

Does investor-state dispute settlement lead to regulatory chill? Global evidence from environmental regulation

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Abstract

Whether investor-state dispute settlement has undue effects on domestic regulation is one of the most contentious issues in the investment treaty regime. Critics argue that investor-state claims may have adverse effects on states' willingness to regulate in specific policy areas – 'chilling' otherwise legitimate domestic regulation. The evidence for the regulatory chill hypothesis however, is dominated by anecdotal evidence and case studies. Little however, is known about whether regulatory chill is a systemic problem. In this paper, we put the regulatory chill hypothesis to a broader test. We examine the effect of investor-state dispute settlement cases brought between 1990 and 2017 on respondent state environmental regulation. We first theorize that a regulatory chill effect should be observable from both pending cases and finalized cases in which the state has lost. Second, we hypothesize that the size of the two effects should be contingent upon the regulatory and economic capacity levels of respondent states. In our analysis, we find no evidence of an overall regulatory chill effect. When letting the chill effect depend on states' regulatory capacity however, we find that higher capacity states do exhibit regulatory chill. Moreover, low capacity states show a somewhat surprising tendency to regulate more when their load of pending claims grow, a tendency akin to 'regulatory heating.' In discussing the implications of these findings, we propose that amongst the many structural deficiencies associated with investor-state dispute settlement, regulatory chill is perhaps not the most problematic. A certain level of regulatory chill might in fact be an expression of sound risk management from states that face uncertainty over future costs to their actions.

Keywords: regulatory chill, investor-state dispute settlement, international investment agreements, environmental regulation, state capacity, regulatory capacity

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1. Introduction

The investment treaty regime is currently experiencing a legitimacy crisis (Waibel et al. 2010, Behn 2015, Langford and Behn 2018), and its impact on domestic governance has become a point of debate (Ginsburg 2005, Tienhaara 2009, Mazumder 2016, Sattorova 2018). One of the key criticisms levelled at the regime is that international investment agreements (IIAs) with investor-state dispute settlement (ISDS) can be used by foreign investors to unduly restrict legitimate domestic regulation in host states. This effect has been labelled ‘regulatory chill.’

Regulatory chill has been a hot potato in the debate around the legitimacy of ISDS. It was one of the key concerns that civil society groups in Canada, Europe and the United States raised with regards to the investment chapters in the Comprehensive Economic and Trade Agreement (CETA)³ and the now shelved Transatlantic Trade and Investment Partnership (TTIP).⁴ Moreover, in the broad ISDS reform discussions currently going on under the auspices of the United Nations Conference on International Trade Law (UNCITRAL),⁵ states are looking into whether higher levels of predictability in the investment regime might make it easier for “States to understand whether [...] future legislative or regulatory activities, might breach their obligations”.⁶ During the UNCITRAL deliberations, developing states in particular have expressed worries over “reputational harm and regulatory chill” associated with ISDS cases.⁷

The concern over regulatory chill is not that ISDS has *any* effect on policy-making of the signatories. After all, disciplining domestic policy-making is one of the key reasons why countries commit to enforceable international rules. The crucial issue is that ISDS allegedly have effects that go *beyond* the original aims of the signatory states (Pelc 2017). While an increasing number of public policy measures have been challenged through ISDS over the last decade (Bernasconi-Osterwalder et al. 2012, 7-8), the studies that have looked at the relationship between ISDS and domestic regulatory is inconclusive. Some have found that ISDS has had little or no effect on regulatory activity in respondent states (Gaines 2007, Côté 2014), while others find that governments adapt their policymaking to (the potential of) ISDS (Mander and Perkins 1994, Gross 2002, Tienhaara 2006, 2009, Van Harten and Scott 2016).

While enlightening in terms of unveiling the mechanisms of regulatory chill, the fact that most empirical studies of the phenomenon rely on anecdotal or within-case evidence, makes it difficult to make general inferences about regulatory chill. In short, it is difficult to assess whether the cases presented are typical cases, or if they are outliers selected for study based on

³ A statement against CETA supported by more than 100 civil society groups was signed and made public in November 2013. The statement went as far as to ask whether “Canada and the EU wants to put a chill on effective climate change policy?” See online: https://www.epsu.org/sites/default/files/article/files/Stop_the_Corporate_Giveaway_-_A_transatlantic_plea_for_sanity_in_the_EU-Canada_CETA_negotiations.pdf (accessed 07.09.2018).

⁴ 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 online: https://corporateeurope.org/sites/default/files/attachments/ttip_investment_letter_final.pdf (accessed 07.09.2018).

⁵ See Roberts (2018) for an extensive review of the UNCITRAL process and the different positions taken by states.

⁶ “Possible reform of investor-State dispute settlement (ISDS): Consistency and related matters” (12), note by the secretariat in conjunction with UNCITRAL Working Group III, thirty-sixth session, Vienna, 29 October-2-November (A/CN.9/WG.III/WP.150). See online: http://www.uncitral.org/uncitral/en/commission/working_groups/3Investor_State.html (accessed 19.12.2018).

⁷ See e.g. South African interventions during UNCITRAL proceedings in Vienna, 2018. Prior to the same deliberations, Indonesia also circulated a paper that discussed concerns related to regulatory chill (Brauch 2018, 5-6).

their outcome (observed chill). The larger question surrounding the regulatory chill hypothesis remains unanswered: *Do ISDS cases influence states' willingness to pass new regulation in any systematic manner?* This is the question we address in the current article.

Providing systematic, cross-country evidence on the effects of ISDS on domestic governance might help policymakers like those gathered under UNCITRAL to better assess how to revamp the regime's key structures. We have chosen to focus on the effect of ISDS cases on environmental regulation because ISDS cases challenging environmental measures are relatively pronounced in the total caseload (133 out of 855 cases) and because the environment is considered a key area of public policy making prone to chilling effects of the international investment regime (see e.g., Mander and Perkins 1994; Gross 2002; Tienhaara 2006).

We formulate a theory with two sets of propositions. We first hypothesize that pending and finalized ISDS cases should affect states' willingness to pass environmental regulation, but for different reasons. Pending cases are expected to introduce regulatory chill due to the insecurity around liability that lingers before the tribunal reaches its ruling. Finalized cases where the state loses are expected to lead to regulatory chill due to fears over having to pay future awards.

Secondly, we hypothesize that ISDS cases should not impact countries similarly. Regulatory chill from pending ISDS cases should be more pronounced in states with high regulatory capacity than in states with low regulatory capacity, because high-capacity states are more likely to have administrative systems in place to ensure vetting of future legislation when faced with uncertainty around liability. Although probably examples of good governance, these vetting processes should protract regulatory processes. Regulatory chill from lost ISDS cases however, should be more pronounced in countries with low economic capacity than in countries with high economic capacity, because the impact of ISDS awards should be relatively graver for poor states than rich states. Moreover, the capital flight that ISDS cases have been found to trigger should be more problematic for cash-strapped states than more economically developed states (Allee and Peinhardt 2011).

To analyze these two sets of propositions, we combine two large datasets. This allows us to overcome the problem of selection bias inherent in existing empirical investigations of regulatory chill. The first dataset is a sample of 855 registered ISDS cases brought against 112 countries between 1990 and 2017. In our analysis, we examine the effect of both the full sample of ISDS cases, and a subsample of cases that we have identified as challenging environmental policy measures specifically. The second dataset maps environmental regulations for these countries in the same period. To the best of our knowledge, this is the first study to test the logic of regulatory chill hypothesis using large-N analysis across a wide range of countries.

Three key findings emerge from our analysis. First, our results indicate that neither pending nor lost ISDS cases seem to have an overall regulatory chill effect on domestic environmental regulation. Second, we find a pronounced regulatory chill effect from pending ISDS cases in countries with particularly high regulatory capacity. Third, somewhat surprisingly, we find that states with low regulatory capacity in fact exhibit regulatory heating as their pending ISDS caseload grows. Thus, instead of inducing regulatory chill, pending ISDS cases seem to trigger a 'regulatory heating' in these low-capacity states.

The rest of this paper is structured as follows. We first discuss the concept of regulatory chill in the context of the investment treaty regime, and review the existing empirical literature. Next, we develop our theory and generate testable hypotheses, before we present our research design and findings. We conclude by discussing the policy implications of our findings and avenues for future research.

2. The investment treaty regime and regulatory chill

Unlike the multilateral trade system governed by the World Trade Organization (WTO), attempts at establishing a multilateral regime for investment have failed (Berger 2016; Berge and Hveem 2018). Instead, international investment flows have come to be governed by a decentralized network of IIAs. There are currently some 2350 bilateral IIAs in force,⁸ and an additional 310 broader treaties which also include investment protection chapters.⁹

At their core, IIAs grant foreign investors rights primarily aimed at safeguarding their investments. These rights are reciprocal, meaning that investors from all state parties to an IIA have access to the same protections when investing in one of the other treaty parties. Substantive protections in IIAs include relative standards such as most-favored nation treatment and national treatment and absolute standards such as fair and equitable treatment and expropriation clauses. The enforcement mechanism in most IIAs is investor-state arbitration (i.e. ISDS).¹⁰

Between the 1960s and 1990s, the investment treaty regime was fairly uncontroversial. Most early IIAs were between high-income and low-income countries. For high-income developed states, IIAs were seen as both protecting and promoting their business interests abroad, while also de-politicizing investment disputes. For low-income developing countries, they were mainly seen as pathways to promote inward investment (Bonnitcha, Poulsen and Waibel 2017, 181-232). Crucially, no treaty-based ISDS cases were registered before 1987, and even though most IIAs in force at the time contained ISDS clauses, the caseload remained limited in the following decade.¹¹

Since the turn of the century, however, voices both within and outside academia have begun to question the regime's legitimacy and fairness (Waibel et al. 2010; Eberhardt and Olivet 2012, Edwards 2016). One strand of criticism focuses on IIAs' failure to achieve its presumptive objectives, such as de-politicization of investment disputes (Gertz, Jandhyala and Poulsen 2018), or promoting foreign investment to developing countries (Bonnitcha, Poulsen and Waibel 2017, 158-166). Another strand focuses on the meteoric rise of ISDS cases the last ten years, and the advent of ISDS cases against developed states in particular. For example, early NAFTA-based ISDS claims against the United States such as the *Loewen*¹² and *Methanex*¹³ cases are said to have taken US policy makers completely by surprise (Edwards 2016, 65-66).

⁸ More commonly known as bilateral investment treaties (BITs).

⁹ UNCTAD (2018). "IIA Issues Note. International Investment Agreements." Issue 1 (May 2018). See online: http://unctad.org/en/PublicationsLibrary/diaepcbinf2018d1_en.pdf

¹⁰ See Dolzer and Schreuer (2012) for a legal introduction to protection standards and dispute settlement mechanisms under IIAs, and Bonnitcha, Poulsen and Waibel (2017) for an introduction to the political economy of the IIA regime.

¹¹ See St John (2018) for an analysis of the rise of investor-state arbitration in IIAs.

¹² *Loewen Group, Inc. and Raymond L. Loewen v. United States of America*, ICSID Case No. ARB(AF)/98/3.

¹³ *Methanex Corporation v. United States of America*, UNCITRAL.

These cases also led to changes in the IIA policies of the United States (Gagné and Morin 2006). Another strand again highlights how the claim that IIAs backed up by ISDS will improve domestic governance is empirically unfounded at best (Sattorova 2018).¹⁴

Figure 1: IIAs signed and ISDS claims, 1957-2017

Thus, while the peak of investment treaty signing occurred in the mid-1990s with over 200 IIAs signed annually (see Figure 1),¹⁵ it was the first NAFTA-based ISDS cases in the late 1990s and early 2000s that actually raised awareness around what protection IIAs actually offered and how investors could use ISDS to seek legal redress outside their host states' domestic judicial systems.¹⁶ A raft of cases based on other IIAs followed. As one commentator noted:

“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

While IIAs with broad investment definitions wide substantive protection clauses have been found to be associated with a higher risk of ISDS (Berge 2018), the legitimacy crisis in the investment treaty regime is not only about the expansiveness of substantive rights under IIAs alone. It is the combination of these rights with ISDS that has created a backlash (Behn and Langford 2018, 552). Indeed, the particular right of standing *vis-à-vis* host states that foreign investors get under IIAs has been labelled “the most revolutionary aspect of the international law relating to foreign investment in the past half century” (Simmons 2014, 17) – and while there are currently extensive debates around the usefulness and fairness of ISDS (Brown 2017), the broader question of whether ISDS cases lead to regulatory chill continues to linger.

Regulatory chill and ISDS: empirical evidence and examples

Regulatory chill concerns the idea that decision-makers, facing uncertainty about the costs and consequences of their actions, defer from passing desirable and legitimate legislation (Tietje & Baetens 2014, 40). The phenomenon of regulatory chill has been discussed in the context of international trade,¹⁸ and studies have also shown that international capital mobility and competition for foreign direct investment may lead to less stringent environmental regulations

¹⁴ Proponents of this good governance narrative hold that the imposition of monetary sanctions on states when they breach commitments under IIAs will deter states from mistreating foreign investors, while also encourage them to reform domestic legal and regulative practices (Dolzer 2005, 972; Schill 2009, 377).

¹⁵ Data on IIAs and ISDS claims is taken from UNCTAD's Investment Policy Hub. See online: <https://investmentpolicyhub.unctad.org/>.

¹⁶ NAFTA's impact on the regime cannot be overstated. As Alschner (2015, 121) noted: “It was a true game changer that set the trajectory of investment treaties for years to come.”

¹⁷ Lester, Simon (2016). “The ISDS controversy: How we got here and where next.” *International Centre for Trade and Sustainable Development (ICTSD)*. See online: <https://www.ictsd.org/opinion/the-isds-controversy-how-we-got-here-and-where-next> (accessed 06.09.2018).

¹⁸ The WTO has had to deal with general questions around how private and public interests collide under its rules (Cass 2005), and more particularly whether the exporter-focus in the WTO is at odds with “sound choices over labor and environmental policies” (Bagwell and Staiger 2001, 69). Similarly, in the context of the TTIP between the EU and the United States, De Ville and Siles-Brügge (2017, 1497) note that the agreement, had it been finalized, could have inhibited industry regulators on either side of the Atlantic due to a prioritization of trade policy objectives over other public policy objectives.

in host countries (Neumayer 2001, Dong, Gong and Zhao 2012).¹⁹ The core of the regulatory chill critique in the investment treaty regime is that ISDS cases may unduly impact host states' willingness to adopt measures that are in the interest of the broader public. The empirical literature on ISDS and regulatory chill can be divided into three groups: (I) those looking at the chilling effect of pending ISDS cases; (II) those looking at the chilling effect of ISDS threats; and (III) those looking at how policymakers, *ex ante*, internalize the constraints of IIAs with ISDS.

In the first group, most studies focus on the effect of certain hallmark cases, such as the *Philip Morris v. Uruguay*²⁰ and *Philip Morris v. Australia* cases,²¹ both concerning plain packaging legislation for tobacco products. While pending, it has been found that these cases led other countries, fearing similar lawsuits, to put their own plain packaging legislation on hold (Gruszczyński 2014, 244; Bonnitcha 2014, 126).²² Similar dynamics have been cited concerning tobacco packaging legislation in countries like Guatemala, Honduras, Chile, Namibia, Gabon, Togo and Norway (Pelc 2017, 569; Tienhaara 2018, 237; Tobin 2018, 161-162).

Other prominent examples from the field of environmental regulation relate to the *Vattenfall v. Germany (I)*²³ and *Pacific Rim v. El Salvador*²⁴ cases. In the former, Vattenfall's notice of arbitration led the provincial government of Hamburg to issue a more favorable permit for a coal-fired power plant (Shekar 2016, 22). The latter ISDS case concerns the government of El Salvador's refusal to issue a gold mining permit to the mining multilateral Pacific Rim due to environmental concerns. While one commentator highlighted that El Salvador was scared away from enacting similar policies while the case was pending,²⁵ statements made by then President Antonio Saca indicates that El Salvador would rather have pay fines than grant mining permits to Pacific Rim (Williams 2016, 156).

There are other instances that underline the ambiguity of pending ISDS cases' effect on host state regulation. For example, Canada and the United States both followed through on their bans of harmful chemicals in spite of ISDS proceedings challenging these measures.²⁶

¹⁹ Similarly, Bennett (2010) argues that because emissions credits under carbon emissions trading schemes are likely to be considered as investments by ISDS tribunals, IIAs may scare states away from adopting carbon trading schemes in the future.

²⁰ *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.

²¹ *Philip Morris Asia Limited v. The Commonwealth of Australia*, PCA Case No. 2012-12.

²² For example, when New Zealand explored similar 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 in making a decision on their own legislation, "the Government acknowledges that it will need to manage some legal risks." See online: <https://www.beehive.govt.nz/release/government-moves-forward-plain-packaging-tobacco-products> (accessed 30.8.2018). Ultimately, New Zealand ended up delaying the implementation of its tobacco plain packaging legislation until 2016, following Australia's successful defense against Philip Morris in 2015. Smoke-free Environments (Tobacco Standardised Packaging) Amendment Act 2016, No. 43, 14 September 2016.

²³ *Vattenfall AB, Vattenfall Europe AG, Vattenfall Europe Generation AG v. Federal Republic of Germany (I)*, ICSID Case No. ARB/09/6.

²⁴ *Pac Rim Cayman LLC v. Republic of El Salvador*, ICSID Case No. ARB/09/12.

²⁵ See online: <https://www.theguardian.com/global-development/2016/oct/14/el-salvador-world-bank-tribunal-dismisses-oceanagold-mining-firm-250m-claim> (accessed 07.09.2018).

²⁶ See *Methanex Corporation v. United States of America*, UNCITRAL, and *Chemtura Corporation v. Government of Canada*, UNCITRAL, (formerly *Crompton Corporation v. Government of Canada*).

Similarly, South Africa maintained its affirmative action policies in the face of an ISDS claim from an Italian mining company²⁷ (Bonnitcha, Poulsen and Waibel 2017, 241).

In the second group, a number of studies look at the effect of ISDS threats and document a number of cases where Governments backtracked from plans to introduce regulations or laws. Three examples are often cited, the first being the Guatemalan government's decision to withdraw a decision to shut down the Marlin mine – a decision initially made based on concerns over the social and environmental impacts of further mining – due to fears that the measure might have led to a potentially costly ISDS case.²⁸

The second comes from Ghana, where the government, after receiving ISDS threats from American, Canadian and South African corporations, allowed a small group of multinational companies to carry out mining in protected forests in spite of a 1996 moratorium on such mining activities, (Tienhaara 2009, 230).²⁹ Sources present in Ghana at the time reported that the “government feared arbitration not because they feared losing, but because they feared the impact that denying the leases and proceeding to arbitration would have on their reputation” (Tienhaara 2006, 388-389).

Finally, it has been noted how the Indonesian government seems to have allowed open-pit mining in protected forests on the Halmahera Island after ISDS threats were made from a group of multinational corporations with active operations or undeveloped exploration contracts on the island (Tienhaara 2009, 214-220).³⁰ While the exact causal relationship between the lifting of the mining ban and the ISDS threats is difficult to establish, the timing of the response of the government of Indonesia to the threats made by the mining companies makes it very plausible. Moreover, the Indonesian Minister of Environment expressed fears that if the mining operations were shut down, Indonesia would face compensation claims it could not pay (Gross 2002, 895).

In the third group of studies, looking at the degree to which policymakers internalize the potential costs of ISDS when crafting or vetting policies or legislation, there are two notable analyses that focus on Canada and one cross-country case study. The first study of Canada, based on interviews with more than 100 officials, concludes that “there is no consistent observable evidence to suggest the possibility of regulatory chill” at the regulator level (Côté 2014, 187). The second Canada study, based on interviews with more than 50 environment and trade policy officials in the province of Ontario, found the contrary. Policies in this province were found to have been altered due to concerns over ISDS. The influence of ISDS on policy-making was particularly noticeable in relation to measures intended to protect the environment (Van Harten and Scott 2016, 116).

²⁷ *Piero Foresti, Laura de Carli and others v. Republic of South Africa*, ICSID Case No. ARB(AF)/07/1.

²⁸ In Guatemala alone, there are at least one more example of the government being pressured to change course on environmentally motivated mining legislation over fears that investors might seek subsequent redress using ISDS. See online: <http://isds.bilaterals.org/?free-trade-s-chilling-effects&lang=en> (30.8.2018).

²⁹ Interestingly, neither Canada nor South Africa had an IIA in force with Ghana at the time, but it is possible that these investors could have shopped into protection under other IIAs to which Ghana was a party.

³⁰ The forests on the island had previously been protected from mining under a forestry law put in place to protect “life-supporting systems for hydrology, preventing floods, controlling erosion, preventing sea water intrusion and maintaining soil fertility” (Gross 2002, 905). This case was also covered at length by Chris Hamby in 2016 in “The Billion Dollar Ultimatum.” See online: <https://www.buzzfeednews.com/article/chrishamby/the-billion-dollar-ultimatum> (accessed 30.8.2018).

The last internalization study looks at the impact of IIAs on bureaucratic politics in Nigeria, Turkey and Uzbekistan, using interviews with government officials (Sattorova, Omiunu and Erkan 2018). In spite of the fact that these three countries are all parties to many IIAs, and having been respondents in ISDS cases multiple times, the study finds that regulators exhibited relatively low levels of internalization of the risks their IIAs carry (see also Sattorova 2018).

To sum up, with a few exceptions, most case-studies of regulatory chill find some kind of chilling effect from ISDS. Moreover, they often convincingly establish within-case linkages between the threat of ISDS and host-state regulatory responses. It does seem that regulatory chill is a real phenomenon, albeit one that may occur through different causal pathways and mechanisms. However, if we want to say something more general about regulatory chill, about whether ISDS chills domestic regulation in a *systemic* manner, case studies are less helpful. There are a few reasons for this.

First, one reason why so few studies find evidence in disfavor of regulatory chill might be grounded in a fundamental selection issue. In many of the cases cited above, researchers seem to have selected cases *ex post*. That is, they provide little reasoning for why they chose their object of study, which leads us to think that cases might have been selected based on their observed outcomes. This is problematic in and of itself (if you are interested in generalizable inferences), but an issue that is probably exaggerated by the fact that neither states nor investors have any clear incentives to make information about instances of regulatory chill public.³¹ Thus, it is likely that the few cases in which enough information to carry out a case study seeps through, are in fact relatively extreme cases.

Secondly, few studies are explicitly concerned with finding evidence in *disfavor* of regulatory chill. Again, this does not render the studies cited above useless. They do a lot to develop our understanding of how regulatory chill *may* manifest itself. The problem is methodological. It is difficult to identify evidence in disfavor of regulatory chill through the case method because it is difficult to separate cases in which we would have expected to see regulatory chill but where the state chose to regulate nevertheless, from the cases where the state never deliberated a response to ISDS and therefore simply regulated as per usual.³²

To tackle some of these shortcomings in the existing literature, we make use of newly available data on ISDS cases to more systemically test the regulatory chill hypothesis. Aside from analyzing the effects of the total, available ISDS caseload, we control for both case-specific and country-specific covariates. Before presenting our analysis, we develop two sets of theoretical propositions about when we would expect to observe regulatory chill.

3. Theory

A systematic analysis of ISDS and regulatory chill runs up against two important challenges, both of which are related to how we define the concept of regulatory chill. The first challenge

³¹ As noted by Bonnitcha, Poulsen and Waibel (2017, 243): “neither host states nor foreign investors have obvious incentives to publicize situations in which states respond to threats of arbitration by abandoning the measures under consideration” and “attempts to determine the frequency with which such events occur [...] regularly run up against confidentiality constraints.”

³² As noted by Tietje and Baetens (2014, 41): “It would be difficult to first identify a particular public regulation the state would have regulated and then secondly pinpoint ISDS as the cause for the failure to regulate. It would therefore be nearly impossible to find enough of these individual cases to prove any overall pattern of regulatory chill.”

is that analyzing regulatory chill entails explaining *non-events* that in the absence of some extraneous treatment (e.g. ISDS) should have otherwise occurred (Mabey and McNalley 1999, 43; Williams 2016, 3). Analytically, we are thus tasked with defining what the non-event in question is and how to observe it. This is essentially a task of identifying and explaining counterfactuals. The second challenge we run up against is to identify the extraneous treatment that leads to regulatory chill, as well as potential circumstances that may condition the effect of the treatment. We discuss how to observe regulatory chill in Section 4, and discuss how to define regulatory chill and its drivers here.

Defining regulatory chill

There are different ways to think about regulatory chill, and legal scholars, political scientists and non-academics tend to apply the term inconsistently.³³ Opponents of the regulatory chill hypothesis often pounce on this inconsistency, noting that the concept of regulatory chill itself is not properly defined (Coe and Rubins 2005). This has in turn spurred attempts at developing reconciled theoretical frameworks and research agendas for the proper study of regulatory chill (Bonnitcha, Poulsen and Waibel 2017; Schram et al. 2018). A broad and operational formulation of regulatory chill is proposed by Tienhaara:

“In some circumstances, governments will respond to a high (perceived) threat of investment arbitration by failing to enact or enforce bona fide regulatory measures (or by modifying measures to such an extent that their original intent is undermined or their effectiveness is severely diminished).” (Tienhaara 2011, 610)

On this definition, there are two things to note. The first regards the formulation: “governments will respond to a high (perceived) threat of investment arbitration,” which is fairly open as to what may represent an ISDS threat. The second is that the caveat “in some circumstances” may diminish the explanatory or predictive usefulness of the hypothesis. We deal with these two challenges sequentially in our hypotheses.

Three different types of responses – or causal paths – through which regulatory chill from ISDS might be at play have been proposed (Tietje and Baetens 2014, 41). Each of these three paths are linked with different types of ISDS threats as discussed in the previous section.³⁴ The first is ‘anticipatory chill,’ where policymakers take the potential for investor disputes into account while drafting regulations or legislation thus internalizing the potential threat posed by their commitments under IIAs.³⁵ This is the potentially most sweeping kind of regulatory chill (Tienhaara, 2011). The second type of regulatory chill is ‘specific response chill,’ which happens when policymakers become aware of an actual dispute, whether expressed as an

³³ See Schram et al. (2018) for a review of different ways to regulatory chill has been defined in the literature. Closely related to Tienhaara’s definition of regulatory chill, reproduced in the main text, Schram et al. define the phenomenon as “...delaying, compromising, or abandoning the formulation or implementation of bona fide regulatory measures in the interest of the public good as a result of a real or perceived threat of investor-state arbitration.” (Schram et al. 2018, 195).

³⁴ In addition to these three types of regulatory chill, Tienhaara (2018) proposes a fourth type of regulatory chill: cross-border regulatory chill. The recent experiences with tobacco legislation in the wake of the two ISDS cases brought by Philip Morris against Uruguay and Australia are held forth as examples. The real issue in these cases, Tienhaara holds, “is not who won and who lost [...] the issue is how tobacco corporations exploited the existence of these cases over the many years during which they dragged on and how [other] governments have responded” (Tienhaara 2018, 237).

³⁵ This regulatory chill path is what Côte (2014), Van Harten and Scott (2016) and Sattorova, Omiunu and Erkan (2018) base their studies of regulatory chill in Canada, Nigeria, Turkey and Uzbekistan on.

explicit threat of arbitration, or through an actual notice of arbitration.³⁶ The third type of regulatory chill is ‘precedential chill,’ which occurs when a state responds to a finalized case or settlement in fear of similar regulation based on the same measure.³⁷

Analyzing anticipatory chill at the large-N level is nearly impossible, because it is difficult to construct comprehensive data on the reasoning of regulators. Moreover, regulators may respond to ISDS cases in other countries, creating a possible contagion effect that may or may not be geographically defined. In short, anticipatory chill is best analyzed through the interview- or survey-based inquiry, because detecting anticipatory chill necessitates analysis of regulators’ perceptions and actions. Analyzing specific response chill from ISDS threats is also difficult at the large-N level, because comprehensive data on threats are generally inaccessible.

Thus, what we can do in a large-N set-up like ours is to test the specific response chill effect of cases that have actually been initiated, and precedential chill effect from cases that are finalized. Our theory and analysis therefore focus on the effect of pending cases and finalized cases on host states regulatory tendencies.

General hypotheses

When a state is made aware of an ISDS challenge against a measure it has taken, it has to carry out a costs and benefit analysis. The question is whether the (political or economic) benefits of the regulation or policy is outweighed by the potential compensation owed to foreign investors due to that regulation and the reputational costs that come with a lost ISDS case (Bonnitcha, Poulsen and Waibel 2017, 137-141).³⁸ The crux of the ‘specific response chill’ hypothesis is that regulatory chill is an expression of states halting other regulations – whether similar to the measure challenged by the investor, other measures in the same sector of the economy, or regulation more generally – while analyzing the severity of an ISDS case. Some of the observed examples of regulatory chill cited above point to a dynamic of this kind. In the field of tobacco packaging regulation, countries were explicit about managing the risk posed by ISDS. And in some of the examples that involved challenges to regulations that affected multinationals’ mining operations, respondent states were open about assessing the potential costs, both direct and reputational, of ISDS. The testable implication of the specific response chill claim is:

***Hypothesis 1:** Pending ISDS cases against a country should have a negative effect on concurrent regulatory activity in that country.*

³⁶ Examples of specific response chill are the way in which governments in Guatemala, Indonesia, Ghana and Costa Rica undid environmental regulation in relation to various resource extraction projects after threats from foreign investors (Tienhara 2009), the regulatory responses to the *Vattenfall* and *Pacific Rim* cases discussed above or the reaction of Australia and New Zealand to the lawsuit filed by Philip Morris against Australia’s plain tobacco packaging law.

³⁷ There are few practical examples of precedential chill. However, we have seen that ISDS cases often come in clusters, where multiple investors affected by the same measure file ISDS claims once they see that a first arbitration case is successful (Simmons 2013, 30; Tienhaara 2018, 33). Prominent events that has spurred multiple ISDS cases are: the Argentine economic crisis of 2000–01, changes in the renewable energy sector in the Czech Republic and Spain in 2011–14, the 2011 uprisings in Egypt and Libya, Russian annexation of Crimea in 2014, and Venezuelan nationalizations 2010–11 (Behn, Berge and Langford 2018, 363).

³⁸ The task of the respondent state of weighting costs and benefits, is similar, but inverse, to the one the claimant-investor most likely carried out before the claim was brought. Investors weigh the expected gains from a claim (i.e. expected monetary compensation multiplied by the odds of success, plus potential spillover gains expected such as those associated with deterred regulation) up against the costs (i.e. expected litigation costs plus reputational costs in terms of business standing) (Pelc 2017, 570).

According to the precedential chill hypothesis, we assume that policy-makers evaluate the outcomes of concluded ISDS cases when drafting and implementing regulations that may affect foreign investors. ISDS cases where the respondent state successfully defended itself should have no effect on countries' regulatory activity, as the underlying uncertainty is now solved. In contrast, cases where the state loses send a signal to policymakers that their regulatory approach is likely to be inconsistent with their international commitments under IIAs. Thus, countries may, subsequent to losses in ISDS cases, change their regulatory approach to make it more compatible with IIA commitments. This can take the form of delaying the implementation of already under-way regulations, or even stopping regulating altogether (Schram et al., 2018). The testable implication from the precedential chill hypothesis is:

***Hypothesis 2:** Losing ISDS cases should have a negative effect on subsequent regulatory activity in the respondent state.*

Conditional hypotheses

We noted above that the formulation 'in some circumstances' in Tienhaara's definition of regulatory chill may diminish its usefulness. However, as Tienhaara notes, "as long as researchers are careful to account for the role of extraneous variables [...] the hypothesis remains useful" (2011, 610). We noted above that states can be expected to carry out cost-benefit analyses when faced with ISDS claims, and that they can be expected to be deterred from regulating further when found liable for breach under their international commitments. The question is whether there are factors that condition these two responses.³⁹ We propose that states' responses to ISDS cases may differ across countries for two capacity-related reasons.⁴⁰ First, we expect that the bureaucratic capacity of states should condition how they are affected by pending cases. Second, the income level should have an effect on countries regulatory responses to lost ISDS cases.

We expect that regulatory chill from pending cases will be more pronounced in states with *higher* regulatory capacity, than in those states that have less capacious regulatory bodies. This is in many ways a statement contrary to conventional wisdom, where developing states are expected to be most at risk of scare and abuse tactics in the investment treaty regime (Tienhaara 2011; Poulsen 2015). However, when looking at the likely causal pathway of regulatory chill from pending cases, both reason and anecdotal evidence suggests that high regulatory capacity states are likely to respond differently than low-capacity states. The reasons for this is rooted in structural aspects of the investment treaty regime and investor-state arbitration procedures.

The first structural aspect is the unprecedented level of uncertainty around the legal meaning of clauses in IIAs, as compared to other international legal regimes. Most IIAs consist of vague and open-ended substantive obligations, as well as wide definitions of investment and investors

³⁹ It has for example been argued that developing countries are more vulnerable to regulatory chill from ISDS due to institutional and financial constraints (Tienhaara 2011, 611-615), that developing countries have generally been found to be more vulnerable to the cost-side of the investment treaty regime than more developed countries due to various capacity constraints (Poulsen 2015), and that governments' machinery to defend claims is an important factor in how ISDS cases are perceived (Coe and Rubin 2005, 599).

⁴⁰ While our theory is focused on circumstantial variables arising from capacity constraints, future research should endeavor to explore other potentially intervening factors, such as political priorities and domestic legal and political constraints (Bonnitcha, Poulsen and Waibel 2017, 243).

(Berge 2018, 14). This creates a problem of interpretative indeterminacy; it is difficult for states to anticipate what investment is supposed to be afforded by what treatment (Matveev 2015, 379). The result is that states often express surprise when being hit with ISDS claims, as demonstrated in states such as the United States, Canada and Pakistan (Poulsen 2015, xiii; Edwards 2016, 65-66). As a result, many states – the United States, China, Indonesia, India, and the Netherlands mention some – have taken measures to increase the clarity and predictability of their IIAs (Gangé and Morin 2006; Berger 2015; Berge 2018, 5).⁴¹

Secondly, there is no formal rule for *stare decisis* or precedent in investment treaty arbitration. On the one hand, this might contribute to inconsistent interpretations of similar treaty clauses,⁴² and as such exacerbate the indeterminacy problem. On the other hand, it has not prevented arbitrators from considering or citing other arbitral awards as sources of authority when ruling in similar cases (Gantz 2004, 689). Due to the general lack of transparency in investment treaty arbitration, however, getting hold of relevant prior awards and proceeding materials has been difficult (Gottwald 2007, 256-257).

We would therefore expect that regulatory capacity conditions how regulatory agencies process the signals from ISDS claims. In transparent high-capacity bureaucracies with good intra-governmental coordination, the entities responsible for drafting and implementing environmental regulations should be more likely to become aware of the risks of an ISDS claim, even though responsibility for defending the claim itself is often situated elsewhere in the government. At the same time, well-developed bureaucracies should be better able to process the information about the actual case, and carry out appropriate cost-benefit analysis. This task however, is likely to put other, similar regulatory measures as those challenged by multinational investors on hold, while risk is assessed. The testable implication from this conditionality is:

Hypothesis 3: *Regulatory chill from pending ISDS cases on respondent state regulation should be more pronounced in respondent states with high regulatory capacity, than in respondent states with low regulatory capacity.*

Our second conditional hypothesis relates to the costs of lost cases. ISDS cases can be very costly for respondent states. Governments have to spend on average almost 5 million US Dollar per case to defend themselves in ICSID cases (Commission, 2016), which is roughly five-times higher than the costs of an average dispute at the WTO (Pelc 2017, 566). The high costs of legal representation mean that poorer governments may not have access to the best available lawyers and are thus more likely to lose a case.⁴³ Therefore, poorer states having lost an ISDS case are

⁴¹ See also UNCTAD (2018).

⁴² See for example the two cases brought by the American national Ronald Lauder against the Czech Republic. Both cases concerned the same issue, but due to the fact that Lauder's investment in the Czech television broadcaster TV Nova, the ownership around which the case revolved, was made via his Dutch company (Central European Media), he brought the same case both as an individual under the Czech Republic-USA (1991) bilateral investment treaty, and through CME under the Czech Republic-Netherlands (1991) bilateral investment treaty. However, 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 completely opposite conclusions (Poulsen 2015, 141). See: *Ronald S. Lauder v. The Czech Republic*, UNCITRAL, Award, September 3, 2001; and *CME Czech Republic B.V. v. The Czech Republic*, UNCITRAL, Award, September 13, 2001.

⁴³ See examples from Seychelles and Argentina in Gottwald 2007, 261-264.

more likely to try and avoid similar regulations in future (Behn, Berge and Langford 2018; Tienhaara 2011, 611-614; Gottwald 2007, 253-254).⁴⁴

In addition, governments face the prospect of having to pay compensation in case they lose the ISDS case or in order to settle it. Reviewing 159 publicly available awards (until January 2012), Franck (2014) finds that on average the investors were awarded around 16 million US Dollar. Although such an average compensation should not pose a huge budgetary problem for high-income states, the sizes of awards should be relatively more severe for low-income developing countries. Furthermore, there are exceptional cases where the awards are much higher posing considerable budgetary risks for the respondent states.⁴⁵

Other costs relating to a lost ISDS case may be equally important. ISDS proceedings, for example, can have additional reputational costs for the respondents. Allee and Peinhardt (2011) show that being a respondent in an ISDS case can reduce inflows of foreign investment and losing a case can offset the gains from signing IIAs. This finding should be particularly worrying for low-income countries that are already struggling to attract and retain foreign investments. In light of these figures, it is reasonable to expect that governments try to avoid being sued by foreign investors. The testable implication of this conditionality is:

***Hypothesis 4:** Regulatory chill from ISDS cases where the state lost on consequent respondent state regulation should be more pronounced for respondent states with low economic capacity than for high economic capacity respondent states.*

4. Data

In this section, we present our data – including the coding that went into constructing the two separate samples of ISDS cases we analyze, and our measure of respondent state environmental regulatory activity.⁴⁶

Environmental regulation

Our dependent variable is the log of the number of environmental legislations and regulations a country has issued in a given year between 1990 and 2017. The data comes from the Food and Agriculture Organization (FAO)'s FAOLEX Database that includes a comprehensive account of national policies, laws and regulations on food, agriculture and natural resources management from a broad range of countries (FAO 2017).⁴⁷ The FAOLEX database is mainly based on information about policies, legislations and regulations provided online supplemented by information from official gazettes and documents gathered by FAO's country offices.

To create the environmental regulation variable, we count the number of environment-related legislative documents a country has issued in any given year. The variable created represents

⁴⁴ For example, Uruguay most likely would not have been able to defend themselves against Philip Morris had it not been for Michael Bloomberg's financial support (Tienhaara 2018, 237).

⁴⁵ An often-cited case is the almost 1.8 billion US Dollar awarded in the ISDS case *Occidental Petroleum vs. Ecuador* which was roughly the same size as Ecuador's health budget. See online: <https://www.italaw.com/sites/default/files/case-documents/italaw1094.pdf> (accessed: 10.7.2018).

⁴⁶ See Appendix C for descriptive statistics and further notes on data quality.

⁴⁷ We are grateful to Andrés Vatter Rubio and Mariusz Suchorowski of the FAO for kindly assisting us with adjusting FAOLEX data for statistical purposes.

the sum of all environmental policies, legislations and regulations a country has issued within a given year.⁴⁸ Figure 2 shows the distribution of countries' environmental regulatory activity over time aggregated by the three types of activities.

Figure 2: Environmental regulatory activity over time

Two caveats regarding the FAOLEX data should be mentioned. First, the cross-country quality of data might vary. For countries where information is more readily available or where legislations and regulations are published in certain languages, the quality might for example be better. Also, data for countries with federal systems may be inflated due to the fact that sub-national legislations and regulations are included or because they address different aspects of policy in different pieces of legislation rather than one consolidated law. We tackle these data shortcomings by not drawing inferences based on variations in environmental regulations across countries, but only within countries over time (i.e. with country fixed effects). Second, since the data only allows us to count the number of regulatory acts, but not the varying degree to which each act heightens environmental protection, we have to make the assumption that each act has the same effect on the net protection add of an act to a country's regulatory load.

There are a couple of different reasons for why we think environmental regulation is a good testing ground for the regulatory chill hypothesis. First, ISDS cases challenging environmental measures have been highly controversial due to the direct impact of environmental policies on peoples' lives (Miles 2013, 154-209). Moreover, environmental regulation was one of the first policy areas in which the issue of regulatory chill and ISDS was discussed (see e.g., Mander and Perkins 1994; Gross 2002). Second, cases where investors challenges environmental policy measures are relatively pronounced in the overall caseload (133 of 855 cases as 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 due to fear of capital flight (Tienhaara 2006).

Fourth, and perhaps most importantly, the externalities that environmental regulation tends to regulate are borne almost exclusively by the host-state inhabitants, and not host governments. The risk however, associated with losing ISDS cases directly affects governments' political and economic room to maneuver. This creates relatively strong incentives to stop regulating the environment when challenged by foreign investors under ISDS, as compared to areas of public policy, (e.g. financial regulation or national security), where the government itself is more directly affected by the externalities they try to regulate. In short, environmental regulation should be a most-likely policy area in which to find evidence for regulatory chill.

Investor-state dispute settlement cases

We rely on data from UNCTAD to code information about pending and lost ISDS cases.⁴⁹ UNCTAD provides information about the year of initiation of each case, the outcome of the

⁴⁸ The information is collected from the FAOLEX Database website. See online: <http://www.fao.org/faolex/en/>. For each country, we counted all legislation, policies and regulation that are related to the "Environment" (the FAOLEX allows for specification of such keywords in its search interface) for the years under examination.

⁴⁹ See online: <https://investmentpolicyhub.unctad.org/ISDS>.

case and the respondent state.⁵⁰ Our dataset covers 855 treaty-based ISDS cases filed between 1993 and 2017. In our analyses, we employ both the full set of cases, and a subset of cases with a particular environmental profile in our analyses.

To identify environmental cases, we have carefully read the available case documentation for all 855 cases to uncover whether at least one of the host state measures challenged in any given case is of an environmental nature.⁵¹ We define an environmental measure as one dealing with environmentally harmful externalities and measures taken to prevent global warming, pollution, oil and other poisonous spills, and the broader degradation of nature and the environment. It includes measures taken in relation to renewable energy such as changes in tariff and subsidy schemes, regardless of the nature of the change to the scheme or subsidy is.

We identify 133 environmental ISDS cases, 694 cases that did not concern an environmental measure, and 28 cases in which there was insufficient information to identify whether the case was environmental or not (see Figure 3). Amongst the top 10 respondent states in ISDS, Spain, the Czech Republic, Mexico and Canada are the four that have faced the most environmental cases (see Figure 4). While the cases against the two former states largely stem from changes in renewable sector subsidy schemes, the cases against Mexico and Canada are of various natures, but mostly brought under NAFTA.

Figure 3: Environmental ISDS cases, 1987-2017

Figure 4: Top 10 respondent states in ISDS

To test the regulatory chill effect of pending cases (H1 and H3), we construct two separate rolling counts of cases pending against any given country in a year (one based on the full set of 855 cases, and one based on the 133 environmental cases). To illustrate, if a case is brought against a country in 2000 and we see a final award ruling for this 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 2 for the years 2001 through 2003 instead.

As a general rule, we consider a case to be resolved when the proceedings come to a halt. This may happen for multiple reasons. The parties may settle, or the case may be discontinued for other reasons. The arbitral tribunal may deny jurisdiction to the claimant under the treaty that was claimed breached. Or, a decision may be handed down on the merits of the claim.

To examine the effects of lost cases, H2 and H4, we construct two variables that counts all cases a country has lost in any given year. To illustrate, if a case is brought against a country in 2001, and is decided in favor of the investor in 2003, the lost cases count variable would take the value of 1 in year 2003. Because H2 and H4 concerns the effect of losing cases on *subsequent* regulation, we lag the lost case variables one year.

⁵⁰ 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 resolution is unavailable, we therefore assume the case ended after 4 years.

⁵¹ See a full description of our coding methodology and cases identified as environmental in Appendix A.

Regulatory Capacity and Economic Capacity

To test the whether the regulatory chill effect of pending cases is conditional upon states' regulatory capacity, we create a *regulatory capacity* index, using composite factor analysis. To construct the index, we leverage two variables from the World Bank's Worldwide Governance Indicators: the regulatory quality index and the government effectiveness index. Regulatory quality reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.⁵² Government effectiveness captures states' administrative capacity, reflecting perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.⁵³

To test whether the effect of lost ISDS cases depend on states economic capacity, we use data on states' gross domestic product (GDP) per capita.⁵⁴ We expect the regulatory chill effect stemming from lost ISDS cases on respondent states' willingness to pass new regulation to be stronger for low-income respondent states than for high-income respondents.⁵⁵

Control variables

In addition, we include several variables that capture factors that may confound the relationship between ISDS cases and regulatory activity. First, we control for countries' membership in multilateral environmental agreements (MEAs), accessed through the International Environmental Agreements (IEA) Database Project (Mitchell 2018). Second, we control for the rolling number of IIAs a country has signed. We extract the IIA data from the UNCTAD's Investment Policy Hub and map it to our panel dataset.⁵⁶

Third we control for levels of democracy. A number of studies report a positive relationship between democracy and quality of environmental regulation (Barret and Graddy 2000, Congleton 1992, Ehrhardt-Martinez 2002, Li and Reuveny 2006, Murdoch et al. 1997, Neumayer 2002, Torras and Boyce 1998). It is argued that democracies are likely to provide more public goods than autocracies (Congleton 1992, Deacon 2009) and that well-functioning democratic institutions facilitate the mobilization and expression of societal demands (Bättig and Bernauer 2009). We use the polyarchy index, an electoral democracy index from the Varieties of Democracy data project, to classify countries' political systems (Coppedge et al. 2018, 40). To control for the fact that larger countries tend to have higher levels of regulatory activity, we use data on population size. Finally, we use data on CO2 Emissions per capita, to

⁵² See online: <http://info.worldbank.org/governance/wgi/rq.pdf>.

⁵³ See online: <http://info.worldbank.org/governance/wgi/ge.pdf>.

⁵⁴ These data were taken from the World Bank's World Development Indicators. See online: <https://datacatalog.worldbank.org/dataset/world-development-indicators>.

⁵⁵ Economic development may also have an independent effect on environmental regulatory activity. According to the Environmental Kuznets Curve hypothesis, wealthy countries are expected to issue more environmental policies in response to increasing demands for environmental quality with economic growth (Grossman and Krueger 1995).

⁵⁶ See online: <https://investmentpolicyhub.unctad.org/IIA>.

control for countries' regulatory response to actual pollution levels.⁵⁷ We lag this variable to avoid post-treatment problems.

5. Results

Our sample consists of 112 countries against whom one or more ISDS cases has been brought in the years 1990-2017. Our unit of analysis is country-years. We employ a pooled cross-sectional OLS regression with standard errors clustered at the country level to account for non-independence of observations within countries. We include country fixed effects in all models to account for the abovementioned potential of variability in FAOLEX' data quality across countries.⁵⁸ To control for the over-time heightened awareness and focus on environmental regulation worldwide, we include a time trend variable in all models. Lastly, to control for the path-dependency in levels of regulation within countries, we include a lagged dependent variable in all models. The basic model is as follows:

$$Y_{i,t} = \beta_0 + \beta_1 ISDScase_{i,t/t-1} + \beta_2 RegulatoryCapacity_{i,t} + \beta_3 GDP\ per\ capita_{i,t} + \beta_4 Population_{i,t} + \beta_5 MEAs_{i,t} + \beta_6 IIAs_{i,t} + \beta_7 CO2Em.pc_{i,t} + \beta_8 Env.reg_{i,t-1} + \beta_9 Timetrend_{i,t} + \varepsilon_{i,t}$$

where $Y_{i,t}$ is the number of environmental regulations country i has issued in year t , and β_1 is either ISDS cases pending in year t or ISDS cases lost in year $t-1$.

Bivariate relationships

Before presenting the results from our regressions analyses, we pause to ponder on the observed bivariate relationships between pending ISDS caseloads and domestic environmental regulatory activity for the ten most frequent respondents in ISDS cases (Figures 5-14).

Figures 5-14: Pending ISDS cases and environmental regulation, top 10 respondent states

These ten countries have been on the receiving side of 40 per cent of the cases in our sample,⁵⁹ and the variation across countries in observed regulatory response to pending ISDS cases seems to mirror some of the heterogeneity that our theory sought to explicate. However, they do not match directly with the part of our theory that predicted a more pronounced regulatory chill effect from pending cases in states with higher regulatory capacity.

In Mexico and Poland, the regulatory response to an increased caseload of pending ISDS cases seems to correspond with a decrease in environmental regulatory activity. In other words, they exhibit regulatory behavior akin to regulatory chill. The Mexican case is perhaps particularly interesting, as it shows how the initial rise in the pending caseload associated with the first wave of NAFTA cases was followed by a slight decrease in regulatory willingness in the early to mid-2000s. However, these first NAFTA cases started being resolved in the mid-2000s, their

⁵⁷ Population and CO2 emissions data were taken from the World Bank's World Development Indicators. See online: <https://datacatalog.worldbank.org/dataset/world-development-indicators>.

⁵⁸ An auxiliary effect of using country fixed effects is that it only allows us to look at intra-country regulatory chill. However, as the Philipp Morris cases against Australia and Uruguay have shown, the potential of inter-country regulatory chill is also worth analyzing. Future studies should seek to probe this potential spatial contagion effect at a more systematic level.

⁵⁹ 340 of 855 cases.

regulatory activity picked up again. Quite recently, however, another spike in cases has been followed by less regulatory activity again.

If we compare Mexico's case with that of Canada, another country whose incoming cases mostly emanate from NAFTA and has been sued the same amount of times as Mexico in our sample (27 times), the picture is less clear, but the same tendencies as in Mexico are on display. While the number of pending cases and regulatory activity seems to have been on parallel rises in the time period observed, there are marked drops in regulatory activity in the late 1990s and late 2000s that seem to correspond with a spike in cases brought. A similar trend is observed in the case of Spain, where the wave of renewable energy cases brought in the early to mid-2010s seems corresponds to a drop in regulatory activity.

In the cases of Russia and partly Argentina, the covariance of pending ISDS cases and regulatory activity is different. Both these states seem to regulate more in the face of a mounting ISDS caseload, behavior akin to regulatory 'heating' rather than regulatory chill. Other cases again, such as Venezuela, Egypt, the Czech Republic and India exhibit less clear patterns.

Regression results

The question is whether these relationships are functions of some sort of regulatory chill mechanism, or merely relationships that are functions of confounding circumstances. Table 1 shows the results for four models that examining H1 and H2 – the proposition that there is an unconditional effect of ISDS cases on domestic, environmental regulatory activity. In models 1 and 2, we estimate the effect of all ISDS cases regulatory behavior, and in models 3 and 4 we isolate the effect of ISDS cases that challenge an environmental regulatory act.

Table 1: Non-conditional effects, ISDS cases on environmental regulatory activity

All in all, the results from these four models indicate that we find no support for our two general regulatory chill hypotheses (H1 and H2). Model 1 indicates that the size of the pending ISDS caseload is not associated with a significant regulatory response. Model 3 confirms this finding when zeroing in on the effect of environmental ISDS cases. Similarly, models 2 and 4 finds no systematic relationship between lost ISDS cases, and the subsequent domestic regulation in the losing state.

Table 2 presents four models that probe H3 and H4, with separate models using both the full ISDS caseload and the environmental cases subsample to test each hypothesis. To test whether the relationship between of ISDS cases and respondent state regulations is conditional upon different aspects of respondent states' capacity levels, we extend our baseline model to include two interaction terms. In models 5 and 7 we include a term where pending cases are interacted with the regulatory capacity index, and in models 6 and 8 we include a term that interacts lost ISDS cases with the respondent state's income levels (as proxied by GDP per capita).

Table 2: Interaction effects, ISDS cases on environmental regulatory activity

The results from models 6 and 8, which test H4, indicate that in addition to the fact that there is no aggregate effect of lost cases on respondent states' environmental regulation, there is no observable conditional relationship based on the income-level of the respondent states. All in

all, we find no evidence for the claim that losing ISDS cases has a systematic effect on low-income host states regulatory willingness in the field of environmental regulation.

The results from models 5 and 7, which test H3, show a quite different picture. In both models, the interaction term is significant, indicating that there is indeed a conditional association between pending ISDS cases and concurrent environmental regulatory activity in high regulatory capacity states. To substantiate these findings, we have created two figures that compares the predicted regulation levels for Venezuela and Canada (Figure 15), and Egypt and Spain (Figure 16) – all countries who are relatively frequent respondents under ISDS.⁶⁰

HERE: Figure 15: Predicted environmental regulations, Venezuela & Canada

HERE: Figure 16: Predicted environmental regulations, Egypt & Spain

There are a few things to note regarding these graphs. First, note that in estimating marginal effects, the regression slopes for cases pending were statistically significant for all estimated values of regulatory capacity. Secondly, the two slopes for our high regulatory capacity stand-ins, Canada and Spain, are both downward sloping. This indicates that H3 is supported. This, Canada and Spain being good examples of states with high regulatory capacity that exhibit behavior akin to regulatory chill in the face of an increasing pending ISDS caseload. It should be noted however, that this chill effect from pending cases are only observed for the very high end of our regulatory capacity index, i.e. those with values of approximately 1.5 or higher on the index (it ranges from approximately -2 to 2). The only states in our sample with an average regulatory capacity score that exceeds 1.5 between 1990 and 2017 in our sample are the United Kingdom, Canada, Australia, Austria, Germany, United States and Belgium.⁶¹

Third, and perhaps more surprisingly, the predicted regulatory responses to increases in pending ISDS caseload for Venezuela and Egypt, two states with low average scores on the regulatory capacity index, indicate that for low-capacity states, the effect of more cases is regulatory heating rather than regulatory chilling. To be sure, we find that the more ISDS cases these countries face, the more regulations they can be expected to pass. This regulatory heating effect is not only predicted for countries at the very low end of the regulatory capacity spectrum. Our model predicts regulatory heating for countries with regulatory capacity scores as high as 0.5 on our index, which includes countries such as Costa Rica (average regulatory capacity score of 0.49) Mexico (0.29) and Turkey (0.21).

Robustness

We conduct several additional tests to verify the finding that states' regulatory response to pending ISDS cases is conditional upon regulatory capacity.⁶² First, we include year fixed effects, to control for potential time-specific policy shocks that are shared across countries. Our findings remain largely unchanged by the inclusion of this control. Second, we control for the

⁶⁰ The plots are created using model 7 in Table 2. The values of all other variables than *Env. ISDS cases, pending* and *Regulatory capacity* are held at their means. I have set the values on the regulatory capacity index to match the average observed value on the index for Venezuela, Canada, Egypt and Spain in our sample.

⁶¹ Note that there are many more countries with a score of 1.5 or higher for individual years in our sample.

⁶² As a standard rule, we have re-run models 5 and 7 from Table 2 throughout our analysis. See Appendix D for full regression tables for the analyses mentioned here.

effect of potential outliers by estimating robust regression models.⁶³ We find that our results are not driven by particularly influential observations. Third, we estimate our models using the untransformed version of our dependent variable. In this case, the results from our original models are not reproduced. Fourth, we estimate our models using the change in environmental regulations from $t-1$ to t instead of just controlling for environmental regulations in $t-1$. Our findings are largely unchanged when using both the log-transformed and the untransformed version of this variable. Fifth, we estimate our models using alternative operationalizations of regulatory capacity. We estimate models using the two subcomponents in our regulatory capacity index, WGI's government effectiveness and regulatory quality respectively, as lone-standing dependent variables. Our results remain unchanged. Then we create an alternative, broader regulatory capacity index, based on the two original variables, as well as the Bureaucratic quality and Control of Corruption from the International Country Risk Guide. Our results are largely reproduced using this alternative index.

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 developing countries, for example, are currently what reform options they should apply. Should they terminate their IIAs, or chose more piecemeal avenues for reform? One aspect this decision hinges on is the validity of the perception that ISDS provisions can be used to unduly constrain public policy measures taken in the best interest of the people of any given country. Against this background, our analysis shows that ISDS cases do not seem to have a general negative, or chilling, effect on regulatory activity relating to the environment. Given the fact that ISDS mechanisms are included in thousands of IIAs and that the number of ISDS cases have been on a continued rise since the early 2000s, this finding is encouraging. It shows that governments are relatively resilient in their regulations, and continue to regulate in the public interest despite having to defend themselves ISDS cases. It is particularly encouraging that low income, capital-constrained countries exhibit the same tendency as high-income states with regard to cases in which they eventually lose.

On the flipside, our analysis shows that countries with high-capacity bureaucracies *do* exhibit a chilling of their regulatory activity while ISDS cases are pending. This evidence partially supports the critique that ISDS proceedings may be used strategically by investors to (temporarily) impede regulatory processes (Pelc 2017). Moreover, it aligns well with some of the more high-profile examples of regulatory chill, such as the response to the Philipp Morris cases, and the finding that Canadian regulators take the threat of ISDS into account when they regulate – these instances of chill all taking place in countries with relatively high-capacity regulatory bodies.

We would like to highlight however, that this observation of regulatory chill in response to an increase in a country's pending ISDS caseload can also be viewed as an example of good governance. After all, one important task of bureaucracies is to oversee a states' adherence to its commitments, whether they are enshrined in domestic or international treaties. Thus, a

⁶³ These models were run using STATA's `rreg` command. In `rreg`, the most influential observations, as measured by a combination of residual values and leverage (Cook's distance), are dropped. Furthermore, observations with large absolute residuals are down-weighted.

temporary deceleration of regulation in a certain policy area to assess the integrity of claims brought against one or more similar measures is probably sound. Especially seeing as how being found liable for breach under an IIA can be extraordinarily costly.

The finding that countries with low regulatory capacity respond to pending ISDS cases by regulating more, not less, is both puzzling and a little bit worrying. There are (at least) two ways to interpret this finding. On the one hand, this ‘regulatory heating’ might be a deliberate response, where countries, adamant that they are not at fault for regulating in the public interest, continue with ‘more of the same’ in the face of an increasing caseload. On the other hand, the response might be an expression of blissful ignorance on the part of low-capacity respondent states – a result of insufficient intra-governmental coordination or miscommunication between different governmental agencies at the national and even subnational level. As a result, the information about potential inconsistencies of measures taken by a country’s with its IIA commitments might never reach the regulators. In other words, it seems that low-capacity states do not sufficiently learn from ISDS cases and integrate this new knowledge in the future regulatory procedures.

Although it is difficult to assess the relative credence of these two interpretations, the nature of our regulatory capacity index leads us to lean towards the latter explanation, that the observed regulatory heating is probably a function of capacity constraints. Regardless of the reasons for the observed tendency however, regulatory heating is probably not the rational path of action for states facing mounting ISDS claims, the simple reason being that such action may thus result in additional ISDS cases in the future.

6. Conclusion

The question of whether IIAs lead to a chilling of domestic regulatory activity in signatory countries is one of the key concerns in policy and academic debates about the legitimacy of the international investment regime. To the best of our knowledge, this is the first study to test the effects of ISDS cases on domestic regulatory activity across a broad range of countries. Our sample includes 112 countries against whom an ISDS arbitration has been brought between 1990 and 2017. We focus on environment regulations as ISDS relating to the environment have been relatively pronounced in the total case load and represent a particularly interesting case to test the regulatory chill hypothesis as governments are expected to respond stronger to environmental ISDS cases.

We develop an original theory to predict the effects of pending and lost ISDS cases in general and across countries with different governance capacities and income levels. Our theory is not confined to the analysis of environmental ISDS cases, but can be applied in future research to analyze the effects of ISDS on other policy domains as well. While we expect that both pending and lost ISDS cases have a negative effect on the regulatory activity of respondent states, our theory predicts that these effects depend on the characteristics of the country facing the ISDS case. We theorize that regulatory chill from pending cases is stronger for states with high levels of regulatory capacity. In the case of lost ISDS cases, we expect that the regulatory activity of low-income countries should more severely be constrained.

Four findings emerge from our analysis. First, we do not find empirical support for a general chilling effect on the regulatory activity relating to the environment in countries that face ISDS cases. This result applies both for pending and lost cases. When we test the effects of ISDS cases for different countries, a more nuanced picture emerges. Our second finding is that we get to observe a regulatory chilling effect from pending ISDS cases on environmental regulatory activity in particularly high regulatory capacity states. This is in line with some of the qualitative studies (e.g. Van Harten and Scott 2016) and may be interpreted as a rational reaction of well-functioning bureaucracies to the insecurity induced into a governance system from the initiation of an ISDS case. Interestingly, pending ISDS cases do not seem to negatively affect the regulatory activity of low-capacity states. On the contrary, our third finding is that there seems to be a positive relationship between pending ISDS cases and regulatory activity for low-income countries. We lean towards interpreting this regulatory heating effect as stemming from poorly coordinated activities of different branches of government. It is problematic insofar as it may lead to more of the same types of regulations without assessing whether those regulations are in fact in line with a country's commitments under IIAs. That in turn may provide the basis for more ISDS cases further down the line. Fourth, and last, we do not find that the relationship between lost ISDS and subsequent regulation is dependent upon respondent states' income levels. This is in part a contradiction of the argument that regulatory chill is particularly problematic in poorer developing countries (Tienhaara 2011), although it should be noted that these countries often face regulatory capacity constraints in addition to being cash-strapped. In sum however, our study indicates that ISDS cases do not systematically lead to chilling of regulatory activity across countries – at least in the field of environmental regulation.

A number of interesting avenues for future research follow from our study that can help to further substantiate the empirical relationship between IIAs, ISDS and domestic regulation. First, future studies should test our findings in other fields of regulation or within broader policy areas or industries. Second, we have not been able to test all theoretically possible mechanisms of regulatory chill. We have only been able to test the effect of investment disputes after an actual ISDS has been initiated. For example, according to the anticipatory chill hypothesis policymakers internalize the potential for investor disputes while drafting regulations. Furthermore, threats of arbitration can also lead to specific response chills forcing the host country to change its regulatory approach. While more in-depth, qualitative process tracing studies are needed to test these effects, this research should endeavor to select cases less based on observed outcomes (i.e. regulatory chill). Third, we have only been able to look at the adoption of environmental regulations assuming that this is a good proxy for environmental protection. ISDS cases, however, can also lead to an alteration of existing regulations, an effect that would not be noticeable in our cross-country data. Again, such effects can best be analyzed by in-depth, case-specific research. Fourth, another promising avenue of future research is to examine whether regulatory chill is more pronounced in cases where the measure challenged imposes costs on a few heavily hit actors than many thinly hit actors, as these actors have a greater incentive to organize in opposition to further regulation. Fifth, future studies should seek to analyze whether cross-country chill effects, like the one observed in New Zealand in the context of the Philip Morris case against Australia, are a systematic problem.

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Appendix A – Identifying environmental ISDS cases

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

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 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.

Coding procedure

The coding has been a two-step process. First, we have identified what the relevant regulatory measures, resolutions, policies or government actions claimants challenge in each of the 855 ISDS cases in our sample. Secondly, we consider whether this measure falls under the above definition of environmental measure.

We first read the investment and case summaries for each of the 855 cases in our sample on UNCTAD’s investment policy hub.⁶⁴ Next, we probed 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 were missing or inconclusive we turned to second-source reporting on the cases. We mainly relied on the Investment Arbitration Reporter and Global Arbitration Review news services in this regard (both requiring subscription).

In cases where we uncover the measure challenged, but are uncertain about how to classify it, we first turned to our boundary rules, as elaborated on below. Where information on the measure challenged at this stage remains undisclosed, 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 licences (or other land use licenses) are withdrawn without us knowing why the respondent state in the given case withdrew the particular license.

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.*

⁶⁴ See online: <https://investmentpolicyhub.unctad.org/ISDS>.

- 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).*
 - (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 (thereunder 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 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).

Environmental cases

Based on the above coding rules, we identified a total of 133 cases in which the investor claimant challenged an environmental measure, 694 cases that did not concern an environmental measure, and 28 cases in which there was insufficient information to identify whether the case was environmental or not. The full list of environmental cases are:

<i>9REN Holding v. Spain</i> (2015)	<i>ČEZ v. Bulgaria</i> (2016)
<i>Abengoa v. Mexico</i> (2009)	<i>Charanne and Construction Investments v. Spain</i> (2012)
<i>Agarwal and Mehta v. Uruguay</i> (2017)	<i>Chemtura v. Canada</i> (2002)
<i>Agro EcoEnergy and others v. Tanzania</i> (2017)	<i>Chevron and TexPet v. Ecuador (I)</i> (2006)
<i>Al Tamimi v. Oman</i> (2011)	<i>Chevron and TexPet v. Ecuador (II)</i> (2009)
<i>Albaniabeg Ambient v. Albania</i> (2014)	<i>Churchill Mining and Planet Mining v. Indonesia</i> (2012)
<i>Allard v. Barbados</i> (2010)	<i>CIC Renewable and others v. Italy</i> (2016)
<i>Alstom Power v. Mongolia</i> (2004)	<i>Clayton/Bilcon v. Canada</i> (2008)
<i>Alten Renewable v. Spain</i> (2015)	<i>Commerce Group v. El Salvador</i> (2009)
<i>Antaris v. Czech Republic</i> (2013)	<i>Copper Mesa v. Ecuador</i> (2011)
<i>Antin v. Spain</i> (2013)	<i>Cordoba Beheer and others v. Spain</i> (2016)
<i>Aven and others v. Costa Rica</i> (2014)	<i>Corona Materials v. Dominican Republic</i> (2014)
<i>Azinian v. Mexico</i> (1997)	<i>Cosigo Resources and others v. Colombia</i> (2016)
<i>Ballantine v. Dominican Republic</i> (2014)	<i>Crystallex v. Venezuela</i> (2011)
<i>Bayview v. Mexico</i> (2005)	<i>CSP Equity Investment v. Spain</i> (2013)
<i>BayWa r.e. v. Spain</i> (2015)	<i>Cube Infrastructure v. Spain</i> (2015)
<i>Beijing Shougang and others v. Mongolia</i> (2010)	<i>DCM Energy and others v. Spain</i> (2017)
<i>Belenergia v. Italy</i> (2015)	<i>Dominion Minerals v. Panama</i> (2016)
<i>Berkowitz v. Costa Rica</i> (2013)	<i>Dow AgroSciences v. Canada</i> (2009)
<i>Biedermann v. Kazakhstan</i> (1996)	<i>E.ON SE and others v. Spain</i> (2015)
<i>Biram and others v. Spain</i> (2016)	<i>Eco Oro v. Colombia</i> (2016)
<i>Blusun v. Italy</i> (2014)	<i>EDF v. Spain</i> (2016)
<i>Bogdanov v. Moldova (IV)</i> (2012)	<i>Elitech and Razvoj v. Croatia</i> (2017)
<i>Burmilla Trust and others v. Lesotho</i> (2016)	<i>ENERGO-PRO v. Bulgaria</i> (2015)
<i>Cavalum SGPS v. Spain</i> (2015)	
<i>CEF Energia v. Italy</i> (2015)	

- Eskosol v. Italy* (2015)
- ESPF and others v. Italy* (2016)
- Ethyl v. Canada* (1997)
- Europa Nova v. The Czech Republic* (2013)
- Eurus Energy v. Spain* (2016)
- EVN v. Bulgaria* (2013)
- Foresight and others v. Spain* (2015)
- Foresti v. South Africa* (2007)
- FREIF Eurowind v. Spain* (2017)
- 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)
- 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)
- Infracapital v. Spain* (2016)
- InfraRed and others v. Spain* (2014)
- Isolux v. Spain* (2013)
- JGC v. Spain* (2015)
- JSW Solar and Wirtgen v. Czech Republic* (2013)
- Kingsgate v. Thailand* (2017)
- Kruck and others v. Spain* (2015)
- KS and TLS Invest v. Spain* (2015)
- Landesbank Baden-Württemberg and others v. Spain* (2015)
- Lone Pine v. Canada* (2013)
- Longyear v. Canada* (2014)
- Maffezini v. Spain* (1997)
- Marion Unglaube v. Costa Rica* (2008)
- Masdar Solar v. Spain* (2014)
- 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)
- OperaFund v. Spain* (2015)
- Pac Rim v. El Salvador* (2009)
- Parkerings v. Lithuania* (2005)
- Photovoltaik Knopf Betriebs v. The Czech Republic* (2013)
- Plama v. Bulgaria* (2003)
- Portigon v. Spain* (2017)
- Quiborax v. Bolivia* (2006)
- Reinhard Unglaube v. Costa Rica* (2009)
- Renco v. Peru* (2011)
- RENERGY v. Spain* (2014)
- Rockhopper v. Italy* (2017)
- RREEF v. Spain* (2013)
- RWE Innogy v. Spain* (2014)
- Saar Papier v. Poland (I)* (1994)
- Saar Papier v. Poland (II)* (1996)
- Schaper v. Poland* (1998)
- Silver Ridge v. Italy* (2015)

SolEs Badajoz v. Spain (2015)

St. Marys v. Canada (2011)

Stadtwerke München and others v. Spain (2015)

STEAG 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)

Vattenfall v. Germany (I) (2009)

Vattenfall v. Germany (II) (2012)

VICAT v. Senegal (2014)

Vivendi v. Argentina (I) (1997)

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)

Appendix B – The FAOLEX data on environmental regulation

(to be added)

Appendix C – Descriptive statistics

Table C1: Descriptive statistics for all variables

	count	mean	sd	min	max
ln(Environmental regulations)	3135	1,057696	0,9831996	0	5,631212
ISDS cases, pending	3135	0,9161085	2,778056	0	38
Env. ISDS cases pending	3135	0,1416268	1,16165	0	36
ISDS cases, lost	3135	0,0478469	0,2817706	0	5
Env. ISDS cases, lost	3135	0,0047847	0,0690168	0	1
Regulatory capacity	3109	-0,0144395	0,8519461	-2,050571	2,029854
GDP per capita	3006	9549,056	12630,4	161,8338	67606,92
ln(Population)	3094	16,24514	1,684214	11,47505	21,04997
IAs signed	3135	31,82456	28,86111	0	155
Polyarchy	3008	0,5190947	0,2697711	0,0152977	0,9399808
MEAs signed	3104	56,69526	53,13807	0	278
CO2 Emiss. per capita	3038	4,611475	5,688927	0,0382172	34,03695

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, the two indicators used to construct the regulatory capacity index, *Regulatory quality* and *Government effectiveness* from the Worldwide Governance Indicators, are coded only for years 1996, 1998, 2000 and 2002-2017. Because of the relative inertia in institutional development, we interpolate the values for years 1997, 1999 and 2001 by way of taking the average of the values for year $t-1$ and $t+1$. For years 1990-1995, we extrapolate the value for year 1996 backwards. To assess whether this affected our results, we ran our models with a version of the Regulatory capacity index that was not based on inter- and extrapolated data. The results remained virtually unchanged.

Second, we replaced missing data on GDP per capita from the World Bank with data from the Penn World tables. **Graham and Tucker (2018)** carried out the replacements. Their full series is available through the International Political Economy Data Resource.⁶⁵

Third, the CO2 emissions data from the World Bank only runs up until 2014 at the time of analysis. We therefore replaced the missing data for years 2015 and 2016 by extrapolated the average value of 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.

⁶⁵ See online: <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/X093TV>.

Appendix D - Robustness checks

(to be added)

Tables and figures from text

Figure 1: IIAs signed and ISDS claims, 1957-2017

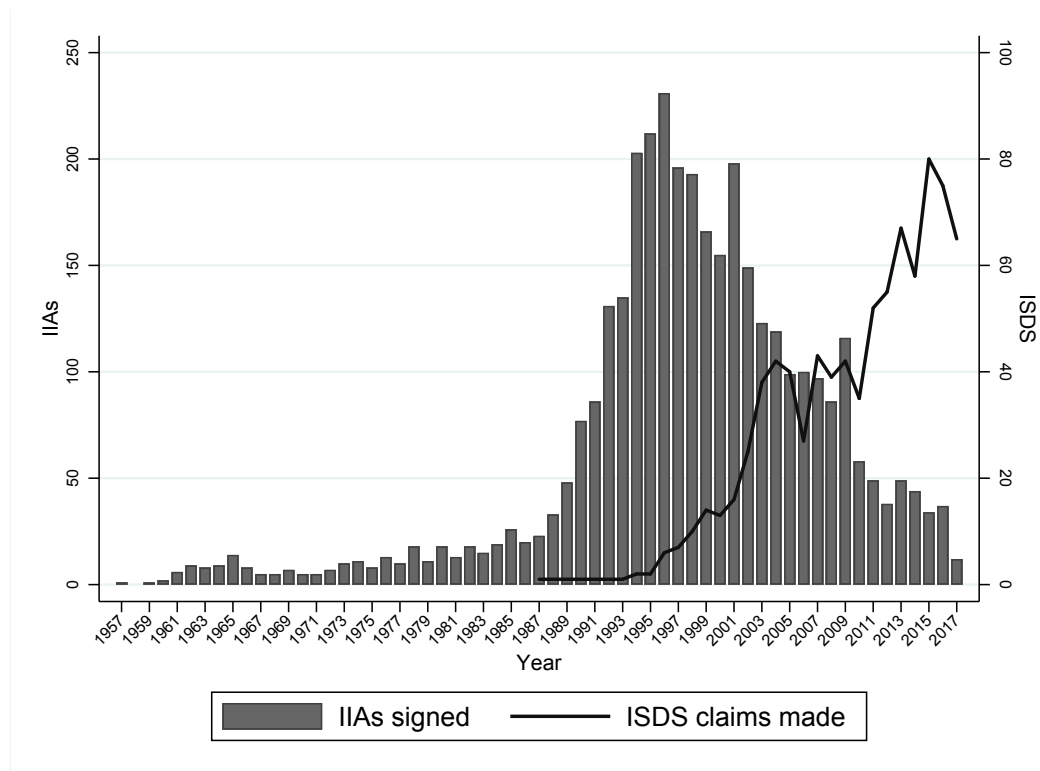


Figure 2: Environmental regulatory activity over time

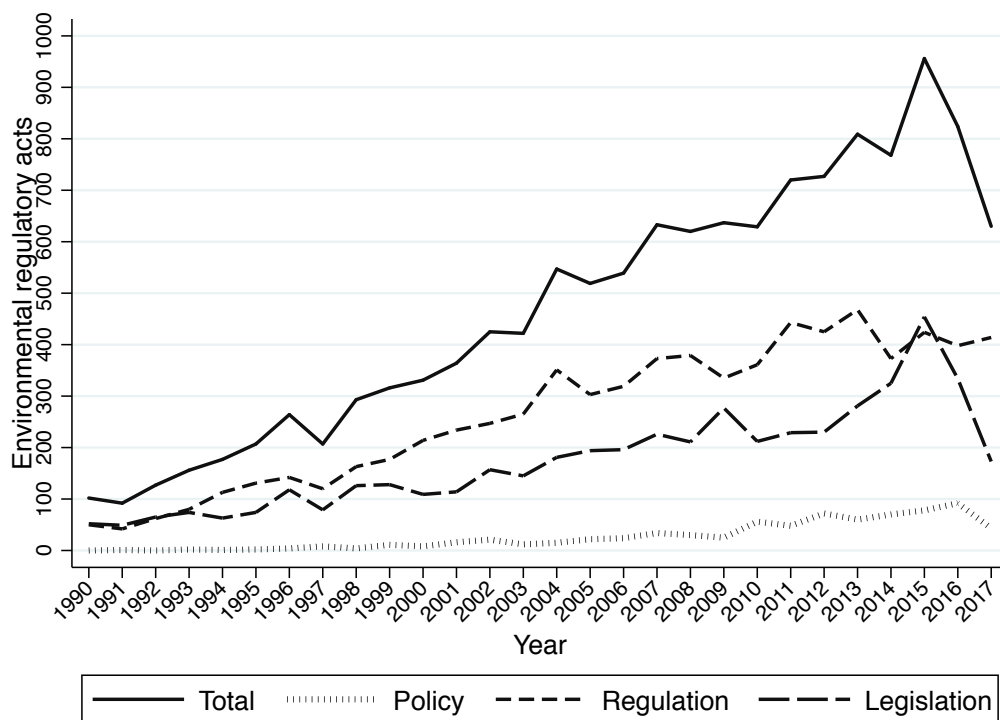


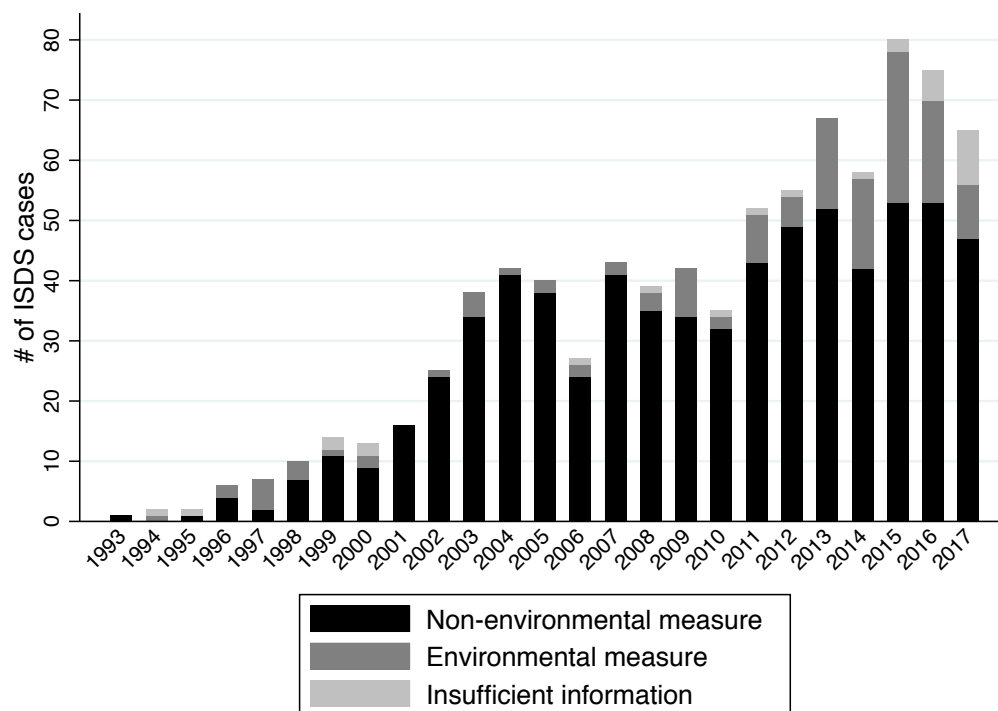
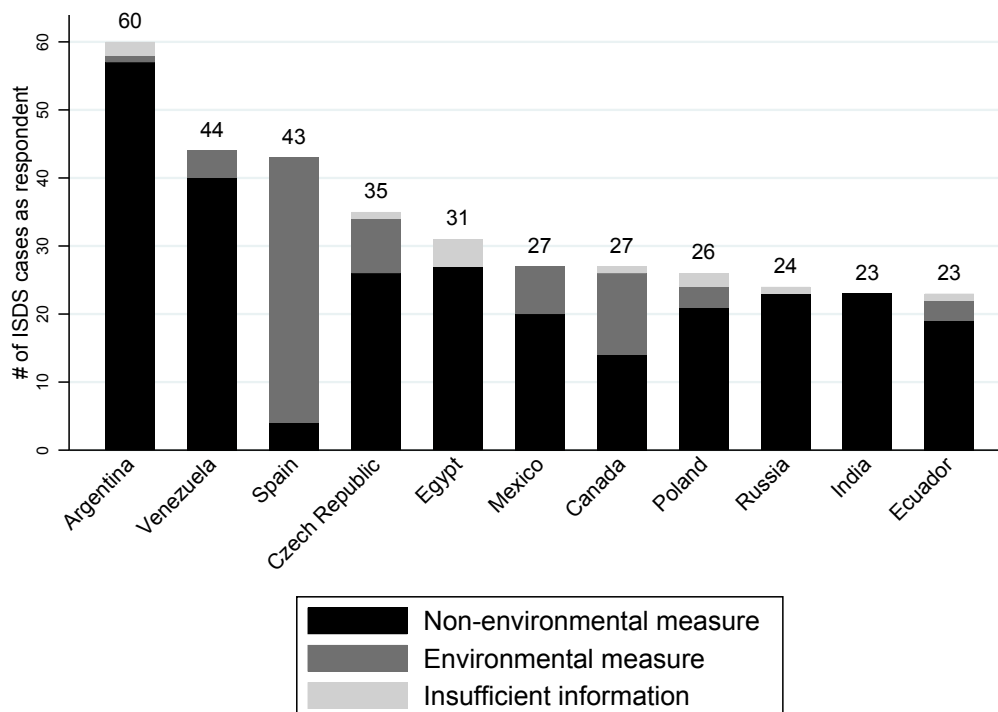
Figure 3: Environmental ISDS cases, 1987-2017**Figure 4: Top 10 respondent states in ISDS**

Table 1: Non-conditional effects, ISDS cases on environmental regulatory activity

	All ISDS cases		Environmental ISDS cases	
	Model 1	Model 2	Model 3	Model 4
ISDS cases, pending	0,00211 (0.00592)			
ISDS cases, lost _(t-1)		0,0768 (0.0509)		
Env. ISDS cases pending			-0,00155 (0.00625)	
Env. ISDS cases, lost _(t-1)				0,0634 (0.129)
Regulatory capacity	0,0731 (0.0745)	0,073 (0.0741)	0,0679 (0.0747)	0,0683 (0.0744)
GDP per capita	1.62e-05* (8.54e-06)	1.65e-05* (8.57e-06)	1.61e-05* (8.54e-06)	1.61e-05* (8.53e-06)
ln(Population)	0,127 (0.216)	0,135 (0.214)	0,119 (0.214)	0,12 (0.213)
MEAs signed	-0,00709 (0.00730)	-0,00715 (0.00727)	-0,00714 (0.00728)	-0,00711 (0.00726)
IAs signed	0.00575*** (0.00177)	0.00582*** (0.00177)	0.00577*** (0.00177)	0.00578*** (0.00177)
Polyarchy	0,16 (0.175)	0,159 (0.180)	0,152 (0.181)	0,154 (0.180)
CO2 Emiss. pc _(t-1)	-0.0872* (0.0521)	-0.0865* (0.0518)	-0.0872* (0.0520)	-0.0871* (0.0521)
Timetrend	0.0148** (0.00594)	0.0144** (0.00585)	0.0152** (0.00585)	0.0151** (0.00582)
Environmental regulations _(t-1)	0.268*** (0.0323)	0.267*** (0.0323)	0.268*** (0.0322)	0.267*** (0.0324)
Constant	-1,087 (3.605)	-1,223 (3.554)	-0,947 (3.557)	-0,964 (3.540)
Country fixed effects	Yes	Yes	Yes	Yes
Observations	2,716	2,716	2,716	2,716
R-squared	0,273	0,273	0,273	0,273
Number of countries	107	107	107	107

The dependent variable in each model is the natural logarithm of the sum of all acts of environmental regulation, legislation and policy counted by FAOLEX in any given year. Robust standard errors clustered on countries in parentheses. *** p<0.01 ** p<0.05 * p<0.1

Table 2: Interaction effects, ISDS cases on environmental regulatory activity

	All ISDS cases		Environmental ISDS cases	
	Model 5	Model 6	Model 7	Model 8
ISDS cases, pending	0,00298 (0.00550)			
ISDS pending*Reg. cap.	-0.0133** (0.00631)			
ISDS cases, lost _(t-1)		0,102 (0.0672)		
ISDS lost _(t-1) *GDP per cap.		-2.74e-06 (4.24e-06)		
Env. ISDS cases pending			0.0659** (0.0270)	
Env. ISDS pending*Reg. cap.			-0.0655*** (0.0245)	
Env. ISDS cases, lost _(t-1)				0,0667 (0.198)
Env. ISDS lost _(t-1) *GDP per cap.				-2.27e-07 (5.52e-06)
Regulatory capacity	0,0964 (0.0737)	0,0735 (0.0738)	0,0802 (0.0718)	0,0683 (0.0745)
GDP per capita	1.77e-05** (8.64e-06)	1.68e-05* (8.62e-06)	1.77e-05** (8.76e-06)	1.61e-05* (8.56e-06)
ln(Population)	0,12 (0.215)	0,137 (0.215)	0,136 (0.216)	0,12 (0.213)
MEAs signed	-0,00697 (0.00735)	-0,00714 (0.00727)	-0,00675 (0.00734)	-0,00711 (0.00726)
IAs signed	0.00580*** (0.00179)	0.00582*** (0.00177)	0.00598*** (0.00177)	0.00578*** (0.00177)
Polyarchy	0,18 (0.171)	0,158 (0.180)	0,174 (0.176)	0,154 (0.180)
CO2 Emiss. pc _(t-1)	-0,0859 (0.0519)	-0.0865* (0.0518)	-0.0873* (0.0522)	-0.0871* (0.0521)
Timetrend	0.0145** (0.00590)	0.0143** (0.00586)	0.0139** (0.00589)	0.0151** (0.00582)
Environmental regulations _(t-1)	0.266*** (0.0320)	0.267*** (0.0323)	0.266*** (0.0321)	0.267*** (0.0324)
Constant	-1,001 (3.577)	-1,253 (3.561)	-1,276 (3.592)	-0,964 (3.542)
Country fixed effects	Yes	Yes	Yes	Yes
Observations	2,716	2,716	2,716	2,716
R-squared	0,274	0,273	0,274	0,273
Number of countries	107	107	107	107

The dependent variable in each model is the natural logarithm of the sum of all acts of environmental regulation, legislation and policy counted by FAOLEX 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

Figures 5-14: Pending ISDS cases and environmental regulation, top 10 respondent states

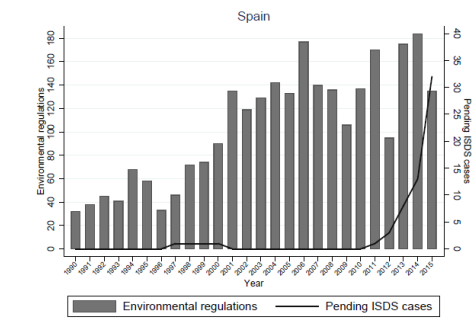
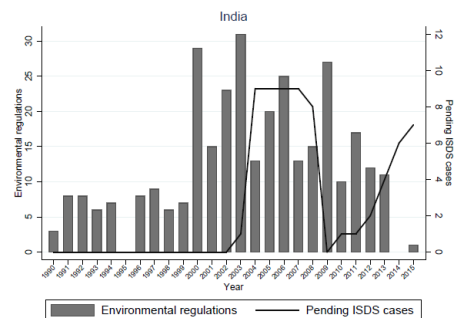
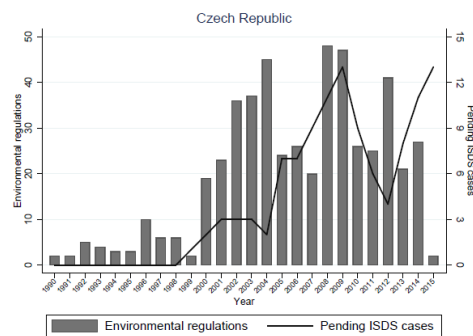
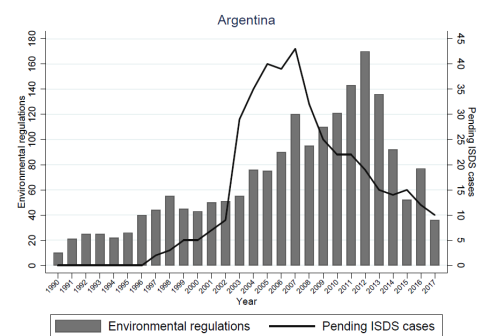
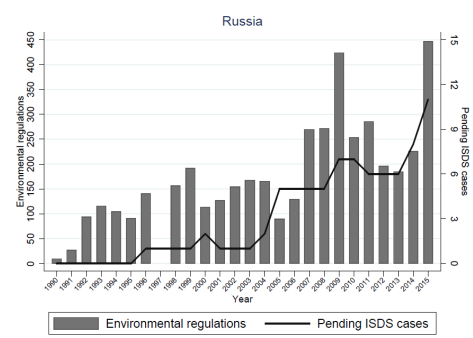
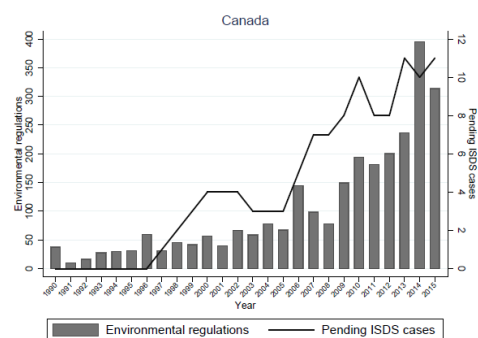
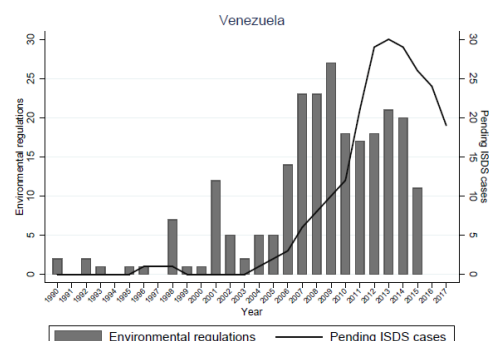
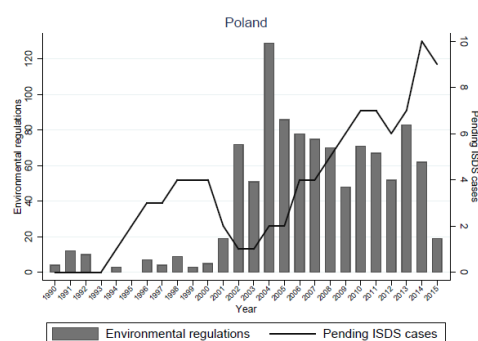
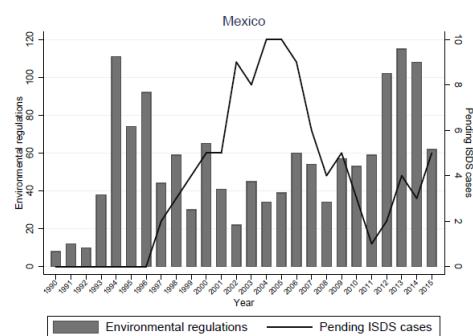
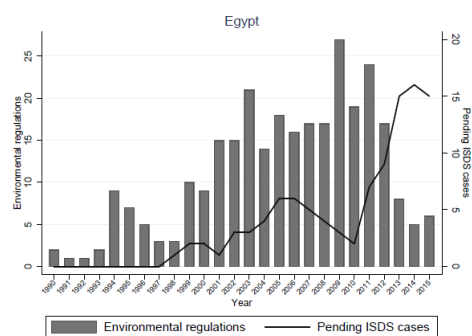


Figure 15: Predicted environmental regulations, Venezuela & Canada

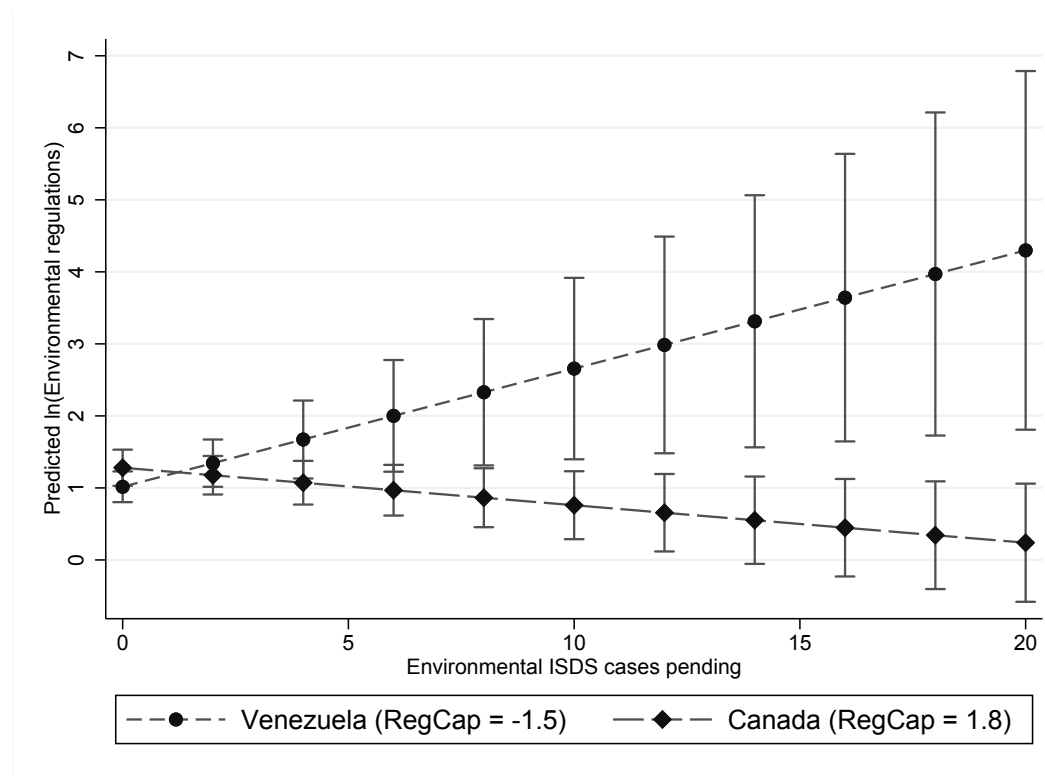


Figure 16: Predicted environmental regulations, Egypt & Spain

