessment and regulatory vetting when economic risk to regulation materializes than the latter.

Our concept of bureaucratic capacity builds on the quality of Weberian-type bureaucratic features such as transparency and codification of intra-bureaucratic communication and coordination procedures and expertise-based hiring procedures.⁴⁵ Recent comparative politics research underline the importance of bureaucratic capacity for states' ability to monitor their policies and engage in self-reflection and regulatory adjustment.⁴⁶

Thus, our theory is in many ways a statement contrary to the conventional wisdom that developing states are most at risk of scare and abuse tactics from foreign investors. While there are examples of blatant attempts by investors to use ISDS to induce regulatory chill in many developing countries, triggering systematic regulatory reactions in bureaucratic, governmental systems is complex. For a pending ISDS case to influence ongoing regulatory processes, governmental agencies tasked with defending the state in international matters and governmental agencies in charge of relevant regulations have to engage in a deliberative, communicative process. In this process, different arms of the state have to, in tandem, evaluate the relative risk of losing a given ISDS case; evaluate adjacent risks, such as potential reputational consequences from the ISDS case; and, finally, evaluate whether the overall risk level warrants a broader regulatory response. Regulatory agencies involved in such deliberations may belong to different arms of the central government, and to different sub-national or provincial levels of government, making communication and coordination challenging.

The crux of our argument is that in high-capacity bureaucracies, with good intra-governmental coordination systems, the part of the government that deals with defense of the state in international legal matters, and the ministries and agencies responsible for drafting and implementing regulations are more likely to be coordinated than in states with low-capacity bureaucracies. Two brief examples from Canada and India, states that have both been on the receiving end of many ISDS cases,⁴⁷ but with very different levels of bureaucratic capacity,⁴⁸ illustrate how states' bureaucratic capacity influences how they respond to pending ISDS claims.

In Canada, when an investor files an ISDS claim against the state, the Trade Law Bureau, a federal government legal agency charged with defending ISDS claims, enters into close coordination with the federal department or agency, provincial

45 M Weber, *Economy and society: An outline of interpretive sociology*. Vol. 1 (UCP 1978).

46 Andersen, Møller and Skaaning (n 9); Brambor et al. (n 9).

47 At the time of writing, Canada has responded to 28 treaty-based ISDS claims and India to 24 claims. See <<https://investmentpolicy.unctad.org/investment-dispute-settlement>>.

48 In 2015, Canada scored 2.91 on the *Rigorous and impartial public administration* index, from the Varieties of Democracy data project, while India scored 0.63. The index ranges from approximately -4 to 4, see more in Section 4.

ministry, or even municipal government whose measure is at issue in the claim.⁴⁹ In India, on the other hand, there is no formalized channel for communication or coordination set up between investment officials and regulators when ISDS claims come in. One former investment policy official noted that the overall workload makes it difficult for officials to handle anything but the management of the litigation process when an ISDS case materializes, and that regulators sometimes fend off attempts to coordinate regulatory action from legal defense officials under the pretext that regulation is their prerogative.⁵⁰

In the Canadian-type response system, the chance that the legal defense unit communicates with relevant regulatory agencies about compliance with IIA commitments is relatively high. Since the goal of such coordination is to evaluate whether the challenged measure breaches IIA commitments, we would expect regulators to freeze similar regulations *while* the vetting process around a particular ISDS case takes place. In poorly governed states, where coordination between branches of the state is less structured and less frequent, the lack of intragovernmental coordination and communication about ISDS should lead to a less pronounced regulatory response while cases are pending.

Recent research on cross-country regulatory chill from ISDS supports this conditional dynamic. Moehlecke finds that of the countries interested in adopting plain packaging at about the same time as Philip Morris's ISDS claim against Australia, there was much more evidence of chilling effects in countries with well-developed bureaucracies such as France, Norway, the United Kingdom, and Canada, than in countries with less-developed bureaucratic systems, such as Botswana, India, Kenya and the Philippines.⁵¹

Importantly, in countries where there is a response to pending ISDS cases, we expect a spillover of the insecurity about one type of case to regulatory processes in adjacent regulatory fields. A key reason for this spillover is the unprecedented level of uncertainty about the legal interpretation of clauses in IIAs, as compared to other international legal regimes. First, most IIAs consist of vague and open-ended substantive obligations, as well as broad definitions of investment and investors.⁵² Second, there is no formal rule for *stare decisis* or precedent in investment treaty arbitration.⁵³ Third, the ISDS system lacks an appeals mechanism that could contribute to a more predictable interpretation of IIA provisions.

This ambiguity creates a problem of interpretative indeterminacy, meaning that it is difficult for states to anticipate what treatment they are obliged to afford foreign

49 Interview with former Canadian investment policy official, 20 May 2019.

50 Interview with former Indian investment policy official, 14 April 2018.

51 Moehlecke (n 8) 8.

52 Bonnitcha, Poulsen and Waibel (n 2) 93.

53 The lack of a formal rule for precedent has contributed to inconsistent interpretations of similar treaty clauses. Compare, for example, the two cases brought by Ronald Lauder against the Czech Republic: *Ronald S. Lauder v The Czech Republic*, UNCITRAL and *CME Czech Republic B.V. v The Czech Republic*, UNCITRAL. Even though the cases were based on the same set of facts and similarly worded IIA clauses, the arbitral tribunals in the two cases came to opposite conclusions. See: LNS Poulsen, *Bounded Rationality and Economic Diplomacy: The Politics of Investment Treaties in Developing Countries* (CUP 2015) 141.

investors.⁵⁴ In fact, both developed states, such as the United States and Canada,⁵⁵ and less developed states such as Pakistan,⁵⁶ are found to express surprise when being hit with ISDS claims. Many states—including China, India, Indonesia, the Netherlands and the United States—have therefore taken measures to increase the clarity and predictability of their IIAs.⁵⁷

Overall, states with well-developed bureaucracies should be more likely to enter into introspective, intra-governmental deliberations about whether an ISDS case has implications for broader regulatory activities than states with less developed bureaucracies. Managing complex intra-governmental processes takes time, and it is likely that states put on hold similar regulatory measures or regulatory measures in the same field as those challenged by investors under ISDS while assessing the credence of pending ISDS claims. The testable implication is:

Hypothesis: *The negative relationship between pending ISDS cases and domestic regulation should be more pronounced in states with high bureaucratic capacity than in states with low bureaucratic capacity*

4. DATA

In this section, we present and discuss our data.⁵⁸ First, however, we present a few reasons for why we think environmental regulation is a good testing ground for assessing the relationship between ISDS and states' regulatory activities. First, ISDS cases challenging environmental measures have been highly controversial because of the direct impact of environmental policies on peoples' lives.⁵⁹ Environmental regulation was also one of the first policy areas in which the negative effects of ISDS cases on regulatory actions were discussed.⁶⁰ Second, cases where investors challenge environmental policy measures are relatively pronounced in the overall caseload (146 of 854 cases, or 15% of all cases, per our coding). Third, environmental regulation also plays a key role in discussions about national competitiveness in a globalized economy, suggesting that countries are deterred from raising environmental standards because of fear of capital flight.⁶¹

54 A Matveev, 'Investor-State Dispute Settlement: The Evolving Balance between Investor Protection and State Sovereignty' (2015) 40 *University of Western Australia Law Review* 379.

55 Edwards (n 3) 65.

56 Poulsen (n 53) xiii.

57 G Gagné and JF Morin, 'The Evolving American Policy on Investment Protection: Evidence from Recent FTAs and the 2004 Model BIT' (2006) 9(2) *Journal of International Economic*; A Berger, 'Hesitant Embrace: China's Recent Approach to International Investment Rule-Making' (2015) 16(5) *Journal of World Investment and Trade*; TL Berge, 'Dispute by Design? Legalization, Backlash and the Drafting of Investment Agreements' (forthcoming) *International Studies Quarterly*.

58 See Appendix B for descriptive statistics and further notes on the data.

59 Tienhaara (n 3) 208; K Miles, *The Origins of International Investment Law. Empire, Environment and the Safeguarding of Capital* (CUP 2013) 154.

60 D Mander and PE Perkins, 'Trade Disputes and Environmental "regulatory chill." The Case of Ontario's Environmental Levy' (1994) 18 *World Competition*; Gross (n 10).

61 Tienhaara (n 32).

Fourth, and perhaps most importantly, the short-term costs associated with *not* regulating harmful environmental impacts of foreign production are likely to be lower for a government than the (perceived) costs of facing ISDS claims for that same government. In fact, the short-term externalities of environmentally harmful industrial activity are borne almost exclusively by citizens, not by governments. Thus, while environmental degradation over time may be detrimental to a country's productivity and economic output, yielding to external corporate pressure to backtrack or refrain from passing environmental regulation might seem attractive for governments in the short run, as compared to other areas of public policy (e.g., financial regulation or national security). In these policy areas, the government is more likely to be directly (economically) affected in the short run by passing invasive regulation. In short, environmental regulation should be a most-likely policy area to test our hypotheses about regulatory responses from ISDS cases.

A. Dependent Variable: Environmental Regulation

We construct our dependent variable by counting the annual number of environmental legislative acts and regulations countries issue. While the first ISDS case was brought in 1987,⁶² and the real awareness of ISDS probably arose in the late 1990s, we chose to observe states between 1985 and 2015.⁶³ This is mainly to facilitate comparison of state regulatory behavior before and after the onset of ISDS.

We use all environmental acts, because we believe that the above-mentioned ambiguity about material protection standards in IIAs makes it likely that regulatory insecurity from an ISDS case in one area of environmental regulation is likely to spill over to other areas of environmental regulation. Moreover, we log the count of regulatory acts because we believe a small change in a country's regulatory activity from one year to the next should be of less importance if the baseline number of regulations in that country is very high than if the baseline is low.⁶⁴

We source data from ECOLEX, an information service on environmental law operated by the Food and Agriculture Organization of the United Nations (FAO), the International Union for Conservation of Nature (IUCN) and the United Nations Environment Programme (UNEP). ECOLEX is the most comprehensive global source of information on environmental law,⁶⁵ and it has a repository of environmental legislation and regulations enacted worldwide, covering both new environmental acts and amendments to existing regulations and legislations.

To create the environmental regulation variable, we first scraped the ECOLEX website for all environmental acts, whether new acts or amendments to existing acts,

62 *Asian Agricultural Products Ltd (AAPL) v Republic of Sri Lanka*, ICSID Case No ARB/87/3.

63 ECOLEX contains data for 2016 and 2017 as well, but due to a general time lag in data reporting/availability, the Food and Agriculture Organization of the United Nations (FAO) has suggested we not use data from these years, because they are likely to be incomplete.

64 In our robustness section, we also present regressions using an untransformed dependent variable.

65 See <<https://www.ecolex.org/>>. Among other sources, ECOLEX collects legislation and regulation entries from a narrower database called FAOLEX. FAOLEX collects information about laws passed that are published online, supplemented with information from official gazettes and documents gathered by FAO's country offices. See <<http://www.fao.org/faolex/en/>>.

that were labeled as either legislation⁶⁶ or regulations.⁶⁷ We then sorted out duplicates (where ECOLEX lists acts as both regulations and legislation). Finally, we created a count of the number of environmental acts a country issued in a given year.

To assess whether the acts listed by ECOLEX are actually ‘up-regulations’—i.e., that we capture acts that are actually supporting the environmental cause—we manually assessed the content of legislation and regulations listed for a subset of countries.⁶⁸ More than 98% of the acts assessed were explicitly ‘up-regulations’, and of the false positives, most were borderline cases.

Figure 3 depicts developments in global environmental regulatory activity over time. In general, it shows that the increased focus on the environment has manifested itself in increased environmental regulation and legislation across the globe. Most law-making has been of a secondary nature, through regulations. While the trend for legislation has been slowly and steadily increasing, the trend for environmental regulations has declined a bit of late.

B. Independent Variables: ISDS Cases, Bureaucratic Capacity

We rely on data from the United Nations Conference on Trade and Development (UNCTAD) for information about ISDS cases.⁶⁹ UNCTAD provides information about the year of initiation for each case, the outcome of the case, and the respondent state. Our base dataset covers 854 treaty-based ISDS cases filed up until the end of 2017.

To identify environmental ISDS cases, we read the available case documentation for all 854 cases to identify whether the measure(s) challenged were environmental or not.⁷⁰ We define environmental measures as those regulating externalities from investments that are environmentally harmful, and measures taken to prevent global warming, pollution, poisonous spills, and the broader degradation of nature and the environment.

We identify 146 environmental ISDS cases, 681 cases that did not concern environmental measures, and 14 cases in which there was insufficient information to identify the measure challenged. The number of environmental cases has risen over time, in parallel with the overall caseload (Figure 4). Of the top 10 respondent states in ISDS, Spain, the Czech Republic, Mexico and Canada have faced most environmental cases (Figure 5). While the cases against the first two states largely stem from

66 “Legislation” comprises: (i) acts or statutes that have been formally adopted at the national level following the official parliamentary procedure for the passage of laws (in parliamentary systems); (ii) other acts at the national level with the force of law, such as decree-laws and legislative decrees and otherwise (in parliamentary systems); (iii) other legal instruments that have been formally endorsed by a law-making body, for instance presidential and royal orders or presidential and royal decrees (in non-parliamentary systems or systems where law-making power lies in an additional institution to the parliament). In all cases, primary legislation must have the force of law, and therefore be binding’ (FAO 2018, p. xi).

67 “Regulations” are secondary legislation, comprising: subsidiary, delegated or subordinate legal instruments that have the force of law, are binding and shall not be in contradiction with primary legislation. They are usually passed by the executive, such as national regulations, rules, by-laws, determinations, directions, circulars, orders and implementing decrees’, see FAO, *Realizing Women’s Rights to Land in the Law. A Guide for Reporting in SD Indicator 5.a.2* (Food and Agriculture Organization of the United Nations 2018) xi.

68 Argentina, Canada, Czech Republic, Egypt, Germany, Hungary, Mexico, South Africa, Thailand and Venezuela.

69 See <<https://investmentpolicyhub.unctad.org/ISDS>>.

70 See a full description of our coding methodology and cases identified as environmental in Appendix A.

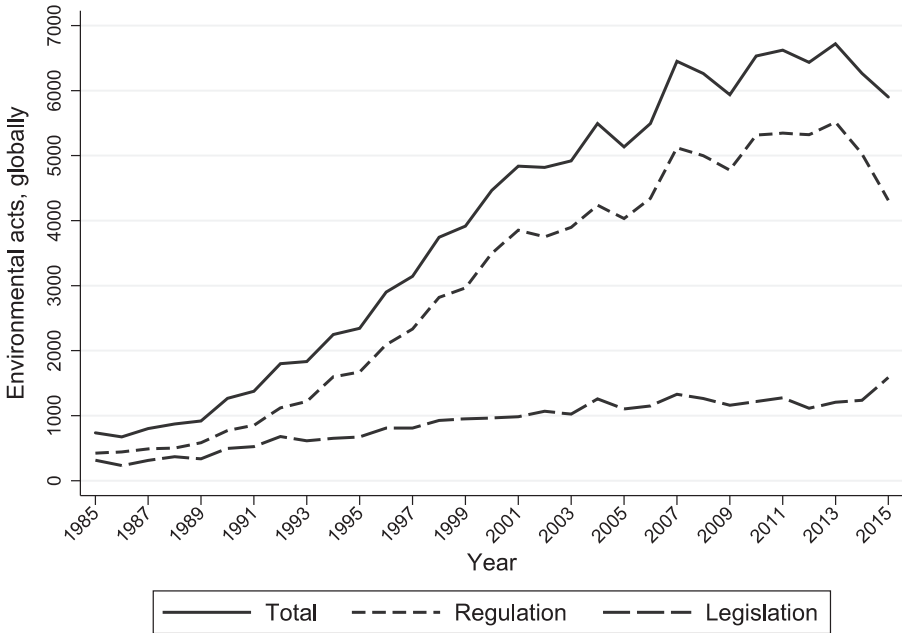


Figure 3. Global Environmental Regulation and Legislation Over Time (ECOLEX).

changes in renewable-sector subsidy schemes, the cases against Mexico and Canada are of various natures, mostly brought under the North American Free Trade Agreement (NAFTA).

We then construct a rolling count of environmental ISDS cases pending against any given country in a year. To illustrate, if a case is brought against a country in the year 2000 and we see a final ruling for that case in 2003, our variable takes a value of 1 for the years 2000 through 2003. If a second case is brought against that same country in 2001 that is also resolved in 2003, the pending case variable would take a value of 1 for the year 2000, and 2 for 2001 through 2003. We consider a case to be resolved when the proceedings come to a halt, which may happen for multiple reasons: the parties may settle, the case may be discontinued, the arbitral tribunal may deny jurisdiction, or a decision on the merits may be handed down.⁷¹

To measure countries’ bureaucratic capacity we follow Hendrix, and use two expert survey-based indicators.⁷² The first is *Rigorous and impartial public administration*, from the Varieties of Democracy (V-Dem) dataset.⁷³ This variable seeks to capture the overall quality of the public administration, and varies between approximately -4 and 4 on an interval scale, where the lowest score indicates that no functioning public administration exists. The second variable is *Bureaucracy quality* from

71 On average, ISDS cases in our dataset were resolved within 3.78 years. In cases that we know have been resolved, but where information about the timing of the resolution is unavailable, we therefore assume the case ended after 4 years.
 72 CS Hendrix, ‘Measuring State Capacity: Theoretical and Empirical Implications for the Study of Civil Conflict’ (2010) 47(3) *Journal of Peace Research*.
 73 M Coppedge and others, *V-Dem Codebook*, v8 (2018) 159.

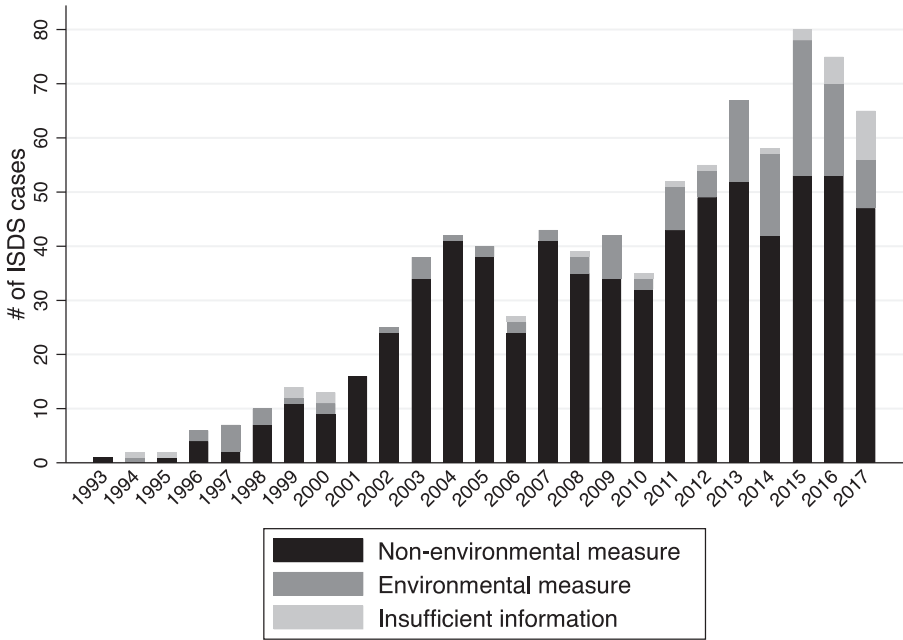


Figure 4. Environmental ISDS Cases Over Time.

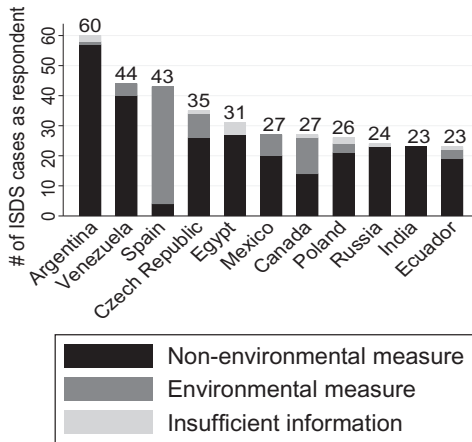


Figure 5. Top 10 Respondent States in ISDS and Types of Cases.

the International Country Risk Guide (ICRG).⁷⁴ This variable measures the resilience and expertise of countries' bureaucracies more generally. It varies between 0 and 4 on an interval scale, where lower scores indicate less-capacitated bureaucracies.

C. Control Variables

We include several variables that capture factors that may confound the relationship between ISDS cases and regulatory activity. First, we include GDP per capita,⁷⁵ as economic development should influence states' propensity to regulate the environment,⁷⁶ and their ability to fund high-quality bureaucracies.⁷⁷ Second, to adjust for the fact that larger countries tend to have more regulation, we control for the log of population size. Third, because some countries have more IIAs that they theoretically can breach than others do, we control for the rolling number of IIAs a country has signed.⁷⁸

Fourth, because democracy levels have been found to influence both the quality of environmental regulation⁷⁹ and the quality of domestic institutions,⁸⁰ we control for levels of democracy by using the *Polyarchy* index from V-Dem.⁸¹ Fifth, to control for the fact that regulations and ISDS claims can be made at multiple levels in the European Union, we include an EU country dummy. Sixth, we control for whether the ruling parties pursue leftist economic policies or not, because these countries should be more likely both to use expropriation as a tool for redistribution and to take a stance against foreign investor interests.⁸² Seventh, we use data on CO₂ emissions per capita to control for countries' regulatory responses to actual pollution levels.⁸³ We lag the *Rigorous and impartial public administration* index, the *Bureaucracy*

74 See <<https://www.prsgroup.com/wp-content/uploads/2012/11/icrgmethodology.pdf>>.

75 These data were taken from the World Bank's World Development Indicators. See <<https://datacatalog.worldbank.org/dataset/world-development-indicators>>. According to the Environmental Kuznets Curve hypothesis, with economic growth, wealthy countries are expected to issue more environmental policies in response to increasing demands for environmental quality, see GM Grossman and AB Krueger 'Economic Growth and the Environment' (1995) 110(2) *Quarterly Journal of Economics*.

76 Grossman and Krueger (n 75).

77 Poulsen (n 53).

78 We extract the IIA data from UNCTAD's Investment Policy Hub and map it to our panel dataset. See <<https://investmentpolicyhub.unctad.org/IIA>>.

79 E Neumayer, 'Do Democracies Exhibit Stronger International Environmental Commitment? A Cross-Country Analysis' (2002) 39(2) *Journal of Peace Research*; MB Bättig and T Bernauer, 'National Institutions and Global Public Goods: Are Democracies more Cooperative in Climate Change Policy?' (2009) 63(2) *International Organization*.

80 NW Freeman, 'Domestic Institutions, Capacity Limitations, and Compliance Costs: Host Country Determinants of Investment Treaty Arbitrations, 1987–2007' (2013) 39(1) *International Interactions*; YK Kim, 'States Sued: Democracy, the Rule of Law, and Investor-State Dispute Settlement (ISDS)' (2017) 43(2) *International Interactions*.

81 Coppedge and others (n 73) 40.

82 The leftist dummy is taken from the Database of Political Institutions, and captures when the executive's economic policy is communist, socialist, social democratic, or left-wing, see: C Cruz, P Keefer and C Scartascini, 'Database of Political Institutions 2017 (DPI2017)' (2018) *Inter-American Development Bank. Numbers for Development* 6.

83 These data were taken from the World Bank's World Development Indicators. See <<https://datacatalog.worldbank.org/dataset/world-development-indicators>>.

quality index, GDP per capita, population, polyarchy, leftist government and CO₂ per capita variables to avoid post-treatment bias.

D. Endogeneity and Selection Bias

Before we present our results, two issues relating to the possible endogeneity of our independent variable and selection bias in our sample should be noted. First, there is reason to believe that our key independent variable, pending ISDS cases, is not completely exogenous. In short, states with higher bureaucratic capacity, should, all else equal, also be better at regulating in accordance with their IIA commitments than states with low bureaucratic capacity.⁸⁴ As such, high-capacity states should have a lower baseline risk of attracting ISDS cases than low-capacity states, and thus have less ISDS cases to which they can respond regulatory.

While we cannot completely do away with this issue, it is essentially a question of confounding. We partially address it through the inclusion of non-interacted bureaucratic quality variables in our analyses. Moreover, the fact that high-capacity states, where we expect to see the most pronounced negative regulatory response to ISDS, also are likely to face less ISDS cases on the margin, should only make for a hard test of our hypothesis.

Second, because we cannot identify anticipatory responses to ISDS—that is, instances where a country anticipates to be sued for a regulation it considers, and therefore ends up not undertaking it—our sample might be skewed towards states that do not anticipate ISDS cases well. The question is whether this introduces a bias in our sample. While we have no way of approximating the exact sample effect, it could be argued that both high-capacity and low-capacity states can engage in anticipatory action. High-capacity states may anticipate ISDS claims through regulatory analysis and pre-regulation vetting practices (as our theory, if applied to anticipatory responses to ISDS, would also have predicted), while low-capacity states may drop regulation out of fear for the economic consequences of being sued.

5. RESULTS

Our sample consists of country–year observations of environmental regulations in 195 countries between 1985 and 2015. We employ pooled cross-section ordinary least squares (OLS) regression with standard errors clustered on respondent states to account for the non-independence of observations within country panels. We include country fixed effects to account for potential variability in ECOLEX data quality across countries, and year fixed effects to control for potential time-specific policy shocks that are shared across countries. The year dummies also capture the heightened global awareness and focus on environmental regulation over time, and the issue of regulatory saturation—meaning that states reach levels of ‘sufficient’ environmental regulation at some point.

To control for the path dependency in levels of regulation within countries, we include a lagged dependent variable in all models. It should be noted that using *both* fixed effects and lagged dependent variables in panel data regressions with short time

series (30 years) might bias coefficients towards zero.⁸⁵ Thus, the models presented here constitute hard tests of our hypotheses.

Table 1 shows the results from four models examining the proposition that the relationship between pending ISDS cases and concurrent regulatory behaviour is conditioned by the bureaucratic capacity of the respondent state. Models 1 and 2 are baseline models. The former does not include the pending ISDS cases variable, and the latter does. Models 3 and 4 include interactions between pending ISDS caseload and our two bureaucratic capacity indicators.

Looking first at the baseline models (1 and 2), these indicate that bureaucratic capacity, overall, seems to be independently, positively, and significantly related to regulatory activity. A one-unit upward change on the *Rigorous and impartial public administration* index is associated with an almost 10% increase in environmental acts.⁸⁶ Second, the lack of an independently significant statistical relationship between pending ISDS cases and regulatory behavior in model 2 casts doubt about an overarching 'direct response' effect from ISDS on domestic regulation.

When we look at the degree to which this effect is conditioned by respondent states' bureaucratic capacity, the picture changes (models 3 and 4). In both models, the interaction term is statistically significant and negative, indicating that the association between pending ISDS cases and concurrent environmental regulatory activity is conditioned by respondent states' bureaucratic capacity. Higher scores on the bureaucratic capacity indices are associated with more negative regulatory responses to increases in the ISDS caseload, lending support to our hypothesis.

To substantiate these effects, Figures 6 and 7 plot predicted environmental acts as respondent states' pending ISDS caseloads grow, while holding the bureaucratic capacity indicators constant at low, medium, and high values.⁸⁷ There are a few things to note. First, the regression slopes for pending ISDS cases on environmental acts were statistically significant for all values of bureaucratic capacity as measured by *Bureaucracy quality*, and close to all values for the *Rigorous and impartial public administration* variable, indicating a stable relationship.

Second, the predicted acts for high-bureaucratic capacity states slope downwards. The predicted number of annual environmental acts for a high-capacity country, as measured by *Rigorous and impartial public administration* (Figure 6) with zero pending ISDS cases is 13,⁸⁸ while the predicted number of annual acts for such a country with five pending cases decreases to nine.⁸⁹ In short, states with a high bureaucratic capacity are predicted to respond with less regulation when their ISDS caseloads grow.

Third, the slopes for both medium- and low-bureaucratic capacity countries are upwards sloping, meaning that an increase in the ISDS caseload for these countries is associated with a regulatory uptick. Thus, not only is the relationship between

85 S Nickell, 'Biases in Dynamic Models with Fixed Effects' (1981) 49(6) *Econometrica: Journal of the Econometric Society*.

86 $(\exp(0.089)-1)*100 = 9.3$.

87 The plots are created using models 3 and 4 in Table 1. The values of control variables are held at their means.

88 $\exp(2.54) = 12.7$.

89 $\exp(2.20) = 9.0$.

Table 1: Pending ISDS cases, regulatory capacity, and regulatory chill, OLS regression estimates

	Model 1	Model 2	Model 3	Model 4
ISDS cases pending		0.008 (0.016)	0.108** (0.053)	0.327*** (0.095)
Rigorous and impartial public administration	0.089*** (0.030)	0.089*** (0.030)	0.090*** (0.030)	
Bureaucracy quality				0.015 (0.028)
ISDS cases pending* Rigorous and impartial public administration			-0.044** (0.020)	
ISDS cases pending* Bureaucratic quality				-0.109*** (0.030)
GDP per cap. (US\$1000) _(t-1)	-0.007* (0.004)	-0.007* (0.004)	-0.006* (0.004)	-0.005 (0.004)
Population(log) _(t-1)	-0.071 (0.126)	-0.068 (0.127)	-0.062 (0.128)	-0.016 (0.143)
IAs signed	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.003** (0.001)
Polyarchy _(t-1)	-0.028 (0.163)	-0.026 (0.162)	-0.013 (0.156)	0.173 (0.167)
EU	-0.069 (0.112)	-0.069 (0.112)	-0.069 (0.114)	-0.029 (0.101)
Leftist government _(t-1)	0.037 (0.034)	0.038 (0.034)	0.033 (0.034)	0.069* (0.039)
CO2 emissions _(t-1)	-0.100 (0.073)	-0.101 (0.072)	-0.104 (0.072)	0.022 (0.102)
Environmental acts _(t-1)	0.534*** (0.023)	0.534*** (0.023)	0.530*** (0.022)	0.545*** (0.024)
Constant	2.087 (1.992)	2.047 (2.003)	1.966 (2.016)	0.622 (2.333)
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	4650	4650	4650	3760
R2	0.504	0.504	0.505	0.535

The dependent variable in each model is the natural logarithm of the sum of all acts of environmental regulation and legislation in ECOLEX in any given year for any given country. Robust standard errors are clustered on countries in parentheses.

***p < 0.01; ** p < 0.05; * p < 0.1.

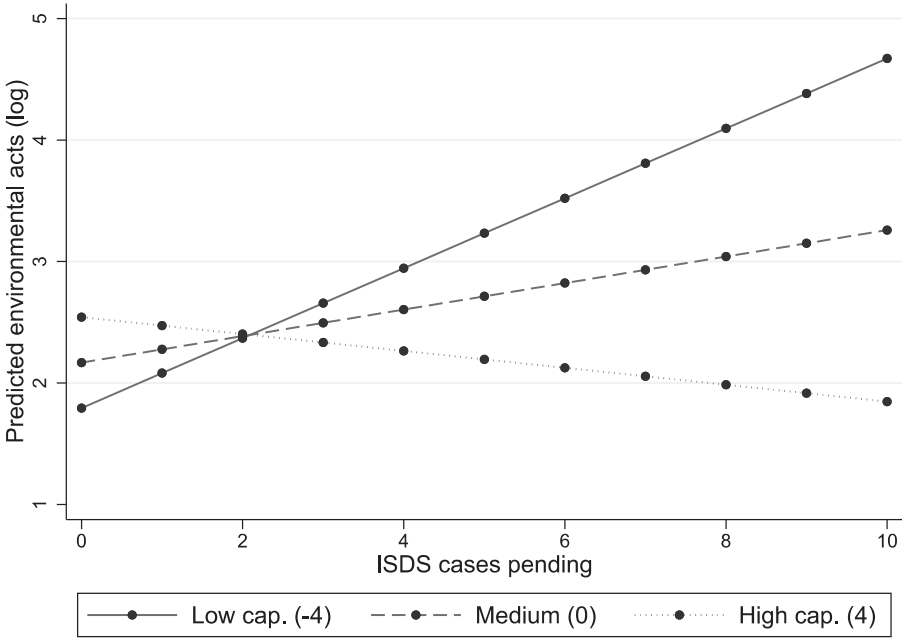


Figure 6. Interacting Pending ISDS Cases and Rigorous and Impartial Public Administration (V-Dem).

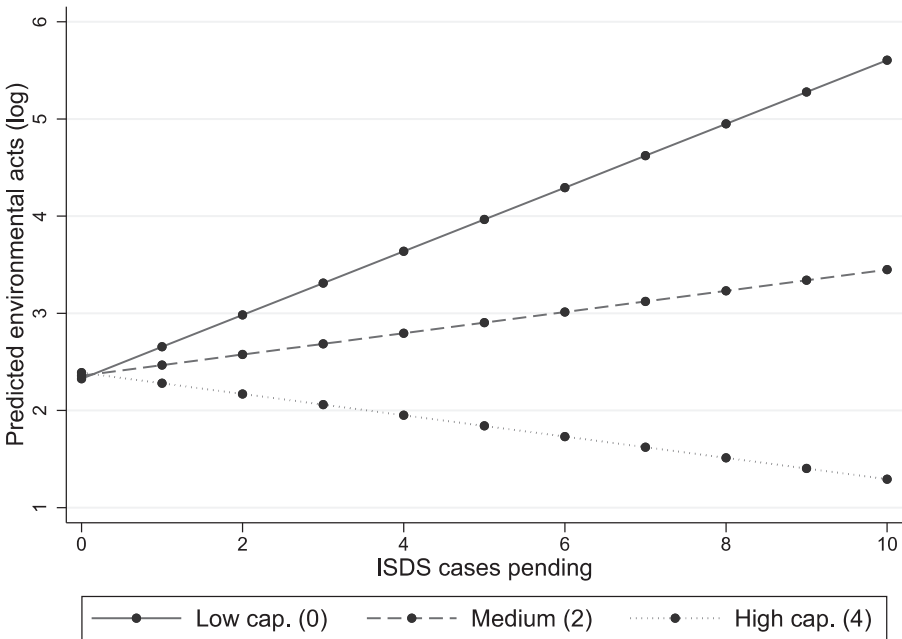


Figure 7. Interacting Pending ISDS Cases and Bureaucracy Quality (ICRG).

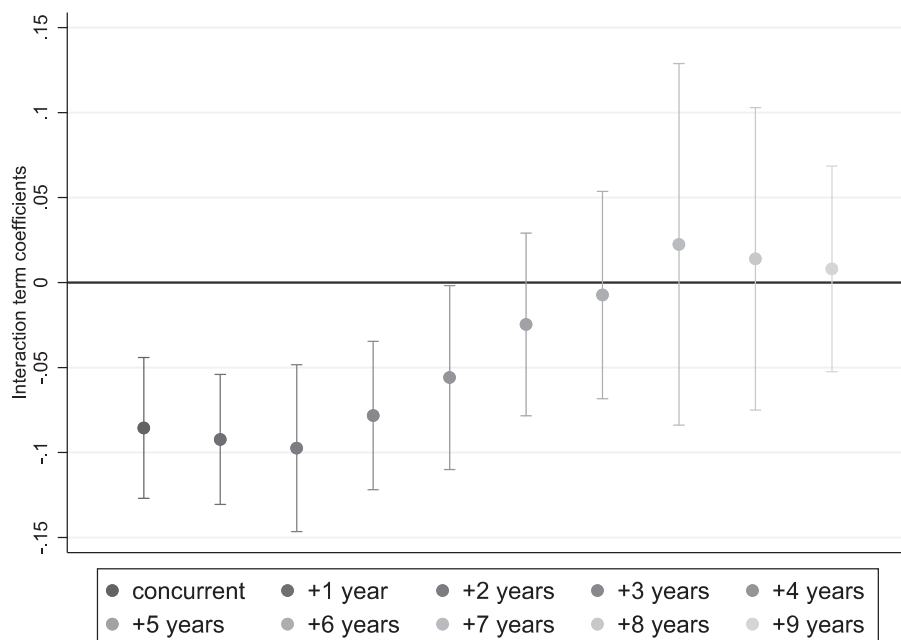


Figure 8. Plot of Interaction Term Coefficients for ISDS Cases Pending * Rigorous and Impartial Public Administration, Moving Year of Regulation One to Nine Years Forward (model 3, Table 1). Whiskers Represent 95 Percent Confidence Intervals.

pending ISDS cases and regulatory activity contingent on respondent state bureaucratic capacity, but bureaucratic capacity is also associated with a change of direction of this relationship. Negative regulatory responses to pending cases is predicted only for states at the very high end of the two bureaucratic capacity indices.⁹⁰ States in our sample with scores that fall within this range include Australia, Belgium, Canada, France, Germany, New Zealand, the United Kingdom and the United States. Regulatory uptick, on the other hand, is predicted not only for the lowest-capacity states, but also for middle-range-capacity states, such as Brazil, Chile, the Czech Republic, Italy and South Africa.

Since an important part of the reasoning behind our hypothesis is that the regulatory response to pending ISDS cases in states with high regulatory capacity is a temporary response driven by regulatory vetting, we also assessed the temporality of our findings. While the models presented in Table 1 were estimations of the relationship between pending ISDS cases and concurrent regulation, Figures 8 and 9 show how our two interaction term coefficients change when we estimate models 3 and 4 on environmental regulation from 1 to 9 years into the future. Both figures indicate that the interaction effect found is of a temporary nature. The effects for both of our

90 For scores of 3 or higher on the *Rigorous and impartial public administration* index (which varies between -4 and 4) and for scores of 3.5 or higher on the *Bureaucracy quality* indicator (which varies between 0 and 4).

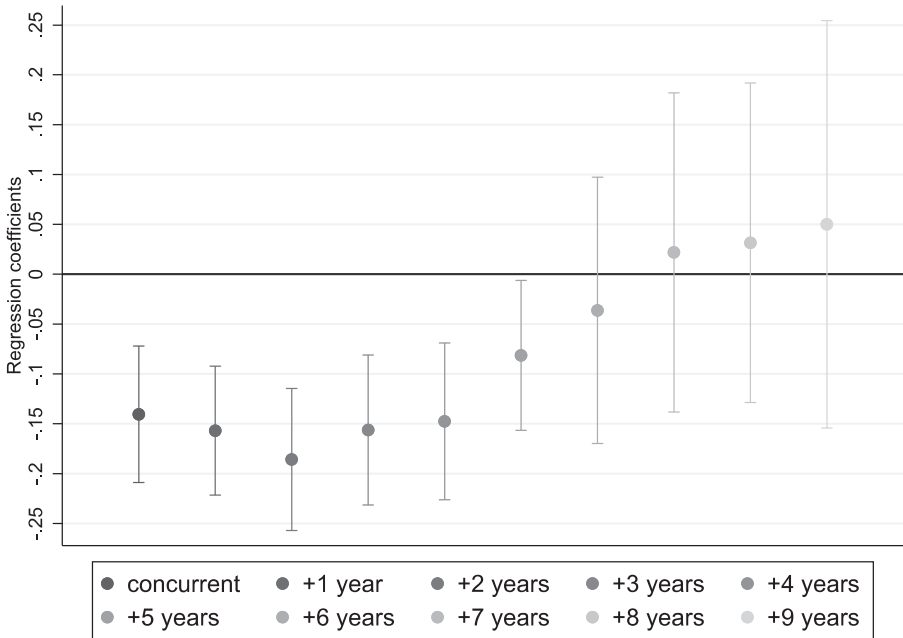


Figure 9. Plot of Interaction Term Coefficients for ISDS Cases Pending* Bureaucracy Quality, Moving Year of Regulation One to Nine Forward (model 4, Table 1). Whiskers Represent 95 Percent Confidence Intervals.

capacity indicators are strongest, and most significant, 2 years into the future, and loses statistical significance after between 5 and 6 years.

In sum, we find no support for an overall negative regulatory response to ISDS claims. In line with our theory, we find that states’ regulatory responses to increases in their pending ISDS caseloads depend on their bureaucratic capacity. High-capacity states are predicted to regulate less when having more pending cases, while medium-to-low capacity states are predicted to regulate more.

A. Robustness

We test a range of alternative model specifications to assess the robustness of our results. The tests are described in Appendix C, but we comment briefly on them here. The general tendency is that our findings are robust.

We run tests for the effect of influential observations on our results, tests using alternative independent variables, and tests using alternative ISDS case samples. These all indicate that our findings are very robust. All models are robust to control-variable sensitivity tests.

We also apply alternative versions of our dependent variable. Our main findings were generally robust to alternative dependent variables, but when splitting the dependent variable into counts of legislative acts and regulative acts, an interesting auxiliary finding emerged. When assessing only the drivers of environmental legislation, our conditional findings disappear. When looking at environmental regulation

however, our findings are both confirmed and strengthened. Although preliminary, these results indicate that the non-elected regulatory level of the state is more prone to regulatory chill than elected legislative bodies are. It might also explain why Van Harten & Scott⁹¹ come to different conclusions than does Côté⁹² in her study of regulatory chill in Canada, because Van Harten & Scott analyse provincial Canadian regulators while Côté analyses regulators at the federal level.

B. Discussion and Implications

The findings in this article can help to better identify areas of systemic concern and give direction to the dynamic, ongoing debate about the future of ISDS. Many countries, both developed and developing, are currently considering what reform options they should apply in the wake of criticism of ISDS.⁹³ Should they terminate their IIAs, or chose more piecemeal avenues for reform? Should they seek to participate in the reform of ISDS, or opt for alternative pathways such as a multilateral investment court?

One aspect this decision hinges on is the validity of the perception that ISDS leads to less regulatory activities in respondent states. It is difficult to measure regulatory chill directly across a large number of countries. An important challenge is that analysing the effects of ISDS on regulatory activity often entails explaining *non-events* that in the absence of an external treatment would have otherwise occurred. This challenge entails identifying and explaining counterfactuals. Our analysis does not answer the question of causality but it provides important insights in the relationship between ISDS cases and corollary regulatory trends. Furthermore, regulatory responses can occur at different stages of the ISDS process and manifests itself through different causal pathways. In [Figure 2](#), we illustrate this heterogeneity, and suggest that different empirical research methods are appropriate in studying the different types of regulatory chill.

Against this background, our analysis indicates that there is no *overall* negative relationship between environmental ISDS cases and respondent state environmental legislation and regulation, even though the environment is a most-likely policy area for observing negative regulatory responses to ISDS. Given the fact that ISDS is included in thousands of IIAs and that the number of ISDS cases has been steadily rising since the early 2000s, this finding is encouraging.

However, our analysis finds a robust relationship between increasing ISDS case-loads and regulatory downturn in states with high-capacity bureaucracies. These findings align well with some of the high-profile examples of regulatory chill, such as the regulatory responses observed in conjunction with the ISDS cases brought by Philip Morris against Australia and Uruguay.⁹⁴

One important question that emanates from our analysis is whether the regulatory responses to pending ISDS cases that our models predict are worrisome? On the

91 Van Harten and Scott (n 26).

92 Côté (n 25).

93 A Roberts, 'Incremental, Systemic, and Paradigmatic Reform of Investor-State Arbitration' (2018) 112(3) *American Journal of International Law*; Berge (n 57).

94 Moehlecke (n 8).

one hand, the temporality of the predicted association we find, as illustrated in [Figures 8 and 9](#), could indicate that the regulatory responses we find are expressions of prudent governance. One important task of bureaucracies is, after all, to oversee states' adherence to their legal commitments to individuals and commercial entities. A temporary deceleration of regulation in a certain policy area, while the integrity of claims brought against measures the state has taken in that policy area is being assessed, might in fact be sound—especially given the size of ISDS awards and the generally high levels of uncertainty about what protection IIAs actually give investors. On the other hand, our evidence partially supports the critique that ISDS proceedings may be used strategically by investors to impede regulatory processes.⁹⁵ This result is especially worrisome in the environmental policy area, as strong and timely regulatory actions are necessary to tackle imminent challenges, such as irreversible climate change.

The fact that our models predict an inverse relationship between ISDS cases and domestic regulation in medium-to-low bureaucratic-capacity states is somewhat puzzling. It might be an expression of either willing or blissful ignorance on the part of respondent states—or it may be the result of bounded rational behaviour of regulators that underestimate the risks of their regulations being challenged by investors. This bounded rational behaviour, however is likely to change over time as a result of increased public awareness about the implications of ISDS having increased in recent years. The inverse relationship may also be a result of insufficient intragovernmental coordination or a lack of communication between different ministries and regulatory agencies. As a result, information about potential inconsistencies between measures taken and IIA commitments might never reach the relevant regulators, which in turn may mean that more of the same regulation will be enacted even though it might lead to more (costly) ISDS cases.

The many case studies and investigative reports that show how foreign investors quite openly use ISDS to bully their host states underline that regulatory chill in some instances is a very worrisome phenomenon. The question is whether a regime-level fix is needed to address it. Perhaps a focus on states' domestic capacities to manage and respond to ISDS is more fruitful? The role of bureaucratic capacity constraints in the investment treaty regime has been highlighted by much research already,⁹⁶ and our results suggest that discussions about an advisory center that promulgates best practices and response systems for managing ISDS cases, as the one discussed under the auspices of UNCITRAL,⁹⁷ may be a useful focal point going forward.

6. CONCLUSION

The question of whether IIAs and ISDS affect domestic regulatory activity in respondent states is one of the key concerns in the debate about the legitimacy of the investment treaty regime. Most existing empirical research on regulatory chill is case

95 Pelc (n 11).

96 Poulsen (n 53); DF Behn, TL Berge and M Langford, 'Poor States or Poor Governance? Explaining Outcomes in Investment Treaty Arbitration' (2018) 38(3) *Northwestern Journal of International Law and Business*; Sattorova (n 3); St John (n 15).

97 See <<https://undocs.org/en/A/CN.9/WG.III/WP.168>>.

study-based. While useful for understanding the mechanisms and causal pathways of the effects of ISDS on domestic regulations, case studies are less useful for making generalizable inferences. This article tests the effects of ISDS on domestic regulatory activity across a broad range of countries. We assess the regulatory and legislative response to 146 ISDS cases that challenge environmental measures, brought between 1990 and 2015. We first develop a typology of responses to ISDS, and an original theory to predict respondent state regulatory responses to pending ISDS cases. In summary, we theorize that the regulatory response to pending ISDS cases should be stronger with higher levels of bureaucratic capacity.

We find that an increase in pending ISDS cases is associated with a downturn in domestic regulation in high-bureaucratic capacity states. This conditional relationship however, is of a temporary nature. Our analyses predict that the relationship is strongest and most significant in the first few years after ISDS cases are filed. Moreover, when using our models to predict regulatory behaviour, we find that having more ISDS cases is associated with an increase in regulatory acts in medium-to-low bureaucratic capacity countries. In discussing these results, we highlight that building administrative capacity at the state level and promulgating best practices for responding to, and managing, ISDS cases might be necessary.

A number of interesting avenues for future research follow from our study. First, future research should examine the variation in domestic ISDS response systems. How do high-capacity states organize their responses to ISDS claims, as compared to low-capacity states? How does information about ISDS cases travel horizontally across state apparatuses, and what is the level of vertical coordination between federal and sub-federal regulatory agencies in different states?

Second, it should be noted that what we measure in this article is the *regulatory response* to ISDS. We do not evaluate the contents of measures counted. They might or might not be legitimate. Future research should endeavor to include assessments of the contents of regulation and legislation that might be affected by ISDS. Moreover, it would be interesting to investigate to what extent low-capacity states susceptibility to ISDS threats is a result of poorly drafted, as well as often revised, environmental regulations and laws.

Third, we have not been able to test all the causal pathways through which respondent states react to ISDS. In some instances, for example, threats of arbitration have been found to lead to negative regulatory responses.⁹⁸ Additional in-depth, qualitative studies are needed to understand how ISDS threats influence regulatory activity. However, such studies should select cases not only based on observed outcomes (i.e., regulatory chill), but also examine why some states do not respond with fewer regulations when threatened with ISDS.

APPENDIX A: IDENTIFYING ENVIRONMENTAL ISDS CASES

In this appendix, we describe how we identified ‘environmental’ ISDS cases.

A. Defining environmental ISDS cases

We define an environmental ISDS case as one where at least one of the measures challenged concerns the larger question of protection of the environment. This includes measures dealing with environmentally harmful externalities associated with investments or production of goods or services, such as measures taken to prevent global warming, pollution, oil and other poisonous spills, and the broader degradation of nature and the environment. It also includes measures taken in relation to renewable energy and environmentally sustainable production, such as changes in tariff and subsidy schemes, regardless of what the nature of the change to the scheme or subsidy being challenged is.

A.1 Coding procedure

The coding has been a two-step process. First, we identify the regulatory measure, resolution, policy and/or government action that the claimant-investor challenge in each of the 854 ISDS cases in our sample. Second, we consider whether this measure falls under the above definition of environmental measure.

To do so, we first read the investment and case summaries for each of the 854 cases in our sample as listed on the UNCTAD Investment Policy Hub.⁹⁹ Next, we probe available primary documents (legal documentation from the case proceedings) where the case summary indicates that the measure under challenge might make the case fall under our definition of environmental ISDS cases. If the legal documents are missing or inconclusive we turn to second-hand sources. In this case, we usually rely on two subscription-based case-reporting services: Investment Arbitration Reporter and Global Arbitration Review.¹⁰⁰

In cases where we uncover the measure challenged, but are uncertain about how to classify it, we first turn to our boundary rules, as elaborated below. Where information on the measure challenged remains undisclosed at this stage, the case is coded as neither ‘yes’ nor ‘no’ in our environmental case dichotomy. There are, for example, quite a few instances of claimed (direct or indirect) expropriation or unlawful tax levies against investors in extractive industries where we cannot find out why that particular measure (expropriation or taxation) was enacted—or cases where property development licenses (or other land use licenses) were withdrawn without us knowing why the respondent state in the given case withdrew the particular license.

A.2 Important limitations and boundary cases

The following types of cases are *not* coded as environmental cases:

- I. Cases where the measure challenged is enacted in conjunction with health and safety concerns. See for example: *Shell v Nicaragua* (2006); *Accession Eastern v Bulgaria* (2011); *Khan Resources v Mongolia* (2011); *Philip Morris v Australia* (2011); *Novera v Bulgaria* (2012); *Cervin and Rhone v Costa Rica* (2013); *South American Silver v Bolivia* (2013).
- II. Cases where the measure challenged is a direct or indirect expropriation in environmentally related policy areas for purely non-environmental reasons. See for example: *Alimenta S.A. v Gambia* (1999); *Middle East Cement v Egypt* (1999); *Booker v Guyana* (2001); *GAMI v Mexico* (2002); *Miminico v Congo* (2003); *ConocoPhillips v Venezuela* (2007); *Eni Dación v Venezuela* (2007); *Global Gold Mining v Armenia* (2007); *Liman Caspian Oil v Kazakhstan* (2007); *Pan American v Bolivia* (2010); *Oxus Gold v Uzbekistan* (2011); *Total E&P v Uganda* (2015).

99 See: <<https://investmentpolicyhub.unctad.org/ISDS>>.

100 See: <<https://www.iareporter.com/> and <https://globalarbitrationreview.com/>>.

- III. Cases where the measure challenged concerns enforcement in an underlying dispute involving primary-industry related investments. See for example: *Western NIS v Ukraine* (2004); *GEA v Ukraine* (2008); *Puma Energy v Benin* (2017).
- IV. Cases where the measure challenged is a breach of contract, concession or other agreement (including corruption cases) that would have included productive activity in a primary-industry related field. See for example: *Mihaly v Sri Lanka* (2000); *F-W Oil v Trinidad & Tobago* (2001); *Aguas del Tunari v Bolivia* (2002); *Impregilo v Pakistan (I)* (2002); *Impregilo v Pakistan (II)* (2003); *Jan de Nul and Dredging International v Egypt* (2004); *Vanessa Ventures v Venezuela* (2004); *Areas MetalGeo v Georgia* (2005); *Biwater v Tanzania* (2005); *Barmek v Azerbaijan* (2006); *Deutsche Bank v Sri Lanka* (2008); *Consolidated Exploration v Kyrgyzstan* (2013); *Anglo American v Venezuela* (2014); *Cortec Mining v Kenya* (2015).
- V. Cases where the measure challenged is general and broad, but may have bearings upon an investment in primary/environment-related industries (but the case is not concerned with that effect). See for example: *Azurix v Argentina (I)* (2001); *LG&E v Argentina* (2002); *Aguas Cordobesas v Argentina* (2003); *AWG v Argentina* (2003); *Azurix v Argentina (I)* (2003) (plus many more of the Argentine cases); *Bear Creek Mining v Peru* (2014).
- VI. Cases where the measure challenged concerns protection of land for non-environmental reasons (e.g. indigenous rights). See for example: *Álvarez y Marín Corporación and others v Panama* (2015).

The following types of cases were considered environmental cases, although borderline:

- I. Cases where the measure challenged was not enacted to protect the environment per se, but where it somehow concerns regulation or development of the renewable energy sector. See for example: *Highbury International v Venezuela* (2011); *Mesa Power v Canada* (2011); the Spain/Czech Republic cases; *Highbury v Venezuela* (2014); *Belenergia v Italy* (2015); *CEF Energia v Italy* (2015); *ENERGO-PRO v Bulgaria* (2015); *Eskosol v Italy* (2015); *Greentech and Novenergia v Italy* (2015); *Silver Ridge v Italy* (2015); *Burmilla Trust and others v Lesotho* (2016); *ČEZ v Bulgaria* (2016); *CIC Renewable and others v Italy* (2016); *Sun Reserve v Italy* (2016).
- II. Where the measure challenged concerns a lack of enforcement of environmental regulation. See for example: *VICAT v Senegal* (2014); *Zelena v Serbia* (2014).

A.3 Environmental cases

Based on the above coding rules, we identified a total of 146 cases in which the claimant-investor challenged an environmental measure, 681 cases that did not concern an environmental measure, and 14 cases in which there was insufficient information to identify whether the case was environmental or not. The full list of environmental cases is as follows:

9REN Holding v Spain (2015)
Abengoa v Mexico (2009)
Accession Eastern v Bulgaria (2011)
Agarwal and Mehta v Uruguay (2017)
Agro EcoEnergy and others v Tanzania (2017)
Al Tamimi v Oman (2011)
Albaniabeg Ambient v Albania (2014)
Allard v Barbados (2010)
Alstom Power v Mongolia (2004)
Alten Renewable v Spain (2015)
Antaris v Czech Republic (2013)
Antin v Spain (2013)
Aven and others v Costa Rica (2014)
Azinian v Mexico (1997)

Ballantine v Dominican Republic (2014)
Bayview v Mexico (2005)
BayWa r.e. v Spain (2015)
Beijing Shougang and others v Mongolia (2010)
Belenergia v Italy (2015)
Berkowitz v Costa Rica (2013)
Biedermann v Kazakhstan (1996)
Biram and others v Spain (2016)
Blusun v Italy (2014)
Bogdanov v Moldova (IV) (2012)
Burlington v Ecuador (2008)
Burmilla Trust and others v Lesotho (2016)
CEF Energia v Italy (2015)
CIC Renewable and others v Italy (2016)
CSP Equity Investment v Spain (2013)
Canadian Cattlemen v USA (2005)
Cavalum SGPS v Spain (2015)
Charanne and Construction Investments v Spain (2012)
Chemtura v Canada (2002)
Chevron and TexPet v Ecuador (I) (2006)
Chevron and TexPet v Ecuador (II) (2009)
Churchill Mining and Planet Mining v Indonesia (2012)
Clayton/Bilcon v Canada (2008)
Commerce Group v El Salvador (2009)
Copper Mesa v Ecuador (2011)
Cordoba Beheer and others v Spain (2016)
Corona Materials v Dominican Republic (2014)
Cosigo Resources and others v Colombia (2016)
Crystallex v Venezuela (2011)
Cube Infrastructure v Spain (2015)
DCM Energy and others v Spain (2017)
Dominion Minerals v Panama (2016)
Dow AgroSciences v Canada (2009)
E.ON SE and others v Spain (2015)
EDF v Spain (2016)
ENERGO-PRO v Bulgaria (2015)
ESPF and others v Italy (2016)
EVN v Bulgaria (2013)
Eco Oro v Colombia (2016)
Elitech and Razvoj v Croatia (2017)
Eskosol v Italy (2015)
Ethyl v Canada (1997)
Europa Nova v The Czech Republic (2013)
Eurus Energy v Spain (2016)
FREIF Eurowind v Spain (2017)
Foresight and others v Spain (2015)
Foresti v South Africa (2007)
Gabriel Resources v Romania (2015)
Gallo v Canada (2007)
Glamis Gold v USA (2003)
Gold Reserve v Venezuela (2009)
Goljevšček and others v Bosnia and Herzegovina (2016)

Gosling and others v Mauritius (2016)
Green Power and Obton v Spain (2016)
Greentech and Novenergia v Italy (2015)
Greiner v Canada (2010)
Highbury International v Venezuela (2011)
Highbury v Venezuela (2014)
Hydro Energy 1 and Hydroxana v Spain (2015)
I.C.W. v The Czech Republic (2013)
Impregilo v Pakistan (II) (2003)
Industria Nacional de Alimentos v Peru (2003)
Infinito Gold v Costa Rica (2014)
InfraRed and others v Spain (2014)
Infracapital v Spain (2016)
Isolux v Spain (2013)
JGC v Spain (2015)
JSW Solar and Wirtgen v Czech Republic (2013)
KS and TLS Invest v Spain (2015)
Kingsgate v Thailand (2017)
Kruck and others v Spain (2015)
Landesbank Baden-Württemberg and others v Spain (2015)
Levy and Gremcitel v Peru (2011)
Lone Pine v Canada (2013)
Longyear v Canada (2014)
MTD v Chile (2001)
Maffezini v Spain (1997)
Marion Unglaube v Costa Rica (2008)
Masdar Solar v Spain (2014)
McKenzie v Viet Nam (2010)
Mesa Power v Canada (2011)
Metalclad v Mexico (1997)
Methanex v USA (1999)
Myers v Canada (1998)
Natland and others v Czech Republic (2013)
Nepolsky v Czech Republic (2008)
NextEra v Spain (2014)
Novenergia v Spain (2015)
Novera v Bulgaria (2012)
OperaFund v Spain (2015)
Pac Rim v El Salvador (2009)
Parkerings v Lithuania (2005)
Paushok v Mongolia (2007)
Perenco v Ecuador (2008)
Photovoltaik Knopf Betriebs v The Czech Republic (2013)
Plama v Bulgaria (2003)
Portigon v Spain (2017)
Quiborax v Bolivia (2006)
RENERGY v Spain (2014)
RREEF v Spain (2013)
RWE Innogy v Spain (2014)
Reinhard Unglaube v Costa Rica (2009)
Renco v Peru (2011)
Rockhopper v Italy (2017)

STEAG v Spain (2015)
Saar Papier v Poland (I) (1994)
Saar Papier v Poland (II) (1996)
Schaper v Poland (1998)
Shell v Nicaragua (2006)
Silver Ridge v Italy (2015)
SolEs Badajoz v Spain (2015)
St. Marys v Canada (2011)
Stadtwerke München and others v Spain (2015)
Sun Reserve v Italy (2016)
Tecmed v Mexico (2000)
Tennant Energy v Canada (2017)
Tethyan Copper v Pakistan (2012)
The PV Investors v Spain (2011)
TransCanada v USA (2016)
VICAT v Senegal (2014)
Vattenfall v Germany (I) (2009)
Vattenfall v Germany (II) (2012)
Vieira v Chile (2004)
Vivendi v Argentina (I) (1997)
Vivendi v Argentina (II) (2003)
Voltaic Network v The Czech Republic (2013)
Waste Management v Mexico (I) (1998)
Waste Management v Mexico (II) (2000)
Watkins Holdings v Spain (2015)
Windstream Energy v Canada (2013)
Zelena v Serbia (2014)
ČEZ v Bulgaria (2016)

APPENDIX B: DESCRIPTIVE STATISTICS

There are a few things to note as regards the variables used. First, since our dependent variable, environmental regulations, often takes on the value 0 for particular country-years, we log-transform it by adding 1 to each observed value on the variable.

Second, missing data on GDP per capita and GDP from the World Bank was replaced with data from the Penn World tables. Graham and Tucker (2019) carried out the replacements. Their full dataset is available through the International Political Economy Data Resource.¹⁰¹

Third, the CO₂ emissions data from the World Bank only ran up until 2014 at the time of analysis. We therefore replaced the missing data for the years 2015 and 2016 by extrapolating the average value of the years 2012–2015. Where there were occasional years of missing data, we interpolated the average value of year $t - 1$ and $t + 1$. The data replacements do not significantly alter our results.

Table B1. Descriptive Statistics for all Variables

	Obs	Mean	SD	Min	Median	Max
Environmental regulations (log)	6044	1.904	1.454	0.000	1.792	6.111
Environmental ISDS cases pending	6044	0.060	0.540	0.000	0.000	29.000
Environmental ISDS cases lost	6044	0.002	0.045	0.000	0.000	1.000
Rigorous & impartial adm.	5222	0.374	1.492	-3.631	0.101	4.623
Bureaucracy quality	4143	2.152	1.169	0.000	2.000	4.000
GDP per cap. (\$1000)	5585	10.885	16.370	0.115	3.641	145.200
Population(log)	5944	15.327	2.209	8.988	15.610	21.030
IAs signed	6044	19.627	26.000	0.000	8.000	155.000
Polyarchy	5194	0.483	0.282	0.015	0.468	0.940
EU	6044	0.095	0.293	0.000	0.000	1.000
Leftist government	5391	0.286	0.452	0.000	0.000	1.000
CO ₂ emissions	5571	4.600	9.923	0.012	1.020	76.360

101 See: <<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/X093TV>>.

APPENDIX C: ROBUSTNESS CHECKS

We conduct several robustness tests to verify our findings. As a standard rule, we have re-run models 3 and 4 from [Table 1](#) in our robustness checks. First, we control for the effect of potential influential observations. We estimate robust regression models ([Table C1](#)), and find that our results are not driven by influential observations.

We then run jackknife estimation, omitting each country panel one by one to assess the stability of the coefficients and standard errors of our interaction terms. The mean coefficients across each of our replication set lie close to the original models, as does the standard errors. The tight density of the replicated interaction term coefficients ([Figures C1](#) and [C2](#)) also indicate that the strength of our interaction terms are not unduly influenced by individual countries such as Spain, who have received disproportionately many environmental ISDS claims.

Second, we use alternative versions of our dependent variable. We include environmental acts that ECOLEX classifies as ‘miscellaneous’ in our regulatory acts count ([Table C2](#)), to which our results are robust. We assess regulations and legislation listed in ECOLEX separately. This yields some interesting results. When only looking at legislative response to ISDS, our findings disappear ([Table C3](#)). When looking at the regulative response however, our findings are both retained and strengthened, an indication that the non-elected regulatory level of the state is more prone to respond to ISDS than elected legislative bodies ([Table C5](#)). We also use an untransformed version of our environmental acts count. We treat it first as a continuous variable and use OLS regression ([Table C6](#)), and then as a count variable and use a Poisson model ([Table C7](#)). The direction and strength of our findings are relatively robust to this control, but the significance levels drop somewhat in the OLS models.

Table C1. Robust Regressions Models

	Model 5	Model 6
ISDS cases pending	0.099** (0.039)	0.296*** (0.086)
Rigorous & impartial adm.	0.096*** (0.023)	
Bureaucracy quality		0.037* (0.021)
ISDS cases pending # Rigorous & impartial adm.	-0.041*** (0.016)	
ISDS cases pending # Bureaucracy quality		-0.099*** (0.029)
ISDS cases lost($t - 1$)		
GDP per cap. (\$1000)($t - 1$)	-0.007** (0.003)	-0.006* (0.003)
Population(log)($t - 1$)	-0.074 (0.100)	-0.024 (0.107)
IAs signed	0.004*** (0.001)	0.003*** (0.001)
MEA membership	-0.047 (0.108)	0.160 (0.110)
Polyarchy($t - 1$)	-0.083	-0.050

(Continued)

Table C1. (continued)

	Model 5	Model 6
	(0.072)	(0.073)
EU	0.011	0.041
	(0.029)	(0.031)
Leftist government($t - 1$)	-0.096	0.061
	(0.094)	(0.264)
CO ₂ emissions($t - 1$)	0.556***	0.574***
	(0.013)	(0.014)
Environmental acts($t - 1$)	3.936	-0.386
	(2.649)	(5.824)
Constant	0.099**	0.296***
	(0.039)	(0.086)
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	4650	3760
R ²	0.823	0.840

The dependent variable in each model is the natural logarithm of the sum of all acts of environmental regulation and legislation in ECOLEX in any given year for any given country. Robust standard errors clustered on countries in parentheses.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Third, we estimate our models using alternative independent variables (Table C8). To measure regulatory capacity, we use the *Regulatory quality* indicator from the Worldwide Governance Indicators,¹⁰² and the *Public sector corruption* index from V-Dem.¹⁰³ Our regulatory capacity interaction results are replicated for both variables.

Fourth, and finally, we test the sensitivity of the coefficients of our interaction terms by removing the control variables one by one. As the coefficient plots in Figures C3 and C4 show, neither coefficients nor confidence intervals are particularly sensitive to the removal of any one control variable.

102 The *Regulatory quality* indicator 'captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development'. See: <<https://info.worldbank.org/governance/wgi/#doc>>.

103 The *Public sector corruption* index measures the degree to which 'public sector employees grant favors in exchange for bribes, kickbacks, or other material inducements' and how often they 'steal, embezzle, or misappropriate public funds or other state resources for personal or family use'. The directionality of the index was reversed to run from high corruption to low corruption. See: Coppedge and others (n 73) 235.

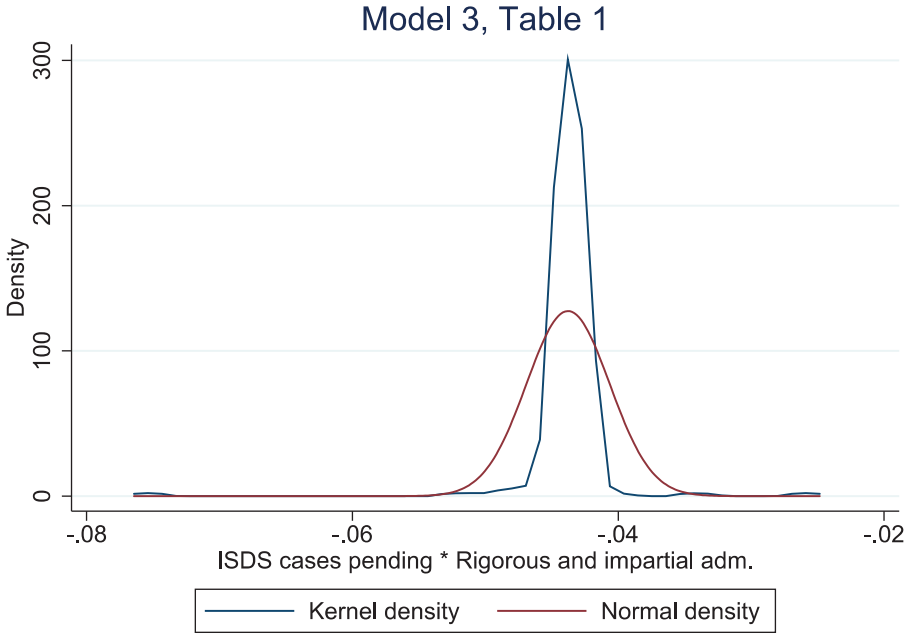


Figure C1. Density of Replicated Coefficients When Removing Country-Panel by Country-Panel from Sample in Model 3, Table 1.

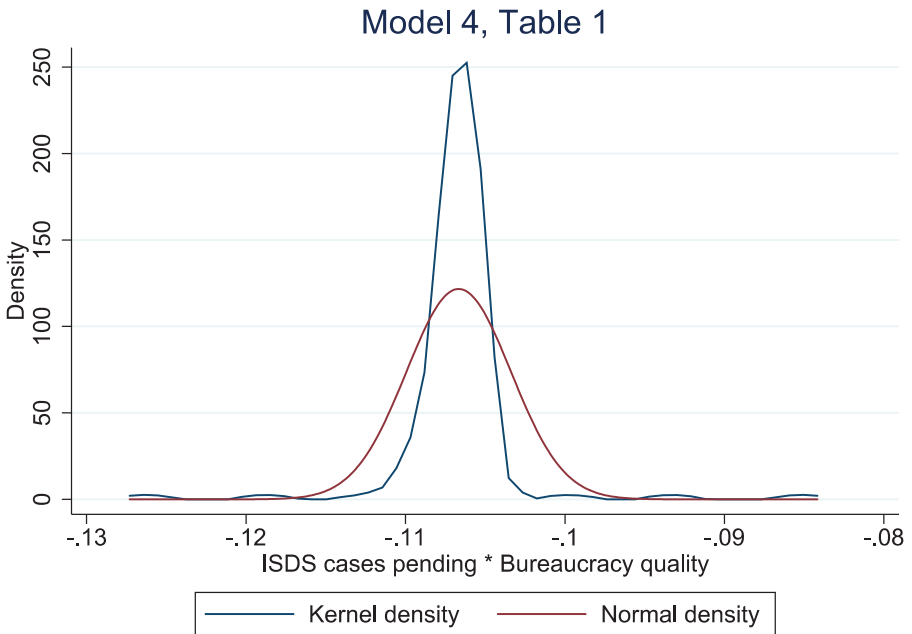


Figure C2. Density of Replicated Coefficients When Removing Country-Panel by Country-Panel from Sample in Model 4, Table 1.

Table C2.Including Miscellaneous Acts in the Environmental Acts Count

	Model 7	Model 8
ISDS cases pending	0.101 [*] (0.054)	0.314 ^{***} (0.097)
Rigorous & impartial adm.	0.086 ^{***} (0.030)	
Bureaucracy quality		0.017 (0.028)
ISDS cases pending # Rigorous & impartial adm.	-0.041 ^{**} (0.020)	
ISDS cases pending # Bureaucracy quality		-0.105 ^{***} (0.031)
ISDS cases lost(t - 1)	-0.006 (0.004)	-0.005 (0.004)
GDP per cap. (\$1000)(t - 1)	-0.051 (0.131)	-0.003 (0.147)
Population(log)(t - 1)	0.004 ^{***} (0.001)	0.003 ^{**} (0.001)
IAs signed	0.006 (0.157)	0.192 (0.167)
Polyarchy(t - 1)	-0.077 (0.115)	-0.036 (0.101)
EU	0.033 (0.034)	0.069 [*] (0.039)
Leftist government(t - 1)	-0.108 (0.073)	0.027 (0.110)
CO ₂ emissions(t - 1)	0.533 ^{***} (0.022)	0.546 ^{***} (0.023)
Environmental acts(t - 1)	1.810 (2.057)	0.378 (2.404)
Constant	0.101 [*] (0.054)	0.314 ^{***} (0.097)
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	4650	3760
R ²	0.508	0.538

The dependent variable in each model is the natural logarithm of the sum of all acts of environmental regulation and legislation, plus all acts tagged as miscellaneous in ECOLEX in any given year for any given country. Robust standard errors clustered on countries in parentheses.

***p < 0.01; ** p < 0.05; * p < 0.1.

Table C3. Using Environmental Legislation as Dependent Variable

	Model 9	Model 10
ISDS cases pending	0.008 (0.062)	0.140 (0.134)
Rigorous & impartial adm.	0.032 (0.038)	
Bureaucracy quality		0.020 (0.026)
ISDS cases pending # Rigorous & impartial adm.	-0.001 (0.025)	
ISDS cases pending # Bureaucracy quality		-0.046 (0.045)
GDP per cap. (\$1000)(t - 1)	-0.006 (0.005)	-0.004 (0.006)
Population(log)(t - 1)	0.024 (0.153)	0.062 (0.163)
IAs signed	0.001 (0.001)	0.001 (0.002)
MEA membership	0.168 (0.175)	0.306* (0.184)
Polyarchy(t - 1)	-0.203 (0.147)	-0.116 (0.139)
EU	-0.009 (0.035)	-0.008 (0.040)
Leftist government(t - 1)	-0.113 (0.091)	-0.426*** (0.089)
CO ₂ emissions(t - 1)	0.258*** (0.019)	0.251*** (0.018)
Environmental acts(t - 1)	0.432 (2.453)	1.445 (2.732)
Constant	0.008 (0.062)	0.140 (0.134)
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	4650	3760
R ²	0.207	0.216

The dependent variable in each model is the natural logarithm of the sum of all acts of environmental legislation in ECOLEX in any given year for any given country. Robust standard errors clustered on countries in parentheses.

***p < 0.01; ** p < 0.05; * p < 0.1.

Table C5. Using Environmental Regulation as Dependent Variable

	Model 11	Model 12
ISDS cases pending	0.144 ^{***} (0.053)	0.360 ^{***} (0.088)
Rigorous & impartial adm.	0.085 ^{**} (0.038)	
Bureaucracy quality		0.024 (0.038)
ISDS cases pending # Rigorous & impartial adm.	-0.057 ^{***} (0.020)	
ISDS cases pending # Bureaucracy quality		-0.117 ^{***} (0.028)
GDP per cap. (\$1000)(t - 1)	-0.002 (0.005)	-0.001 (0.005)
Population(log)(t - 1)	-0.312 [*] (0.162)	-0.273 (0.179)
IAs signed	0.004 ^{**} (0.002)	0.003 (0.002)
Polyarchy(t - 1)	-0.172 (0.185)	-0.109 (0.212)
EU	0.087 (0.131)	0.091 (0.136)
Leftist government(t - 1)	0.057 (0.043)	0.103 ^{**} (0.048)
CO ₂ emissions(t - 1)	-0.140 [*] (0.081)	0.289 ^{***} (0.084)
Environmental acts(t - 1)	0.550 ^{***} (0.027)	0.570 ^{***} (0.030)
Constant	5.694 ^{**} (2.487)	3.028 (2.883)
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	4650	3760
R ²	0.498	0.526

The dependent variable in each model is the natural logarithm of the sum of all acts of environmental regulation in ECOLEX in any given year for any given country. Robust standard errors clustered on countries in parentheses.

***p < 0.01; ** p < 0.05; * p < 0.1.

Table C6. Using an Untransformed Version Environmental Acts as Dependent Variable, Using OLS Models

	Model 13	Model 14
ISDS cases pending	11.395 (6.973)	23.197* (13.730)
Rigorous & impartial adm.	3.205* (1.624)	
Bureaucracy quality		0.002 (2.133)
ISDS cases pending # Rigorous & impartial adm.	-3.957 (2.539)	
ISDS cases pending # Bureaucracy quality		-7.262* (4.374)
GDP per cap. (\$1000)(t - 1)	0.587 (0.384)	0.485 (0.397)
Population(log)(t - 1)	-27.206*** (8.468)	-33.377*** (10.996)
IAs signed	0.209** (0.104)	0.127 (0.116)
Polyarchy(t - 1)	-6.092 (8.942)	-7.225 (9.843)
EU	-14.185** (6.523)	-16.414** (6.898)
Leftist government(t - 1)	7.322** (3.261)	8.571** (3.900)
CO ₂ emissions(t - 1)	1.060 (3.081)	-24.571*** (2.814)
Environmental acts(t - 1)	13.931*** (1.887)	15.941*** (2.338)
Constant	404.202*** (131.022)	642.868*** (175.046)
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	4650	3760
R ²	0.328	0.340

The dependent variable in each model is the sum of all acts of environmental legislation and regulation in ECOLEX in any given year for any given country. Robust standard errors clustered on countries in parentheses.

***p < 0.01; ** p < 0.05; * p < 0.1.

Table C7. Using an Untransformed Version Environmental Acts as Dependent Variable, Using Poisson Models

	Model 15	Model 16
ISDS cases pending	0.028 (0.023)	0.171 ** (0.069)
Rigorous & impartial adm.	0.047 (0.029)	
Bureaucracy quality		0.043 (0.033)
ISDS cases pending # Rigorous & impartial adm.	-0.013 (0.010)	
ISDS cases pending # Bureaucracy quality		-0.060 ** (0.024)
GDP per cap. (\$1000)(t - 1)	-0.010 *** (0.004)	-0.010 *** (0.004)
Population(log)(t - 1)	0.064 (0.194)	0.135 (0.214)
IAs signed	-0.001 (0.002)	-0.002 (0.002)
Polyarchy(t - 1)	0.054 (0.150)	0.103 (0.146)
EU	-0.083 (0.074)	-0.076 (0.079)
Leftist government(t - 1)	0.044 (0.034)	0.042 (0.037)
CO ₂ emissions(t - 1)	0.007 (0.078)	0.078 ** (0.036)
Environmental acts(t - 1)	0.589 *** (0.029)	0.581 *** (0.032)
Constant	-0.948 (3.766)	-3.880 (3.816)
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	4650	3760
Pseudo R ²	0.833	0.836

The dependent variable in each model is the count of all acts of environmental legislation and regulation in ECOLEX in any given year for any given country. Robust standard errors clustered on countries in parentheses.

*** p < 0.01; ** p < 0.05; * p < 0.1.

Table C8. Using Alternative Operationalizations of the Independent Variables

	Model 17	Model 18
ISDS cases pending	0.049** (0.022)	0.376* (0.218)
Regulatory quality	0.189*** (0.059)	
Public sector corruption		0.112 (0.154)
ISDS cases pending * Regulatory quality	-0.065*** (0.019)	
ISDS cases pending * Public sector corruption		-0.199* (0.113)
GDP per cap. (\$1000)(t - 1)	-0.012* (0.006)	-0.007* (0.004)
Population(log)(t - 1)	-0.003 (0.188)	-0.074 (0.133)
IAs signed	-0.002 (0.003)	0.004*** (0.001)
Polyarchy(t-1)	-0.189 (0.169)	0.135 (0.145)
EU	-0.119 (0.136)	-0.072 (0.109)
Leftist government(t - 1)	0.063 (0.042)	0.041 (0.035)
CO ₂ emissions(t - 1)	0.087 (0.369)	-0.110 (0.074)
Environmental acts(t - 1)	0.443*** (0.029)	0.536*** (0.023)
Constant	1.173 (3.264)	1.967 (2.153)
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	3233	4650
R ²	0.260	0.503

The dependent variable in each model is the natural logarithm of the sum of all acts of environmental regulation and legislation in ECOLEX in any given year for any given country. Robust standard errors clustered on countries in parentheses.

***p < 0.01; ** p < 0.05; * p < 0.1

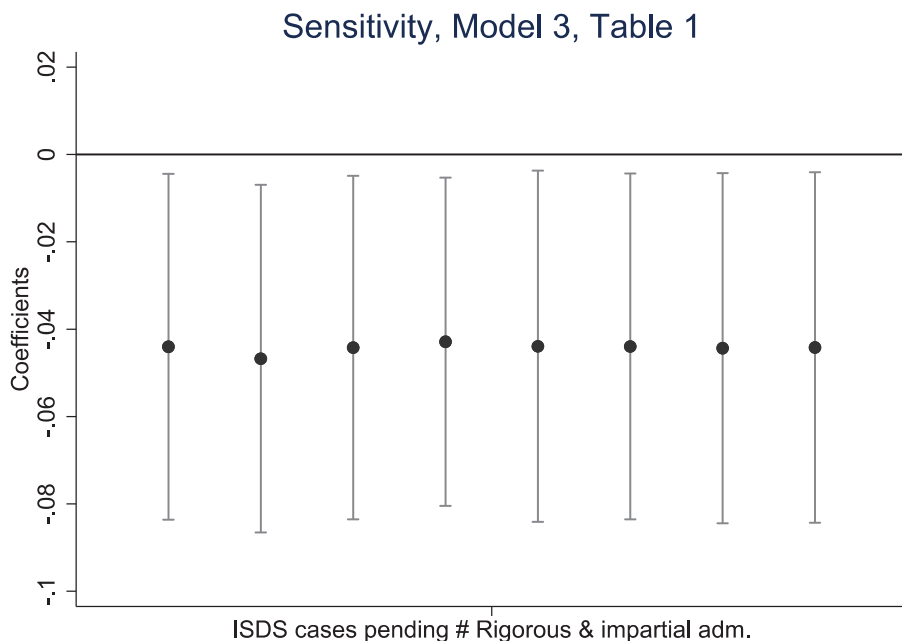


Figure C3.Sensitivity of Interaction Term Coefficients When Removing Control Variables from Model 3, Table 1 One by One.

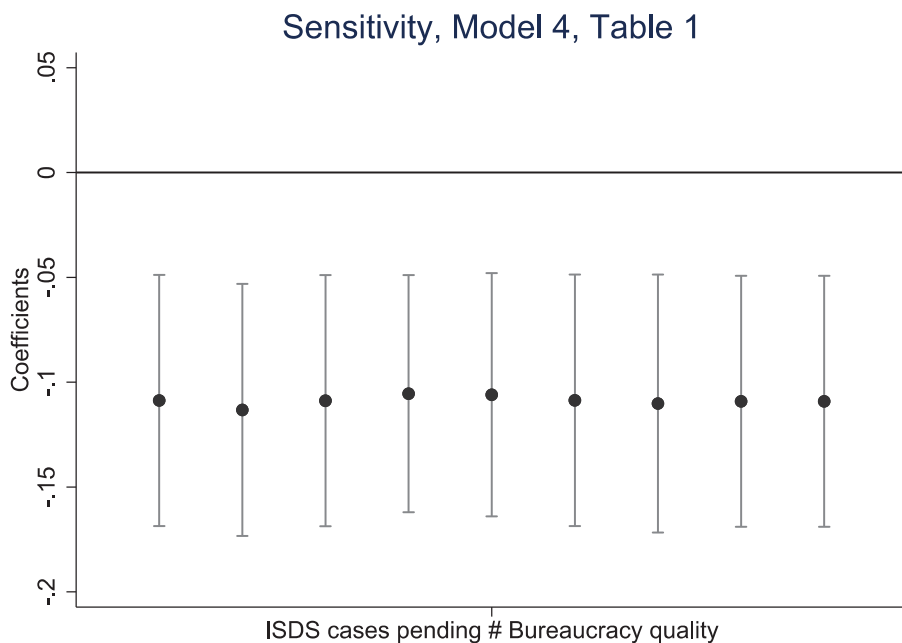


Figure C4.Sensitivity of Interaction Term Coefficients When Removing Control Variables from Model 4, Table 1 One by One.