Bargaining in the Shadow of a Dispute Settlement Mechanism: GATT vs. WTO Adjudication

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Abstract

Many international organizations and multilateral negotiations are criticized as being driven by power politics, which disadvantages less powerful members. Does legalization of international institutions mitigate or magnify power asymmetries? I answer this question in the context of the dispute settlement mechanism (DSM) of the World Trade Organization (WTO). I argue that the legal power of the WTO DSM helps level the playing field and mitigate problems of power politics better than its predecessor, the General Agreement on Tariffs and Trade (GATT). Using a game theoretic analysis, I find that complainants are more likely to benefit from bilateral bargaining under the WTO than the GATT due to structural advantages of the WTO DSM granted to complainants. Nevertheless, fair adjudication which supports specific and firm rules of the WTO DSM is necessary for complainants to insulate themselves from power politics. These finding suggests that the sheer existence of legalized international arbitration alone is not an effective means of empowering weak members.

1 Introduction

Many scholars criticize international organizations and multilateral negotiations, arguing that they are driven by power politics (e.g. Brutger and Morse, 2015; Stone, 2011; Vreeland, 2007).[1] For example, the United Nations Security Council (UNSC)'s veto power reflects the power of its five permanent members: China, France, Russia, the United Kingdom, and the United States. As for the International Monetary Fund (IMF), the weighted voting mechanism grants the United States approximately 17% of the vote share while small countries such as Jamaica and Haiti have less than 1%.[2] In recent decades, world politics has become increasingly legalized[3] through the creation of international courts or court-like institutions across issues areas (e.g. trade and investment, peace and security, health and human rights, and the environment).[4]

Does legalization of international institutions mitigate or magnify power asymmetries? There are two competing views of the legalization of international institutions and its conse-quences for power politics. Some argue that legalization mitigates power asymmetries because legalized international institutions apply laws equally to all members and enforce adjudication decisions. Yet others argue that legalization reinforces power asymmetries rather than providing members with equal rights. Highly legalized international institutions require greater legal capacity for member states to initiate a claim and to utilize legal processes. Given that small and weak states often lack legal capacity[5] and retaliatory power against powerful counterparts, legalized international institutions are merely responsive to powerful states.[6]

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[1]As Stone argued, "Informal governance, then, is for the benefit of powerful countries, and it allows powerful countries to avoid outcomes that they could not commit to tolerating ... the most important elements of institutional design are explained by the distribution of power" (223).

[2]Jamaica and Haiti have approximately 0.08% and 0.03% of the vote share, respectively. "IMF Members' Quotas and Voting Power, and IMF Board of Governors," http://www.imf.org/external/np/sec/memdir/members.aspx. Accessed December 13, 2018.

[3]Legalization refers to a set of institutional characteristics with three dimensions: obligation for compliance through binding rules, precise and highly elaborated rules, and delegation to international arbitration (Abbott, Keohane, Moravcsik et al., 2000).

[4]Notable examples are the Dispute Settlement Understanding (DSU) of the WTO, the International Centre for Settlement of Investment Disputes (ICSID), the International Court of Justice (ICJ), the European Court of Justice (ECJ), the International Criminal Court (ICC), and the European Court of Human Rights (ECHR).

[5]This is the so-called "participation deficit" (Johns and Pelc, 2016).

[6]There are competing views on the creation of legalized international institutions associated with these different

I answer this question in the context of the transition from the General Agreement on Tariffs and Trade (GATT) to the World Trade Organization (WTO) dispute settlement mechanism (DSM). In particular, I address the following question in this paper: Does the WTO provide a more level playing field than the GATT?[7] In international trade governance, there has been a trend towards legalization through reform and development of the DSM. The WTO DSM, in particular, is widely recognized as one of the most legalistic institutions. A large and growing body of literature has emerged to analyze the role of the strong dispute settlement system of the WTO (e.g. Kim, 2008; Rosendorff, 2005; Sattler, Spilker, and Bernauer, 2014). Some argue that the strongly legalized dispute settlement system of the WTO provides a more level playing field (e.g. Horn, Mavroidis, and Nordström, 1999). For example, strengthening the rule of law in multilateral trade regimes raises the costs of defection, which leads to cooperative behavior (e.g. Baccini and Kim, 2012; Busch and Reinhardt, 2000; Sattler, Spilker, and Bernauer, 2014). Others claim that international institutions inevitably reflect the unequal distribution of power (e.g. Bown, 2005; Guzman and Simmons, 2005).

The most striking change of the WTO from its predecessor GATT in 1995 was the transition to a strongly legalized dispute resolution system. The WTO DSM provides more precise, elaborated, and binding rules and time lines than the GATT. For example, the introduction of the permanent Appellate Body (AB) composed of highly-qualified lawyers contributes to the rule of law in the multilateral trading system. By restricting the use of escape clauses and safeguards, the WTO also constrains opportunistic behavior by members (e.g. Goldstein and Martin, 2000). The introduction of the semi-automatic establishment of panels and adoption of panel/AB reports does not allow a losing party to block a dispute settlement procedure anymore.[8] Panel rulings,[9]

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views on the effect of legalization: (1) why do powerful states choose legalized institutions which constrain their autonomy? vs. (2) what motivates small and weak states to join international institutions which are merely responsive to powerful states? See, for example, Goldstein and Steinberg 2008; Pelc 2010; Thompson 2007; and Stone 2011.

[7]In a broader context, the question I address is: Does the legalization of international institutions mitigate or magnify power politics?

[8]For a critical review of WTO DSM practice, see Hudec 1999; and Zimmermann 2005.

[9]Panel rulings clarify rules and pressure violating parties to lift illegitimate trade barriers

therefore, are automatically adopted unless a disputant appeals or there is a consensus to reject it from all other WTO members including disputing parties. Under the old GATT, however, the losing party is allowed to block or veto the adoption of a panel report.[10] In sum, as noted by Lacarte-Muro and Gappah, "*right* perseveres over *might*" under the WTO DSM.[11]

I argue that the legal power of the WTO helps serve the needs of weak states better than the GATT by empowering them in the dispute resolution procedure. The structural advantages the WTO grants complainants—specifically, the unilateral right to a panel and the automatic adoption of a ruling—increase their bargaining leverage relative to the GATT. Due to the increased bargaining leverage, concessions are more likely to occur under the WTO than the GATT. Nevertheless, fair adjudication which supports specific and firm rules is necessary for the WTO to allow weak complainants to insulate themselves from power politics and offer a voice to less powerful states.

I develop a game theoretic model of trade disputes that applies to three types of international trade agreements. The model focuses on the early stages of a dispute settlement process, before a panel circulates its final report - consultations, panel establishment, and panel composition - because during those stages (1) a majority of GATT/WTO disputes filed end, and (2) complainants tend to get the fullest concession.[12]

The model allows me to make predictions for three different scenarios. In the baseline model, there are two disputants who take turns making offers over the division of a disputed good without an intervention of international arbitration. The extension of the model allows disputants to delegate to third-party adjudication and takes two forms with respect to the use of unilateral right to a panel and the automatic adoption of a ruling. In the baseline model, I find that a complainant without bargaining leverage gets nothing in equilibrium. With an

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[10]For an excellent overview about the differences between the DSM of the GATT and the WTO, see Busch and Reinhardt 2003a. On the differences in the panel procedures, specifically, see Kantchevski 2006.

[11]Lacarte-Muro and Gappah (2000) argue that small and poor countries are able to bring complaints under the WTO, which is highly unlikely under the GATT (401).

[12]Those (mostly fullest) concessions come from the threat of legal condemnation (Busch and Reinhardt, 2000, 2003a).

international arbitration where a defendant is able to block either panel proceedings or the adoption of panel reports, the GATT model predicts that a complainant has bargaining leverage when (1) a defendant gets a substantial amount of additional benefit from winning the case through delegation, and (2) a complainant's chance of winning the dispute through delegation exceeds her cost of litigation.

Given that those conditions are unlikely to be satisfied simultaneously, the results suggest that a complainant is unlikely to have bargaining leverage under such an international institution. In the model where a defendant is not allowed to block either panel proceedings or the adoption of panel reports, a complainant benefits over the baseline model when a complainant's chance of winning the dispute through delegation exceeds her cost of litigation. The WTO model shows that a defendant being unable to block delegation and the adoption of panel reports leads to more concessions in bargaining in the shadow of international arbitration.

Thus, the results suggest that the WTO, which does not allow a defendant to block delegation and the adoption of panel reports, is able to serve the needs of weak states better than the GATT by empowering them in the early stages of the dispute resolution process. The results also suggest that the GATT fails to come to grips with the fundamental problems affecting the unequal distribution of economic power and wealth. This implies that the sheer existence of legalized international arbitration alone is not an effective means of threat by which weak states insulate themselves from power politics. Specific and firm rules supported by fair international adjudication are necessary to allow complainants to insulate themselves from power politics. This research contributes to the literature on the legalization of world politics by developing a model to examine the impact of international arbitration on power asymmetries.

2 Legalization and GATT/WTO DSM

Previous studies in the literature of international politics and law largely suggest positive effects of legalization on international cooperation (e.g. Keohane, Moravcsik, and Slaughter, 2000; Maggi, 1999). In this literature, the WTO DSM has received considerable scholarly attention. As noted by Bechtel and Sattler (2015), the WTO is "a prime example for the stronger legalization and delegation of authority observable in international politics"(376). Conventional wisdom suggests that the WTO, vested with more legal power through the DSM, helps facilitate the level of cooperation and mitigate power asymmetries (e.g. Chaudoin, 2010; Goldstein, Kahler, Keohane et al., 2000; Smith, 2000).[13] Previous studies identify various mechanisms by which the DSM shapes state behavior including increasing the costs of defection (e.g. Goldstein, Kahler, Keohane et al., 2000; Smith, 2000), transmitting information to voters regarding a nation's trade behavior (e.g. Chaudoin, 2010; Fang, 2008), and allowing temporary defection in response to high domestic political pressure (e.g. Fearon, 1998; Rosendorff, 2005).[14] Recent studies also assess how domestic politics shapes state behavior under the legal dispute system of multilateral negotiations (e.g. leader turnover,[15] audience costs,[16] and domestic institutions[17]).

In the meantime, a growing literature began to take legalization into consideration and to argue that legalized institutions fail to meet expectations. They claim that even international institutions with strong legal teeth fail to mitigate power asymmetries; rather, those institutions still reflect the relative power of member countries. The highlighted drawbacks associated with legalization include lack of strong punishment (e.g. Ludema, 2001), discrimination in participation against weak states (e.g Busch and Reinhardt, 2003a; Davis and Bermeo, 2009), and excess litigation (e.g. Goldstein and Martin, 2000; Simmons, 2014). Poor and small countries

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[13]In the international law literature, there is "a particularly warm, if not enthusiastic, welcome" for the WTO DSM (Zimmermann, 2005, 35).

[14]Rosendorff (2005) considers the WTO DSM as an insurance against domestic fluctuations, which leads to an increase in systemic stability of the multilateral trading system.

[15]See Bobick and Smith 2013.

[16]See Allee and Huth 2006; and Chaudoin 2014.

[17]See Betz 2018; Betz and Kerner 2016; and Peritz 2017.

have fared worse in legalized international institutions because the strong DSM deters the use of harsh punishment, causing inefficient outcomes in negotiations. Ludema (2001) argues that the use of stronger punishment against defections disabled by the DSM reduces the level of national welfare by preventing countries from using autarky as a part of the punishment.[18]

In addition, several studies argue that the increased legal costs of highly legalized DSMs discourages developing countries from participating because they lack resources to monitor and recognize WTO violations, and go through subsequent legal proceedings (e.g. Bown, 2005; Busch and Reinhardt, 2003a; Davis and Bermeo, 2009). As a result, legalized institutions fail to provide a level playing field to less powerful countries unless they have the legal capacity and expertise to participate in legal disputes. For example, Davis and Bermeo (2009) argue that the potential for legalization to reduce power asymmetries depends on weaker countries learning to navigate the legal system. By examining the initiation of disputes in the WTO from 1975 to 2003, they find that past experience in trade adjudication increases the likelihood that a developing country will initiate disputes. As weaker countries overcome these initial capacity constraints they will increasingly benefit from the international legal structures they have joined. In sum, the existing literature provides mixed findings on the role of legalization of international institutions, in the context of the WTO, in particular.

This research contributes to the literature on international institutions and international adjudications by developing a game-theoretic model to explain how legal features of dispute settlement mechanisms shape state behavior and affect distributional consequences of international cooperation. The theory and findings of this research deepen our understanding of legalized dispute settlement mechanisms. A series of bargaining models demonstrates that the legal teeth of the WTO increases the size of the pie for weak complainants.

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[18]There exists an opposite claim that a harsher punishment against defection by member states helps strengthen the bargaining power of developing countries (e.g. Park, 2000).

3 Bargaining and Early Settlement

Both The GATT and the WTO systems advocate the use of consultations to settle differences between disputing parties as an effective means of dispute resolution. Consultations refer to private negotiations between the parties for the purpose of reaching mutually satisfactory solutions. The case filed can proceed to the panel stage if: (1) parties fail to reach an agreement during consultation, and (2) the complainant party requests the establishment of a panel. In other words, if a mutually agreed settlement is not reached at the consultation stage, the complaining party may request a panel to adjudicate the dispute.[19] Early settlement occurs if a case is withdrawn because disputing parties reach a mutually agreed solution prior to a ruling. Early settlement refers to concessions negotiated in advance of a panel ruling; it includes both settlement during consultations and settlement after the consultation stage but prior to a ruling. For example, the case of "US-Anti-Dumping Duties on Imports of Colour Television Receivers from Korea" (DS89) was settled with the revocation of anti-dumping duty orders. South Korea formally withdrew its request for a panel on September 15th, 1998. Also, the case of "EC-Definitive Safeguard Measure on Salmon" (DS326) brought by Chile ended in early settlement with the termination of the safeguard measure against imports of farmed salmon. On May 12th, 2005, Chile formally withdrew its request for consultations.[20]

A majority of GATT/WTO disputes filed never proceed beyond the consultation stage or a panel ruling.[21] Nevertheless, previous works largely focus on initiation, panel proceedings, and

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[19]The request can be made by the complainant any time 60 days after the date of receipt by the defendant of the request for consultations. The complainant is allowed to make the request earlier. For details, see Article 4.7 of the DSU.

[20]Other examples are: Mexico-Certain Pricing Measures for Customs Valuation and Other Purposes (DS298) brought by Guatemala against Mexico, and EC-Regime for the Importation of Bananas (DS364) brought by Panama against the EC.

[21]Another way a dispute filed would not proceed to a panel ruling is to be dropped (a.k.a. abandoned cases). Such cases remain in consultations without a formal settlement or a panel established. For example, the Philippines requested consultations with the U.S. regarding import prohibition of certain shrimp and shrimp products imposed by the U.S. (DS61) on October 25th, 1996. On May 27th, 1998, India requested consultations with the E.C. with respect to the restrictions on certain import duties on rice (DS134). These cases have remained with the status "in consultations" since then. Other examples are: US-Safeguard Measure Against Imports of Broom Corn Brooms (DS78) brought by Colombia against the U.S., and China-Grants, Loans and Other Incentives (DS390) brought by

the aftermath of panel/AB rulings, leaving private settlements prior to a ruling understudied in this literature.[22] Only a handful of studies assess consultations and early settlement to examine the effect of the GATT/WTO DSM (e.g. Bechtel and Sattler, 2015; Busch and Reinhardt, 2000, 2003a). In particular, Busch and Reinhardt show that the GATT/WTO system allows members to bargain in the "shadow of law" where defendants tend to offer the greatest concessions. Johns and Pelc (2016) also claim that the litigants prefer private settlements because: (1) they allow the defendant to avoid the normative impact of an adverse ruling, and (2) they allow the litigants to reach an agreement away from domestic interest group pressure.

Early settlement is hard to measure compared to settlement after a panel ruling. When disputing parties reach a mutually agreed solution to the related issue during consultations or prior to a panel ruling, they notify the DSM with a complainant's withdrawal of its request for consultations and a defendant's objection to that request, if any. Due to a lack of official records such as panel or AB reports, previous observational studies fail to capture the dynamics of the GATT/WTO dispute settlement in the early stage. For example, Busch and Reinhardt (2003a) coded cases of early settlement based on the level of concessions by the defendant. They gave cases 1 if they end with no ruling and full concessions, and 0 otherwise. The dichotomous measure hardly captures heterogeneity in bargaining strategies and settlement outcomes. In this study, I utilize a game-theoretic approach in examining the bargaining mechanism with international arbitration under the GATT vs. the WTO.

Formal models have provided various theoretical accounts of the design of international institutions and the effects of the design on international cooperation (e.g. Fang, 2010; Manzini and Mariotti, 2004). Gilligan, Johns, and Rosendorff (2010) emphasize the role of the GATT/WTO

Guatemala against China. About 20% of all merchandise disputes end in a mutually agreed solution prior to the formation of a panel; and "no less than 35 percent of all disputes" are abandoned (Chaudoin, Kucik, and Pelc, 2016). Previous studies suggest various reasons why those cases get dropped (e.g. lack of legal expertise, weak merits of the case, a settlement under domestic pressure). However, dropped cases are beyond the scope of this study, and I focus on bargaining which leads to mutually agreeable concessions.

[22]Various potential dispute outcomes include panel not established, no ruling with panel established, ruling for complainant, mixed ruling, and ruling for defendant (Busch and Reinhardt, 2000).

DSM in providing information to disputing parties.[23] Johns (2012) suggests the role of international courts in coordinating endogenous enforcement by the group of disinterested parties. Johns (2016) further provides a general theoretical framework for examining the effects of the design of an international legal regime on state behavior. Compared to her model and findings in the context of the GATT/WTO, I focus on examining the role of the GATT/WTO DSM in mitigating power asymmetries between disputants.

Using a bargaining model across different scenarios, I show under what conditions, where in the process, and to what extent, international arbitration empowers a weak party in the process of dispute settlement against its powerful counterpart. My model assumes that powerful states are willing to wield their power to get away with violating agreements. Thus, the model differentiates players by their relative power such that a defendant is more powerful than a complainant. I begin with private bargaining between disputants and extend to bargaining with international arbitration which captures institutional characteristics of the GATT and later, the WTO.

Among the many differences between the GATT and the WTO, I focus on the right of delegation. In this paper, delegation refers to both the establishment of a panel and the adoption of panel reports. Thus, delegation fails if the respondent blocks the complainant's proposal of delegation or the adoption of a panel report.[24] The current WTO system builds on the previous GATT system which has evolved considerably over the years. Under *GATT 1947*, the defendant could block panel proceedings by delaying (indefinitely) the establishment of a panel. Moreover, the adoption of panel reports required a positive consensus (i.e., no objection from any member to the decision). This enabled the losing party to block or veto the adoption of the panel report. This threat of veto is often considered a legal loophole of the GATT.

An important modification of the dispute resolution system has been made through the 1989 *Dispute Settlement Procedure Improvements*. The reform prevents a defendant from tactically

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[23]Similarly, Carrubba 2005, 2009; and Johns and Rosendorff 2009.

[24]Note that any member (possibly the losing party) blocks the adoption of a panel report.

blocking the complainant's request for a panel by delaying it significantly. Before the reform, there were two options for the respondent who disagrees with the complainant's proposal of delegation: (1) block panel proceeding by delaying panel establishment, or (2) reject the adoption of panel reports. After the reform, however, to reject the adoption of a panel report is the only option. Given that the defendant is still able to block arbitration after the 1989 reform, the basic setting of the GATT bargaining game in this paper remains the same before and after the reform.[25]

In contrast, the WTO empowers complainants with the unilateral right to request a panel formation and an automatic adoption of panel reports. The WTO prevents a respondent from blocking not only the panel proceeding (carried over the 1989 GATT reform) but also the adoption of panel reports. The complainant's request of panel composition does not need a respondent to agree, and the parties to the dispute must unconditionally accept a ruling. A panel ruling is automatically adopted unless a party formally notifies the DSB its decision to appeal or there is reverse consensus, a consensus in the DSB against the adoption (Article 16.4, DSU). Under a rule of reverse consensus, a single member is not sufficient to reject the adoption of the report, but sufficient to secure it. Note that even a majority is not sufficient to prevent the adoption under the WTO. As Busch and Reinhardt (2003a) put it, "The *Improvements* gave complainants a way to escape the power politics of the consultation stage"(150). The legal teeth enables complainants to obviate their counterparts' threat of blocking.[26]

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[25]It is noteworthy that the parties might be still bargaining after the panel is established, and even after panel ruling is circulated. Shaffer (2009) concurs, noting, "WTO members sometimes begin settlement negotiations only after the panel ruling is issued"(174). For example, the bargaining over the modification of the U.S. *foreign sales corporation* tax subsidies were in progress between the U.S. and the EC even years after the panel ruling had been issued.

[26]For the sake of simplicity, the model does not capture different stages of litigation such as panel establishment, panel ruling, and AB ruling.

4 The Model

Consider the following standard alternating-offer bargaining setting, as in Rubinstein.[27] Two countries, C (Complainant, henceforth "she") and D (Defendant, henceforth "he"),[28] dispute the distribution of an infinitely divisible good, such as the interests of C harmed by D's trade violations, whose size is normalized to 1. They take turns making offers over the division of the pie. For example, settlement over trade disputes refers to taking down trade barriers such as tariffs or subsidies and compensating affected trading partners. The game starts with C's offer $(x_C, 1 - x_C)$ where $x_C \in [0, 1]$ is player C's share and $1 - x_C$ is D's share. Then D decides either to accept or to reject the offer. If D accepts, the game ends; if not, the game moves to the next round where D makes a counter-offer. The game continues until one's proposal is accepted by the other. Let $(SQ_C, 1 - SQ_C)$ denote the status quo division of the disputed good, where SQ_C is C's share and $1 - SQ_C$ is D's share. Henceforth, I will assume that $SQ_C = 0$, meaning that at each failed round, the disputed good entirely belongs to D.[29] Both players discount their future payoffs by a common discount factor $\delta \in (0, 1)$.

If players agree to a settlement, bargaining ends, and players receive the new division of the pie such as the termination or reduction of unfair trade barriers for the remaining periods of the game.[30] Given that the agreed-upon proposal will remain in force for the remaining infinite future, if an agreement is made in any even-numbered periods where C makes an offer x_C^t, players receive payoffs $\left(\frac{x_C^t}{1-\delta}, \frac{1-x_C^t}{1-\delta} \right)$.[31] If an agreement is made in any odd-numbered periods

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[27] See Rubinstein 1982.

[28] For simplicity's sake, the model assumes a single-party Complainant and Defendant. In practice, however, there could be multiple complainants, defendants, and/or third-parties to a dispute. For example, under the GATT/WTO, every member can participate in a dispute of another member as a third party (pro-Complainant, pro-Defendant, or even mixed).

[29] In Rubinstein's bargaining model, the status quo of each player is set to zero for both players.

[30] The game assumes that the agreement will be kept forever without a breach. In practice, a break is subject to breach. I assume that a breach opens up another bargaining over trade dispute.

[31] Note that from the perspective of $t = 0$, players get $\left(\frac{\delta^t x_C^t}{1-\delta}, \frac{1-\delta^t x_C^t}{1-\delta} \right)$. For D's payoff, C's offer x_C^t at time t gives D $\left(1 + \delta + \delta^2 + \cdots + \delta^{t-1} \right) + \delta^t (1 - x_C^t) + \delta^{t+1} (1 - x_C^t) + \delta^{t+2} (1 - x_C^t) + \cdots = \frac{1-\delta^t}{1-\delta} + \frac{\delta^t (1-x_C^t)}{1-\delta} = \frac{1-\delta^t x_C^t}{1-\delta}$. Note that following a formula to calculate the sum of the first t terms of a geometric sequence, $1 + \delta + \delta^2 + \cdots + \delta^{t-1}$ is $\frac{1-\delta^t}{1-\delta}$.

Figure 1: Private bargaining model in trade disputes
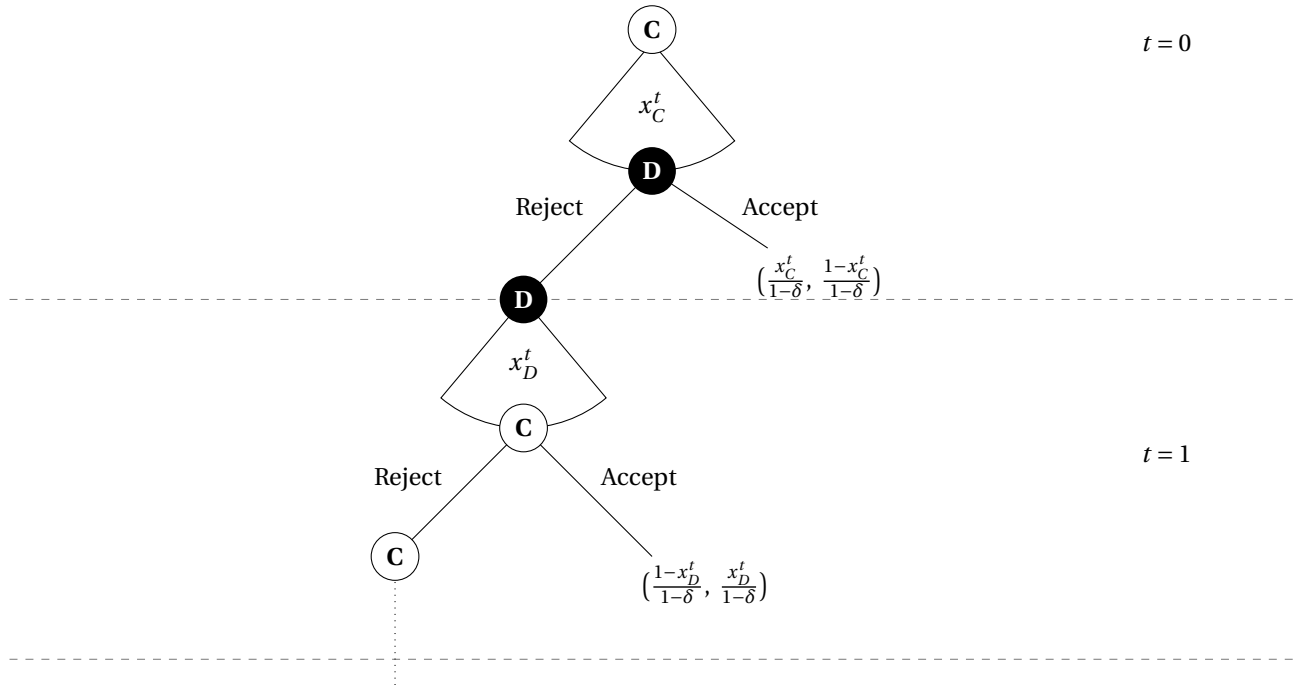
where D makes an offer x_D^t, players receive payoffs $\left(\frac{1-x_D^t}{1-\delta}, \frac{x_D^t}{1-\delta}\right)$. The game tree is shown in Figure 1. The solution concept is Subgame-Perfect Equilibrium (SPE), specifically I look for a (stationary) no-delay SPE where each player always makes the same offer (stationarity) and accepts the equilibrium offer immediately (no delay). The following proposition describes the results of the private bargaining game.

Proposition 1 (Bilateral EQ)**.** *Whenever C proposes, she offers $x_C = 0$ and accepts any offer $x_D \leq 1$. Whenever D proposes, he offers $x_D = 1$ and accepts $x_C = 0$. Thus, bargaining ends immediately with a split (0, 1).*

If there is no institution, then C has no bargaining leverage (since the model does not allow for C to retaliate on other issues, although that would be an interesting avenue for future research) and hence D has no reason to make concessions. In equilibrium, D keeps the entire pie and C gets nothing.

4.1 Bargaining in the Shadow of Arbitration: GATT vs. WTO

Now suppose the model features bargaining under the shadow of international arbitration under the GATT or the WTO. In both GATT and WTO bargaining games,[32] C has an additional way to respond to D's offer other than *Accept* and *Reject*: *Delegate* to third-party adjudication. If C chooses delegation, D will decide whether to reject or accept in the GATT bargaining game.[33] Without D's agreement, international adjudication fails to occur and the game ends with status quo payoffs $\left(0, \frac{1}{1-\delta}\right)$. If D accepts, private bargaining ends, and the case proceeds to litigation. If international adjudication takes place, then the outcome is a game-ending costly lottery, with C winning with probability $(1-a)\theta$ and the prize of winning 1, D winning with probability $1 - (1-a)\theta$ and the prize of winning $(1+b)$, where $a \in (0,1)$ is the level of bias toward D,[34] $\theta \in (0,1)$ is the merits of C's case,[35] and $b > 0$ is an additional small benefit to D if he prevails in international courts.[36] In the case of international adjudication, both players also pay the costs of arbitration $C_C, C_D > 0$. Thus, if international arbitration occurs, the game ends with the payoffs $\left(\frac{(1-a)\theta - C_C}{1-\delta}, \frac{[1-(1-a)\theta](1+b) - C_D}{1-\delta}\right)$. Figure 2 displays a game tree of the GATT bargaining model. Proposition 2 characterizes the SPE of the GATT bargaining game.

Proposition 2 (GATT EQ). *Define the following threshold: $b_{crit} \equiv \frac{C_D + (1-a)\theta}{1 - (1-a)\theta}$. Then the following is the subgame-perfect equilibrium (SPE) of the GATT-bargaining game.*

(i) If $b < b_{crit}$,[37] $\forall a \in (0,1)$ whenever D proposes, he offers $x_D = 1$, accepts $x_C = 0$, and rejects

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[32]The GATT/WTO bargaining game refers to the alternating-offers bargaining model with institutional features of the GATT/WTO.

[33]In practice, there are two ways for D to reject C's proposal of delegation: (1) reject C's request of panel establishment, and (2) reject the adoption of panel reports. The bargaining model in this paper does not differentiate them; rather, delegation refers to the direct loss of state control over the issue.

[34]Given that $0 < a < 1$, I assume that the disputes are not only judged by the merits of the case but also by the distribution of power across disputing parties. If international arbitration is perfectly fair and disputes are hence judged solely by the merits of the case, then $a = 0$ in the model.

[35]This captures to what extent a defendant's violating behavior harms the interests of the complainant.

[36]There are various sources of additional benefit b. For example, the GATT/WTO rulings would set a precedent for other related issues in the future as well as in other regional trade agreements. There is a prestige benefit of having third-party adjudication endorse your position on a dispute. At the domestic level, the legalized GATT/WTO systems of dispute resolution tie the hands of leaders to respect rulings, which enables them to resist domestic pressure for protection.

[37]If $b = b_{crit}$, then D is indifferent between rejecting and accepting delegation C proposes. I will ignore this

Figure 2: GATT bargaining model
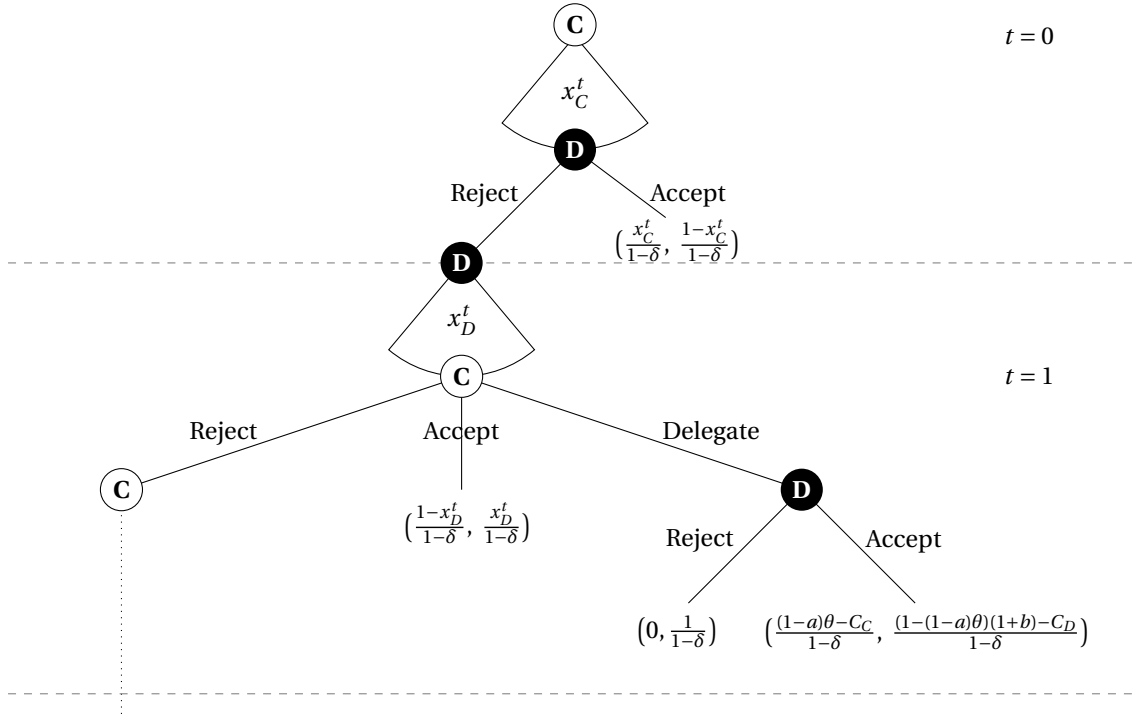
if C chooses to delegate. Whenever C proposes, she offers $x_C = 0$, accepts any $x_D \leq 1$, and prefers rejecting over delegating. Bargaining ends immediately with a split $(0, 1)$.

(ii) If $b > b_{crit}$, for $(1-a)\theta < C_C$ whenever D proposes, he offers $x_D = 1$, accepts $x_C = 0$, and accepts if C chooses to delegate. Whenever C proposes, she offers $x_C = 0$, accepts any $x_D \leq 1$, and prefers rejecting over delegating. Bargaining ends immediately with a split $(0, 1)$.

(iii) If $b > b_{crit}$, for $(1-a)\theta > C_C$ whenever D proposes, he offers $x_D > 1-(1-a)\theta + C_C$, rejects any $x_C \geq 0$, and accepts if C chooses to delegate. Whenever C proposes, she offers $x_C \geq 0$, accepts $x_D \leq 1-(1-a)\theta + C_C$, and chooses to delegate (rather than reject) if $x_D > 1-(1-a)\theta + C_C$. Bargaining ends up with delegation taking place.

Under the GATT, the primary factor as to whether *C* has any bargaining leverage in equilibrium is whether or not *b* is high enough that *D* would accept delegation. If $b < b_{crit}$, then *D* would reject delegation and hence *C* has no bargaining leverage, and in equilibrium *D* keeps the

knife-edge condition which is uninteresting.

entire pie and C gets nothing (case (i) in Proposition 2), just as in the bilateral bargaining model.

If $b > b_{crit}$ and hence D would accept delegation, then whether or not C has any bargaining leverage depends on whether or not $(1-a)\theta > C_C$, C's probability of winning the dispute in delegation exceeds her cost of litigation, holds. If not (case (ii) in Proposition 2), then C has no bargaining leverage and in equilibrium D keeps the entire pie and C gets nothing, just as in the bilateral bargaining model. But if it does (case (iii) in Proposition 2), then in equilibrium delegation occurs with C getting a strictly positive expected payoff of $(1-a)\theta - C_C$.

Thus, under the GATT C has bargaining leverage if and only if $b > b_{crit}$ and $(1-a)\theta > C_C$ both hold: b is high enough that D would accept delegation, and C's probability of winning the dispute exceeds her cost of litigation. But note that b_{crit} is strictly increasing in C's probability of winning $(1-a)\theta$, meaning that $b > b_{crit}$ is less likely to hold as C's probability of winning increases. Thus, both conditions are unlikely to be satisfied simultaneously, suggesting that complainants are unlikely to have much bargaining leverage under the GATT. Note that b_{crit} is also strictly increasing in D's litigation cost C_D, meaning that D is less likely to accept delegation as his litigation cost increases. Somewhat counter-intuitively, C is more likely to have bargaining leverage as D's cost of litigation decreases (as then D is more likely to accept delegation). Under the GATT, complainants benefit when costs of litigation are low (for both sides). Finally, note that the other crucial condition for C to have bargaining leverage under the GATT, $(1-a)\theta > C_C$, is more likely to hold as (1) the DSM's bias in D's favor decreases, (2) C's case becomes stronger, and (3) C's cost of litigation decreases.

This suggests that the dispute resolution system under the GATT fails to come to grips with the fundamental problems affecting the unequal distribution of economic power and wealth. Thus, the results indicate that international adjudication alone fails to function as an effective means for weak complainants to insulate themselves from power politics. If not the sheer existence of international arbitration, what makes international arbitration effective?

To answer this question, I now consider bargaining under the WTO DSM. What differenti-

ates WTO bargaining from GATT bargaining is whether D is able to respond to C's decision of delegation. While the GATT allows D to reject if C chooses delegation, the WTO prevents D from blocking delegation, which allows C to unilaterally trigger delegation to third-party adjudication. Figure 3 displays a game tree of the WTO bargaining model. Proposition 3 characterizes the no-delay SPE of the WTO bargaining game.

Figure 3: WTO bargaining model
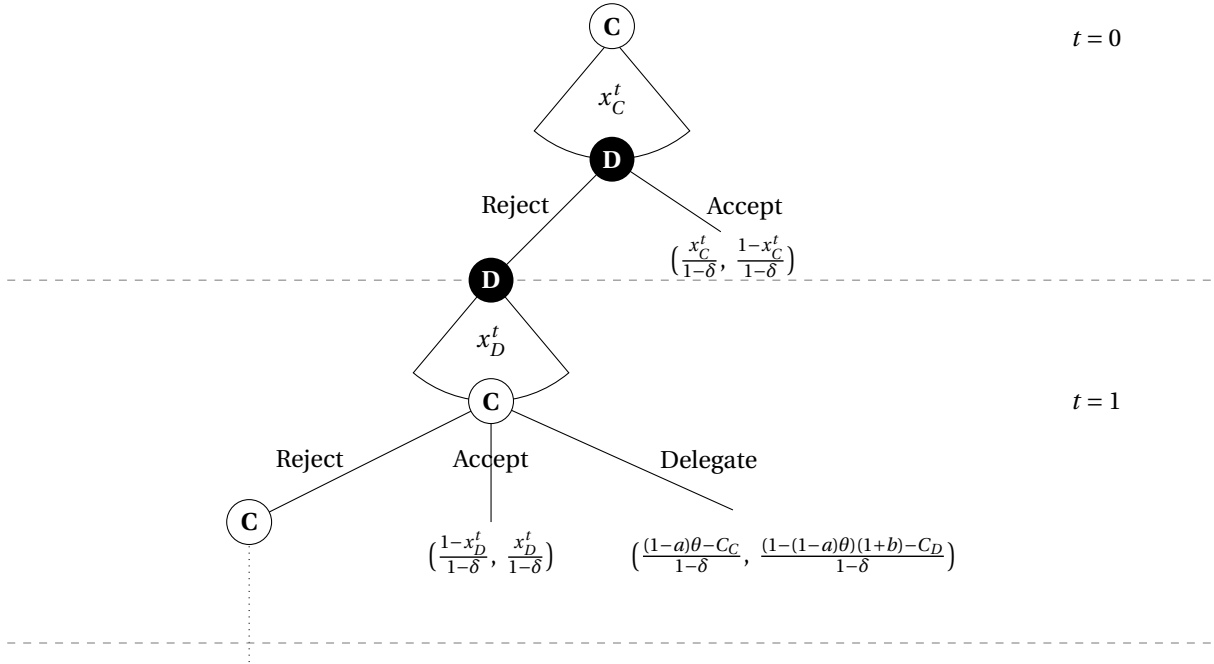
Proposition 3 (WTO EQ)**.** *Define the following threshold: $b'_{crit} \equiv \frac{C_C + C_D}{1-(1-a)\theta}$. Then the following is the subgame-perfect equilibrium (SPE) of the WTO-bargaining game.*

(i) *If $(1-a)\theta < C_C$, $\forall b \, (> 0)$ whenever D proposes, he offers $x_D = 1$ and accepts $x_C = 0$. Whenever C proposes, she offers $x_C = 0$ and accepts any offer $x_D \leq 1$. Thus, bargaining ends immediately with a split $(0,1)$.*

(ii) *If $(1-a)\theta > C_C$, for $b < b'_{crit}$ whenever D proposes, he offers $x_D = 1 - (1-a)\theta + C_C$, accepts $x_C \leq \delta[(1-a)\theta - C_C]$, and rejects otherwise. Whenever C proposes, she offers $x_C = \delta[(1-a)\theta - C_C]$, accepts $x_D \leq 1 - (1-a)\theta + C_C$, and delegates (rather than rejects) otherwise. Thus,*

bargaining ends immediately with a split $\left((1-a)\theta - C_C, 1 - (1-a)\theta + C_C\right)$.

(iii) *If $(1-a)\theta > C_C$, for $b > b'_{crit}$ whenever D proposes, he offers $x_D > 1 - (1-a)\theta + C_C$, accepts $x_C \leq \delta[(1-a)\theta(1+b) + C_D - b]$, and rejects otherwise. Whenever C proposes, she offers $x_C > \delta[(1-a)\theta(1+b) + C_D - b]$, accepts $x_D \leq 1 - (1-a)\theta + C_C$, and delegates (rather than reject) otherwise. Bargaining ends up with delegation taking place.*

Under the WTO, because D cannot block delegation, whether or not $b > b_{crit}$ is no longer relevant. Now, whether or not C has bargaining leverage simply depends on whether or not $(1-a)\theta > C_C$, C's probability of winning the dispute in delegation exceeds her cost of litigation, holds. If this condition does not hold, then C's expected payoff for delegation is negative, and she would never choose delegation. Thus, she has no bargaining leverage. In equilibrium D keeps the entire pie and C gets nothing (case (i) in Proposition 3), just as in the bilateral bargaining model.

If $(1-a)\theta > C_C$ holds, then C chooses delegation if D's proposal is unacceptable. The equilibrium outcome depends on whether or not $b < b'_{crit}$ holds (incidentally, note that $b'_{crit} < b_{crit}$), but in either case C has a positive expected payoff, and hence benefits relative to the bilateral bargaining game. If $b < b'_{crit}$ holds, then D prefers to make an acceptable proposal rather than allowing delegation to occur, and proposes $x_D^* = 1 - [(1-a)\theta - C_C]$ for himself, which is less than the entire pie. C accepts this proposal (case (ii) in Proposition 3). The threat of delegating causes D to make an acceptable proposal that gives C some of the pie, and delegation does not actually occur.

As for comparative statics, C's equilibrium share $1 - x_D^* = (1-a)\theta - C_C$ is (1) strictly increasing in the strength of her case (θ), (2) strictly decreasing in the DSM's degree of bias towards D (a), and (3) strictly decreasing in her cost of litigation (C_C).

Finally, if $(1-a)\theta > C_C$ and $b > b'_{crit}$, then D prefers to allow delegation to occur rather than propose what C is demanding, and hence makes an unacceptable proposal, triggering delegation

(case (iii) in Proposition 3). C thus gets her expected payoff for delegation $(1 - a)\theta - C_C$, which is positive (and in particular, C gets the entire pie with positive probability).
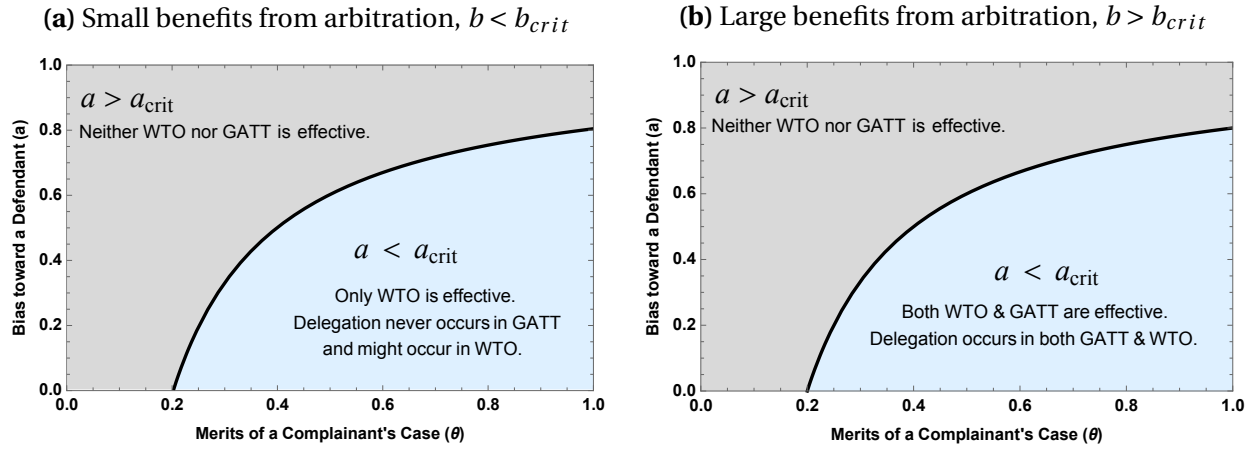
The same comparative statics as in case (ii) apply, because C's expected payoff is the same either way. This raises an important point, in that when D makes an acceptable proposal (case (ii)), he just offers C her expected payoff for delegation, and hence her cost of litigation still factors into her payoff.

When $(1 - a)\theta > C_C$ holds, then delegation occurs if $b > b'_{crit}$. Thus, any factor that increases b'_{crit} decreases the likelihood of delegation occurring. Note that b'_{crit} is (1) strictly increasing in C's cost of litigation (C_C), (2) strictly increasing in D's cost of litigation (C_D), (3) strictly increasing in the strength of C's case (θ), and (4) strictly decreasing in the DSM's degree of bias towards D (a). These last two comparative statics can alternatively be stated as (5) b'_{crit} is strictly increasing in C's probability of winning in delegation $((1 - a)\theta)$.

High costs of litigation on either side decrease the likelihood of delegation occurring. The stronger C's case, the less likely delegation is to occur. This implies a possible selection effect: empirically, the sample of delegation instances may exhibit unusually weak complainant cases, because when the complainant's case is strong the defendant would rather make an acceptable proposal in bilateral bargaining. Hence, any empirically estimated complainant success rate in delegation may be underestimating the "true" rate, in that strong cases tend to be settled through bilateral bargaining and do not even go to delegation.[38] This selection effect is reinforced by comparative statics (4) and (5): when the complainant is likely to win through the DSM being unbiased, delegation is less likely to occur.

The major contrast between the GATT and the WTO is that complainants only benefit over private bargaining under the GATT if $b > b_{crit}$ and $(1 - a)\theta > C_C$ both hold, whereas benefiting under the WTO only requires the latter. That is, in turn, neither WTO nor GATT is effective in

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[38]This is similar to Smith's (1996) argument that estimating alliance reliability using a sample in which the alliance is actually invoked may be underestimating the true reliability rate, in that reliable alliances are unlikely to actually be invoked. Only unreliable alliances tend to be challenged.

Figure 4: Settlements in equilibrium (GATT vs. WTO)

(a) Small benefits from arbitration, $b < b_{crit}$

(b) Large benefits from arbitration, $b > b_{crit}$

Note: Under the WTO, C's equilibrium payoff is $\frac{(1-a)\theta - C_C}{1 - \delta_C}$ in the bottom region and 0 in the top region. C's equilibrium payoff is always 0 under the GATT and private negotiations. Delegation occurs in the WTO if $b > b'_{crit}$.

Note: Under both the WTO and the GATT, C's equilibrium payoff is $\frac{(1-a)\theta - C_C}{1 - \delta_C}$ in the bottom region and 0 in the top region. C's equilibrium payoff is always 0 under private negotiations.

providing a more level playing field if $(1 - a)\theta < C_C$. Define the following threshold: $a_{crit} \equiv 1 - \frac{C_C}{\theta}$. Then, $a > a_{crit}$ is equivalent to $(1 - a)\theta < C_C$. Thus, when arbitration is substantially biased toward D such that $a > a_{crit}$ (as shown in the top region of Figures 4a and 4b), C is just as well off in the GATT or the WTO as she would be in private bargaining. This suggests that fair adjudication is necessary for the GATT/WTO DSM to allow weak complainants to insulate themselves from power politics.

When the arbitration is substantially fair such that $a < a_{crit}$ (as shown in the bottom region of Figures 4a and 4b), the effectiveness of the WTO or the GATT depends on the extent to which international arbitration is beneficial to a defendant (b). When $b < b_{crit}$ (Figure 4a) and $a < a_{crit}$, C is just as well off in the GATT as she would be in private bargaining. International arbitration of the GATT fails to generate additional benefits enough to prevent D from blocking delegation (the bottom region of Figure 4a). Under the WTO, by contrast, weak complainants are better off than private negotiations by either (i) pre-trial settlements during consultations or (ii) international

arbitration. Note $b'_{crit} < b_{crit}$ when $a < a_{crit}$.[39] When $b < b'_{crit}$, international arbitration of the WTO functions as a threat by which weak complainants could elicit a more favorable offer from their powerful counterparts before the panel stage. When $b'_{crit} < b < b_{crit}$, weak complainants receive more favorable settlements from international arbitration of the WTO.

When $b > b_{crit}$ (Figure 4b) and $a < a_{crit}$, both the GATT and the WTO are effective because bargaining winds up resulting in international arbitration from which C receives a more favorable offer than private negotiations (the bottom region of Figure 4b). D optimally makes an offer which C would rather choose to delegate, and international arbitration will take place in both the GATT and the WTO. The results also indicate that the GATT is effective in leveling the playing field only when delegation occurs, whereas the WTO is effective even without going through the costly process of litigation. Thus, the model predicts that defendants being unable to block delegation under the WTO leads to much more concessions in trade disputes under the WTO than under the GATT.

It is worth noting that delegation can occur in equilibrium even under complete information. This is noteworthy because I have modeled delegation analogously to the "costly lottery" interpretation of war in game-theoretic models of crisis bargaining, in which war never occurs under complete information assuming no issue indivisibility or commitment problems (Fearon, 1995; Powell, 1996). That is, it is a costly lottery over who wins the entire pie. The difference is that I have stipulated an additional benefit $b > 0$ that the defendant gets for winning the dispute, and if this benefit is large enough, delegation can occur even under complete information. However, empirically the benefit is unlikely to be large enough, and hence case (ii) is more likely to occur than case (iii): under complete information, concessions likely occur through bargaining rather than delegation. For the parameters of case (ii), a simple informational model can be constructed in which D is uncertain of the strength of C's case θ and for certain priors makes a risky proposal that only the weak-case type accepts. This provides an informational rationale for

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[39]Recall that $b'_{crit} \equiv \frac{C_C + C_D}{1 - (1-a)\theta}$ and $b_{crit} \equiv \frac{C_D + (1-a)\theta}{1 - (1-a)\theta}$. If $C_C < (1-a)\theta, b'_{crit} < b_{crit}$. That is, if $a < a_{crit}, b'_{crit} < b_{crit}$ where $a_{crit} \equiv 1 - \frac{C_C}{\theta}$.

costly delegation occurring, analogous to the informational explanation for costly war occurring.

5   Conclusion

Does legalization of international institutions mitigate or magnify power asymmetries? I answer this question in the context of the transition of dispute settlement mechanisms from the General Agreements on Tariffs and Trade (GATT) to the World Trade Organization (WTO). I argue that the more legalized institutional features of the WTO — the unilateral right to a panel and the automatic adoption of a ruling — empower complainants. Due to the increased bargaining leverage, concessions are more likely to occur under the WTO than the GATT.

Building on Rubinstein's alternating offer bargaining model, I develop a game theoretic model of trade disputes and examine three different scenarios: private bargaining, GATT bargaining, and WTO bargaining. In the baseline model of private bargaining, I find that a complainant with no bargaining leverage gets nothing in equilibrium. I find that a complainant benefits from GATT bargaining relative to private bargaining only if delegation occurs, while benefiting under the WTO does not require delegation to occur. Also, in the GATT bargaining model, a complainant has bargaining leverage when (1) a defendant gets a substantial amount of an additional benefit from winning the case through delegation, and (2) a complainant's chance of winning the dispute through delegation exceeds her cost of litigation. Given that those conditions are unlikely to be satisfied simultaneously, this suggests that a complainant is unlikely to have bargaining leverage under the GATT. In the WTO bargaining model, however, a complainant benefits more than in private bargaining only if a complainant's chance of winning the dispute through delegation exceeds her cost of litigation. Thus, the WTO bargaining model predicts that defendants being unable to block delegation leads to more concessions in trade disputes under the WTO than under the GATT. This suggests that the WTO is more effective than the GATT in providing a level playing field.

The model also predicts that delegation is more likely to occur under the WTO than the GATT, which is consistent with previous empirical findings. Additionally, the majority of disputes brought to the GATT/WTO end in early settlement without delegation occurring. Note that in both the GATT and the WTO, delegation occurs only if the following two conditions are satisfied: (1) a defendant receives a substantial amount of an additional benefit from winning the case through delegation, and (2) a complainant's chance of winning the dispute through delegation exceeds her cost of litigation. Thus, the empirical finding about the high rate of early settlement suggests that in both the GATT and the WTO (1) the complainant's probability of winning rarely exceeds her cost of litigation, (2) a defendant is unlikely to get a substantial amount of additional benefit from winning the case through delegation, or (3) both conditions are unlikely to be satisfied simultaneously.[40]

My research suggests significant implications for our understanding of the role of legalization in the international relations literature. A series of bargaining models over trade disputes shows that the sheer existence of international arbitrators alone fails to function as an effective means of threat. The legal teeth of the WTO are more likely to mitigate power asymmetries than the GATT. Specific and firm rules supported by fair international adjudication are necessary to allow complainants to insulate themselves from power politics. These results should not undermine the importance, in the pursuit of international cooperation, of seeking to strengthen international organizations. Despite the apparent constraints on the role of international organizations, these results suggest that legalization can offer a voice to less powerful states, thereby improving the distribution of power and gains from cooperation.

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[40]Note that for the WTO disputes, (1) is the only relevant condition.

Appendix

Proof of Proposition 1. I show that no player can make a profitable deviation from the proposed equilibrium strategy in one single period, i.e., one-shot deviation principle (OSDP). Consider a period when C offers. C has no profitable deviation. C cannot make an acceptable offer that will get her more than 0. And if makes an offer that will be rejected, she will get 0 the next period too. D also has no profitable deviation. If D accepts, he gets 1. If he rejects, he will get 1 the next period. Note that for any failed period, C and D receive their status quo payoffs $SQ_C = 0$ and $SQ_D = 1$, respectively. A similar argument applies to periods when D offers. Consider a period when D offers. D has no profitable deviation either. D cannot make an acceptable offer that will get him more than 1. C also has no profitable deviation. If C accepts, she gets 0. If she rejects, she will get 0 the next period. ∎

Proof of Proposition 2. I show that no player can make a profitable deviation from the proposed equilibrium strategy in one single period, i.e., one-shot deviation principle (OSDP). Suppose $b < b_{crit}$. Then D chooses to reject delegation. When C chooses to delegate, D has no profitable deviation. D receives $\frac{1}{1-\delta}$ with rejection and $\frac{\left(1-(1-a)\theta\right)(1+b)-C_D}{1-\delta}$ ($< \frac{1}{1-\delta}$ when $b < b_{crit}$) with acceptance. D has no incentive to deviate to accept when C chooses to delegate. If D offers $x_D = 1$, C always receives 0 from all three decisions: accepting, rejecting, and delegation; C has no incentive to deviate to delegate. Thus, the game is analogous to private bargaining above. The proof is straightforward, as shown above.

Suppose $b > b_{crit}$ and $(1 - a)\theta < C_C$. Then D chooses to agree on delegation and C prefers rejecting over delegating. When C chooses to delegate, D has no profitable deviation. D receives $\frac{1}{1-\delta}$ with rejection and $\frac{\left(1-(1-a)\theta\right)(1+b)-C_D}{1-\delta}$ ($\geq \frac{1}{1-\delta}$ when $b > b_{crit}$) with acceptance. Thus, D has no incentive to deviate to reject. If D offers $x_D = 1$, C receives (1) 0 if she accepts, (2) 0 in both current and following periods if she rejects and makes an offer next period, and (3) $\frac{(1-a)\theta - C_C}{1-\delta}$ < 0 when $(1 - a)\theta < C_C$ if she delegates. C has no incentive to deviate to delegate; thus, the game is analogous to private bargaining in the absence of international arbitration. The proof is straightforward, as shown above.

Now suppose $b > b_{crit}$ and $(1-a)\theta > C_C$. Then D chooses to agree on delegation and C prefer delegating over rejecting. Consider a period when D offers. D has no profitable deviation. If D makes an unacceptable offer $x_D > 1 - (1-a)\theta + C_C$, delegation will occur which will give him $\frac{[1-(1-a)\theta](1+b)-C_D}{1-\delta}$. If he makes an offer that C would accept, he would optimally choose $x_D = 1 - (1-a)\theta + C_C$. This offer gives him $\frac{1-(1-a)\theta+C_C}{1-\delta}$ which is worse than $\frac{[1-(1-a)\theta](1+b)-C_D}{1-\delta}$ because $b > \frac{C_C+C_D}{1-(1-a)\theta}$ and $b_{crit} > \frac{C_C+C_D}{1-(1-a)\theta}$. D has no incentive to deviate to an acceptable offer $x_D \leq 1-(1-a)\theta+C_C$. C also has no profitable deviation. If she accepts D's offer $x_D > 1-(1-a)\theta+C_C$, her payoff is less than her payoff from delegation $\frac{(1-a)\theta-C_C}{1-\delta}$. Given that D rejects any offer C could make and C chooses to delegate in response to his offer $x_D > 1 - (1-a)\theta + C_C$, the game ends with delegation two periods later. Given C's status quo of 0 and positive discount factor, rejection makes her worse off. Thus, C has no incentive to accept or reject. If C accepts D's offer $x_D \leq 1 - (1-a)\theta + C_C$, she gets $\frac{(1-a)\theta-C_C}{1-\delta}$ at least. If she delegates, she receives $\frac{(1-a)\theta-C_C}{1-\delta}$. If she rejects, she gets $\frac{(1-a)\theta-C_C}{1-\delta}$ because the game ends with delegation two periods later. Thus, C has no incentive to deviate to reject. When C chooses to delegate, D has no profitable deviation. D receives $\frac{1}{1-\delta}$ with rejection and $\frac{\left(1-(1-a)\theta\right)(1+b)-C_D}{1-\delta}$ ($\geq \frac{1}{1-\delta}$ when $b > b_{crit}$) with acceptance. Thus, D has no incentive to deviate to reject.

Consider a period when C offers. Not only C but also D has no profitable deviation. For any offer C could make $x_C \geq 0$, If D accepts, he will receive $\frac{1}{1-\delta}$ at most. If D rejects, he will get 1 in the current failed period and $\frac{[1-(1-a)\theta](1+b)-C_D}{1-\delta}$ from delegation in the following period. Thus, with rejection, D will receive $1 + \frac{\delta\left([1-(1-a)\theta](1+b)-C_D\right)}{1-\delta}$, which is strictly greater than $\frac{1}{1-\delta}$ because $b > b_{crit}$. Thus, D has no incentive to deviate. $\blacksquare$

Proof of Proposition 3. I show that no player can make a profitable deviation from the proposed equilibrium strategy in one single period, i.e., one-shot deviation principle (OSDP). Suppose $(1-a)\theta < C_C$. When D offers $x_D = 1$, C will receive 0 if she accepts or rejects (then she makes an offer $x_C = 0$ next period) or $\frac{(1-a)\theta-C_C}{1-\delta}$ (< 0 when $(1-a)\theta < C_C$) if she delegates. Since C has no incentive to delegate, the game is analogous to private bargaining in the absence of international arbitration. The proof is straightforward as shown above (Proposition 1).

Suppose $(1-a)\theta > C_C$ and $b < b_{crit'}$. Consider a period when C offers. C has no profitable

deviation. C cannot make an acceptable offer that will get her more than $\frac{\delta[(1-a)\theta-C_C]}{1-\delta}$. If she makes an offer that will be rejected, she will get $\frac{(1-a)\theta-C_C}{1-\delta}$ in the next period, or in present terms $\frac{\delta[(1-a)\theta-C_C]}{1-\delta_C}$, suggesting that C has no incentive to deviate. D also has no profitable deviation. If D accepts $x_C = \delta[(1-a)\theta - C_C]$, he gets $\frac{1-\delta[(1-a)\theta-C_C]}{1-\delta}$. If he rejects, he will get 1 the current failed period and $1 - (1-a)\theta + C_C$ the next period. The continuation values of the two payoffs are the same $\frac{1-\delta[(1-a)\theta-C_C]}{1-\delta}$. Thus, D has no incentive to deviate to reject. Now consider a period when D offers. D has no profitable deviation. D cannot make an acceptable offer that will get him more than $\frac{1-(1-a)\theta+C_C}{1-\delta}$. If he makes an offer that C would not accept, he will get $\frac{[1-(1-a)\theta](1+b)-C_D}{1-\delta}$ from delegation, which is worse than $\frac{1-(1-a)\theta+C_C}{1-\delta}$ because $b < b_{crit'}$. Thus, D has no incentive to deviate. C also has no profitable deviation. If C accepts $x_D = 1 - (1-a)\theta + C_C$, she gets $\frac{(1-a)\theta-C_C}{1-\delta}$. Also, she will get $\frac{(1-a)\theta-C_C}{1-\delta}$ if she delegates. If she rejects, however, she will get 0 the current failed period and $\frac{\delta[(1-a)\theta-C_C]}{1-\delta}$ the next period, or $\frac{\delta^2[(1-a)\theta-C_C]}{1-\delta}$ in present terms. Thus, C has no incentive to deviate.

Now suppose $(1-a)\theta > C_C$ and $b > b_{crit'}$. Consider a period when C offers. C has no profitable deviation. If C makes an offer $x_C > \delta[(1-a)\theta(1+b) + C_D - b]$ that D would not accept, she will get $\frac{(1-a)\theta-C_C}{1-\delta}$ from delegation in the next round (i.e., $\frac{\delta\left[(1-a)\theta-C_C\right]}{1-\delta}$ in current terms). C cannot make an acceptable offer that will get her more than $\frac{\delta\left[(1-a)\theta-C_C\right]}{1-\delta}$ because $b > b_{crit'}$. D also has no profitable deviation. If he rejects, he will get 1 the current failed period and $\frac{\left[1-(1-a)\theta\right](1+b)-C_D}{1-\delta}$ from delegation in the next period, i.e., $\frac{1-\delta\left[(1-a)\theta(1+b)+C_D-b\right]}{1-\delta}$ in current terms. If D accepts $x_C > \delta[(1-a)\theta(1+b) + C_D - b]$, he gets strictly less than $\frac{1-\delta\left[(1-a)\theta(1+b)+C_D-b\right]}{1-\delta}$. Thus, D has no incentive to deviate to accept. Now consider a period when D offers. D has no profitable deviation. If D makes an offer $x_D > 1 - (1-a)\theta + C_C$ that C would not accept, he will get $\frac{[1-(1-a)\theta](1+b)-C_D}{1-\delta}$ from international adjudication. D cannot make an acceptable offer that will get him more than $\frac{[1-(1-a)\theta](1+b)-C_D}{1-\delta}$ because $b > b_{crit'}$. C also has no profitable deviation. If she delegates, she will get $\frac{(1-a)\theta-C_C}{1-\delta}$. If she accepts $x_D > 1 - (1-a)\theta + C_C$, her payoff is obviously worse than $\frac{(1-a)\theta-C_C}{1-\delta}$. If she rejects, she will get $\frac{(1-a)\theta-C_C}{1-\delta_C}$ from international adjudication two periods later, or $\frac{\delta^2\left[(1-a)\theta-C_C\right]}{1-\delta}$ in present terms, which is strictly worse than $\frac{(1-a)\theta-C_C}{1-\delta}$ because $\delta \in (0, 1)$. Thus, Both C and D have no incentive to deviate. ∎

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