

# Estimating a Model of Settlement Bargaining in the World Trade Organization\*

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## Abstract

Disputes that involve developed countries are more likely to result in litigation. Moreover, in a dispute between a developed and a developing country, litigation is more likely if the developing country is the complaining party. We modify canonical models of settlement bargaining under asymmetric information by assuming that governments are restricted to use policy adjustment, rather than cash payments, as a means of compensation in their settlement negotiations. A key theoretical prediction of the modified models is that the likelihood of settlement is more sensitive to the defendant's litigation costs than to the complainant's litigation costs. This theoretical prediction combined with the assumption that developing countries face higher costs of litigation explains the divergent behavior of developing and developed countries in the dispute settlement process. Empirical evidence from the WTO supports our theoretical findings. Moreover, we show that the introduction of subsidized legal help for poor

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countries by the Advisory Centre on WTO Law has changed the litigation patterns in a way that is consistent with the predictions of the model.

## 1 Introduction

The establishment of a legalized Dispute Settlement Process (DSP) was one of the most important reforms introduced to the old GATT system in its transition to the World Trade Organization (WTO). Under GATT, dispute settlement was merely a political process for the negotiation and rebalancing of reciprocal state-to-state trade concessions (Shaffer, 2003). In contrast, the DSP under the WTO is quite similar to a domestic legal system in that it involves dispute panels that act as a court of law and an Appellate Body that reviews the rulings of the panels. There is an ongoing debate on whether a “legalized” dispute settlement process creates a more level playing field that favors the less powerful members, or whether this process is used as an instrument by powerful members to put pressure on developing countries to fulfill their liberalization promises.

One of the concerns about a legalized process of dispute settlement is its high cost that may have an adverse effect on the bargaining position of developing countries against developed countries.<sup>1</sup> For example, in a recent survey the WTO delegations from developing countries have cited the high cost of litigation as one of the main reasons for not pursuing a complaint (Busch et al., 2008).

Developing and developed countries show divergent behavior in the dispute settlement process. More than half of all initiated disputes are resolved without litigation, i.e. without the establishment of a dispute panel, which may reflect the parties’ desire to avoid high costs of litigation in the WTO.<sup>2</sup> Disputes that involve developed countries, however, are more

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<sup>1</sup>We use the commonly used keywords, developing and developed *countries* to refer to all WTO members, although some members, such as European Union, are not countries.

<sup>2</sup>The main stages of the DSP are Consultation (pre-trial negotiations between disputants), Dispute Panel, and Appellate Body. See Beshkar and Bond (2008) for a summary of the DSP.

likely to result in litigation. To show this, we divide countries into developing and developed. Countries whose GDP per capita (in 2005 dollars) is larger than \$10,000 are categorized as developed and those below this threshold as developing.<sup>3</sup> Using \$7,000, \$12,000, or even \$15,000 as the threshold does not change the results.<sup>4</sup> As demonstrated in Table 1, being a developed country, as opposed to a developing country, as the defending party, decreases the likelihood of pre-trial settlement by 24 percentage points (i.e., from 69% to 45%; the right column of the table). Similarly, a developed defendant decreases the likelihood of settlement by 9 percentage points (i.e. from 60% to 51%; the bottom row of the table).

A more curious pattern is that in a dispute between a developed and a developing country, litigation is more likely if the developed country is the defending party. As is shown in Table 1, 62 percent of disputes in which a developed country presses charges against a developing country are settled without establishing a dispute panel. In contrast, only 44 percent of disputes are settled without establishing a dispute panel if a developing country disputes against a developed country.

In this paper, we provide a model of dispute settlement in the WTO that explains the above patterns. The model is a modification of the classic models of dispute settlement, namely, Bebchuk (1984) and Reinganum and Wilde (1986). The point of departure from this tradition is the assumption that disputing parties are restricted to use policy adjustment as a means of compensation in their settlement negotiations. In disputes between private parties, a settlement normally involves a cash transfer from the defending party to the complaining party. However, cash transfer has rarely been used in the WTO to settle a trade dispute.<sup>5</sup>

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<sup>3</sup>Income is measured in 2005 US dollars. The \$10,000 threshold for classifying developed and developing countries is comparable to the World Bank threshold of high income countries in 2005 dollars, i.e. \$10,725 (GNI per capita). Moreover, using the World Bank threshold and GNI per capita leads to (almost) identical results. List of developed and developing countries can be found in Tables A1 and A2, respectively. For more information on the World Bank threshold, see “How are the income group thresholds determined?” on World Bank website (<https://datahelpdesk.worldbank.org/knowledgebase/articles/378833-how-are-the-income-group-thresholds-determined>).

<sup>4</sup>\$7000, \$12,000, and \$15,000 are chosen to check the robustness of the results if one digresses from the World Bank definition of high income countries.

<sup>5</sup>See Limão and Saggi (2008) for a discussion of why cash compensation is rarely used as a means of

Instead, a complaining country is usually compensated through policy adjustments, such as a reduction in import tariffs in the defending country. The type of available compensation mechanisms determines the payoff structure in the bargaining process, which may also affect the outcome of the process. In particular, while cash transfer is a zero-sum transaction, a policy adjustment is not necessarily zero-sum. For example, as is well-known in the trade literature, a reduction in import tariffs in an importing country generates more gains for the exporting country than losses to the importing country.

The paper shows that due to differences in methods of compensation in private and inter-governmental disputes, classic models of settlement bargaining cannot correctly explain the settlement pattern in the WTO. To show this, we extend those models to study the determinants of out-of-court settlement under situations where the available compensation mechanism features a positive-sum transaction. This added feature alters some of the important predictions of the classic models. In particular, the models of Bebchuk (1984) and Reinganum and Wilde (1986) imply that the allocation of litigation costs between disputants has no bearing on the likelihood of settlement. In contrast, we show that under a positive-sum compensation mechanism, the likelihood of settlement is more sensitive to the defendant's litigation costs than to the complainant's litigation costs. This analysis has important policy implications, as it suggests that allocating the burden of proof to the defending party should lead to a higher settlement rate.<sup>6</sup>

This study provides a novel explanation for the divergent settlement behavior of developing and developed countries, which is based on relative litigation costs of these countries. We construct a measure of litigation costs based on the assumption that the cost of pursuing a dispute in the DSP is greater for poorer and smaller countries. It is a widely held view among observers of the WTO that less developed countries have higher costs of legal work settling disputes among WTO members.

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<sup>6</sup>The DSP can influence the allocation of litigation costs by adopting appropriate rules about the allocation of the burden of proof, for example.

in the dispute settlement process. For example, Shaffer (2003) points out that “lack of legal expertise in WTO law and the capacity to organize information concerning trade barriers and opportunities to challenge them [... and] lack of financial resources, including for the hiring of outside legal counsel,” are challenges faced by the developing countries in using the WTO legal system effectively.<sup>7</sup> In fact, to address this issue, in 2001, Advisory Centre on WTO Law (ACWL) was established to provide subsidized legal counselling to developing countries.

In addition to whether the dispute had multiple complainants or third parties, we use the following measures of real value of trade one year before the violation to capture “stakes at dispute”: 1) the real value of the defending country’s import from the complaining country in the disputed sector, and 2) the real value of the defending country’s import from the rest of the world. Real value of total export of defending country to the complaining country in the year of the dispute is used as a measure of retaliation capacity of the complaining country. We show that controlling for these measures the probability of settlement is positively correlated with the litigation costs of the disputants and statistically significant for the defending party, prior to 2001. It is also empirically verified that before 2001, the litigation costs of the defending party has a significantly larger effect on the likelihood of settlement than the litigation costs of the complaining party. While consistent with the prediction of our model, this latter observation is at odds with the prediction of the classical settlement bargaining models, where the total litigation costs of the disputants – not the distribution of costs – is what matters for the likelihood of settlement.

The fact that these results hold for pre-2001 sample, further strengthens our hypothesis that litigation costs of parties play a critical role in the settlement process. This is because

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<sup>7</sup>For developing countries, the absolute marginal cost of pursuing a dispute – not just the relative marginal cost, for example, as a share of GDP – is larger than the developed countries. For instance, developed countries have a large mission at WTO that is available to litigate the disputes when they happen. But, developing countries have small missions that are insufficient or would be overwhelmed by the litigation at the margin. Therefore, their marginal costs of litigation are larger than developed countries in absolute terms.

if litigation costs are the key, they should not matter (or matter less) after the establishment of ACWL in 2001, which offered subsidized legal expertise to developing countries to help them overcome the challenges of the dispute settlement process.

We also show that the larger is the defending party's imports from the complaining party in the disputed sector (i.e. the more is the stakes at dispute), the lower is the likelihood of a pre-trial settlement. The defending country's import in the disputed sector from third parties (rest of the world), however, has no statistically significant effect on the likelihood of pre-trial settlement. Multiplicity of complainants in the bargaining process and the existence of third parties in the dispute, however, reduce the chance of pre-trial settlement. But, the retaliatory capacity of the complaining party, measured by total export of defendant to complainant, has no statistically significant relation with the probability of settlement.

In the past decade, there has been a growing number of empirical studies of the dispute settlement process of GATT and the WTO.<sup>8</sup> Guzman and Simmons (2002) consider the relationship between the nature of the dispute and likelihood of an early settlement. They hypothesize that if the subject matter of the dispute has an all-or-nothing character and leaves little room for compromise (for example, health and safety regulations), the parties' ability to reach an agreement is limited and a higher rate of litigation is expected for such disputes. They find empirical support for their hypothesis only among democratic states. Busch and Reinhardt (2003) consider the success of developing countries as complainants in this process by investigating the level of concessions that they have been able to induce from defending countries. In particular, they find that the introduction of a more legalized system of dispute settlement under the WTO has exaggerated the gap between developed and developing country complainants with respect to their ability to get defendants to liberalize disputed policies. Nevertheless, Bown (2004) provides evidence that developing country complainants have had more economic success in resolving trade disputes under the WTO

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<sup>8</sup>Busch and Reinhardt (2003) provide a survey of this literature.

than was the case under the GATT.

A number of papers study the determinants of the decision to initiate a formal dispute. Bown (2005) investigates the determinants of participation in the DSP and examines whether the new regulations of the DSP under the WTO discourages active engagement by developing countries. He finds that the size of exports at stake and legal capacity are important factors in deciding whether to initiate a dispute. Wilckens (2009) also finds that a country is more likely to file a complaint if its retaliatory capacity is large. Horn et al. (1999), however, argue that the bias in the pattern of disputes that have been initiated under the WTO is due to the fact that developed countries have a larger diversity of imports and exports that naturally leads to more disputable trade policies and a more frequent use of the DSP by the developed countries.

In a more recent study, Kuenzel (2017) finds a relationship between the likelihood of a dispute and the degree of unilateral policy flexibility that a country has in any particular sector. As documented by Beshkar et al. (2015), Beshkar and Bond (2017), and Beshkar and Lee (2018), in a substantial fraction of sectors worldwide, the negotiated tariff bindings are above the tariffs applied by the government. The difference between applied tariffs and the negotiated bindings, known as tariff overhang, provides governments with a degree of flexibility to adjust their tariffs unilaterally. Kuenzel (2017) shows that a WTO dispute is more likely to arise in sectors with lower tariff overhangs. While we focus on the determinants of early, i.e. pre-trial, settlements, many interesting questions regarding the later stages of the dispute settlement process, namely the WTO trial and post-trial negotiation, remain unexplored in this study. Moreover, in this paper we do not explicitly model tariff adjustments in the dispute settlement process. These issues are studied in various papers including Park (2011), Beshkar and Park (2017), Maggi and Staiger (2011; 2015a; 2017; 2018), and Beshkar (2010; 2016). Park (2016) provides a comprehensive review of this literature.

In Sections 2 to 4 of this paper, we focus on disputes under the allegation of direct breach.

In Section 2, we introduce our assumptions regarding the costs and benefits of settlement to the disputing parties. In Section 3, we set out a screening model of pre-trial bargaining, which is a modified version of the Bebchuk (1984) model. Similarly, in Section 4, we follow Reinganum and Wilde (1986) approach to model the pre-trial settlement bargaining in the WTO as a signaling game. We turn our attention to non-violation cases in Section 5 and show that the effect of litigation costs and the stake at dispute on the settlement outcome are similar in violation and non-violation cases. Section 6 provides a brief discussion of the data sets and explanatory variables. The empirical models and results are presented and discussed in Section 7. Section 8 concludes.

## 2 Basic Setup

In this and the two subsequent sections, we focus on the case of direct breach. In a direct breach, the dispute is on the nature of the prevailing contingency. If such a case is litigated, the court issues its opinion on the nature of the contingency and rules whether the defendant is in violation of its obligation or not. If ruling is against the defendant, the defendant is supposed to reduce its tariff rate to a lower level (possibly the agreed-upon level) as specified by the court. Similarly, a settlement schedule is a tariff rate (lower than the disputed tariff rate) offered by one of the two parties.

The defendant's tariff rate on the imports from the complainant at the time of the dispute is denoted by  $\tau^d$ , while  $\tau^a$  ( $\leq \tau^d$ ) denotes the tariff rate that the defendant should adopt in order to be in compliance with its obligations. When a dispute arises, *renegotiation* takes place in order to find a "mutually agreed solution". A settlement proposal is characterized by a new tariff rate,  $\tau$  ( $< \tau^d$ ), to be adopted by the defending country. If a mutually agreed solution is not achieved, the case will escalate to the dispute panel. If at the panel stage the defendant is found in violation of its obligations, it should reduce its tariff from  $\tau^d$  to  $\tau^a$ .



Otherwise, the defending party can continue to adopt the disputed tariff rate,  $\tau^d$ .

Let  $W_D(\tau)$  and  $W_C(\tau)$  denote the welfare of the defendant and the complainant, respectively, as functions of the defendant's tariff rate, where  $W'_D(\tau) > 0$  and  $W'_C(\tau) < 0$ . Then the defendant's welfare loss from lowering its tariff from the disputed level (i.e.,  $\tau^d$ ) to  $\tau$  is given by

$$\Omega(\tau) \equiv W_D(\tau^d) - W_D(\tau).$$

Similarly, the complainant's benefits from this policy adjustment is given by

$$\Delta(\tau) \equiv W_C(\tau) - W_C(\tau^d).$$

Assuming there are gains from trade, an increase in tariff rates by one party would decrease the two parties' aggregate payoff.<sup>9</sup> Therefore, if deviation from the agreement benefits one party it should hurt the other party to a larger extent. Similarly, the defendant's loss from reducing its tariff rate is smaller than the complainant's benefits from this policy adjustment, i.e.  $\Omega(\tau) < \Delta(\tau)$ . For the sake of the tractability of the model, we impose more restrictions on the functions  $\Omega$  and  $\Delta$  as follows:

**Assumption 1:**  $\Omega(\tau) = \alpha\Delta(\tau)$  for all  $0 \leq \tau \leq \tau^d$ , where  $\alpha < 1$ .

As will be seen in the subsequent sections, modifying the classical models of settlement bargaining (e.g., Bebchuk 1984 and Reinganum and Wilde 1986) reveals some interesting features of the settlement bargaining in the WTO.

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<sup>9</sup>This assumption is consistent with various trade models but it may fail if there is a shock to the preferences of the parties that changes the jointly optimal tariff rate. In the framework of our paper, this assumption always holds as we assume away shocks to preferences. For models of dispute settlement that consider preference shocks, see Beshkar (2010, Forthcoming) and Maggi and Staiger (2015b, 2018, 2011).

### 3 A Screening Model

Consider a case in which the defendant has better information about the dispute case. In the case of implementing safeguard measures, for example, the defendant is better informed about the economic conditions surrounding its import-competing industries. Therefore, the defendant can make a better prediction about the ruling of the dispute panel in case of litigation. On this basis, we assume that the probability of an adverse ruling against the defendant,  $p$ , is private knowledge of the defendant, while the complainant knows only that  $p$  is distributed over interval  $[\underline{p}, \bar{p}]$  by a distribution function  $F(\cdot)$ . Here,  $p$  is interpreted as the defendant's type.

Bebchuk's (1984) framework can be easily adapted to this situation. Suppose that the complainant demands that the defendant adopts  $\tau^s$  rather than  $\tau^d$ . If the defendant fulfills this demand the case is settled, the complainant earns  $\Delta(\tau^s)$  and the defendant incurs a cost of  $\Omega(\tau^s)$ . On the other hand, if the defendant does not accept this offer, the parties bring the case before the dispute panel, in which case each of them should pay their respective legal fees, namely,  $c_D$  and  $c_C$ .

Assuming that the panel ruling is enforceable, the defendant accepts  $\tau^s$  if and only if:

$$\Omega(\tau^s) \leq (1 - p) \times 0 + p\Omega(\tau^a) + c_D, \quad (1)$$

or, equivalently, if and only if:

$$p \geq \frac{\Omega(\tau^s) - c_D}{\Omega(\tau^a)}. \quad (2)$$

Hence, the defendant will accept  $\tau^s$  if and only if its type  $p$  is equal to or higher than  $q(\tau^s)$ , where  $q(\tau^s)$  is the marginal defendant type defined by

$$q(\tau^s) = \frac{\Omega(\tau^s) - c_D}{\Omega(\tau^a)}.$$

On the other hand, the complainant's expected payoff from demanding  $\tau^s$  is given by

$$A(\tau^s) = \{1 - F[q(\tau^s)]\} \Delta(\tau^s) + F[q(\tau^s)] \left\{ -c_C + \frac{\Delta(\tau^a) \int_p^{q(\tau^s)} p f(p) dp}{F[q(\tau^s)]} \right\}.$$

Therefore, the FOC is given by  $A'(\tau^s) = 0$ , where

$$\begin{aligned} A'(\tau^s) &= -f[q(\tau^s)] q'(\tau^s) \Delta(\tau^s) + \{1 - F[q(\tau^s)]\} \Delta'(\tau^s) \\ &\quad - f[q(\tau^s)] q'(\tau^s) c_C + \Delta(\tau^a) q(\tau^s) f(q(\tau^s)) q'(\tau^s) \\ &= \{1 - F[q(\tau^s)]\} \Delta'(\tau^s) - f[q(\tau^s)] q'(\tau^s) [\Delta(\tau^s) + c_C - \Delta(\tau^a) q(\tau^s)]. \end{aligned}$$

Substituting  $q(\tau^s) = \frac{\Omega(\tau^s) - c_D}{\Omega(\tau^a)}$ , and  $q'(\tau^s) = \frac{\Omega'(\tau^s)}{\Omega(\tau^a)}$  in this equation and then applying Assumption 1, i.e.  $\Omega(\tau) \equiv \alpha \Delta(\tau)$ , yield:

$$A'(\tau^s) = \left\{ \{1 - F[q(\tau^s)]\} - f[q(\tau^s)] \frac{c_C + \frac{c_D}{\alpha}}{\Delta(\tau^a)} \right\} \Delta'(\tau^s).$$

Thus, the FOC can be written as:

$$\frac{f[q(\tau^s)]}{1 - F[q(\tau^s)]} = \frac{\Delta(\tau^a)}{c_C + \frac{c_D}{\alpha}}. \quad (3)$$

Moreover,

$$\begin{aligned} A''(\tau^s) &= - \left\{ f[q(\tau^s)] + f'[q(\tau^s)] \frac{c_C + \frac{c_D}{\alpha}}{\Delta(\tau^a)} \right\} q'(\tau^s) \Delta'(\tau^s) \\ &= - \left\{ f[q(\tau^s)] + f'[q(\tau^s)] \frac{c_C + \frac{c_D}{\alpha}}{\Delta(\tau^a)} \right\} \frac{[\Delta'(\tau^s)]^2}{\Delta(\tau^a)}. \end{aligned}$$

Therefore, the SOC,  $A''(S) < 0$ , is given by:

$$f[q(\tau^s)] + f'[q(\tau^s)] \frac{c_C + \frac{c_D}{\alpha}}{\Delta(\tau^a)} > 0. \quad (4)$$

Assuming a monotonic and increasing hazard function for the distribution function,  $F$ , the SOC will be always satisfied and the First-Order condition given in (3) yields a unique equilibrium.

### 3.1 Litigation costs and the likelihood of settlement

Under the baseline model of Bebchuk (i.e., when  $\alpha = 1$  in this setting), settlement rate is equally sensitive to the changes of the litigation costs of either party. However, under the current model (i.e., when  $\alpha < 1$ ), settlement rate is more responsive to changes in the defendant's costs than to changes in the complainant's costs. To see this, denote the equilibrium value of  $q(\tau^s)$  by  $q^*$  and rewrite the first-order condition (3) as follows

$$\frac{f(q^*)}{1 - F(q^*)} = \frac{\Delta(\tau^A)}{\frac{c_D}{\alpha} + c_C}. \quad (5)$$

Since we assume a monotonically increasing hazard function, an increase in the RHS of this equation results in a higher equilibrium value for  $q^*$ , or equivalently, a lower equilibrium settlement rate. Therefore,

**Proposition 1** *The equilibrium settlement rate is increasing in the litigation costs of either party and decreasing in the stake at dispute.*

Moreover, since  $\alpha < 1$ , a reduction in the defendant's litigation costs reduces the likelihood of settlement to a greater extent than does a reduction in the complainant's costs. Formally,

**Proposition 2** *The equilibrium settlement rate is more sensitive to changes in the defendant's costs than to changes in the complainant's costs.*

To obtain an intuition for this result, consider the relative cost of litigation to concessions for each party. Due to gains from trade (Assumption 1), a marginal change in tariffs has a greater impact on the welfare of the complaining country than the welfare of the defending country. Therefore, the opportunity cost of litigation is relatively higher for the defending party.

Denoting the equilibrium settlement rate by  $R^*$ , Propositions 1 and 2 imply:

$$\frac{dR^*}{dc_D} > \frac{dR^*}{dc_C} > 0.$$

**Example 3** *Suppose that  $p$  is distributed according to Beta distribution with shape parameters given by  $(2, 2)$ , i.e.,*

$$f(p) = \frac{\Gamma(4)}{\Gamma(2)\Gamma(2)} p(1-p),$$

where  $p \in [0, 1]$  and  $\Gamma$  is the gamma function. The hazard function of this probability distribution is given by

$$\frac{\frac{\Gamma(4)}{\Gamma(2)\Gamma(2)} p(1-p)}{1 - \frac{\Gamma(4)}{\Gamma(2)\Gamma(2)} \int_0^p t(1-t) dt} = \frac{6p}{1+p-2p^2}.$$

Using this hazard function, the equilibrium condition (5) can be written as

$$\frac{6q^*}{1+q^*-2q^{*2}} = \frac{\Delta(\tau^A)}{\frac{c_D}{\alpha} + c_C}.$$

Solving for  $q^*$  yields:

$$q^* = \frac{\Phi - 6 + \sqrt{-12\Phi + 9\Phi^2 + 36}}{4\Phi},$$

where,  $\Phi$  is equal to the right-hand side of (5). Thus, the likelihood of settlement,  $R^* =$

$1 - F(q^*)$ , is given by

$$\begin{aligned} R^* &= 1 - \frac{\Gamma(4)}{\Gamma(2)\Gamma(2)} \int_0^{q^*} t(1-t) dt \\ &= 1 - \frac{3}{16\Phi^2} \left( \Phi - 6 + \sqrt{9\Phi^2 - 12\Phi + 36} \right)^2 + \frac{1}{32\Phi^3} \left( \Phi - 6 + \sqrt{9\Phi^2 - 12\Phi + 36} \right)^3 \end{aligned}$$

As is depicted in Figure 1,  $R^*$  is a decreasing function of  $\Phi \equiv \frac{\Delta(\tau^A)}{\frac{c_D}{\alpha} + c_C}$ , and Propositions 1 and 2 are verified.

## 4 A Signaling Model

In the previous section, we assumed that in the settlement bargaining game the uninformed party offers a settlement proposal and the informed party decides whether to accept or reject this proposal. In contrast, in this section, we assume that the informed party is the one that offers a settlement and the uninformed party may accept or reject the offer.

The model presented in this section is a modification of the signaling model of Reinganum and Wilde (1986). As in the previous section, we assume that the defendant has private information about its probability of losing the case in the court, denoted by  $p$ . The signaling game is as follows. The defendant offers a reduction in its import tariff from  $\tau^d$  to  $\tau^s$ . The complainant's strategy, on the other hand, is a function,  $r(\tau^s)$ , which specifies the probability that it rejects the defendant's policy adjustment proposal. The expected payoffs of the complainant, if she chooses a rejection probability of  $\rho$ , is given by

$$\Pi_C(\tau^s, \rho; b) = [1 - \rho] \Delta(\tau^s) + \rho [b(\tau^s) \Delta(\tau^a) - c_C]. \quad (6)$$

where,  $b(\tau^s)$  represents the complainant's belief about  $p$  given the defendant's offer,  $\tau^s$ .

Given function  $r(\cdot)$ , the expected payoff of the defendant from offering  $\tau^s$  is

$$\Pi_D(\tau^s; r(\cdot)) = -[1 - r(\tau^s)]\alpha\Delta(\tau^s) - r(\tau^s)[p\alpha\Delta(\tau^a) + c_D]. \quad (7)$$

An equilibrium for this problem is characterized by a triple  $(b^*, r^*, \tau^{s*})$ . An interior solution for the complainant's problem requires:

$$\frac{\partial \Pi_C}{\partial \rho} = -\Delta(\tau^s) + b(\tau^s)\Delta(\tau^a) - c_C = 0. \quad (8)$$

Moreover, consistency requires  $b(\tau^s) = p$ . Therefore, (8) implies:

$$\Delta(\tau^{s*}) = p\Delta(\tau^a) - c_C \quad (9)$$

Furthermore,  $\tau^{s*}$  must maximize the defendant's expected payoff, given  $r^*(\cdot)$ . That is, it should satisfy the defendant's first-order condition:

$$r'(\tau^{s*})\alpha\Delta(\tau^{s*}) - [1 - r(\tau^{s*})]\alpha\Delta'(\tau^{s*}) - r'(\tau^{s*})[p\alpha\Delta(\tau^a) + c_D] = 0$$

or, equivalently,

$$-\alpha\Delta'(\tau^{s*}) + \alpha\Delta'(\tau^{s*})r(\tau^{s*}) - [\alpha c_C + c_D]r'(\tau^{s*}) = 0 \quad (10)$$

Equation (10) has a one-parameter family of solutions  $r^*(\Delta'(\tau^s)) = 1 + \lambda \exp\left\{-\frac{\Delta'(\tau^s)}{\alpha c_C + c_D}\right\}$ . The appropriate boundary condition is  $r^*(\Delta'(\underline{\tau}^s)) = 0$ , where  $\Delta'(\underline{\tau}^s) = \bar{p}\Delta'(\tau^a) - c_C$ .<sup>10</sup>

This implies that

$$\lambda = -\exp\left\{\frac{\bar{p}\Delta'(\tau^a) - c_C}{\alpha c_C + c_D}\right\}.$$

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<sup>10</sup>For a discussion of this boundary condition, see Reinganum and Wilde (1986).

Therefore, the equilibrium probability of rejection as a function of  $\tau^s$  will be given by:

$$r^*(\tau^s) = 1 - \exp \left\{ \frac{\bar{p}\Delta'(\tau^a) - c_C}{\alpha c_C + c_D} \right\} \exp \left\{ -\frac{\Delta'(\tau^s)}{\alpha c_C + c_D} \right\} \quad (11)$$

$$= 1 - \exp \left\{ \frac{\bar{p}\Delta'(\tau^a) - \Delta'(\tau^s) - c_C}{\alpha c_C + c_D} \right\}. \quad (12)$$

Finally, for a particular value of  $p$ , the equilibrium settlement rate,  $R^* = 1 - r^*$ , can be obtained by substituting  $\Delta(\tau^{s*})$  from (9) into (11), namely:

$$R^* = \exp \left\{ \frac{\bar{p} - p}{\alpha c_C + c_D} \Delta'(\tau^a) \right\}. \quad (13)$$

In contrast with the Reinganum and Wilde (1986) original model, in the present formulation the probability of trial depends on the allocation of litigation costs. In particular, probability of trial is more responsive to changes in the defendant's litigation costs than to the complainant's litigation costs. Therefore, Propositions 1 and 2 hold under the signaling model as well.

## 5 Settlement Bargaining under the Allegation of Indirect Breach

In this section, we consider disagreements over policies that are not explicitly restricted by the trade agreement but can potentially nullify or impair the benefits of a contracting party that were intended under the agreement. Such actions, if proved to nullify the effect of the agreement, may be categorized as indirect breach of the contract. In an indirect breach, while keeping its tariff rates fixed at the agreed-upon levels, the defendant adopts a policy, such as subsidies, etc, that potentially nullifies/impairs the benefits of the complainant from the agreement. If such a case is litigated, the court determines the extent to which the



defendant's policy has nullified the complainant's gains from the agreement. If the court's ruling is against the defendant, the defendant is supposed to take mitigating actions that restore the benefits of the complainant from the agreement.

In this type of disagreement, the dispute is over the extent of damages imposed on the complaining party. Such disagreements may arise due to asymmetric information of the disputing parties about the size of the compensation, denoted by  $\Delta$ , that the dispute panel would award to the complainant in case of litigation. We assume that  $\Delta$  is the private information of the complaining party, while the defending party only knows that  $\Delta$  is distributed according to  $G(\cdot)$  on the interval  $(\underline{\Delta}, \overline{\Delta})$ . We also maintain Assumption 1, which implies that the cost to the defendant of conforming to an adverse ruling by the panel is given by  $\alpha\Delta$ , where  $0 < \alpha < 1$ .

Once again, we employ the signaling model of Reinganum and Wilde (1986) to analyze the settlement bargaining problem. More specifically, we consider a bargaining process in which the informed party, i.e., the complainant, demands a policy adjustment on behalf of the defendant in exchange for settlement. Let  $S$  denote the benefit of the proposed policy adjustment to the complaining party. We continue to maintain Assumption 1, which implies that the cost of this policy adjustment to the defending party is given by  $\alpha S$ .

The complainant's strategy is to demand  $S$  to maximize its expected payoff. The defendant's strategy, on the other hand, is a function,  $r(S)$ , which specifies the probability that it rejects the complainant's policy adjustment proposal. The expected payoffs of a defendant who has received a settlement demand  $S$  and has a rejection probability of  $\rho$ , is given by

$$\Pi_D(S, \rho; b) = -[1 - \rho]\alpha S - \rho[\alpha b(S) + c_D], \quad (14)$$

where,  $b(S)$  represents the defendant's belief about  $\Delta$  given the complainant's demand,  $S$ .

Expected payoffs of a complainant who would receive an award of the size  $\Delta$  by the

dispute panel, demands  $S$  to settle, and takes as given the strategy  $r(S)$  of the defendant, is given by

$$\Pi_C(S; r) = [1 - r(S)] S + r(S) [\Delta - c_C]. \quad (15)$$

An equilibrium for this problem is characterized by a triple  $(b^*, r^*, S^*)$ . An interior solution for the defendant's problem requires:

$$\frac{\partial \Pi_D}{\partial \rho} = \alpha S - \alpha b(S) - c_D = 0. \quad (16)$$

Moreover, consistency requires  $b(S) = \Delta$ . Therefore, (16) implies:

$$S^* = \Delta + \frac{c_D}{\alpha}. \quad (17)$$

Furthermore,  $S^*$  must maximize the complainant's expected payoff, given  $r^*(\cdot)$ . That is, it should satisfy the complainant's FOC:

$$[1 - r(S^*)] + [1 - r'(S^*)] S^* + r'(S^*) [\Delta - c_C] = 0,$$

or, equivalently,

$$1 + S^* - r(S^*) - \left( c_C + \frac{c_D}{\alpha} \right) r'(S^*) = 0. \quad (18)$$

Equation (18) has a one-parameter family of solutions  $r^*(S) = 1 + \lambda \exp \left\{ -\frac{S}{c_C + \frac{c_D}{\alpha}} \right\}$ . Applying appropriate boundary conditions, the equilibrium probability of rejection as a function of  $S$  will be given by:

$$r^*(S) = 1 - \exp \left\{ -\frac{S - \Delta - \frac{c_D}{\alpha}}{c_C + \frac{c_D}{\alpha}} \right\}. \quad (19)$$

Finally, for a particular value of  $\Delta$ , the equilibrium settlement rate,  $R^* = 1 - r^*$ , can be

obtained by substituting  $S^*$  from (17) into (19), namely:

$$R^* = \exp \left\{ -\frac{\Delta - \underline{\Delta}}{\frac{c_D}{\alpha} + c_C} \right\}. \quad (20)$$

Note the similarity between this result and equation (13), which is the equilibrium settlement rate in the signaling model of Section 4. In both cases the equilibrium settlement rate is more responsive to changes in the defendant's litigation costs than to the complainant's litigation costs and Propositions 1 and 2 continue to hold.

## 6 Data

The data set used in this study is from Bown and Reynolds (2014). It contains 427 disputes from 1995 to 2011. For each case, the respondents, complainants, dispute initiation date, whether dispute was over import or export, and the dates as well as nature of violations are reported. Out of all the disputes, 308 cases target import of specific products. The innovation of this data set is the inclusion of bilateral trade volumes and values at the time of violation as well as the time of implementation of these disputes. Moreover, these trade data are included for two years before and after those dates.<sup>11</sup>

Note that some of these 308 cases are multiple filings of same disputes.<sup>12</sup> These multiple filings are marked in the data set with a variable that gives them the same dispute number. This helps us to combine these multiple filings into single disputes. But, since disputed product codes between a pair of countries might have been repeated across these multiple filings, one needs to eliminate these duplicate observations so that trade values are not double-counted in these combined disputes.

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<sup>11</sup>See Bown and Reynolds (2014) for more information on the data set.

<sup>12</sup>One example is when the same dispute between a pair of member countries is filed multiple times. Another is when several parties have similar complaints against a defending party, they may file a single complaint as co-complainants or they may file separate complaints. In either case, similar complaints are addressed as a single case by the DSP.

- *Measure of settlement*

Settlement can happen before or after the panel establishment. We call settlements that take place before panel establishment ‘early settlements’ and those after it as ‘late settlements.’ We only consider early settlement for this study. Cases for which panels were not established, i.e. the date of panel establishment is missing in their data, are considered as settled early. The data on the dates of panel establishment are taken from the WTO dispute settlement data set (Horn and Mavroidis, 2008).

- *Measure of litigation costs*

It is a widely held view among the observers of the WTO that less developed countries have relatively higher costs of legal work in the dispute settlement process. For example, Shaffer (2003) points out that little expertise in the WTO law and the opportunities it offers coupled with financial constraints in obtaining legal expertise from outside are challenges faced by the developing countries in using the WTO legal system effectively.<sup>13</sup> In fact, in response to concerns about the relatively high costs of legal works for poorer countries, the Advisory Centre on WTO Law (ACWL) was established in 2001 to provide developing countries with subsidized legal aid for participation in the DSP.<sup>14</sup>

On this basis, we divide countries into high cost and low cost based on their GDP per capita. All countries whose GDP per capita is beyond a threshold are considered low cost and those below the threshold are high cost. \$10,000 is chosen as the threshold. But, the results do not change when we use \$7,000, \$12,000, or even \$15,000 as the threshold.<sup>15</sup> Tables A1 and A2 rank countries based on their GDP per capita and reports share of times they

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<sup>13</sup>See the quote from Shaffer (2003) in Section 1.

<sup>14</sup>Developing countries can access legal aid through ACWL for an hourly charge that ranges from \$25 for the least developed countries to \$200 for the highest income developing countries (see [www.ACWL.ch](http://www.ACWL.ch)).

<sup>15</sup>Some may argue that even though China, India, and Brazil are developing countries with low income levels, they have a similar capacity as the developed countries to litigate in WTO. This may be apparent from the fact that they are strong and active members of WTO. Including these countries among the low cost countries does not change the result qualitatively.

settled their disputes as a defendant or a complainant. For the defendants a dummy is defined that is equal to one if the defendant belongs to the high cost countries and zero otherwise. A similar dummy is defined for the richest complainant in a dispute. This measure only depends on the disputing party's GDP per capita and not on the characteristics of the case, e.g., the complexity of the legal issues involved. While it would be interesting to include case-specific factors in the construction of this measure, it has been pointed out by observers that litigation costs are more or less independent of the commercial stakes involved in a dispute (Shaffer, 2003).

- *Measure of the stake at dispute*

Stake at dispute affects the chance of settlement negatively and should be included in any regression of dispute settlement. We use the value of defendant's import of the disputed products from the complainants one year before the violation, as one measure of stakes at dispute. Products are measured at six-digit level HS codes. The stake at dispute may be also affected by the defending country's size of imports from third countries. In a three-country model of trade where the defending party imports from the complaining party as well as the rest of the world, it can be shown that the stake at dispute for the defending party is decreasing in its import value from the rest of the world. To account for this effect, we also include value of import in the disputed sector from the rest of the world one year prior to violation, in the regression.<sup>16</sup>

- *Measure of retaliation capacity of the complainants*

The complainants in a dispute may want to retaliate by raising their tariff rates on imports from the defendant. The size of this threat may affect the likelihood of the settlement. Therefore, we control for the total value of exports from the defendant to all complainant.

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<sup>16</sup>Bown and Reynolds (2014) data set has the size of defendant's import from all countries. So the import from the complainants and from the rest of the world are calculated based on these data. Moreover, when the complainant is European Union, we calculate the size of the defendant's import by adding the size of import from countries that were in the European Union in the year the dispute was initiated.

- *Other control variables*

Some disputes involve multiple complaining parties that join the dispute as interested parties. In some instances also, third parties join the dispute. The existence of multiple parties as well as the existence of third parties, who joined before the panel was established, can affect the settlement of a dispute. Therefore, we define and include two dummies in the regressions: 1) a multiple complainants dummy that is one if the dispute has multiple complainants and zero otherwise, and 2) a third-party complainants dummy that is one if at least one of the third parties joined the dispute before the panel was established and zero if there was no third party or all of them joined after the panel was established. The third-party complainants dummy is defined this way - which is different from the third-party variable already in the data set - because not all parties that join a dispute can be considered as a third party. Most third parties join a dispute after pre-trial negotiations break down. Therefore, one can argue that it is the breakdown of pre-trial negotiations that attracts third parties to join the dispute, and not the other way around. Hence, only third parties that joined before the panel establishment should be considered.

Summary statistics of all variables are reported in Table 2.

## 7 Empirical Results

In this section, we evaluate the following hypotheses that are derived from Propositions 1 and 2:

*Hypothesis 1A:* Settlement rate is positively correlated with the measures of litigation costs.

*Hypothesis 1B:* Settlement rate is negatively correlated with the trade volume between the disputing parties in the disputed sector prior to violation.

*Hypothesis 2:* Settlement rate is more sensitive to changes in the litigation costs of the

defending party than to changes in the litigation costs of the complaining party.

Hypotheses 1A and 1B correspond to Proposition 1 and Hypothesis 2 refers to Proposition 2. In addition to these hypotheses, we will also be able to discuss other factors that may influence the outcome of settlement negotiations, including the retaliation capacity and the existence of co-complainants.

Table 3 reports the probit estimates for the likelihood of settlement in a dispute. Similar results are obtained from linear probability model, logit model, and maximum likelihood estimation assuming beta distribution. The dependent variable is a dummy that is equal to one if the panel is not established, i.e. the dispute is settled prior to panel establishment. Column (1) has the probit estimation for all disputes regardless of whether they are on imports, exports, goods, or services. It contains 349 disputes. Columns (2) to (6) restrict the results to those disputes that are about import of goods in a specific disputed sector for which import data is available. They have 252 disputes.

Estimations for the whole data (Column(1)) and all import cases (Columns (2) and (3)) support Hypothesis 1A which states the likelihood of settlement is positively correlated with the litigation costs of each party. The coefficient of defendant cost is statistically significant in all of them. But, the coefficient of the richest complainant cost, although positive, is not statistically significant. The results are robust when we control for different variables, that are potentially related to settlement, in Column (3). The last row in the table reports the p-value for testing the null hypothesis of whether the coefficient of 'Defendant is high cost' is smaller than the coefficient of the 'Richest complainant is high cost'. The results in Columns (1) through (3) reject the null and therefore, support Hypothesis 2.

Column (4) reports the results for only disputes prior to 2001 and Column (5) depicts them for disputes filed in and after 2001. In 2001, the Advisory Centre on WTO Law (ACWL) that subsidizes the cost of litigation for the developing countries was established. As a result, it became easier for these countries to press charges against their trade partners,

especially the developed countries, and defend their cases in the DSP. As Figure 2 shows the share of disputes in which a developing country is a complainant substantially increased after 2001. This share was about 30% between 1995 and 2000 and increased to about 50% between 2001 and 2011. Hence, based on the model presented in this study, one may expect that the estimated results would only hold (or would be stronger) for disputes prior to 2001. The estimates in Columns (4) and (5) are in line with this conjecture and show that Hypotheses 1A and 2 are only supported by data prior to 2001. In other words, with the advent of ACWL and subsidization of litigation costs of developing countries, being a developing country is not correlated with the likelihood of settlement anymore. This further supports the theoretical model of the paper that the litigation cost of developing countries is an important predictor of settlement.

The estimates for the pre-2001 period are similar to those for the whole sample. The coefficient of litigation costs for both defendant and the richest complainant increases. But, similar to Columns (1) through (3), it is only statistically significant for the defendant. The test rejects that the correlation for the cost of defendant is smaller than the complainant which confirms Hypothesis 2 (for pre-2001 sample).

- *Stake at dispute, retaliation capacity, and co-complainants*

The value of defendant's imports from the complainants in the disputed sector one year prior to violation is a measure of stake at dispute. As shown in Columns (3) through (6), the likelihood of settlement is negatively correlated with this variable. The coefficient remains statistically significant even after 2001. This supports Hypothesis 1B that the larger the trade value, the greater the stake at dispute, and the harder the settlement. The value of defendant's import from the rest of the world, however, has no statistical correlation with the probability of settlement.

The Dispute Settlement Process of the WTO does not provide any external enforcement



of the agreement. Instead, the system relies on the retaliatory power of the injured countries against the offending countries to enforce trade agreements. Therefore, the retaliatory capacity of the complaining parties may influence the outcome of the pre-trial negotiations. Retaliatory actions are normally in the form of import restrictions in the injured country against the products from the offending country. Thus, the volume of export from the defending country to the complaining countries can be used as a measure of the complainants' retaliation capacity. Our empirical observation suggests that total value of exports from the defending country to the complaining countries has no correlation with the likelihood of settlement controlling for the size of imports.

Having multiple complainants, on the other hand, is negatively correlated with the probability of settlement and the correlation is statistically significant. Columns (4) and (5) show that this negative correlation is only pronounced prior to 2001. Hence, in that period, the existence of multiple complainants may have reduced the likelihood of settlement by increasing the stake at dispute. This result is robust even if we control for measures of the stake at dispute such as the disputed trade values between the defendant and the complaining parties.

Busch and Reinhardt (2006) hypothesize that third parties undermine pre-trial negotiations by increasing the negotiation costs. In fact, as they point out, "61 percent of disputes with no third parties ended in early settlement, in contrast to 26 percent of disputes with third parties. Likewise, nine percent of disputes without third parties ended in a ruling, whereas fully 45 percent of disputes with third parties went the legal distance." But, it is important to note that most third parties join a dispute after pre-trial negotiations break down. Therefore, one can argue that this is the breakdown of pre-trial negotiations that attracts third parties to join the dispute, and not the other way around. To analyze the effect of third parties on the pre-trial negotiations, we define third-party complainants as a dummy variable that is equal to one if at least one third party joined the negotiations *prior*

to the establishment of a WTO dispute panel. The coefficient of third-party complainants support Busch and Reinhardt (2006) hypothesis at least prior to 2001.

## 8 Conclusion

Our objective in this paper was to highlight the effect of the compensation mechanism that is available to disputing parties on the outcome of pre-trial negotiations. In particular, we considered trade disputes among the WTO members in which trade policy adjustments, rather than cash payments, are used to transfer wealth among the member countries. As opposed to cash payments, policy adjustments are not zero-sum transactions, in the sense that the payee receives a different amount than is paid by the payer. The classical settlement bargaining models, which consider cash payments as the method of compensation, is modified to study settlement bargaining in an environment where compensations are implemented through policy adjustment.

We showed that when policy adjustment is the only compensation mechanism, the litigation costs of the defending party has a pronounced effect on the likelihood of pre-trial settlement. Thus, the classic result regarding the independence of the settlement likelihood and the allocation of litigation costs does not follow under this alternative compensation mechanism. This result suggests that legal procedures that allocate a larger fraction of the burden of proof on the defending party should result in a higher settlement rate.

This theory can explain some stark differences between the behavior of these developed and developing countries in the dispute settlement process of the WTO. In a dispute between a developed and a developing country, the likelihood of settlement is significantly lower when the developed country is named as the defending party. Assuming that developing countries in the data set have higher litigation costs, this observation can be interpreted as

an indication of the pronounced effect of the defending countries' litigation costs in pre-trial negotiations.

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# Figures

Figure 1: Equilibrium settlement rate,  $R^*$ , as a function of  $\Phi \equiv \frac{\Delta(\tau^A)}{\alpha + c_C}$ .

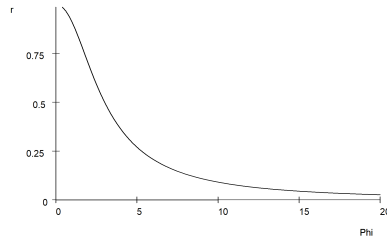
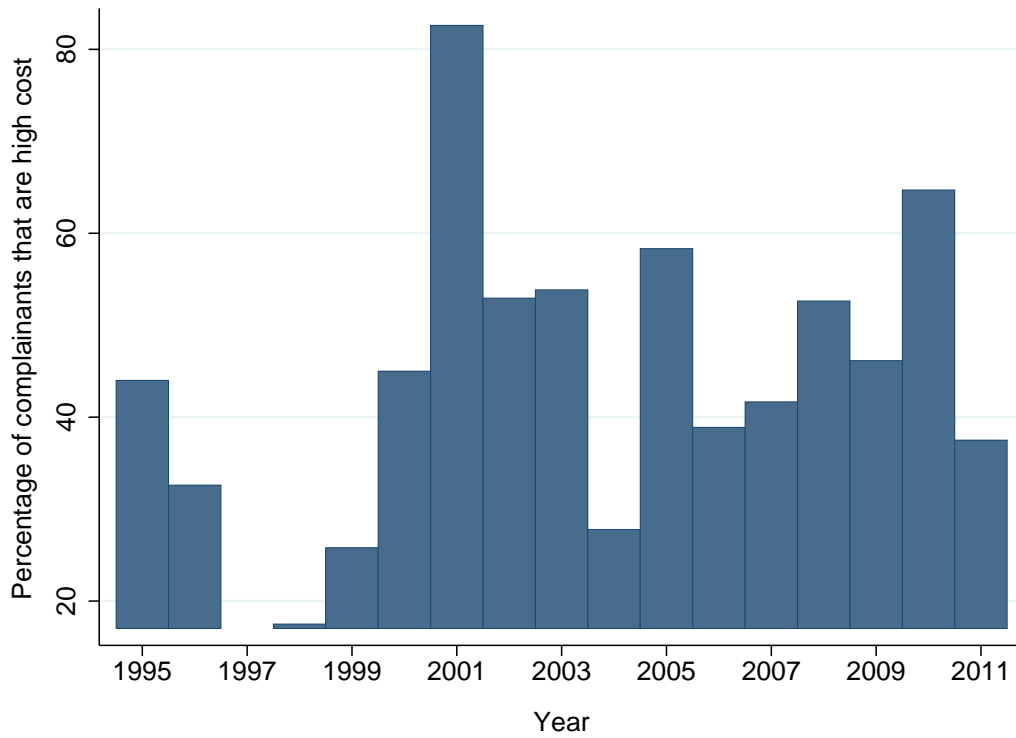


Figure 2: Percentage of complainants that are high cost over time



## Tables

Table 1: Settlement rate and the size of the defending and complaining parties

Defendant Economy	Complainant Economy		All
	Developing	Developed	
Developing	75% <sup>†</sup> (69)	62% <sup>‡</sup> (71)	69% (140)
Developed	44% (66)	45% (142)	45% (208)
All	60% (135)	51% (213)	54% (348)

Note: The numbers in parentheses show the number of disputes. Disputes that were the same and filed multiple times are combined. *Developing* includes all countries with GDP per capita  $\leq$  \$10,000 and *Developed* contains all countries with GDP per capita above \$10,000. For more information, please see Tables A1 and A2. Using \$7,000, \$12,000, or even \$15,000 as the threshold does not change the results.

<sup>†</sup> This is statistically significantly different than 50% (the average settlement rate for when the defendant is developed and complainant is developing (P-value $<$ 0.01).)

<sup>‡</sup> This is statistically significantly different than 46% (the average settlement rate for when the defendant and complainant are both developed (P-value $<$ 0.01).) It is also statistically significantly different than 50% (when the defendant is developed and the complainant is developing (P-value $<$ 0.02).)

Table 2: Summary statistics of variables

	Observations	Mean	St. dev.	Min	Max
Settlement prior to panel establishment	252	0.54	0.50	0	1
Defendant is high cost	252	0.44	0.50	0	1
Richest complainant is high cost	252	0.46	0.50	0	1
ln(import from complainants in disputed sectors)	252	3.24	2.86	0	10.25
ln(import from the rest of the world in disputed sectors)	252	5.52	2.98	0	11.48
ln(total export to all complainants)	252	16.15	2.94	9.00	20.95
Multiple complainants	252	0.11	0.31	0	1
Third-party complainants	252	0.61	0.49	0	1

Note: 'Settlement prior to panel establishment' is a dummy that is one if the dispute is settled before the panel is established. Import variables have the real value of import of the defendant from the complainants and from the rest of the world one year before the violation. 'Real import from the complainants' only includes import from complainants who filed the dispute and is in the year before the violation. 'Total export to all complainants' is export from the defendant to all complainants in the year the dispute is filed. 'Multiple complainants' is equal to one if more than one complainant filed the dispute. 'Third-party complainants' is a dummy that is equal to one if at least one third party joined the dispute before the panel is established and zero otherwise.



Table 3: Probit Estimation of the Settlement Likelihood

	(1)	(2)	(3)	Pre-2001 (4)	Post-2001 (5)	(6)
Defendant is high cost	0.609*** (0.143)	0.619*** (0.165)	0.740*** (0.274)	1.591** (0.664)	0.376 (0.288)	
Richest complainant is high cost	0.156 (0.143)	0.162 (0.164)	0.309 (0.262)	0.458 (0.610)	0.046 (0.331)	
ln(import from complainants in disputed sectors)			-0.131*** (0.042)	-0.150* (0.081)	-0.150*** (0.051)	-0.123*** (0.042)
ln(import from the rest of the world in disputed sectors)			0.065 (0.047)	0.151 (0.112)	0.045 (0.056)	0.028 (0.044)
ln(total export to all complainants)			0.058 (0.055)	0.175 (0.116)	-0.060 (0.063)	-0.015 (0.043)
Multiple complainants			-0.773* (0.448)	-2.763** (1.099)	-0.083 (0.496)	-0.701* (0.413)
Third-party complainants			-2.726*** (0.290)	-4.019*** (0.468)		-2.625*** (0.267)
Constant	-0.200** (0.099)	-0.251** (0.125)	0.808 (0.993)	-1.485 (2.049)	1.160 (1.199)	2.550*** (0.632)
Observations	349	252	252	114	138	252
P-value for $H_0 : \beta_{Def.} \leq \beta_{Comp.}$ †	0.019	0.034	0.102	0.065	0.180	

Note: For the definition of variables see notes in Table 2. The dependent variable is ‘Settlement prior to panel establishment’. ‘Third-party complainants’ is dropped from Column (5) as it predicted success of probit perfectly.

† This row reports the p-value of testing whether the coefficient of ‘Defendant is high cost’ is smaller than the coefficient of the ‘Richest complainant is high cost’.

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

## Appendix

Table A1: Settlement Rate and the Size of the Defending and Complaining Parties with Low Litigation Costs

Country (from richest to poorest)	No. of Settled/All Disputes as a	
	Defendant	Complainant
Norway		1/2
Switzerland		2/3
Denmark	1/1	
United States	33/94	50/88
United Kingdom	0/1	
Netherlands	1/1	
Japan	6/12	2/10
Ireland	2/2	
Belgium	2/3	
Canada	5/15	11/23
Sweden	1/1	
France	2/2	
Australia	6/10	1/6
New Zealand		1/6
European Union	22/49	41/79
Singapore		1/1
Hong Kong		1/1
Greece	2/2	
Portogul	1/1	
Korea	5/12	4/14
Antigua and Barbuda		0/1

Table A2: Settlement Rate and the Size of the Defending and Complaining Parties with High Litigation Costs

Country (from richest to poorest)	No. of Settled/All Disputes as a	
	Defendant	Complainant
Czech Republic	2/2	1/1
Croatia	1/1	
Hungary	2/2	5/5
Slovakia	3/3	
Trinidad and Tobago	1/1	
Mexico	8/14	6/15
Poland	1/1	2/3
Chile	7/10	6/10
Turkey	5/7	1/2
Venezuela	2/2	0/1
Argentina	9/16	9/13
South Africa	3/3	
Panama	1/1	1/3
Malaysia	1/1	0/1
Uruguay	0/1	1/1
Brazil	7/11	11/22
Costa Rica		2/3
Dominican Republic	2/4	
Romania	2/2	
Colombia	2/3	5/5
Ecuador		1/3
China	10/15	2/7
Peru	4/4	1/3
Thailand	1/3	6/13
Guatemala	0/2	3/5
Ukraine	1/1	2/2
Armania	1/1	
Indonesia	0/1	1/4
Honduras		2/5
Egypt	3/4	
Philippines	3/4	2/4
Nicaragua	2/2	1/1
Moldova	1/1	1/1
Vietnam		0/1
Sri Lanka		1/1
India	8/13	8/18
Pakistan	2/2	1/3
Bangladesh		1/1