Regulatory Chill and the Effect of Investor State Dispute Settlements

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October 9, 2018

Abstract

Legal conflicts between multinational firms and host governments are often decided by international arbitration panels - as opposed to courts in the host country - due to provisions in international investment agreements known as Investor State Dispute Settlements (ISDS). Critics fear that ISDS panels favor multinational firms, and thus make governments reluctant to adopt appropriate policies (regulatory chill). In this paper I develop a theoretical model in which the outcome of cases brought to court is uncertain due to the vagueness of the law protecting investors and low quality of courts. I show that from a world welfare perspective there is no underregulation, only an overregulation problem. However, from a national welfare perspective "frivolous" lawsuits may lead to regulatory chill. I also show that for countries with error prone national courts a shift to an ISDS based international tribunal which is of higher decision quality improves host country welfare. Stronger protection rights for firms arising from international treaties can be beneficial to the host country if the FDI response is sufficiently strong or if similar countries sign a reciprocal agreement.

JEL Classification: F23, F53, H25

Keywords: Investor State Dispute Settlement, Regulatory chill, International Investment Agreement, Foreign Direct Investment

1   Introduction

"Except in rare circumstances, non-discriminatory regulatory actions by a Party that are designed to protect legitimate public welfare objectives, such as public health, safety and the environment, do not constitute indirect expropriations." Bilateral Investment Treaty Columbia/USA

Legal conflicts between multinational firms and host governments about policy changes are widespread. Often, these conflicts are decided through international arbitration by a panel of expert lawyers, known as Investor State Dispute Settlement (ISDS), instead of courts in the host country. International arbitration is agreed upon in international investment agreements, of which by the end of 2014 there were 3268 in place. In recent years between 40 and 60 ISDS cases have been decided annually, some of which involve substantial amounts of money (UNCTAD, 2015a,b).[1]

Many conflicts center around the issue of indirect expropriation, which refers to government actions that have a substantial adverse impact on a firm without nationalizing a firm outright. It is difficult to define precisely what indirect expropriation means in practice, in particular since the law shall not prevent a government from rightful regulation. The conceptual vagueness is shown exemplary in the bilateral investment treaty between Columbia and the US, as cited above (see, Nikiema (2012) for a detailed description and legal analysis of similar clauses in other treaties). Courts therefore have some leeway in deciding cases brought to them by firms.

Critics of ISDS from the scientific community (e.g., Gerstetter and Meyer-Ohlendorf, 2013; Tienhaara, 2011) or international advocate groups such as *attac* fear that international arbitration panels decide more often than national courts in favor of multinational firms. This is seen as problematic for the host country government not only because the government is required to pay compensation or revert its policy if it loses the case in court, but mostly because it may prevent governments from carrying out legitimate policy changes in the future if lawsuits by firms are anticipated, a situation known as *regulatory chill*. This argument appears to be not fully convincing because regulation with a compensation payment should be worthwhile for the government if the negative effects of missing regulation are sufficiently large. This viewpoint assumes however that only legitimate lawsuits are filed, which may not always be the case, as argued below.

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[1] An example is the Swedish energy company Vattenfall, that has filed lawsuits in Germany and under ISDS (ICSID) against the German government's revocation of nuclear power plant licencses after the nuclear power incident in Fukushima, asking for compensation in the amount of 3.7 billion Euros; see The Economist, The arbitration game, October 11, 2014

This paper provides a formal economic framework for the analysis of i) regulatory chill in the presence of foreign direct investment (FDI) and ii) the welfare effects of shifting decision power of conflicts between foreign investors and host countries from a national court to an international body via ISDS. While recent research has looked into the effects of ISDS, discussed in detail below, to the best of my knowledge there is no formal work on regulatory chill and the explicit modelling of court challenges in the context of FDI. Thereby the paper sheds light on the debate of ISDS-based arbitration in recent trade agreements such as CETA and TTP.

The theoretical model has several features that make for a realistic setup. The underlying economic framework is standard: firms are afraid of harmful regulation after entry into the host country, which involves sunk cost. On the other hand, absence of regulation causes a loss (externality) to the host government (such as environmental hazard from production). In the absence of a compensation payment to the firm for harmful regulation the hold up problem induces the well known underinvestment phenomenon. The presence of courts, to which firms may appeal for compensation in case of harmful regulation without compensation, changes the outcome in a nontrivial way. Whether the firm is entitled to compensation by law depends on circumstances, modeled as an uncertain state of nature ex ante. This aspect captures the vagueness of investor protection clauses in investment treaties. Unlike the firm and host government, courts do not perfectly observe the state of nature however, and therefore may make a wrong decision: ruling in favor of compensation even though there should none be paid - thus setting the stage for a frivolous lawsuit-, or not rewarding compensation even though the firm should get it. Moreover, the quality of the court, measured by the probability with which the court identifies the true state of nature, is a parameter of the model that allows me to capture potential differences between national courts and international tribunals. Similarly, I vary the strength of the law protecting the firm against regulation without compensation, measured by the ex ante probability of the state of nature that favors the firm.

Within this framework I establish five insights. First (Prop. 2), regardless of the quality of the court the firm always files a lawsuit if the state of nature favors the firm to receive compensation for regulation but wasn't offered any. That is, bad court quality does not deter the firm from claiming its rights. However, when the firm is not entitled to compensation the firm challenges the host government if the court is of lower quality because the court may then wrongfully award compensation. This is the case of a frivolous lawsuit, which implies that laws for compensation enforced by courts are not always a remedy against the underinvestment problem.

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The second result (Prop. 3) shows under which circumstances the host government pays compensation for regulation if it anticipates correctly the legal behavior of the firm (as just described). When the court quality is high, the host government chooses regulation and pays compensation voluntarily when the production externality is high and the firm is entitled to compensation, while not paying compensation when the firm is not entitled to it. This result backs the logic of the proponents of investor protection laws. "Good" regulation is not prevented, and compensation payments are in the self interest of the host government if the stakes are high enough. However, when the court quality is sufficiently low, the host government never pays compensation regardless of the state of nature. Rather the host government takes a gamble in court if the court may come out wrongly even though the firm is entitled to compensation. This result can be seen as an analogue to the frivolous lawsuit by the firm, and could be termed frivolous regulation.

The third finding (Prop. 4+5) speaks to the issue of regulatory efficiency and regulatory chill in particular. From a world welfare perspective (combining firm profits and host country welfare) there is no problem of underregulation ex post (after firm entry), only of overregulation. That is, the government regulates the firm even if it should not do it from a world welfare perspective. Therefore, fears of regulatory chill are not justified from a global perspective. At the same time, however, underregulation may occur from a host country perspective in a situation where the firm is not entitled to compensation, but nevertheless would file a lawsuit if facing regulation without compensation. This happens only when court quality is relatively low. Anticipating the lawsuit, the government chooses not to regulate in the first place, thus being deterred by a frivolous lawsuit. This establishes the case of regulatory chill from a host country perspective.

The fourth result (Prop. 6) shows that from an ex ante viewpoint (prior to the state of nature being revealed), firm entry is usually inefficient except when the court is of lower quality and the production externality in the absence of regulation is sufficiently small. In the latter case, the host government never regulates and thus induces the firm to enter at the efficient level. Outside these circumstances, however, firm entry can be either too high or too low. Excessive entry takes place if the externality in the absence of regulation is high because then the host government is willing to pay compensation even if the firm is not entitled to it. The occurence of frivolous lawsuits thus may cause efficiency losses from an allocational point of view.

The fifth and final result (Prop. 7) compares national courts with international tribunals. The two may differ in the level of quality (i.e., the probability of identifying the true state of nature), the strength of the law in terms of requiring compensation in case

of regulation (i.e., the probability of firm entitlement to compensation), and the magnitude of compensation in case of regulation. I show that a marginal improvement in court quality has no effect when the court quality is already sufficiently high (while still not identifying the state of nature perfectly). This suggests that for industrialized countries, whose national courts are typically working efficiently, there are no benefits from an ISDS-based system even if one assumes that panelists on an international tribunal are of higher quality than judges in a national court. For low court quality, however, a marginal increase in court quality improves host country welfare if the production externality in the absence of regulation is large and the firm has a low probability of being entitled to compensation. This result suggests that developing countries may benefit from delegating the decision power over firm-government conflicts to an international tribunal. Yet, for other parameter combinations, a marginal improvement in court quality has a negative effect. In addition, a higher probability for firms to receive compensation or higher payments when regulation is compensated typically worsens host country welfare, unless the induced increase in firm profits generates substantially more firm entry into the host country.

Taken together, the paper's results are in line with the empirical observation that lawsuits are brought to court, some of which are decided in favor of firms other in favor of host countries. The vagueness of the law protecting investors is captured in the theoretical model by the uncertainty about the realization of the state of nature. The paper contributes to the debate on the role and design of institutions that prevent or foster regulatory chill and opens a way to compare national courts and international tribunals.

The rest of the paper is organized as follows. In the next section I briefly review related literature. In section 3 I introduce the model, characterize the first best allocation as a benchmark and the equilibrium outcome in the absence of courts (Prop. 1). A generic court is introduced into the analysis in section 4, where I also describe the firm's legal decision (Prop. 2) and the equilibrium policy choice (Prop. 3). This allows me to formally define regulatory chill (Prop. 4 and 5) and to analyze the problem of overregulation, as well as the efficiency of the firm entry decision (Prop. 6). Section 5 focuses on moving the decision power from a national court to an international court (Prop. 7). Section 6 concludes.

2 Related Literature

The paper is related and contributes to different types of literatures. The paper is closely related to the work by Aisbett et al. (2010a,b). The authors analyze how changes in the legal extent to which a government does not have to pay compensation in case of regulation (police power carve out, PPCO) affects investment decisions of firms and regulation. In Aisbett et al. (2010a) an optimal PPCO mechanism is studied that leads to efficient regulation and that reduces but does not eliminate the excessive entry problem of firms into host countries. The firm does not initiate litigation but rather a court decides on compensation based on a noisy signal about the possible harm from firm activity. Aisbett et al. (2010b) study in the context of international tribunals based on investment treaties the effect of extending PPCO in an environment where governments are bound by national treatment clauses. The tribunal checks whether a complaint by a firm against regulation without compensation falls within the scope of PPCO. The decision depends on the likelihood of harm from the firm's operation and the strength of international protection in the law. While sharing several common modelling aspects with these two works, the present paper differs in a number of important aspects. First, the present paper formalizes the notion of regulatory chill and studies from that angle the problem of underregulation. The endogeneity of the litigation process is essential for the behavior of firms and governments and allows me to study "frivolous lawsuits". Second, I undertake comparative statics not only with respect to the strength of the protection against harmful regulation, but also focus on the quality of the court in making correct decisions. This aspect is crucial in understanding the different incentives of developing and developed countries to delegate the arbitration power from national courts to international tribunals.

There exists only a small theoretical literature on regulatory chill on the one hand and the effect of ISDS on the other hand. Bagwell and Staiger (2001a,b) argue that concerns over regulatory chill are not valid in the case of trade agreements that deal with regulatory policies relating to traded goods (as opposed to FDI), provided that market access is properly guaranteed. Closely related to the present work is recent research by Kohler and Stähler (2016) who compare the effects of ISDS and national treatment clauses. They argue that ISDS can reduce the holdup problem, but affects inefficiently the regulatory standard setting over time. National treatment creates an entry distortion for domestic firms but may welfare dominate ISDS if the share of domestic firms is large enough. Stähler (2016) and Konrad (2017) analyze optimal ISDS mechanism. In Konrad (2017) an ISDS system can help to overcome a policy failure due to time-consistency, but

at the same time generates uneven benefits for firms and consumers/taxpayers.[2]

In terms of modeling court challenges, the present work is related to Maggi and Staiger (2011) who analyze the role and mandate of the WTO's Dispute Settlement Body (DSB) for trade conflicts between member countries. Like them, the present paper identifies the incomplete contract framework as the core of the underlying problem that gives courts and arbitration centers a role to play.[3]

Finally, the present paper relates to the literature on the determinants of FDI (e.g., Blonigen and Piger, 2011) of which institutional quality in the host country is one important factor. A number of papers has analyzed the role of bilateral investment treaties, and ISDS provisions in particular, for inward FDI. In a series of papers, Busse et al. (2010), Berger et al. (2011, 2013), and Neumayer et al. (2016) find little or no evidence for stricter ISDS provisions to promote FDI, using aggregate FDI data in a gravity-type regression framework. By contrast, Egger and Merlo (2012) - using micro data from the universe of German multinational firms - find a positive and significant effect of BITs on the number flows and FDI magnitude in host countries.

3   The Model

The world consists of two countries. In each country there exists a continuum of multinational firms that have the option to invest in the other country, called FDI. The firms differ in their sunk investment cost when investing abroad. For simplicity, I assume that firms do not interact economically and therefore the profit maximizing choices are independent. In the following I describe the issue from the home country perspective (the host country), to which one (foreign) firm may enter via FDI.

The firm is risk neutral and wants to maximize its profits. The outside option of not investing at all gives a payoff of zero. FDI requires a fixed cost $F \in [0, \bar{F}]$ which cannot be recovered. Fixed costs are distributed according to a smooth density function $g(F)$ and cumulative density function $G(F)$. Investment in the host country gives the firm a net profit of

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[2]There is substantially more work in other social sciences relating to ISDS and regulatory chill, for example, Dietz and Dotzauer (2015) in political science, and Alschner (2013), Bronkers (2015), Kleinheisterkamp (2014) and Pauwelyn (2015) in law. However, case studies and empirical analyses dominate and therefore do not directly speak to the trade off between non-optimal policies and the benefits of foreign investment. There is also a small literature on the lawyers acting as panelists on international tribunals. Panelists on ISDS tribunals have stronger ties to multinational firms from prior work as counselors for investors than judges on national courts (see Gaukrodger and Gordon (2012)), which may suggest a bias in decision making.

[3]For a legal perspective on the incompleteness of bilateral investment treaties see Alschner (2013).

$$\pi_p^n = \pi_p - F, \tag{1}$$

where π_p is the firm's gross profit and the subscript p refers to a specific government policy. The host government chooses policy $p \in \{0, 1\}$, where $p = 0$ (also called policy 0) corresponds to no regulation, while $p = 1$ stands for regulation (also called policy 1). Regulation of the firm by the host government, for example via permits, rules for compliance with product, environmental or safety standards, affects the firm's gross profit. Specifically, policy $p = 0$ corresponds to gross profit π_0, while policy $p = 1$ carries a lower gross profit

$$\pi_1 < \pi_0. \tag{2}$$

The firm is harmed by regulation (=policy 1) compared to policy 0, because the net profit declines: $\pi_1^n < \pi_0^n$. The Vattenfall case mentioned in in footnote 1 in the introduction represents a specific example of a regulatory policy: The German government terminated the license to operate a nuclear power plant (equivalent to $\pi_1 = 0$).

The host country benefits from the presence of a multinational firm. Let b be the benefit to the host country, such as the wages paid to local residents or contributions to tax revenues. At the same time the firm's presence may cause an externality $z \geq 0$ on the host country as a byproduct of firm production, when unregulated. The purpose of regulation is to avoid the welfare loss for the host government. There is no loss when $p = 1$ is chosen, while the loss is $z > 0$ if $p = 0$ is adopted. The government payoff is assumed to be additive in the general benefit from FDI, b, and the loss from regulation z:

$$U = b - (1-p)z = b - \begin{cases} z & \text{if } p = 0 \\ 0 & \text{if } p = 1. \end{cases} \tag{3}$$

It is immediately clear from (3) that the optimal policy for the government ex post (that is, after the firm has made its FDI decision), is to always regulate and choose policy 1.

To discuss the normative implications of the model, I define world welfare W as the sum of firm profits and government welfare (here only for one particular firm):

$$W = b + \pi_p - (1-p)z - F = b - F + \begin{cases} \pi_0 - z & \text{if } p = 0 \\ \pi_1 & \text{if } p = 1. \end{cases} \tag{4}$$

Assuming for the moment that FDI has taken place, and thus F can be ignored, a policy maximizing (4) requires policy $p = 0$ when the externality is sufficiently small, that is $z < \pi_0 - \pi_1$, and policy $p = 1$ when the externality is large $z \geq \pi_0 - \pi_1$. This is summarized in

Proposition 1 (Excessive regulation ex post in the absence of courts). *Assume that a firm has entered the host country.*
i) In equilibrium the government always regulates and sets policy p=1.
ii) The host country policy that maximizes global welfare is given by

$$\bar{p} = \begin{cases} 0 & if \ \ z < \pi_0 - \pi_1 \\ 1 & else. \end{cases} \tag{5}$$

Proposition 1 shows that in the absence of laws regulating possible compensation for regulation the equilibrium outcome is not efficient. The government chooses too often policy 1 because it ignores the effect on firm profit. In this case equilibrium profits are lower than what is socially optimal.

Conditional on firm entry and taking optimal policy choice into consideration, world welfare under the first best policy amounts to

$$\bar{W} = b - F + \begin{cases} \pi_0 - z & if \ \ z < \pi_0 - \pi_1 \\ \pi_1 & else \end{cases} \tag{6}$$

I now turn to firm entry: In equilibrium the number of entering firms tends to be too small. To see this, note that a firm enters the host country as long as fixed cost are not too high (given that policy 1 is chosen ex post):

$$F \leq \pi_1. \tag{7}$$

In the extreme case where the externality is high and the profit under regulation is zero, $\pi_1 = 0$, no FDI takes place for strictly positive fixed cost. By contrast, firms enter under the first best policy whose fixed cost satisfy

$$F \leq \pi = \begin{cases} \pi_0 & if \ \ z < \pi_0 - \pi_1 \\ \pi_1 & else \end{cases}. \tag{8}$$

Firms are assumed to correctly anticipate the world welfare maximizing policy shown in (5). From a social planner's perspective who could not only choose policy p but could also decide on firm FDI, entry should even further increase if $b > z$.

Proposition 1 suggests that laws which safeguard the firm against "excessive" regulation could be beneficial. This motivates the introduction of laws against regulation without compensation that are enforced by courts.

4 Court challenges and regulatory chill

A laws against indirect expropriation may help in overcoming the excessive regulation problem. Often, however, the law is vague in terms of specifying the circumstances when compensation should be paid. I capture this by a random shock that determines the state of nature. In practice court challenges by firms, successful and unsuccessful ones, are observed, as documented in Unctad (2015). This suggests that uncertainty about the success of a lawsuit at the time of investment plays a role, an aspect that is captured in the formal model and described in more detail now.

4.1 Court challenges against regulation without compensation

After the FDI decision, nature chooses state $s \in \{0, 1\}$. The state of nature determines whether a regulatory action by the government that affects the firm negatively requires compensation payment or not according to the law. While the law spells out compensatorable regulations, identifying conditions under which compensation is to be paid ex post is difficult. I assume that the firm and host government know whether a compensation payment is legitmate or not, which depends on the state of nature. In state $s = 0$ no compensation payment is necessary, which occurs with probabilty $1 - q$, while $s = 1$ means compensation must be paid according to the law. The latter state happens with probability $q \in [0, 1]$. By assumption, the state is observable to the firm and the host government, but is not contractible, as it is not observable to outsiders such as a court. From an ex ante perspective, the firm is uncertain as to whether regulation by the government ex post allows the firm to rightfully claim compensation. The parameter $1 - q$ can be interpreted as a measure of "carve out", the extent to which there are situations in which the firm does not have to be compensated when facing harmful regulation, while q is measure of the protection of the firm (see Aisbett et al. 2010a, 2010b for their modelling of carve outs). More generally, the parameter q allows me to capture the ambiguity in

the definition of indirect expropriation. If $q = 1$ or $q = 0$, there is no ambiguity and the firm is always or never to be compensated when regulation takes place.

Compensation is assumed to be proportional to the loss of the firm from regulation $\beta(\pi_0 - \pi_1)$, where $\beta \leq 1$ is a parameter of the law. A value of one means full compensation, a value of β strictly less than 1 means that compensation is not complete. There is no overcompensation considered. As for notation, I use $m \in \{0, \beta(\pi_0 - \pi_1)\}$ to describe the amount of compensation ("money") paid to the firm, which is either zero or proportional to the firm's loss of profit.

The timing of events is:

1. Firm decides on FDI. If no FDI, the game ends, otherwise the game continues with

2. Nature draws state $s \in \{0, 1\}$, which is observed by firm and government, but not by court

3. Government announces policy $p \in \{0, 1\}$, and compensation $m \in \{0, \beta(\pi_0 - \pi_1)\}$ in case $p = 1$ is chosen. The game ends if the host government chooses either regulation $p = 1$ with compensation $m = \beta(\pi_0 - \pi_1)$ or no regulation $p = 0$. Then the announced policy in stage 3 is implemented. If, by contrast, the host government chooses regulation $p = 1$ without compensation $m = 0$, the game continues with the next stage

4. The firm decides whether to challenge the government in court. If no challenge, $p = 1$ without compensation is implemented. If challenged, then the game continues with

5. Court decides on whether compensation needs to be paid.

In the last stage the court identifies the true state of nature with probability θ. I assume that a court identifies the true state with higher probability than the wrong state, therefore $\theta \in (\frac{1}{2}, 1]$.[4] The parameter θ is a measure for the institutional quality of the court system. The higher the value of θ, the better is the quality of the institution. To illustrate the mechanism assume that the true state is $s = 1$ and the firm goes to court. If the court believes the true state is $s = 1$, the host government is forced to paying $m = \beta(\pi_0 - \pi_1)$ to the firm. When the court does make the wrong decision, however, believing the state is $s = 0$, then no payment of compensation is forced ($m = 0$). In summary, the court

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[4]See, for example, Raab and Welzel (2007) for a similar assumption in a model with costly state verification.

may err in both directions, forcing compensation payment when it should not, as well as not ruling in favor compensation payments even though it should.

I assume that a challenge in court is costly to the loser of the case, where the loser is determined by the court's decision. If the government is forced to pay compensation, it is the loser. Otherwise it is the firm that has to pay the court cost. Losing a court case costs $c \geq 0$.[5] I limit the amount of court cost, however. Specifically, I assume

$$c < \beta(\pi_0 - \pi_1), \tag{9}$$

which means that the object of the dispute, the compensation payment, is higher than the cost of court. For later purpose, note that (9) implies $c/(c + \beta(\pi_0 - \pi_1)) < 0.5$. I consider the cost from court challenges to be wasteful from a global welfare perspective.

It is now straightforward to see that a perfect court - which always identified the true state s - would make legal challenges obsolete: Either because the firm anticipates correctly to lose its case (which is costly), or because a government that does not pay compensation would be successfully challenged subsequently and could avoid paying the court cost by paying compensation right away.

The option to challenge in court affects the government's incentive to pick one policy over the other. The welfare effects of this option are a priori unclear. Court challenges could reduce excessive government regulation, but may also allow strategic behaviour by the firm in the form of frivolous lawsuits.

Throughout section 4 I assume that FDI has occurred (which is relaxed in section 4). I begin with an analysis of stages 3 and 4. Stage 5 is mechanical, as the court's decision can be directly represented by a probabilistic outcome.

4.2   Stages 3 and 4: Policy announcement and court challenge

Solving the game from the back, I start with stage 4.

Stage 4. By assumption, the announced policy is implemented and no court case develops if the government chooses either $p = 0$ or $p = 1$ with positive compensation. In

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[5]Cost of litigation in a ISDS system may be quite substantial. Gaukrodger and Gordon (2012) report that expenses are mostly for legal counsels. In the arbitration system under the auspices of the World Bank (ICSID) arbitrators are paid around 3,000 USD per day. Depending on the legal frame cost of litigation may be left to the international panel's final award decision (as under ICSID) or to the "unsuccessful party" (as under the United Nations system UNCITRAL). The latter is in line with the present paper. While in public international law typically parties pay their own way, recently a trend towards shifting costs has been observed. What matters for the formal analysis is that losing a court case is costly, either because the loser pays all court cost, or because meeting in court in the first place is costly.

the former case the firm's operating profit is π_0, while under the latter it is $\pi_1 + \beta(\pi_0 - \pi_1)$. The government obtains utility $b - z$ and $b - \beta(\pi_0 - \pi_1)$, respectively.

If the government announced policy $p = 1$ without compensation in stage 3 the firm faces the decision whether to challenge in court or not. The firm files a lawsuit in state $s = 1$ if and only if

$$E\pi_1^n[chall. \mid s = 1] = \theta[\pi_1 + \beta(\pi_0 - \pi_1)] + (1 - \theta)[\pi_1 - c] \geq \pi_1 = E\pi_1^n[no\ chall. \mid s = 1].$$

The first term on the left hand side of the inequality gives the utility when the court correctly identifies the true state, implying a compensation payment to the firm and no court cost, while the second term is the firm's utility when losing in court. The two outcomes are weighted by the probability of the court's decision making. The right hand side of the inequality represents the sure payoff when no challenge in court is filed. The inequality can be rewritten as

$$\theta \geq \tilde{\theta} := \frac{c}{c + \beta(\pi_0 - \pi_1)}. \tag{10}$$

In other words, the firm litigates in state $s = 1$ if the probability of winning in court is sufficiently high. Note that the assumption of relatively small litigation cost relative to the compensation payment, see (9), means that $\tilde{\theta}$ is less than 0.5. At the same time I assume that the probability of correct state verification is larger than 0.5. This means that the firm files a court case whenever $\theta > 0.5$.

Now consider the case where the true state is $s = 0$. In this case the firm litigates if and only if

$$E\pi_1^n[chall. \mid s = 0] = \theta[\pi_1 - c] + (1 - \theta)[\pi_1 + \beta(\pi_0 - \pi_1)] \geq \pi_1 = E\pi_1^n[no\ chall. \mid s = 0].$$

Again the firm trades off the probability weighted payoffs under the legal challenge against the sure payoff under no challenge. The condition is equivalent to

$$\theta \leq \hat{\theta} := \frac{\beta(\pi_0 - \pi_1)}{c + \beta(\pi_0 - \pi_1)}. \tag{11}$$

Condition (9) implies that $\hat{\theta} > 0.5$. To summarize:

Proposition 2 (court challenges by the firm): *The firm goes to court when facing regulation without compensation in state $s = 1$ if $\theta \geq 0.5$, and in state $s = 0$ if $\theta \leq \hat{\theta}$.*

An implication of Proposition 2 is that depending on the quality of the court two different types of regimes can be defined. If $\theta \geq \hat{\theta}$, meaning the court is of relatively high quality, the firm challenges in state $s = 1$ but not in $s = 0$. Court challenges are therefore always "rightful". When institutional quality of the court is in the range $\theta \in (0.5, \hat{\theta})$, however, the firm litigates in both states of the nature, that is, when lawsuits are "rightful" and also when "frivolous". In the following, I call the latter regime a low quality court, and the former a high quality court.[6]

Stage 3. I now turn to stage 3 in which the host country government needs to announce its policy. It can choose among three options: no regulation ($p = 0$), regulation ($p = 1$) without compensation ($m = 0$), and regulation ($p = 1$) with compensation $m = \beta(\pi_0 - \pi_1)$. The possible payoffs for the host country are:

$$U = \begin{cases} b - z & if & p = 0 \\ b - \beta(\pi_0 - \pi_1) & if & p = 1 \wedge m = \beta(\pi_0 - \pi_1) \\ b & if & p = 1 \wedge m = 0 \wedge no\,lawsuit \\ b - \theta[\beta(\pi_0 - \pi_1) + c] & if & p = 1 \wedge m = 0 \wedge lawsuit,\, s = 1 \\ b - (1-\theta)[\beta(\pi_0 - \pi_1) + c] & if & p = 1 \wedge m = 0 \wedge lawsuit,\, s = 0. \end{cases} \quad (12)$$

The five cases reflect the two regulation policies, the compensation option, the role of lawsuits, and the true state of nature. In the case of litigation the government risks losing the compensation payment and the court cost. It is useful to define this amount as

$$A := \beta(\pi_0 - \pi_1) + c. \quad (13)$$

Hence $\hat{\theta} = \beta(\pi_0 - \pi_1)/A$ and $\tilde{\theta} = c/A$. In the following I describe the policy choice as tuple (p, m), reflecting the choice of policy and level of compensation. By assumption in case of no regulation, $p = 0$, there is no compensation: $m = 0$.

In its decision the government anticipates correctly the firm's decision in stage 4. The following Proposition characterizes the equilibrium outcome in stage 3.

Proposition 3 (Regulation in presence of courts). *In stage 3 the government announces the policy depending on the quality of the court:*

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[6]If θ were allowed to be very small, that is $\theta < \tilde{\theta}$, a third institutional regime would appear, in which the firm never files a lawsuit, because courts are very inefficient, and the government always regulates without compensation. But this case is inconsistent with the assumption that any court finds the true state more often than the wrong state of nature and hence is not considered.

- *The quality of the court is high, $\theta \geq \hat{\theta}$: In state $s = 1$, the government announces*

$$(p, m) = \begin{cases} (0,0) & if \quad z < \beta(\pi_0 - \pi_1) \\ (1, \beta(\pi_0 - \pi_1)) & if \quad z \geq \beta(\pi_0 - \pi_1) \end{cases} \tag{14}$$

  and in state $s = 0$, the government announces

$$(p, m) = (1, 0). \tag{15}$$

- *The quality of the court is low, $\theta \in (0.5, \hat{\theta})$: In state s=1, the government announces*

$$(p, m) = \begin{cases} (0,0) & if \quad z < \theta A \\ (1, 0) & if \quad z \geq \theta A \end{cases} \tag{16}$$

  and in state s=0 the government announces

$$(p, m) = \begin{cases} (0,0) & if \quad z < (1 - \theta)A \\ (1, 0) & if \quad z \geq (1 - \theta)A. \end{cases} \tag{17}$$

Proof: When court quality is high, the firm goes to court in state $s = 1$ but not when $s = 0$ (see Prop. 2). Therefore in the latter case the host government has no benefit from paying compensation and always regulates (see (15)). In state $s = 1$, however, taking the risk of litigation is too high for the government because the court detects the true state (which requires compensation) with high probability. Thus the government effectively compares the loss from no regulation (first line in (12)) with regulation plus compensation payment (second line in (12)), and ends up with a decision shown in (14). Regulation with compensation is optimal for the government when the externality is large enough.

For the case of low court quality and $s = 0$, the government compares the payoffs under no regulation, regulation with compensation, as before, and regulation without compensation (and therefore litigation, last line in (12)). Since $\theta < \hat{\theta}$, paying compensation in case of regulation is worse than risking the lawsuit. Effectively the government compares only the first and the last option, which depend on the size of the externality z and the expected loss $(1 - \theta)A$, see (17). By constrast, when $s = 1$ the reasoning is identical except for the probability that the government loses its case when regulating

without compensation. Hence conditions (16) and (17) are structurally the same. q.e.d.

Proposition 3 has interesting implications: If the court is sufficiently inefficient in the sense of $\theta < \hat{\theta}$, the host country never pays compensation, see (16)-(17), and may or may not choose policy 1 or 0, depending on parameters. Only if the court is sufficiently efficient, $\theta \geq \hat{\theta}$, compensation may be paid, namely in state $s = 1$ with sufficiently high externality z. High court efficiency means that offering compensation right away is preferred over the chance of losing in court. Sticking to no regulation ($p = 0$) is not an attractive alternative if the externality is large.

4.3   Overregulation and Regulatory Chill

Comparing Propositions 1 and 3 allows me to assess whether ex post there exists over-regulation ($p = 0$ efficient from a world welfare perspective, but $p = 1$ chosen by the government) or underregulation ($p = 1$ welfare maximizing, but $p = 0$ chosen). Recall from Prop. 1 that compensation payments are not relevant for assessing first best policies (for given FDI levels), because they respresent pure transfers among agents.

Proposition 4 (Overregulation ex post). *From a world welfare perspective the host government policy is inefficient ex post only due to excessive regulation, not underregulation. When $\beta < 1$, overregulation occurs for some parameter values regardless of the quality of the court.*

Proof: Consider first the possibility of underregulation, that is $\bar{p} = 1$ is optimal, but $p = 0$ is chosen in equilibrium. This cannot happen when court quality is high because regulation, $p = 1$, is chosen by the host country whenever $z \geq \pi_0 - \pi_1$, which is the condition for efficient regulation. When $z < \beta(\pi_0 - \pi_1)$, policy 0 is indeed chosen (14), which is not efficient (Prop. 1). In the case of low court quality, $p = 0$ is chosen when $z < \theta[\beta(\pi_0 - \pi_1) + c]$. However by assumption of low court quality $\pi_0 - \pi_1 > \theta[\beta(\pi_0 - \pi_1) + c]$. Together the two conditions imply $z < (\pi_0 - \pi_1)$, which is the condition for no regulation to be first best. Hence the condition for no regulation and sufficiently high externality (so that regulation would be efficient) cannot be satisfied simultaneously.

To prove the second part of the Proposition, I identify the conditions in which $\bar{p} = 0$ is optimal from a world welfare perspective, but $p = 1$ is chosen in equilibrium. The former requires $z < \pi_0 - \pi_1$. For

- $\theta \geq \hat{\theta}$ In state $s = 1$ overregulation occurs if $z \in [\theta[\beta(\pi_0 - \pi_1), (\pi_0 - \pi_1)]$, that is $p = 1$ is chosen in equilibrium (see (14)), but is not efficient because the externality

is small. The set of values of the externality is a non-empty if $\beta < 1$, and in state $s = 0$ if $z < \pi_0 - \pi_1$.

- $\theta \in \left(0.5, \hat{\theta}\right)$: In state $s = 1$, too much regulation is observed if $z \in [\theta A, \pi_0 - \pi_1]$, and in state $s = 0$ if $z \in [(1 - \theta)A, \pi_0 - \pi_1]$. This completes the proof.

Recalling Proposition 3 it is clear that policy $p = 0$ is chosen only when z is relatively small. But efficiency dictates no regulation when the externality is small, and in fact the efficient cutoff for no regulation is higher than the one chosen in equlibrium. Note also that a more efficient court in terms of θ does not guarentee efficiency. Even when the court always correctly identifies the true state of nature, $\theta = 1$, there is inefficiency when $s = 0$, and also for $s = 1$, as long as compensation payments do not fully amount to the loss in profits, that is, $\beta < 1$. However, higher values of β make the range of z for which inefficiencies occur smaller. A higher court quality θ reduces the range when $\theta \geq \hat{\theta}$, as the lower bound θA is rising in θ, but not necessarily when the court's quality is low, as excessive regulation can occur in both states.

I now turn to the issue of regulatory chill. From a *world welfare* perspective there is no underregulation, as shown in Prop. 4. The result suggests that the notion of regulatory chill, according to which a host government is deterred from legitimate regulation in face of a possible lawsuit, is ill-conceived. However, one may ask whether there is regulatory chill from a *national welfare* viewpoint. To answer this question I first define regulatory chill to satisfy the following three conditions

- the firm challenges a policy of regulation without compensation in stage 4

- the government prefers regulation over no regulation if the firm did not file a lawsuit in the presence of regulation without compensation, and

- the host government chooses no regulation instead of regulation when it anticipates the legal challenge in stage 4.

The latter condition appears to make little sense economically because the government could compensate the firm if it feels that avoiding the loss from missing regulation is so large. This reasoning is valid when the state of nature is $s = 1$ because the firm should be compensated if the court could perfectly observe the state of nature. However, in state $s = 0$ the logic is different because compensation payments should not be paid.

Proposition 5 (Regulatory chill). *From a host country perspective there exists regulatory chill in state $s = 0$ if the court is of low quality $\theta \in (0.5, \hat{\theta})$ and the externality is not too large $z < (1 - \theta)A$.*

Proof: Regulatory chill has three properties as defined above. The second one is always fulfilled when the firm does not litigate, as the situation is equivalent to the case without court (see Prop. 1). The first property holds because the government is challenged in court in case of regulation without compensation (see Prop. 2). The third property is also fulfilled because the host government does not regulate when the conditions provided in the Proposition are met (see (17)). q.e.d.

Proposition 5 suggests that in the present framework the claim that governments can always regulate and compensate if the externality is large enough, while formally correct, is not fully convincing in the present case. While the host government could regulate with compensation it seems inappropriate in a situation where the firm should not be compensated. It is thus the case of a frivolous lawsuit that leads to regulatory chill from a domestic policy perspective.

4.4 Stage 1: Firm Entry

I now move to stage 1 in which the firm decides on entry into the host country before the state of nature is determined. The firm anticipates correctly the subseqent decisions and therefore enters the host country if its fixed cost are no more than the expected profit: $F \leq \pi^e$. To proceed with the analysis it is useful to summarize the payoffs (U, π, W) conditional on s, from which the expected payoffs in stage 1 can be computed. Conditional on firm entry, the expected firm payoff depends on court quality and can be derived from the probability weighted payoffs in the two situations depending on s:

- $\theta \geq \hat{\theta}$: The equilibrium policy is found in (14) and (15) and implies that in state $s = 0$ there is always regulation without compensation, but in the other state either regulation with compensation or no regulation occurs depending on the size of the externality

$$
\pi^e = (1-q)\pi_1 + q \cdot \begin{cases} \pi_0 & if \quad z < \beta(\pi_0 - \pi_1) \\ (\pi_1 + \beta(\pi_0 - \pi_1)) & if \quad z \geq \beta(\pi_0 - \pi_1) \end{cases} \tag{18}
$$

- $\theta \in \left(0.5, \hat{\theta}\right)$: This case is more involved because the firm always litigates when facing regulation without compensation. The relevant policy chosen by the host government is given in (16) and (17). There are two critical thresholds for the externality, θA and $(1 - \theta)A$, which represent the expected loss of the government

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when losing in court

$$\pi^e = \begin{cases} \pi_0 & if & z < (1-\theta)A \\ \pi_1 + [q + (1-q)(1-\theta)\beta](\pi_0 - \pi_1) - (1-q)\theta c & if & z \in [(1-\theta)A, \theta A] \\ \pi_1 + [q\theta + (1-q)(1-\theta)]\beta(\pi_0 - \pi_1) - [(1-q)\theta + (1-\theta)q]c & if & z \geq \theta A \end{cases}$$

(19)

In the first line, the government in both states of nature chooses policy 0 when z is sufficiently small. Hence the firm obtains π_0. For intermediate levels of the externality, the second line represents the situation where the government chooses policy 1 without compensation in state $s = 0$, but policy 0 in state $s = 1$. The firm litigates in the former case. The firm gets more than profit π_1 in state $s = 1$, which occurs with probability q, and in state $s = 0$ (probability $1 - q$) when the court misjudges the situation and awards compensation. However when the court identifies the true state, the firm must pay court cost which amounts to $(1 - q)\theta c$ in expected terms. By contrast, when the externality is high (third line in 19), the firm always litigates against regulation without compensation. The host government never pays compensation. In this case the firm gets compenstion in state $s = 1$ when the court correctly identifies the state, and in state $s = 0$ when the court misjudges. Court cost must be paid by the firm in the opposite cases, which in expected terms amounts to the last term in the last line of (19).

The expected firm payoff defines the cutoff level for firm entry, because at $F^* = \pi^e$ the firm breaks even. Firms with $F \leq F^*$ enter while those with higher fixed cost stay out. The number of entering firms is given by

$$N^* = G(F^*) = \int_0^{\pi^e} g(F)dF.$$

(20)

The following proposition characterizes the efficiency of firm entry.

Proposition 6 (inefficient firm entry). *Firm entry is efficient if and only if the court quality is low and the externality is sufficiently small $z < (1-\theta)A$. In all other cases firm entry is inefficient, and depending on parameters can be either too low or too high. The latter occurs if the externality is sufficiently large regardless of court quality.*

Proof. Consider first the case in which court quality is high $\theta \geq \hat{\theta}$. Assume that the externality is small, i.e. $z < \beta(\pi_0 - \pi_1)$. The marginal firm enters because $F = \pi^e =$

$(1-q)\pi_1 + q\pi_0 < \pi_0$, where π_0 is equal to the fixed cost of the marginal firm that enters in a first best world (see (8)). Hence too little entry occurs. A similar argument holds when the externality is intermediate, $(\pi_0 - \pi_1) > z \geq \beta(\pi_0 - \pi_1)$, because the marginal firm entering in equilibrium has an expected profit below π_0, and then too few firms enter. Finally, consider the case of a high externality, $(\pi_0 - \pi_1) < z$. The marginal firm enters with $F = \pi^e = \pi_1 + \beta q(\pi_0 - \pi_1) > \pi_1$, where π_1 is the fixed cost threshold under the first best policy. Hence under high court quality entry is always inefficient.

Next, consider the case of low court quality $\theta \in \left(0.5, \hat{\theta}\right)$. For low levels of the externality, $z < \beta(\pi_0 - \pi_1)$, the expected profit is π_0 under the first best and in equilibrium (see first lline of (19)), thus indicating efficient entry. For higher levels of z, however, the expected profit in equilibrium is larger than π_1, which is the benchmark for the first best world. Therefore there is excessive entry. q.e.d.

Proposition 6 shows that the option to file a lawsuit has negative consequences in some circumstances. If the firm can extract compensation payments in cases where it should not, this induces excessive entry. The host government is willing to pay compensation in order to make sure that the large externality is avoided even if compensation is not warranted. Thus the right to file a lawsuit is not an unambiguously beneficial instrument.

5 The effect of ISDS

In the previous section I described a generic court, without specific reference to international law. I now consider the effects of moving the decision power for legal conflicts from a domestic to an international court, like an investor-state dispute settlement panel (ISDS) based on an international investment treaty. An ISDS based international panel may differ from a national court in three dimensions. First, an international court may be more "professional" or of higher quality than a national court. The quality of court decision may also be the factor underlying the proposal to have professional judges rather than an expert panel in international arbitration, as considered in the Canada-EU trade agreement CETA . Panel experts may have a bias towards firms because panelist on an international tribunal are often drawn from private law firms with more working relationships to firms. Gaukrodger and Gordon (2012) report that 50% of ISDS arbitrators acted as counsels for investors in other ISDS cases, whereas only 10% of arbitrators worked

as counsels for governments previously.[7] Unlike legal systems in most highly developend countries, courts in politically unstable or corrupt countries may also not be able to guarantee a neutral legal setting. Shifting the decision power to an ISDS may remedy this problem. In the formal model I capture a differential court quality by the parameter θ. Higher values mean better quality.[8]

A second possible difference between national court and international tribunal relates to the scope of the compensation in case of regulation. An international investment treaty typically guarantees the full value of the investment in case of nationalization.[9] By comparison national law may have a narrower scope and be thus less beneficial to the firm. In terms of the above model the size of compensation is captured by the parameter β. A higher value of β means more compensation. Note that a higher β could be interpreted as higher present value. For instance, if the scope of the compensation in the national legal system is the same as the one signed in an international investment treaty, processing the claim through the national court may take longer if for example the national court could involve a lengthy appeals process and thus in present value terms is less valuable to a firm.

Finally, as a third possible difference I consider how changes in the ambiguity of the law may impact the outcome, that is, the degree to which the firm is entitled to compensation, which is measured by $1 - q$. A higher level of q means that from an ex ante perspective it is more likely that the firm should be compensated in case of regulation.

In the following I examine how changes in θ, β and q affect host country and world welfare. The parameters are the same for all firms/industries. Host country expected welfare at stage 0 equals $\int_0^{F^*} U^e g(F) dF = N^* U^e$, where N^* is the number of firms entering the host country. More specifically, conditional on a firm that enters I obtain for host country welfare

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[7]Government defense counsels are typically not selected as arbitrators, and government investment treaty negotiators do not act as arbitrators. In comparison to the WTO Dispute Settlement Mechanism arbitrators in ISDS are typically highly paid star lawyers from prestiguous international law firms, while in the WTO many government bureaucrats get appointed without extra pay (Pauwelyn, 2015).

[8]The model allows for an alternative interpretation, along the lines of the Vattenfall case referred to in the introduction. The firm's strategy to file a lawsuit in national court in addition to an international tribunal means that it is less likely that a firm is not compensated. So even if the national and international had the same probability of awarding no compensation, a multinational firm would have two chances to win a case in the presence of an ISDS based international panel in addition to a national court.

[9]See for example, Art. 4(2) of the German model bilateral investment treaty: "Such compensation must be equivalent to the value of the expropriated investment immediately before the date on which the actual or threatened expropriation, nationalization or other measure became publicly known."

- $\theta \geq \hat{\theta}$

$$U^e = b - q \cdot \begin{cases} z & if \quad z < \beta(\pi_0 - \pi_1) \\ \beta(\pi_0 - \pi_1) & if \quad z \geq \beta(\pi_0 - \pi_1) \end{cases} \tag{21}$$

- $\theta \in \left(0.5, \hat{\theta}\right):$

$$U^e = b - \begin{cases} z & if \quad z < (1-\theta)A \\ [qz + (1-q)(1-\theta)A] & if \quad z \in [(1-\theta)A, \theta A] \\ [q\theta + (1-q)(1-\theta)]A & if \quad z \geq \theta A. \end{cases} \tag{22}$$

The second line in (22) represents the case where the governments regulates without compensation in state $s = 0$ but does not regulate in state $s = 1$.

Expected world welfare at stage 0, $\int_0^{F^*} W^e g(F) dF$, can be derived from adding expected firm profit (see (18) and (19)) and host country welfare, as shown in (21) and (22). Expected world welfare based on the activity of a single firm depends on the quality of the court as follows

- $\theta \geq \hat{\theta}$

$$W^e = \pi^e + U^e = b - F + \pi_1 + q \cdot \begin{cases} (\pi_0 - \pi_1 - z) & if \quad z < \beta(\pi_0 - \pi_1) \\ 0 & if \quad z \geq \beta(\pi_0 - \pi_1) \end{cases} \tag{23}$$

- $\theta \in \left(0.5, \hat{\theta}\right):$

$$W^e = b - F + \begin{cases} \pi_0 - z & if \quad z < (1-\theta)A \\ \pi_1 + q(\pi_0 - \pi_1 - z) - (1-q)c & if \quad z \in [(1-\theta)A, \theta A] \\ \pi_1 - c & if \quad z \geq \theta A \end{cases} \tag{24}$$

Note that world welfare depends on fixed cost F directly, whereas host country welfare does not.

5.1 Different court efficiency θ

When the efficiency of the court is high $(\theta \geq \hat{\theta})$ a further increase in θ is neutral for the firm (see (18)), the host country (21), as well as for world welfare (22). Therefore

different court quality does not change the incentive for a firm to enter the country, and is thus also neutral from an ex ante standpoint. The result suggests that in case of highly developed countries with good own courts there is no benefit from an international court that might further improve the efficiency of the legal system. Intuitively, the firm files a lawsuit if and only if it is rightful and hence there is no room for further improvement.

However, when the court quality is low, a marginal increase in θ may improve ex post host country welfare. Note first that an increase in θ impacts the expected profit of the firm investing in the host country (differentiating (19)) as follows

$$
\frac{d\pi^e}{d\theta} = \begin{cases} 0 & if & z < (1-\theta)A \\ -(1-q)A < 0 & if & z \in [(1-\theta)A, \theta A]. \\ (2q-1)A & if & z \geq \theta A \end{cases} \tag{25}
$$

There is no effect if the externality is small, a negative effect if z is intermediate, and an ambiguous effect for high externalities (depending on the level of q). Not surprisingly, the change in host country welfare for given firm entry mirrors this pattern (with opposite signs)

$$
\frac{dU^e}{d\theta} = \begin{cases} 0 & if & z < (1-\theta)A \\ (1-q)A > 0 & if & z \in [(1-\theta)A, \theta A] \\ -(2q-1)A & if & z \geq \theta A \end{cases} \tag{26}
$$

The overall effect on host country welfare is less clear when firm entry is taken into account because the welfare effect of firm entry and the change in welfare per firm may move in opposite direction. For example, when the externality is intermediate, the host country's welfare improves from higher court quality per existing firm, but at the same time fewer firms enter. The opposite occurs when the externality is high.

Finally note that the effect of θ on world welfare is driven only by the firm entry decision, as W^e itself is independent of θ. If the marginal firm makes a positive contribution to world welfare, an increase in entry has a positive welfare effect.

5.2 Changes in the strength of investor protection q

When the court quality is high, $\theta \geq \hat{\theta}$, an increase in q leads to lower host country welfare ex post: the derivative of (21) is negative for all z. At the same time world welfare is weakly improving in q, and strictly so when the externality is small (see 22). Together

these observations imply that the firm must be better off when q rises, and that the host country finds an increase in q better only if the higher induced firm profit increases FDI substantially because the direct effect on host country welfare is negative.

A positive welfare effect for the host country can be realized even for given FDI, however, if the country enters a reciprocal agreement with another, symmetric country. In that case, host country welfare, consisting of the welfare arising from inward FDI and the profit of own firms investing abroad, improves weakly because host country welfare in a symmetric case with FDI in both directions is equivalent to world welfare in the previous case of one-way FDI. That is, changes in (23) and (24) are then measures of changes in host country welfare.

Consider next the case of low court quality $\theta \in \left(0.5, \hat{\theta}\right)$. For given firm entry, a negative effect for the host country occurs when the externality is sufficiently high, otherwise the effect is neutral

$$
\frac{dU^e}{dq} = \begin{cases} 0 & if & z < (1-\theta)A \\ -(z - (1-\theta)A) \leq 0 & if & z \in [(1-\theta)A, \theta A]. \\ -(2\theta - 1)A < 0 & if & z \geq \theta A \end{cases} \tag{27}
$$

At the same time expected firm profits rise and thus make firm entry more attractive, from which the host government benefits. Similar to the case of high court quality, a strong firm response to q is necessary to improve host country welfare when the likelihood of firm compensation rises.

World welfare (for given firm entry) is unaffected by q when the externality is either low or high, but positive if z is intermediate ($dW/dq = \pi_0 - \pi_1 - z + c > 0$ because $z < \theta A = \beta(\pi_0 - \pi_1)$). Thus a reciprocal agreement by symmetric countries can (weakly) improve both countries' welfare even when firm responses are absent.

5.3   Differences in size of compensation β

A marginally higher β (weakly) improves firm profits ex post when the externality is large enough, and is neutral when the externality is relatively small (see 18 and 19). The former encourages FDI. The opposite effect is true for the host government. Hence a unilateral shift to a higher compensationβ, for example by signing an international investment treaty, can be welfare improving for the host government only if the FDI response is sufficiently strong. As β relates to transfer payments between firm and host government, and thus cancel out from a global welfare perspective, world welfare is not directly affected

by β, that is for given firm entry. A reciprocal agreement by two symmetric countries has nonnegative and for sufficiently high externality strictly positive benefits regardless of court quality. Compared to q and θ, changes in β have a more limited effect, as it operates only indirectly.

We summarize the findings for all parameters in the following result:

Proposition 7 (effect of ISDS): *An ISDS court may differ from a national court in three dimensions: court quality θ, compensation probability q, and size of compensation β.*

a) A marginal improvement in court quality has no effect if court quality is already high ($\theta \geq \hat{\theta}$). When court quality is low, however, the effect of higher court quality depends on the externality z. The host government benefits from higher court quality when the externality is intermediate, but may be harmed if z is large and q<0.5. Regardless of court quality, world welfare is not directly affected by a marginal improvement, only through the change in the number of firms that enter the host country.

b) A marginal increase in the probability of being entitled to compensation q has a (weakly) negative effect on host government welfare for a given firm entry decision regardless of court quality. The host country benefits from ISDS only if either the induced firm entry is sufficiently strong or for given firm entry a reciprocal agreement between symmetric countries is agreed upon.

c) An increase in the size of compensation benefits the host country only if the induced firm response outweighs the negative direct effect from higher compensation payments. In a reciprocal agreement between symmetric countries the host country (weakly) benefits from higher compensation payments.

Proposition 7 sheds some light on recent aspects of investor protection in trade agreements such as CETA and TTP. First, if court quality is sufficiently high, further improvement in quality do not bring any benefits to host countries. Of course, the threshold for high quality courts in the model can not easily be measured in practice. Yet, it seems plausible to assume that an international tribunal is not of (much) higher quality than national courts in established democracies with divided powers between the executive and the judicative. The logic is different if court quality is low, which presumably is the case in some developing countries. In this case, delegation of arbitration to an international tribunal that has marginally higher quality has the potential to improve host country welfare only under some circumstances because frivolous lawsuits still plague the system. In any case, world welfare increases with higher court quality.

Strengthening investor protection through international laws tends to harm host countries as compensation payments become more likely. A positive effect requires that this induces substantial more firm entry or own firms investing abroad benefit from this. The latter may be less relevant for relatively poor developing countries, so that the key for higher investor protection to work must come from an elastic response of firms entering the host country when profits expectations increase. This is the case for example, if at the present break even point for firm entry many firms would find FDI profitable if expected profits increased slightly.

Finally, more beneficial compensation terms in case of regulation benefit the firm and thus may induce more FDI. The size of compensation may be higher under international law either because international law typically calls for full compensation or because an international tribunal is less costly than pushing a claim through a national legal system with potentially subsequent challenges in higher courts. This could be an argument for industrialized countries to agree bilaterally to an ISDS based system, as it more effectively guarantees compensation in case of regulation.

6 Conclusion

In this paper I have proposed a framework to study the role of investor protection laws and institutions when foreign direct investment faces a hold up problem due to ex post regulation. A novel perspective is provided through the possible mistakes made by a court, that is awarding compensation for regulation when none should be given, and not ruling in favor of compensation when it should. This aspect influences both the decision of firms whether to litigate against compensation without regulation and for governments to pursue such a policy in the first place. The framework allows me to address policy issues such regulatory chill and the possible benefits from delegating decision power to an international tribunal away from national courts. Key parameters are the quality of the court in the sense of the probability of taking a wrong decision, the strength of investor protection in the law, and the size of compensation in case the government pays one.

The paper sheds light on the debate on regulatory chill. While it is true that from a global welfare perspective there is no underregulation, the paper shows that from a host country perspective regulatory chill may occur in some circumstances, which involve frivolous lawsuits, where due to bad court quality the host government abstains from regulation even in a situation where the firm should not be compensated. Identifying the circumstances of such a case to occur in practice is difficult, but the result shows where to

look for. Interestingly, it is not the case where the externality from no regulation is very large, but rather intermediate because otherwise the host country would have regulated with compensation.

In light of the analysis the case for international investment protection through ISDS seems strongest for countries with low quality of courts, and for countries with high court quality if bilateral agreements with similar countries are made, or when firms respond elastically in terms of FDI as a result of higher compensation payments investor protection is improved.

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