Quarterly Journal of Political Science, 2010, 5: 107–131

The Strategic Use of International Institutions in Dispute Settlement*

Songying Fang

Department of Political Science, Rice University, TX, USA; sfang@rice.edu

ABSTRACT

How does the existence of an international institution change the strategic calculations of states engaged in an international dispute? This paper investigates the question by modeling an international institution as an alternative to bilateral bargaining for a dispute settlement. The equilibrium results show that only one of the two countries may find the option of appealing to an international institution attractive, and that the institution can influence the bargaining outcome even when it is not directly involved in settling the dispute. Moreover, the results show that countries condition their behavior on the type of the institution that they are dealing with: While a high capacity institution can induce cooperation, a low capacity institution does not. These findings have important implications for WTO reforms and provide an explanation for restrictive membership adopted by many significant international institutions.

* I thank John Duggan, Curt Signorino, Randy Stone, Seok-ju Cho, Jin Li, Kris Ramsay, Siyang Xiong, and Jun Wako for many discussions. I also thank Michael Barnett, Anna Bogomolnaia, Karl Brandt, Daina Chiba, Christina Davis, Jeffrey Dunoff, Raymond Duvall, Nevzat Eren, John Freeman, Jesse Johnson, Robert Keohane, Cliff Morgan, Brian Pollins, Kathryn Sikkink, Randy Stevenson, Richard Stoll, and Ahmer Tarar for their input at various stages of the project. Special thanks to Ashley Leeds, Lisa Martin, Beth Simmons, Branislav Slantchev, Christopher Way, two anonymous reviewers, and the QJPS editors for detailed comments. Support from W. Allen Wallis Institute of Political Economy is gratefully acknowledged. Any remaining errors are the sole responsibility of the author.

Supplementary Material available from:
http://dx.doi.org/10.1561/100.00009020_supp
MS submitted 9 March 2009; *final version received 25 June 2010*
ISSN 1554-0626; DOI 10.1561/100.00009020

In international dispute situations, we often observe that some countries are willing to resort to an international institution to settle a dispute, while others are reluctant to do so. An examination of 112 contentious cases brought to the ICJ between 1946 and 2008 shows that 97 (87%) of them are unilateral applications. Similarly, Merrills (2005, p. 272) notes that although the two sides of a dispute can jointly refer the case to the UN, it is more common that one party seeks UN involvement while the other resists it. Such observations pose two related questions: Why do countries have differential interests in engaging an international institution to settle a dispute? Does the *threat* of appealing to an international institution affect bilateral negotiations?

The research on international institutions has thus far focused on the direct effect of the institutions in bringing about cooperative behavior from states. In particular, the questions of whether states comply with an international agreement and what factors influence their compliance have generated a significant literature (Carrubba, 2005; Chayes and Chayes, 1995; Dai, 2005; Downs *et al.*, 1996; Koh, 1997; Mitchell and Hensel, 2007; Tallberg, 2002). Some suggest that the involvement of international institutions enhances prospects for compliance. What is overlooked in this literature, however, is that the question of compliance arises only after states have accepted institutional involvement in the dispute settlement process. Therefore, there is a *prior* question concerning when states find such an engagement desirable.

Contrary to a rarely challenged assumption that states have a common interest in utilizing international institutions, some countries may choose to avoid engaging an institution by making concessions in bilateral negotiations. In such cases, an institution influences the outcome of a dispute in indirect ways. For instance, in the dispute over France's nuclear tests in a Pacific test center, after spending a decade to no avail in bilateral negotiations, New Zealand and Australia filed suits to the International Court of Justice (ICJ) against France to block further nuclear tests in the region. France first contended that the Court did not have jurisdiction over the case because the testing was part of its national defense, and later withdrew its acceptance of the Optional Clause. However, France continued its discussions with Australia and New Zealand, and changed its testing strategy in a few months (Fischer, 1982). In international trade, more than 60% of disputes are settled bilaterally, with the defendants making concessions when the issues are brought to the attention of the General Agreement on Tariffs and Trade (GATT) or the World Trade Organization (WTO) (Busch and Reinhardt, 2001, 2003; Reinhardt, 2001). Clearly, states make careful decisions about whether to engage an international institution to resolve a dispute, and the mere *threat* of institutional involvement can be sufficient to change the dynamics of bilateral bargaining and the outcomes.

This study develops a game theoretical model to understand both the direct and indirect effects of international institutions on dispute settlement. In the model, two countries negotiate to settle a dispute, each having the option of referring the issue to an international institution. Depending on the prior beliefs of the countries about the outcome of an institutional ruling, as well as the costs associated with noncompliance, countries can have divergent interests in engaging an international institution. The key insight of the model is that the relationship between bargaining and appealing to an institution are two aspects of the same process. While the existing literature largely treats

bilateral negotiations and institutional solutions as two distinct methods of interstate dispute settlement, case studies suggest that states see the threat of appealing to an international institution as part of the bargaining process (Fischer, 1982; Koh, 2000; Paulson, 2004; Tallberg, 2002).

The equilibrium analysis produces three main findings. First, only one of the two countries may find the option of appealing to an international institution attractive. The result provides an explanation for why we so frequently observe unilateral filing for dispute settlement. Second, even when an institution is not appealed to, it can nevertheless affect the bargaining outcome by strengthening the position of the country that has a credible threat of engaging the institution. In particular, the country with a lower noncompliance cost is more likely to have a credible threat, and is thus more able to extract concessions at the bargaining table. I argue that restrictive membership adopted by many significant international institutions may be a response to differential noncompliance costs among countries. Finally, countries condition their behavior on the type of institutions that they are dealing with; although high capacity institutions — those that are capable of generating significant costs for both countries relative to the issue at stake — can bring about cooperation, low capacity institutions do not. The result suggests that enforcement matters: Institutional influence is unlikely to bring about cooperative settlement unless countries jointly face high costs for not complying with institutional rulings.

BARGAINING WITH A THREAT OF APPEALING TO AN INSTITUTION

Settling interstate disputes is one of the most important functions of international institutions. For instance, Chapter VI of the UN charter authorizes the UN Security Council to recommend appropriate procedures to settle a dispute or directly engage in mediation and arbitration. The ICJ, which is the main judicial body of the UN, has delivered more than ninety judgments on disputes ranging from maritime boundaries to economic rights since 1946. The European Court of Justice settles disputes between the member states of the European Union, and on average two to three hundred cases are brought to the body each year. The WTO significantly reformed the trade dispute settlement mechanism that it inherited from its predecessor, GATT, and has received more than three hundred appeals since its establishment in 1995. Following the lead by the WTO, both the North American Free Trade Agreement and the Association of Southeast Asian Nations have specialized procedures to settle disputes in regional economic cooperation.

The increasing number of dispute settlement mechanisms begs the question of how effective such institutions are. The question has led scholarly attention to the compliance and enforcement issues associated with institutional involvement, particularly in trade and territorial disputes. However, this interpretation of the effect of the institutions is incomplete. As the example of France's nuclear tests demonstrates, the option of appealing to an institution can change bargaining dynamics between opponents, even if the institution never becomes officially involved. Busch and Reinhardt (2001) and Reinhardt (2001) provide interesting discussions of the indirect effect in the context of

early settlement of trade disputes in the shadow of GATT/WTO, however, theoretical analysis of who has a credible threat and what the indirect effects are on bargaining is lacking in the literature. Such analysis requires a fresh look at the incentives for states to appeal to an international institution.

Several explanations have been proposed for why states appeal to an international institution or enter into an international agreement. State leaders may appeal to an international institution to ease domestic opposition to unpopular policies (Allee and Huth, 2006; Schultz, 2003; Simmons, 2002; Vreeland, 2003), to transmit information to international audiences about their intentions and the consequences of their coercive policies (Thompson, 2006), or to signal to their domestic audiences that their policies are appropriate or have international support (Chapman, 2007; Fang, 2008; Voeten, 2005). These explanations suggest that international institutions are engaged for domestic political purposes or to convey information to wider audiences; they do not take into account a state's strategic incentive to engage an international institution to influence an ongoing bargaining with another state, which is the central argument of the study. More specifically, I argue that states appeal to (or threaten to appeal to) international institutions when they believe that doing so will provide them a bargaining advantage in a dispute.

In a bargaining situation with an outside option of appealing to an institution, a country's decision whether to engage the institution depends on the opponent that it faces. A country's expected payoff from appealing to the institution is determined not only by the likely outcome of a ruling, but also by the costs associated with noncompliance by the country itself and its opponent. The country that expects to gain more from an institutional solution can either benefit directly from appealing to the institution, or indirectly by using the option as a threat in the bargaining process. In contrast, a country that expects to do worse with an institutional solution will have an incentive to avoid the outside option by making concessions at the bargaining table. A careful modeling exercise that simultaneously models the two processes can help us understand under what conditions we may observe these different behaviors.

The modeling exercise is necessary not only for uncovering the indirect effect, but also for making correct inferences about compliance. For example, a state that bears a lower noncompliance cost than its opponent may be more tempted to engage an institution to benefit from a favorable ruling that imposes constraints on its opponent, while leaving the door open for itself to defect if the ruling is not favorable. In the meantime, the threat of incurring noncompliance costs may prompt high cost countries to make concessions outside of the institutions. Such strategic calculations have broad implications for compliance study. In the debate between two perspectives on compliance (Chayes and Chayes, 1995; Downs *et al.*, 1996), the management theorists have argued that sanctions are rarely available and ineffective when used, to which enforcement theorists have responded that states only make shallow agreements that do not require much enforcement. The results of this model provide different explanations for the frequency and effectiveness of sanctions. First, even when sanctions are not used, the ability of the institutions to enforce their decisions matters indirectly; it has a deterrence effect on states with high costs of noncompliance and pushes them to find bargaining solutions. Second,

the strategic calculations are likely to result in a biased sample of low cost countries that appeal to the institutions, thus leading to a higher observed level of noncompliance. In other words, the reason that sanctions do not work may be due to a selection effect of the countries that enter into an agreement.

The above analysis suggests that noncompliance costs critically influence both the direct and indirect effects of an institution. It is thus a key variable in the model developed in the study. Where do noncompliance costs come from? First, noncompliance costs could arise directly from retaliatory measures authorized by an institution. The UN and the WTO can authorize sanctions or retaliations against countries that they deem to have violated the institutions' decisions. Second, noncompliance behavior can generate domestic and international audience costs. In the same vein as Fearon's (1994) seminal work on domestic audience costs, Lohmann (2003) argues that an institutional commitment has bite only if it is made vis-à-vis an audience that can and will punish institutional defections. A ruling by an international institution creates just such audiences, which include domestic voters and interest groups, international market actors, other governments, and other international institutions. It may not be obvious at first why a public would punish its government for not complying with an international institution. This can be the case if the public comes to appreciate the benefit brought by the institution (Carrubba, 2009), or if the noncompliance behavior reveals information about the private intentions of the government (Fang, 2008; Mansfield *et al.*, 2002). Internationally, a country may suffer a loss of reputation from such behavior (Guzman, 2008), which has negative implications for the country's pursuits of its national interests in multiple spheres.[1] Empirical research has shown that internal and international pressures, especially the reactions from the allies, figured heavily in leaders' decisions to accept rulings by international institutions (Paulson, 2004; Stiles, 2000).[2]

To summarize, in order to fully understand the effect of international institutions on dispute settlement, we need to model bilateral bargaining and the option of appealing to

---

[1] There is an ongoing debate as to whether a state's reputation in one issue area affects its reputation in another area (Downs and Jones 2002; Guzman, 2008). A key insight coming out of the debate is that the extent to which the impact of a violation of an international agreement is generalized depends on what it is that audiences learn as a result of the violation (Guzman, 2008, p. 100).

[2] It seems at times, however, leaders could *gain* in front of a domestic audience by defying an international institution. Although such phenomenon exists, it is by no means a typical reaction by a domestic audience. Both public opinion polls and scholarly research show that the American public is more likely to support American use of force if it is supported by the UN Security Council (Kull et al., 2002; Chapman and Reiter, 2004). Moreover, studies show that leaders often use institutional decisions as a cover to ease domestic opposition to a concession that they would make in bilateral negotiations (Allee and Huth, 2006; Simmons, 2002; Vreeland, 2003), which suggests that institutional rulings enjoy a level of legitimacy that domestic audiences find compelling. Additionally, international pressure has a significant countervailing effect on the incentive to defect due to domestic considerations, particularly on economic disputes — institutions such as the WTO can now muscle unprecedented international support for their decisions. Thus, although noncompliance costs can be negative, such cases are sufficiently rare that the model informs us on the vast majority of interactions between states where an international institution can serve as a credible third-party dispute mediator.

an institution jointly, instead of treating them as two separate processes. Such an approach is called for not only by empirical observations, but also by a unifying variable, namely, noncompliance costs, that drives both the direct and indirect effects of institutions. Now I turn to the model.

THE MODEL

Suppose two countries, labeled as country 1 and country 2, are negotiating over the resolution of a dispute.[3] The bargaining problem is modeled as a negotiation over the division of a "pie" of size 1, which represents the Pareto frontier of a bargaining set.[4] Although the two countries can resolve the dispute through bilateral bargaining, either side has the option of turning the issue over to an international institution. Once a country appeals to an institution, the bilateral bargaining is effectively terminated. The game ends either by successful bilateral bargaining, or by the countries' responses to the institution's decision.

The model is an extension of Rubinstein's alternating-offer bargaining game. In the Rubinstein game, in each period player i proposes a division of a pie $(x_i, 1 - x_i)$ to player j $(i,j = 1, 2)$, where $x_i \in [0, 1]$ is player 1's share and $1 - x_i$ is player 2's share, and j decides whether to accept or reject it. The game continues until a proposal is accepted by the other player; if an agreement is never reached, then each player's payoff is zero. Rubinstein shows that there is a unique subgame perfect equilibrium (SPE) to this game, in which the players always propose $\frac{1}{1+\delta}$ for themselves and $\frac{\delta}{1+\delta}$ for the other player, where δ is a common discount factor, and an agreement is reached in the first period of the game.

The model here adds to the Rubinstein game the option of appealing to an international institution for arbitration in any period. Economists have explored how an outside option may change the Rubinstein bargaining outcome (Binmore *et al.*, 1989; Manzini and Mariotti, 2001; Muthoo, 1999; Ponsati and Sakovics, 1998). Two features of this literature are worth noting. First, the outside option, usually modeled as a division of the contested good, is assumed to be enforceable; second, the outside option is interpreted as an arbitrated outcome about which actors have full information. I relax both assumptions. Most economic problems are situated in a domestic environment where enforcement is generally not a problem; however, enforcement *is* a problem for international institutions situated in an anarchic world. Moreover, interstate dispute adjudication involves more than a direct application of precise standards, so it is not unusual that a country receives a ruling that is contrary to its expectation (Paulson, 2004). Therefore, in the model

---

[3] The players are labeled as countries because domestic politics is not modeled; they should be understood as two governments more accurately.

[4] Obviously many international disputes are not purely adversarial. What the model highlights, however, is the possibility that countries cannot reap the benefits of cooperation if distributional issues are not resolved.

developed below I assume that countries have a choice of defying an institutional decision with some costs, and *ex ante* they only have beliefs about the decision.

Specifically, if in any period of the game a country appeals to the institution, then the institution proposes a partition of the pie. Denote the decision by the institution as $(s, 1 - s)$, where s is country 1's share and $1 - s$ is country 2's share. Assume that the countries' prior beliefs about the institutional ruling follow an arbitrary cumulative distribution function, $F(s)$, and assume $f(s)$ is the corresponding probability density function. Both $F(s)$ and $f(s)$ are common knowledge for the two countries. After the institution reveals its decision, country 1 and country 2 simultaneously decide to comply with the ruling or not. If country i defies the institution, then it incurs a noncompliance cost, $c_i \in (0, 1)$.[5] The simultaneous move captures the idea that a unilateral application by a country could damage the bilateral relationship and the two countries may respond independently of each other to the institution's decision.

The players' payoffs in the subgame are as follows (Table 1). If both countries comply with the ruling, then the payoffs are s for country 1 and $1 - s$ for country 2. If country 1 defies the ruling while country 2 complies, then country 1 receives $1 - c_1$ and country 2 receives 0. That is, country 1 gains significant grounds on the disputed issue in this case by defying the institution, but pays a cost for such behavior; on the other hand, country 2 loses out on the issue by unilaterally abiding by the institutional ruling.[6] Symmetrically, if country 1 complies while country 2 defies, then country 1 receives 0 and country 2 receives $1 - c_2$. If both countries defy the institution, then they receive $-c_1$ and $-c_2$, respectively; that is, neither gains from the continuing dispute while paying the costs of defiance.[7]

The timing of the game is as follows. At the beginning of the first period, country 1 decides whether to bargain with country 2 by proposing $(x_1, 1 - x_1)$, or appeal to an institution to settle the dispute. If country 1 proposes a partition, then country 2 decides whether to accept the proposal. If country 2 accepts the proposal, then the game ends,

---

[5] Countries incur other costs when they appeal to an international institution, such as legal fees, time, and resources spent; similarly, the potential benefits from an institutional decision include not just a favorable ruling, but also a possible boost to a government's popularity domestically. The model abstracts away from these additional factors, which influence all governments in similar ways, in order to generate insights about the effects of different noncompliance costs on the decision to utilize an institution.

[6] All the results hold if we assume that a unilateral noncompliance reduces the size of the pie to a fraction. Moreover, an interesting finding in this setting is that the institution is more likely to become a high capacity institution compared with the baseline case in the paper. The intuition is that the shrinkage in the size of the pie adds an additional cost to noncompliance, which further reduces the incentive to defy an institutional ruling. For technical details, please refer to the online Appendix.

[7] It may not seem obvious what noncompliance by a plaintiff means, and how noncompliance costs could be generated for the plaintiff. A plaintiff may take an issue to a dispute settlement mechanism (DSM) with the expectation of a favorable ruling, yet a DSM may not rule as the plaintiff expected. Under such circumstances, at least in principle the plaintiff can choose to defy the institution by taking a retaliatory action against the defendant and incur noncompliance costs. It is therefore useful to treat the plaintiff and the defendant symmetrically in the model.

Table 1. The subgame after an institutional ruling.

		Country 2: Comply	Country 2: Defy
Country 1	Comply	$s, 1-s$	$0, 1-c_2$
	Defy	$1-c_1, 0$	$-c_1, -c_2$

with country 1 and country 2 receiving payoffs x_1 and $1 - x_1$, respectively. If country 2 rejects the proposal, then the game enters the second period, and country 2 decides whether to propose $(x_2, 1 - x_2)$, or appeal to the institution. The game continues in this fashion until a country appeals to the institution or an agreement is reached. If in any period a country appeals to the institution, then each country receives a payoff based on the outcome of the simultaneous subgame following an institutional ruling. If no country ever appeals to the institution, and also no agreement is reached, then each country's payoff is zero. As in the Rubinstein game, the countries discount future payoffs with a common discount factor $\delta \in (0, 1)$. The model is a game of complete information, and the solution concept used is subgame perfect equilibrium (SPE).

EQUILIBRIUM ANALYSIS

I present two sets of results in this section, corresponding to two types of institutions — high and low capacity institutions, which influence the countries' behaviors differently in equilibrium. The four propositions for each type provide a full characterization of all possible scenarios in the presence of an institutional solution: Neither country prefers to take the dispute to the institution, only country 1 or country 2 does, and finally, both prefer taking the issue to the institution.[8] Throughout this paper I use two figures to illustrate the intuitions of the results. The figures are drawn assuming a uniform prior distribution of the institutional ruling, however, similar figures can be drawn for any single-peaked asymmetric prior distribution where one country is believed to be favored by the ruling.[9]

Define an institution as a *high capacity* institution for a pair of countries if $c_1 + c_2 > 1$, and as a *low capacity* institution if $c_1 + c_2 \leq 1$. Because the total benefit of resolving the dispute is assumed to be 1, $c_1 + c_2$ is in effect a ratio between the total noncompliance cost and the magnitude of the issue at stake.[10] I introduce the concept of institutional

[8] The proofs are in the Appendix.

[9] For detailed discussions of the asymmetric case, see the online Appendix.

[10] As discussed above, noncompliance costs come from several sources, including sanctions imposed by the institution, international audience costs, and domestic audience costs. Thus, the concept of institutional capacity captures the enforcement ability of the institution, its level of respect among international and domestic audiences, and the countries' sensitivity to domestic and international

capacity to connect two core aspects of an institution's ability to bring about compliance. The first is the institution's ability to generate noncompliance costs for the countries involved, and the second is the issue area in which the institution operates. So far, compliance studies have investigated separately the effects of the institutions in different issue areas (environmental issues, territorial disputes, and trade disputes), and also do not compare the findings across the areas; consequently, the existing studies cannot shed light on some of the most important questions about compliance. For example, when an institution is not effective, is it because the institution is not being able to generate noncompliance costs, or is it because the institution is dealing with difficult issues that are vital to the interests of the states? What should we expect in terms of the effectiveness of the institutions in different issue areas? The concept of institutional capacity allows us to address these questions theoretically as a first step.[11] The equilibrium results show that states indeed behave differently depending on the type of the institutions that they are dealing with.

A HIGH CAPACITY INSTITUTION

In the case of a high capacity institution, a unique Nash equilibrium exists in the simultaneous subgame that follows an institutional ruling. The nature of the equilibrium depends on the parameter range of s. Specifically, in equilibrium, if $0 \leq s < 1 - c_1$, then country 1 defies the institution while country 2 complies; if $1 - c_1 < s < c_2$, then both countries comply with the ruling; if $c_2 < s \leq 1$, then country 1 complies and country 2 defies.[12] Let EU_i^{HC} denote country i's expected utility from appealing to a high capacity institution. Then,

$$EU_1^{HC} = \int_0^{1-c_1} (1 - c_1) f(s) ds + \int_{1-c_1}^{c_2} s f(s) ds,$$

audience costs. This means that while institutions can be characterized as high capacity or low capacity on average, the costs an individual institution can generate may also vary across countries and across dyads. Some domestic regimes have characteristics that make leaders more sensitive to domestic audience costs (e.g., democracies); some institutions may be more highly respected in some countries than others; and countries may attribute varying values to a positive international reputation. Since some institutions are more capable of generating costs across countries than others due to differences in their enforcement mechanisms and legitimacy, however, characterizing institutions as high or low capacity remains useful.

[11] For example, the UN may be able to impose potent sanctions and influence international and domestic audiences, but because the issues it addresses are often high stake security issues, it may not be effective in bringing about compliance. This means that the UN is not necessarily a high capacity institution. On the other hand, a trade dispute settlement mechanism, such as the WTO, may be a high capacity institution because the costs necessary to induce compliance in lower stakes issue areas are lower.

[12] Note that if $s = 1 - c_1$ or $s = c_2$, then there are in fact two Nash equilibria. However, any particular value of s has measure zero because $F(s)$ is continuous, thus it does not affect players' expected utility calculations.

and

$$EU_2^{HC} = \int_{1-c_1}^{c_2} (1-s)f(s)ds + \int_{c_2}^{1} (1-c_2)f(s)ds.$$

First, note that both the noncompliance costs and the prior belief about the institutional ruling enter into the expected utilities. Second, country i's expected utility is a decreasing function of its own cost and an increasing function of its opponent's cost.[13] That is, given the prior belief about the institutional ruling, the more costly it is for a country to defy the institution, the lower it is the country's expected utility from appealing to the institution, and the higher it is the other country's expected utility from doing so. Third, contrary to our intuition, it is not necessarily the case that a country's expected utility from going to the institution increases as the country becomes more optimistic about a favorable ruling. The reason is that when a ruling is more likely to be in favor of a country, the probability that the other country defies the ruling is also likely to be higher. Therefore, the effect of the prior belief on countries' decisions to appeal to an institution can only be understood in relation to noncompliance costs.

The equilibrium results are presented in four propositions below. Figure 1 illustrates the intuitions with a uniform prior distribution of the institutional ruling. The uniform distribution implies that the countries are highly uncertain about the outcome of the ruling and puts a flat prior on all possible outcomes. The assumption equalizes the effect of the prior belief on the countries' incentives to appeal to the institution, and focuses our attention on the relationship between the relative size of the two countries' noncompliance costs and the equilibrium outcome.

Not surprisingly, the results of the model are closely related to the equilibrium outcome of the Rubinstein game. Proposition 1 characterizes the baseline case, and it says that the existence of the institution as an outside option is inconsequential if both countries are better off negotiating between themselves. The bilateral bargaining outcome in this case is the same as that of the Rubinstein game: The bargaining concludes in the first period, and the division of the pie is $(\frac{1}{\delta+1}, \frac{\delta}{\delta+1})$, with country 1 enjoying the larger share due to its control of the agenda at the beginning.

Proposition 1 (Bargaining EQ) *If and only if* $EU_1^{HC} \leq \frac{1}{1+\delta}$ *and* $EU_2^{HC} \leq \frac{1}{1+\delta}$, *then the following is the unique subgame perfect equilibrium*:

(*a*) *Country* 1 *always proposes* $x_1 = \frac{1}{1+\delta}$, *and always accepts a proposal if and only if* $x_2 \geq \frac{\delta}{1+\delta}$.

(*b*) *Country 2 always proposes* $1 - x_2 = \frac{1}{1+\delta}$, *and always accepts a proposal if and only if* $1 - x_1 \geq \frac{\delta}{1+\delta}$.

---

[13] We can rearrange EU_1^{HC} as $EU_1^{HC} = \int_0^{1-c_1} (1-c_1-s)f(s)ds + \int_0^{c_2} sf(s)ds$. It is then easy to see that EU_1 is a decreasing function of c_1, and an increasing function of c_2. A similar analysis applies to EU_2^{HC}.

In equilibrium, country 2 *accepts country 1' proposal in the first period, and the institution is not appealed to.*

The condition for a high capacity institution, $c_1 + c_2 > 1$, implies that the two countries jointly face high costs for not complying with institutional rulings. Figure 1 shows that for the conditions in Proposition 1 to hold simultaneously, the noncompliance costs for the two countries must be similar in magnitude. So, sharing similarly high noncompliance costs would motivate the countries to resolve their differences through bilateral bargaining. In such a case, neither country can expect to gain from taking the issue to the institution.

The next proposition says that the opposite is *not* true. That is, it cannot be the case that both countries prefer appealing to the institution to bilateral bargaining. A country may see an advantage in taking the issue to the institution due to a number of reasons, such as a favorable prior, a low noncompliance cost of its own, and a high noncompliance cost of its opponent. But if that is the case, then its opponent will be sufficiently deterred by the circumstance to do the same.

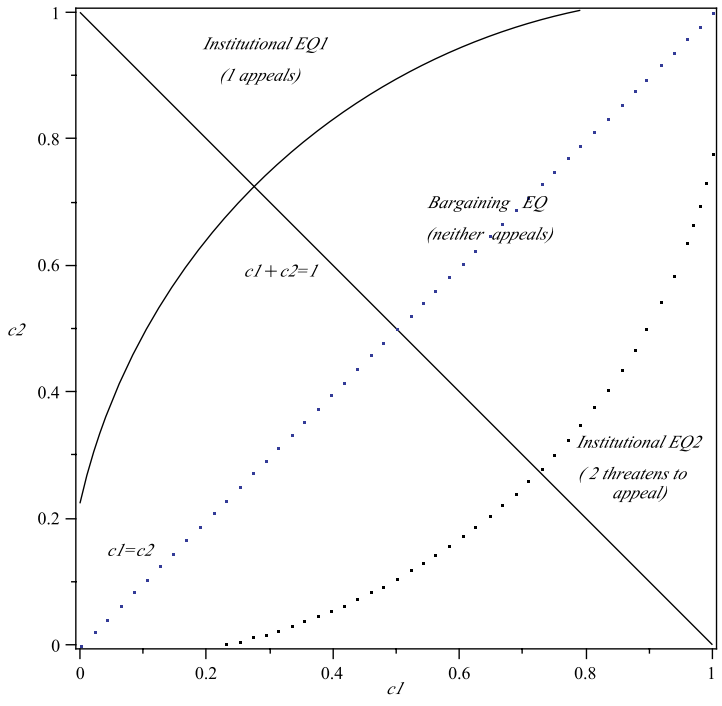

Figure 1. The equilibrium for the case of a high capacity institution. The solid curve is $EU_1^{HC} = \frac{1}{1+\delta}$, and the dotted curve is $EU_2^{HC} = \frac{1}{1+\delta}$. The three regions in the upper triangle correspond to the equilibrium characterized in Propositions 1, 3, and 4.

Proposition 2 *No equilibrium exists in which both countries prefer appealing to the institution to bilateral bargaining.*

Proposition 2 provides an explanation for the phenomenon discussed earlier that states are much more likely to file unilateral rather than joint applications to international institutions. The intuition is as follows. Each country is only willing to appeal to the institution if it believes that the expected payoff from doing so is greater than its payoff from bargaining. If both countries believe this to be the case, then it implies that the sum of their expected payoffs from appealing to the institution is greater than the sum of their bargaining shares, which is the *entire* size of the pie. This cannot be true, of course, because one country's gain in the ruling is the other country's loss, and there is also an efficiency loss due to the possibility of noncompliance. Therefore, both countries finding it advantageous to appeal to the institution cannot be an equilibrium scenario.[14]

The next two results complement the findings in the last two propositions by showing the conditions under which a particular country benefits from the option of appealing to the institution. Proposition 3 characterizes an equilibrium in which country 1 alone prefers appealing to the institution.

Proposition 3 (Institutional EQ1) *If and only if* $EU_1^{HC} > \frac{1}{1+\delta}$, *then the following is the unique subgame perfect equilibrium*:

(*a*) *Country* 1 *always appeals to the institution, and always accepts a proposal if and only if* $x_2 \geq \delta EU_1^{HC}$.
(*b*) *Country* 2 *always proposes* $1 - x_2 = 1 - \delta EU_1^{HC}$, *and always accepts a proposal if and only if* $1 - x_1 \geq \delta(1 - \delta EU_1^{HC})$.

In equilibrium, country 1 *appeals to the institution in the first period.*

Figure 1 provides the intuition for the result. If the prior belief is uniformly distributed, then the condition $EU_1^{HC} > \frac{1}{1+\delta}$ and the condition for a high capacity institution, $c_1 + c_2 > 1$, jointly imply that Institutional EQ1 emerges when c_2 is significantly larger than c_1. In this scenario, country 1 is willing to take the issue to the institution due to its low noncompliance cost, while country 2 is unwilling to do so. Given country 2's opposite preference, country 1's best strategy is to appeal to the institution sooner rather than later to avoid a delay in settlement. This leads to the equilibrium result in which country 1 appeals to the institution in the first period, and receives a payoff of $EU_1^{HC} > \frac{1}{1+\delta}$. The institution is directly involved in settling the dispute in this case, and country 1 receives a higher expected payoff than it would from bargaining with country 2.

---

[14] The result does not go away even if one of the countries, say country 1, derives a positive payoff (i.e., $c_1 < 0$) from defying the institution. In such a case, country 1 has a dominant strategy of defying the institution in the simultaneous game, which leads to a unique equilibrium in the subgame that brings $1 - c_1 > 1$ to country 1 and 0 to country 2. This in turn implies that country 1 always prefers appealing to the institution and country 2 always (weakly) prefers bilateral bargaining, which is consistent with Proposition 2. If *both* countries receive positive payoffs from defying the institution, then the result does not hold. This scenario is highly unlikely, however.

Proposition 4 characterizes the symmetric case in which country 2 alone prefers to take the dispute to the institution. Importantly, although country 2 does not actually appeal to the institution in this case, the influence of the institution is nevertheless reflected in the bargaining outcome.

Proposition 4 (Institutional EQ2) *If and only if* $EU_2^{HC} > \frac{1}{1+\delta}$, *then the following is the unique subgame perfect equilibrium:*

(*a*) *Country* 1 *always proposes* $x_1 = 1 - \delta EU_2^{HC}$, *and always accepts a proposal if and only if* $x_2 \geq \delta(1 - \delta EU_2^{HC})$.
(*b*) *Country* 2 *always appeals to the institution*, *and always accepts a proposal if and only if* $1 - x_1 \geq \delta EU_2^{HC}$.

In equilibrium, *country* 2 *accepts country* 1*'s proposal immediately and the institution is not appealed to.*

In this scenario, country 1's noncompliance cost is significantly larger than that of country 2's, and thus country 2 has a credible threat of appealing to the institution. The threat prompts country 1 to offer country 2 what the latter can receive from appealing to the institution in the next period, so that country 2 does not act on the threat. Country 1's payoff of $1 - \delta EU_2^{HC}$ in the equilibrium is less than $\frac{1}{1+\delta}$, the amount that country 1 receives in the baseline bargaining equilibrium where the institution does not matter; on the other hand, country 2's equilibrium payoff of δEU_2^{HC} is greater than $\frac{\delta}{1+\delta}$, the amount that country 2 receives in the baseline case. The equilibrium outcome is that the two countries resolve the dispute through bargaining and, consistent with the finding in Proposition 3, the country with a credible threat of appealing to the institution improves its share compared with the baseline case.

A LOW CAPACITY INSTITUTION

The results for a low capacity institution are similar in construction to those for a high capacity institution, but the equilibrium conditions have different substantive implications. For a low capacity institution, no pure strategy Nash equilibrium exists in the simultaneous game in which both countries comply with an institutional ruling. Instead, pure strategy equilibria exist in which one country complies. Specifically, in equilibrium, if $0 \leq s < c_2$, then country 1 defies the ruling while country 2 complies; if $1 - c_1 < s \leq 1$, then country 1 complies and country 2 defies; if $c_2 < s < 1 - c_1$, then the two equilibria coexist.[15] These features of the equilibria in the subgame lead to different equilibrium outcomes of the whole game.

[15] As in the case of a high capacity institution (see Footnote 12), I do not consider the case $s = 1 - c_1$ or $s = c_2$.

Let EU_i^{LC} denote country i's expected utility from appealing to a low capacity institution. Then,[16]

$$EU_1^{LC} = \int_0^{c_2} (1 - c_1) f(s) ds,$$

and

$$EU_2^{LC} = \int_{c_2}^{1} (1 - c_2) f(s) ds.$$

Note that the expected utilities are decreasing functions of a country's own noncompliance cost. The equilibrium results are again presented in four propositions. Figure 2 illustrates the intuitions assuming a uniform prior of the institutional ruling. Proposition 5 characterizes the baseline case where appealing to the institution is not a preferred option for either country and they simply bargain between themselves as though the institution does not exist.

Proposition 5 (Bargaining EQ) *If and only if* $EU_1^{LC} \leq \frac{1}{1+\delta}$ *and* $EU_2^{LC} \leq \frac{1}{1+\delta}$, *then the following is the unique subgame perfect equilibrium:*

(*a*) *Country* 1 *always proposes* $x_1 = \frac{1}{1+\delta}$, *and always accepts a proposal if and only if* $x_2 \geq \frac{\delta}{1+\delta}$.

(*b*) *Country* 2 *always proposes* $1 - x_2 = \frac{1}{1+\delta}$, *and always accepts a proposal if and only if* $1 - x_1 \geq \frac{\delta}{1+\delta}$.

In equilibrium, country 2 *accepts country* 1*'s proposal in the first period, and the institution is not appealed to.*

Figure 2 shows that for the conditions in Proposition 5 to hold and produce the bargaining equilibrium, the noncompliance costs for both countries have to be similarly low or moderate. Recall that in the case of a high capacity institution, for the bargaining equilibrium to exist the noncompliance costs must be high for both countries. Why, then, in the case of a low capacity institution, do countries ignore the option of appealing to the institution even when the costs are at most moderate? Recall that for a low capacity institution, no equilibrium exists in the simultaneous subgame in which both countries comply with an institutional ruling. This means that countries are less afraid of defying a low capacity institution, and either of them will defy when it receives an unfavorable ruling. The proposition thus characterizes a situation in which the costs are relatively small for both countries, so that neither country can count on the other side's willingness to abide by the institutional ruling. Consequently, neither finds it advantageous to take the dispute to the institution.

---

[16] In calculating the expected utilities I assume that when $c_2 < s < 1 - c_1$ the equilibrium being played is one in which country 1 complies and country 2 defies. The insights can be extended to the other case straightforwardly because the two equilibria are symmetrical.

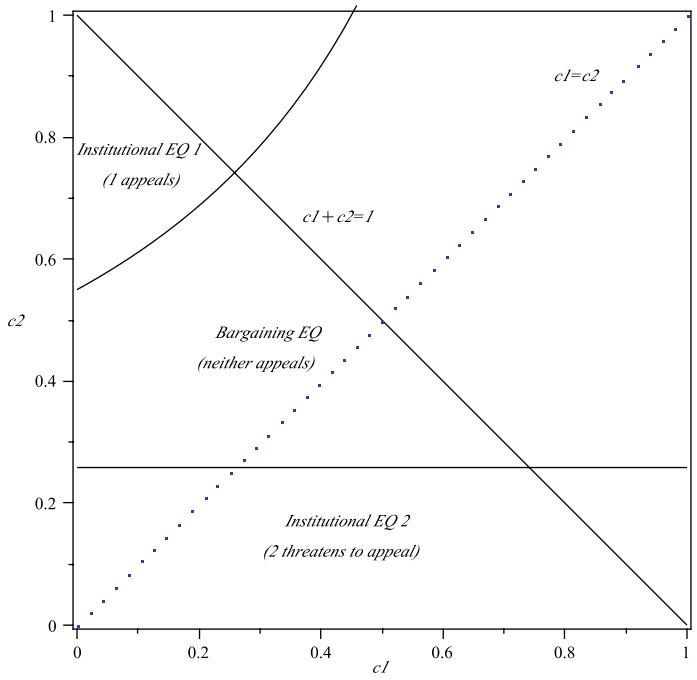

Figure 2. The equilibrium for the case of a low capacity institution. The solid curve is $EU_1^{LC} = \frac{1}{1+\delta}$, and the horizontal line is $EU_2^{LC} = \frac{1}{1+\delta}$. The three regions in the lower triangle correspond to the equilibrium characterized in Propositions 5, 7, and 8.

The next proposition says that the opposite cannot be true. The intuition is similar to that behind Proposition 2.

Proposition 6 *No equilibrium exists in which both countries prefer appealing to the institution to bilateral bargaining.*

Propositions 7 and 8 complete the characterization of different equilibrium scenarios by specifying the conditions under which country 1 or country 2 alone would prefer appealing to the institution.

Proposition 7 (Institutional EQ1) *If and only if* $EU_1^{LC} > \frac{1}{1+\delta}$, *then the following is the unique subgame perfect equilibrium*:

(*a*) *Country* 1 *always appeals to the institution, and always accepts a proposal if and only if* $x_2 \geq \delta EU_1^{LC}$.
(*b*) *Country* 2 *always proposes* $1 - x_2 = 1 - \delta EU_1^{LC}$, *and always accepts a proposal if and only if* $1 - x_1 \geq \delta(1 - \delta EU_1^{LC})$.

In equilibrium, country 1 *appeals to the institution in the first period.*

The equilibrium outcome is that the institution is directly involved in resolving the dispute; country 1 benefits from appealing to the institution by receiving a higher expected payoff than it would from the bargaining equilibrium. Figure 2 shows that the equilibrium emerges if country 2's noncompliance cost is large while country 1's is small. With this configuration of the costs, country 1 can afford to defy the institution if it is not pleased with the ruling, while country 2 is highly constrained from doing the same. As a result, country 1 chooses to appeal to the institution rather than bargaining with country 2.

Proposition 8 (Institutional EQ2) *If and only if* $EU_2^{LC} > \frac{1}{1+\delta}$, *then the following is the unique subgame perfect equilibrium*:

(*a*) *Country* 1 *always proposes* $x_1 = 1 - \delta EU_2^{LC}$, *and always accepts a proposal if and only if* $x_2 \geq \delta(1 - \delta EU_2^{LC})$.
(*b*) *Country* 2 *always appeals to the institution*, *and always accepts a proposal if and only if* $1 - x_1 \geq \delta EU_2^{LC}$.

In equilibrium, *country* 2 *accepts country 1's proposal immediately and the institution is not appealed to.*

Proposition 8 characterizes an equilibrium in which the institution is never utilized, but country 2's share of the pie is improved by its credible threat of appealing to the institution. The logic is analogous to that of Proposition 4. Figure 2 shows that the equilibrium emerges if country 2 has a low noncompliance cost.

DISCUSSION

The equilibrium results can be summarized by two findings that hold for both high and low capacity institutions and one that is contingent on the type of the institution. First, it is often the case that only one country finds the option of appealing to an international institution attractive. Second, even when an institution is not appealed to, it can affect the bargaining outcome by strengthening the position of a country that has a credible threat of engaging the institution. A surprising aspect of the result is that if there is high uncertainty regarding the outcome of the institutional decision — for instance, the prior is more or less uniformly distributed — then the country with a lower noncompliance cost is more likely to have a credible threat of appealing to the institution. I discuss the empirical relevance of the result in the next section.

Finally, high and low capacity institutions have different effects on countries' compliance behavior. For a high capacity institution, for some range of a ruling there exists an equilibrium in which both countries comply with the ruling; for a low capacity institution, such a range does not exist. Even for a high capacity institution, however, its ability to promote mutual compliance depends on how it rules. An institutional ruling can easily fall outside of the range that brings mutual compliance and results in defiance by one of the two countries. So, contrary to our intuition, ruling strictly according to facts and principles may not be the best strategy for an institution to preserve its prestige, because it could

preclude the possibility of mutual compliance. Empirical evidence suggests that both national and international institutions may in fact use strategic interpretations of legal doctrines to enhance compliance with their decisions. In a study of national high courts in 18 countries, Gibson et al. (1998) find that court decisions are generally pleasing rather than displeasing. They suggest that this might result from the ability of judges to frame issues in a light favorable to the maintenance of institutional legitimacy. Nzelibe (2005) finds that the WTO's Appellate Body rules in a way to accommodate changing domestic political considerations of member states and maximize compliance with its decisions.

As with any game-theoretic analysis, one may wonder if the equilibrium results hold under reasonable alternative specifications of the model. Here I consider two of the most interesting variations: One is the existence of a status quo, and the other is the possibility of war when countries disagree with an institutional ruling. From a modeling perspective, the two scenarios can be incorporated similarly into the original model despite their different substantive interpretations.

Suppose that there is a status quo division of the disputed issue, $(q, 1-q)$, where q is country 1's share and $1-q$ country 2's share. The countries can resolve the dispute by bilateral bargaining or appealing to an international institution. If an agreement is reached in a certain period, then the new division from the agreement will become the flow payoffs for the countries from that period on. If either country appeals to the institution in a period, then the countries play the institutional subgame. The payoffs in the subgame are as follows: If both countries comply with the institutional ruling, $(s, 1-s)$, then the ruling becomes the new division of the pie; if at least one country defies the ruling, then the status quo remains, with each defying country paying a noncompliance cost. The payoffs from the outcome of the sugbame will become the new flow payoffs for the countries from that period on (Table 2):[17]

The main results from the four propositions for each type of the institution still hold in the modified game.[18] What is different is that the distinction between high and low capacity institutions does not matter in the game with a status quo. Instead, what becomes critical for a country's equilibrium behavior is the relative size of its noncompliance cost

Table 2. The subgame after an institutional ruling.

		Country 2	
		Comply	Defy
Country 1	Comply	$s, 1-s$	$q, 1-q-c_2$
	Defy	$q-c_1, 1-q$	$q-c_1, 1-q-c_2$

[17] In this setup, country i pays c_i in every period ever since it defies the ruling. This assumption is not essential, however. If a country pays the cost only once, then c_i can be transformed into a per period cost, c_i', such that $c_i = \frac{c_i'}{1-\delta}$.

[18] Please refer to the online Appendix for the proofs.

and its status quo payoff. If the noncompliance cost is larger than the value of the status quo for a country, then the country will not defy an institutional ruling. Because of the constraint that the status quo share puts on noncompliance behavior, there always exists a parameter range in which both countries comply with the institutional ruling regardless of the institution's capacity. In other words, with a status quo, countries are more likely to comply with an institutional ruling if a dispute is brought to the institution.

Alternatively, suppose that the two countries go to war if at least one of the countries defies an institutional ruling. Assume that country 1 wins the war with probability q and country 2 wins with probability $1 - q$. If a country wins, then it acquires the entire pie, but pays the cost of war and also a noncompliance cost if the country initiated the conflict. Technically, this is the same model as the one with a status quo division of the pie, $(q, 1 - q)$, with q and $1 - q$ now represent the probabilities of winning the war for country 1 and country 2, respectively. The main results thus hold for this model as well.

EARLY SETTLEMENT IN THE WTO AND ENDOGENOUS APPLICATION IN THE ICJ

In this section, I demonstrate that the main results of the model can shed light on observed patterns of state behavior with respect to prominent international institutions. In particular, I show that the consequences of WTO reforms provide a nice illustration of the indirect effect of the institutions on state bargaining behavior. Furthermore, I argue that the filing patterns of the ICJ cases are consistent with the finding that countries with lower noncompliance costs are more likely to utilize an institutional solution.

When the WTO replaced the GATT in 1995, it improved the dispute settlement understanding (DSU) under the GATT in two ways. First, the WTO increased the legalism of the system. Most significantly, the WTO removed the veto power of a defendant to block or delay a case from being heard by a panel, and established automatic adoption of panel reports that were allowed to be unilaterally vetoed by a defendant under the GATT. Second, the WTO extended its reach and entered into the areas of intellectual property and trade in services, where explicit obligations did not previously exist.

In an investigation of the consequences of these reforms on the trade disputes between the USA and the EU, Busch and Reinhardt (2003) find that the USA and the EU have made more concessions to each other in disputes under the WTO than they did under the GATT, but the concessions were made mostly in the areas of intellectual property and traded services. Moreover, they find no improvement in the level of compliance after a ruling is handed out under the WTO. Based on the observations, the authors conclude that more legality has done little to bring more concessions or solve compliance problems, and they suggest that more legalization may not be the best way to improve the system.

The theoretical results of this model provide a different explanation of the observed patterns. A higher level of legalization has made the WTO a more credible outside option

to bilateral bargaining in the existing issue areas under the GATT; at the same time, the expansion of its scope allows the WTO to be relevant in new issue areas. By the logic of the model, both of these reforms should lead to more concessions at the bargaining table, including more early settlements and higher levels of concessions, because both reforms enhance the ability of the institution to exert an indirect effect on bilateral negotiation. This prediction seems to be borne out by the observations, with the effect of the new rules more evident. In contrast, the reforms do not directly increase noncompliance costs for the countries unless they are accompanied by reforms of enforcement capacity; therefore, it is not surprising that the level of compliance has not improved under the WTO.

Perhaps the most striking finding of the model is that, all else equal, countries with lower noncompliance costs are more likely to appeal to an institution to resolve a dispute. The logic behind the result is that a low cost country can afford to defy an unfavorable ruling, while its high cost opponent may be constrained from doing the same. So counter-intuitively, international institutions can be more strategically "useful" for countries that care less about their authority. The finding suggests that there is a selection effect at work with regards to *who* brings a dispute to an institution, and it has implications for compliance behavior. From an institutional design perspective, then, it is important to identify what type of countries (and under what conditions) may incur low noncompliance costs.

It is not immediately clear what the characteristics are for low cost countries because the costs have both domestic and international components. In particular, even if a country incurs small noncompliance costs domestically, it may suffer high costs internationally. Libya, for instance, incurred low domestic costs for not surrendering two Libyan nationals suspected of Lockerbie bombing, but suffered relatively high costs from UN sanctions and international isolation. Nevertheless, it seems plausible that democratic governments tend to incur higher noncompliance costs than their non-democratic counterparts due to their exposure to more sources of domestic costs. Although democratic leaders do not lose their lives in political competition like non-democratic leaders sometimes do, they also lose their jobs more frequently. Domestic interest groups and free media in a democracy play a significant role in publicizing a government's failure in working with international institutions, and the publicity can have negative electoral consequences.

If, indeed, democratic governments incur higher noncompliance costs on average, then the equilibrium results suggest that non-democracies are more likely to appeal to international institutions if they are involved in disputes with democracies. A natural place to look for empirical evidence of the logic is the ICJ, where different pairs of countries have brought highly contentious cases to the institution to arbitrate. One challenge to this approach is that we do not have information about the countries' prior beliefs about the rulings. Even a high cost country can find filing an attractive option if it holds a strong belief that it will receive a favorable ruling. Noting that the priors may often be conditional on political perceptions of an institution (Chapman, 2007; Kydd, 2003), particularly in the case of the ICJ, I contrast the patterns of filing in the ICJ cases during and after the Cold War to control for the effect of different priors.

Of the 112 contentious cases brought to the ICJ between 1946 and 2008, there are 47 cases of mixed dyads.[19] Among them, 27 cases occurred during the Cold War (1946–1989) and 21 of these were Western democracies filing against non-democracies. Of the 20 mixed dyads involved in suits *after* the Cold War, however, 18 cases were filed by non-democracies against democracies.[20] These patterns are broadly consistent with the model's prediction. During the Cold War, with the East–West conflict in the background, countries belonging to the Soviet bloc could have had pessimistic assessments of their chances of winning disputes in the Court against Western countries. This pessimism could have made Soviet bloc countries unwilling to take an issue to the Court, while Western countries had the opposite incentives. After the Cold War, with the ideological struggle disappearing, countries may have perceived more uncertainty surrounding a particular ICJ ruling, which would make noncompliance costs figure more prominently in their decisions whether to involve the Court. It is not surprising, then, in the post-Cold War era we observe that low cost non-democracies are more likely to apply to the ICJ.

A question arises as to why democracies — states that care most about international institutions — would continue to perceive high noncompliance costs if the institutions are taken advantage of by states with low noncompliance costs? The very question may explain the phenomenon of a particular type of restrictive membership in significant international institutions. It has been argued that founding members of an international institution may adopt restrictive membership to assure a deeper level of cooperation (Downs *et al.*, 1998), or to safeguard against countries that do not have the capacity to implement the terms of agreements even if they wish to (Downs and Rocke, 1995, pp. 105–129). Although both arguments are plausible, they do not directly explain exclusions that seem to be targeted specifically at non-democracies by powerful democracies. For example, the road to WTO membership has been exceptionally long for certain countries. It took China 15 years (1986–2001) to wrap up its negotiation phase and another two years to finally gain entry to the WTO. Russia's accession has taken 17 years by 2010. Iran applied to join the WTO in 1996, but the organization agreed to begin the membership talks only recently, after the United States lifted its opposition. Moreover, the EU has not allowed non-democracies to join the Union thus far. The reason behind the phenomenon may be that powerful democracies use restrictive membership to guard against states that may reap the benefit of the institutions without paying the costs.

CONCLUSION

Scholars have often argued that international institutions facilitate cooperation among states. Depending on the issues involved, however, the relationship between states and

[19] I use democracy score in Polity IV (Jaggers and Gurr, 1995) to determine if a country was a democracy. A country is considered a democracy if its democracy score is at least +6.

[20] Moreover, in one of the two remaining cases, Yugoslavia filed against Bosnia & Herzegovina in 2001, which is a weak case for democracy filing against a non-democracy because Yugoslavia was a new democracy while Bosnia & Herzegovina was in transition.

international institutions can be much more complex. In international disputes, in particular, countries may have differential interests regarding institutional solutions, and thus make asymmetrical use of the institution. Specifically, it is often the case that only one country finds the option of appealing to an international institution attractive. Moreover, countries with lower noncompliance costs are more likely to have a credible threat of appealing to an institution and thus benefit from the existence of institutional solutions.

A number of important implications for institutional design follow from the main results. First, strengthening the enforcement mechanisms is key to both direct and indirect effects of the institutions. It is the threat of incurring noncompliance costs that leads to a bilateral settlement in the shadow of the institutions, in much the same way that a country may comply after an institutional ruling because of concerns regarding these costs. Increasing the transparency of institutional procedures and widely publicizing noncompliance behavior are measures that institutions could adopt to increase noncompliance costs and encourage cooperative behavior. Second, membership restrictions may be necessary for some institutions to avoid exploitations of the dispute settlement mechanisms by low noncompliance cost countries.

While the above design issues aim at improving compliance with rulings, the result that only a high capacity institution can induce mutual compliance, and only for a certain range of rulings, suggests that rulings themselves have to be made strategically. If an institution's strength lies mainly in its reputation, reflected in the costs countries incur when they defy the institution, and if frequent occurrence of noncompliance behavior undermines its reputation, then a conjecture from the result is that an institution has to pay attention to countries' noncompliance costs in its ruling in order to maintain its standing. This in turn suggests that allowing for less precision in institutional rules and more flexibility in their interpretations could be desirable in some cases for the very purpose of building a high capacity institution.

The results of the study are applicable to international dispute settlement mechanisms across issue areas. In the existing literature there is a tendency to study the effect of international institutions in different issue areas separately, making it difficult to generalize findings in one area to another. Yet, the underlying logic of the institutional influence may be similar. Using a modeling approach that focuses on basic features shared by many bilateral dispute settlement processes, the study shows that the first-order importance of any dispute settlement mechanism is that it *exists* at all, which provides an outside option that affects the calculation at the bargaining table.

A PROOFS OF THE PROPOSITIONS

The unique equilibrium characterized in Propositions 1, 3, and 4 requires a uniqueness proof and an existence proof. For uniqueness, Binmore *et al.*, (1989) show that there is a unique SPE to Rubinstein bargaining game with one player having an outside option. Applying the logic of their proof, it can be shown that the uniqueness is again guaranteed when both players have outside options. Due to space considerations, below I only provide the existence proof by solving for the unique no-delay stationary SPE.

Assume that the institution is of high capacity, i.e., $c_1 + c_2 > 1$, and denote the countries' expected utilities from appealing to the institution as EU_1^{HC} and EU_2^{HC}.

Suppose there exists a no-delay stationary SPE to the game. Let v_i^B denote country i's best payoff if it makes a proposal given country j's equilibrium strategy, and let v_i^I denote i's payoff if it appeals to the institution, i.e., $v_i^I = EU_i^{HC}$. Then the equilibrium continuation value for country i is $v_i = \max\{v_i^B, v_i^I\}$. Assume that if a country is indifferent between making a proposal and appealing to the institution, it chooses to make a proposal; furthermore, if it is indifferent between accepting and rejecting a proposal, then it accepts. There are four cases to consider in order to fully characterize the equilibrium. Below I consider each case in turn, and thus provide the existence proof for the propositions.

Proof of Proposition 1

Proof: I first show that if a no-delay stationary bargaining equilibrium exists to this game, then it is unique. Suppose it exists. Then $v_i = v_i^B$. Because a proposal will be accepted immediately in such an equilibrium, v_i^B is in effect country i's proposed share to itself, and $1 - v_i^B \geq \delta v_j^B$. Moreover, in equilibrium $1 - v_i^B \not> \delta v_j^B$; otherwise, country i could increase its payoff by proposing $v_i^{B'} > v_i^B$ such that $1 - v_i^B > 1 - v_i^{B'} > \delta v_j^B$. Hence, we have the following equilibrium conditions:

$$\begin{cases} v_1^B = 1 - \delta v_2^B \\ v_2^B = 1 - \delta v_1^B. \end{cases}$$

The unique solution to the system of equations is:

$$\begin{cases} v_1 = v_1^B = \frac{1}{1+\delta} \\ v_2 = v_2^B = \frac{1}{1+\delta}. \end{cases}$$

Therefore, if a no-delay stationary bargaining equilibrium exists, then there is a unique equilibrium payoff for each country, which implies a unique equilibrium: In the equilibrium, country 1 always makes a proposal $x_1 = v_1^B$ to itself, and always accepts a proposal if and only if $x_2 \geq \delta v_1^B$; country 2 always makes a proposal $1 - x_2 = v_2^B$ to itself, and always accepts a proposal if and only if $1 - x_1 \geq \delta v_2^B$. This is the equilibrium characterized in Proposition 1.

To prove necessity, suppose that there exists a unique no-delay stationary bargaining equilibrium as characterized in Proposition 1. Because in the equilibrium both countries prefer bilateral bargaining to appealing to the institution, it must be the case $v_1^I \leq v_1^B$ and $v_2^I \leq v_2^B$, or equivalently, $EU_1^{HC} \leq \frac{1}{1+\delta}$ and $EU_2^{HC} \leq \frac{1}{1+\delta}$.

To prove sufficiency, suppose $EU_1^{HC} \leq \frac{1}{1+\delta}$ and $EU_2^{HC} \leq \frac{1}{1+\delta}$. Suppose it is country 1's turn to make a proposal or appeal to the institution. First consider country 1's optimal proposal strategy given country 2's strategy. If country 1 proposes $1 - x_1 = \frac{\delta}{1+\delta}$, then country 2 accepts and country 1's payoff is $\frac{1}{1+\delta}$. Clearly, country 1 cannot do better by

offering 2 anything higher than $\frac{\delta}{1+\delta}$; if country 1 proposes anything less, then at most it gets $\frac{\delta^2}{1+\delta}$. Therefore, proposing $x_1 = \frac{1}{1+\delta}$ is country 1's optimal proposal strategy. Moreover, if country 1 appeals to the institution, then it gets $EU_1^{HC} \leq \frac{1}{1+\delta}$. So country 1 has no profitable deviation at this stage. It follows that country 1's acceptance strategy is to accept any offer of at least $\frac{\delta}{1+\delta}$ and to reject anything less. By a symmetrical argument, we can show that country 2's strategy is also its best response. The equilibrium outcome is that country 1 proposes a division $(\frac{1}{1+\delta}, \frac{\delta}{1+\delta})$, and country 2 accepts immediately. ■

Proof of Proposition 2

Proof: I prove by contradiction. Suppose in an equilibrium both countries prefer appealing to the institution to bilateral bargaining. Then,

$$\begin{cases} v_1^B = 1 - \delta v_2^I \\ v_2^B = 1 - \delta v_1^I. \end{cases}$$

And additionally, $v_i^B < v_i^I$. The condition implies $v_1^I + \delta v_2^I > 1$, or equivalently, $EU_1^{HC} + \delta EU_2^{HC} > 1$. Contradiction. ■

Proof of Proposition 3

Proof: Suppose a no-delay stationary equilibrium in which country 1 appeals to the institution exists. Then $v_1 = v_1^I = EU_1^{HC}$ and $v_2 = v_2^B$. Because country 2's offer will be accepted immediately in the equilibrium, v_2^B is country 2's proposed share to itself, and $1 - v_2^B \geq \delta v_1^I$. Moreover, in equilibrium $1 - v_2^B = \delta v_1^I$. Hence, if the equilibrium exists, then there is a unique equilibrium payoff for each country, which implies a unique equilibrium: In the equilibrium, country 1 always appeals to the institution, and always accepts a proposal if and only if $x_2 \geq \delta v_1^I$; country 2 always makes a proposal $1 - x_2 = v_2^B$ to itself, and always accepts a proposal if and only if $1 - x_1 \geq \delta v_2^B$. This is the equilibrium characterized in Proposition 3.

To prove necessity, suppose that there exists a unique no-delay stationary institutional equilibrium as characterized in Proposition 3. Because in the equilibrium country 1 prefers appealing to the institution while country 2 prefers bilateral bargaining, $v_1^B < v_1^I$ and $v_2^B \geq v_2^I$. Given the equilibrium strategies, $v_1^B = 1 - \delta(1 - \delta EU_1^{HC})$ and $v_2^B = 1 - \delta EU_1^{HC}$. Then for the equilibrium to exist, the condition $EU_1^{HC} > \frac{1}{1+\delta}$ must hold.

To prove sufficiency, suppose $EU_1^{HC} > \frac{1}{1+\delta}$. Suppose it is country 1's turn to make a proposal or appeal to the institution. If country 1 appeals to the institution, then it receives EU_1^{HC}. If country 1 makes a proposal, then the best payoff country 1 can receive is $max\{1 - \delta(1 - \delta EU_1^{HC}), \delta^2 EU_1^{HC}\}$. It is clear that $\delta^2 EU_1^{HC} < EU_1^{HC}$, and given the condition $EU_1^{HC} > \frac{1}{1+\delta}$, it is also the case $1 - \delta(1 - \delta EU_1^{HC}) < EU_1^{HC}$. Therefore, country 1 does not have a profitable deviation at this stage. Now consider country 1's acceptance strategy. It is optimal for country 1 to accept any offer of at least δEU_1^{HC} and to reject anything less. Next, suppose it is country 2's turn to make a proposal or appeal to the institution. Given country 1's strategy, country 2's proposal strategy is

optimal. In addition, country 2 has no incentive to appeal to the institution at this stage because $EU_2^{HC} < 1 - \delta EU_1^{HC}$. It follows that country 2's acceptance strategy is also optimal. The equilibrium outcome is that country 1 appeals to the institution in the first period. ■

Proof of Proposition 4

Proof: The proof is symmetrical to that of Proposition 3, therefore it is omitted. ■

The proofs for Propositions 5–8 are also omitted because they are almost identical to the proofs for Propositions 1–4.

REFERENCES

Allee, T. L. and P. K. Huth. 2006. "Legitimizing Dispute Settlement: International Legal Rulings as Domestic Political Cover." *American Political Science Review* 100(2): 219–234.

Binmore, K., A. Shaked, and J. Sutton. 1989. "An Outside Option Experiment." *Quarterly Journal of Economics* 104(4): 753–770.

Busch, M. L. and E. Reinhardt. 2001. "Bargaining in the Shadow of the Law: Early Settlement in GATT/WTO Disputes." *Fordham International Law Journal* 24(1&2): 158–172.

Busch, M. L. and E. Reinhardt. 2003. "Transatlantic Trade Conflicts and GATT/WTO Dispute Settlement." in *Transatlantic Economic Disputes: The EU, The US and the WTO*, E.-U. Petersmann and M. A. Pollack (eds.), pp. 105–142, New York, NY: Oxford University Press.

Carrubba, C. J. 2005. "Courts and Compliance in International Regulatory Regimes." *Journal of Politics* 67(3): 669–689.

Carrubba, C. J. 2009. "A Model of the Endogenous Development of Judicial Institutions in Federal and International Systems." *Journal of Politics* 71(1): 55–69.

Chapman, T. L. 2007. "International Security Institutions, Domestic Politics, and Institutional Legitimacy." *Journal of Conflict Resolution* 31(1): 134–166.

Chapman, T. L. and D. Reiter. 2004. "The United Nations Security Council and the 'Rally Around the Flag Effect'." *Journal of Conflict Resolution* 48(6): 886–909.

Chayes, A. and A. H. Chayes. 1995. *On Compliance*. Cambridge, MA: Harvard University Press.

Dai, X. 2005. "Why Comply? The Domestic Constituency Mechanism." *International Organization* 59(2): 363–398.

Downs, G. W. and M. Jones. 2002. "Reputation, Compliance, and International Law." *Journal of Legal Studies* XXXI:S95–S114.

Downs, G. W. and D. M. Rocke. 1995. *Optimal Imperfection? Domestic Uncertainty and Institutions in International Relations*. Princeton, NJ: Princeton University Press.

Downs, G. W., D. M. Rocke, and P. N. Barsoom. 1996. "Is the Good News about Compliance Good News about Cooperation?" *International Organization* 50(3): 379–406.

Downs, G. W., D. M. Rocke, and P. N. Barsoom. 1998. "Managing the Evolution of Multilateralism." *International Organization* 52(2): 397–419.

Fang, S. 2008. "The Informational Role of International Institutions and Domestic Politics." *American Journal of Political Science* 52(2): 304–321.

Fearon, J. D. 1994. "Domestic Political Audiences and the Escalation of International Disputes." *American Political Science Review* 88: 577–592.

Fischer, D. D. 1982. "Decisions to Use the International Court of Justice: Four Recent Cases." *International Studies Quarterly* 26(2): 251–277.

Gibson, J. L., Gregory A. Caldeira, and Vanessa A. Baird. 1998. "On the Ligitimacy of National High Courts." *American Political Science Review* 92(2): 343–358.

Guzman, A. T. 2008. *How International Law Works: A Rational Choice Theory*. New York, NY: Oxford University Press.

Jaggers, K. and T. R. Gurr. 1995. "Tracking Democracy's Third Wave with the Polity III Data." *Journal of Peace Research* 32(4): 469–482.
Koh, H. H. 1997. "Why Do Nations Obey International Law?" *Yale Law Journal* 106(8): 2599–2659.
Koh, P. M. C. 2000. "Enhancing Economic Co-operation: A Regional Arbitration Center for Asean?" *International and Comparative Law Quarterly* 49(2): 390–412.
Kull, S., C. Ramsay, S. Subias, P. Warf, and M. Wolford. 2002. *Americans on the Conflict with Iraq*. <http://www.pipa.org/OnlineReports/Iraq/IraqConflict_Oct02/IraqConflict_20Oct02%20rpt.pdf>: PIPA/Knowledge Networks, Accessed: July 11, 2006.
Kydd, A. 2003. "Which Sice Are you On? Bias, Credibility and Mediation." *American Journal of Political Science* 47(4): 597–611.
Lohmann, S. 2003. "Why Do Institutions Matter? An Audience-Cost Theory of International Commitment." *Governance: An International Journal of Policy, Administration and Institutions* 16(1): 95–110.
Mansfield, E. D., H. V. Milner, and B. P. Rosendorff. 2002. "Why Democracies Cooperate More: Electoral Control and International Trade Agreements." *International Organization* 56(3): 477–513.
Manzini, P. and M. Mariotti. 2001. "Perfect Equilibrium in a Model of Bargaining with Arbitration." *Games and Economic Behavior* 37: 170–195.
Merrills, J. G. 2005. *International Dispute Settlement*. Cambridge University Press, Cambridge: University of Sheffield, 2005.
Mitchell, S. M. and P. R. Hensel. 2007. "International Institutions and Compliance with Agreements." *American Journal of Political Science* 51(4): 721–737.
Muthoo, A. 1999. *Bargaining Theory with Applications*. Cambridge, UK: Cambridge University Press.
Nzelibe, J. 2005. "In the Shadow of the Future: Strategic Adjudication by the WTO." Presented at the Midwestern Law and Economics Workshop.
Paulson, C. 2004. "Compliance with Final Judgements of the International Court of Justice Since 1987." *American Journal of International Law* 98(3): 434–461.
Ponsati, C. and J. Sakovics. 1998. "Rubinstein Bargaining with Two-Sided Outside Options." *Economic Theory* 11: 667–672.
Reinhardt, E. 2001. "Adjudication without Enforcement in GATT Disputes." *Journal of Conflict Resolution* 45(2): 174–195.
Schultz, K. 2003. "Tying Hands and Washing Hands: The US Congress and Multilateral Humanitarian Intervention." in *Locating the Proper Authorities: The Interaction of Domestic and International Institutions*, D. Drezner (ed.), pp. 105–142, Ann Arbor, MI: University of Michigan Press.
Simmons, B. A. 2002. "Capacity, Commitment, and Compliance: International Institutions and Territorial Disputes." *Journal of Conflict Resolution* 46(6): 829–856.
Stiles, K. W. 2000. "U.S. Response to Defeat in International Courts: A Contingent Model of Rule Compliance." *Political Research Quarterly* 53(2): 401–425.
Tallberg, J. 2002. "Paths to Compliance: Enforcement, Management, and the European Union." *International Organization* 56(3): 609–643.
Thompson, A. 2006. "Coercion Through IOs: The Security Council and the Logic of Information Transmission." *International Organization* 60(4): 1–34.
Voeten, E. 2005. "The Political Origins of the UN Security Council's Ability to Legitimize the Use of Force." *International Organization* 59(3): 527–557.
Vreeland, J. 2003. "Why Do Governments and the IMF Enter into Agreements? Statistically Selected Cases." *International Political Science Review* 24(3): 321–343.