Who's Listening? Legalized Dispute Settlement, Information Transmission, and International Cooperation

Stephen Chaudoin

Princeton University

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Abstract

International dispute settlement mechanisms are thought to play an important role in facilitating international cooperation because disputes transmit information about member state behavior to domestic audiences. I develop a formal model with two key features: (1) the decision to initiate a dispute is endogenous as opposed to automatic and (2) the preferences and strength of domestic audiences are allowed to vary. Features of the domestic audiences who receive information from disputes affect the decision to violate an international agreement and the decision to initiate a dispute. The ability of institutions to affect member state behavior by transmitting information is tempered by features of the audience receiving that information. The model shows the difficulty in using dispute data to infer the effects of judicial institutions on member state behavior and describes practical ways to overcome this challenge empirically.

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A large and growing body of literature argues that international institutions, and legalized dispute settlement mechanisms in particular, play a crucial role in facilitating international cooperation, because these bodies transmit information about member state behavior to domestic audience. According to these arguments, when a member state violates their international agreement, dispute settlement institutions act as a fire alarm that alerts domestic audiences of the violation. Hearing this alarm, the audience punishes the offending government, and this threat of *ex post* punishment helps facilitate cooperation, *ex ante*. This dynamic is at the core of many broader theories of the effects of international institutions, such as those based on audience costs[1] or credible commitments,[2] and is particularly emphasized in theories of dispute settlement relating to important international institutions governing international trade.[3]

If international institutions play an important fire alarm role, then two puzzles arise. First, why is there such variation in whether or not the alarm sounds after violations? Consider the context of tariff barriers and the World Trade Organization's Dispute Settlement Mechanism. The vast majority of WTO-illegal trade barriers erected by WTO members do not result in the alarm sounding as a result of DSM litigation. The DSM is among the most vibrant and active international courts in existence. It has heard 427 cases as of January 2, 2011; yet few would doubt that hundreds, if not thousands, of explicit tariff barriers and hidden non-tariff barriers have escaped DSM scrutiny. Second, why is there such variation in the timing of the alarm? Returning again to international trade, plaintiffs often allow perceived illegal and harmful trade barriers to remain in place for months, or even years, before they sound the alarm with DSM litigation. Few, if any, international institutions act as fire alarms that alert domestic audiences to government misbehavior *immediately* after *all* violations of an agreement.

An important part of the answer comes from asking: who's listening to the alarm? The preferences and political strength of the groups hearing the institutional alarm are critical features of the fire-alarm dynamic. Often, the domestic audiences hearing the alarm are assumed to be monolithic and static. The audience is often assumed to be in favor of punishing their government for violations and this punishment is assumed to be of consequence to the government. However, audiences vary along both dimensions. Audiences can vary in their preferences. Domestic audiences often actively support non-compliant government policies

[1] Tomz (2007).
[2] Simmons (2000); Simmons and Danner (2010).
[3] Mansfield, Milner and Rosendorff (2000, 2002); Rosendorff (2005).

and they can vary in the intensity of their dislike of defections. Audiences also vary in their strength. Cross-nationally, not all governments care equally about potential audience punishment, which has driven much of the research on regime type and audiences costs. But even within a particular regime, government sensitivity to audience punishment can vary over time, e.g. with the electoral cycle.

How do the features of domestic audiences affect government behavior under international agreements that allow for dispute settlement? I develop a model in which a plaintiff country can strategically use dispute settlement to transmit information about violations of an agreement to domestic audiences in a defendant country. The model endogenizes the defendant's decision to violate an agreement, the plaintiff's decision to initiate a dispute over that violation, and the reaction of domestic audiences to the dispute. I allow audiences to vary in their preferences over the defendant government's policy and in their ability to influence that policy.

The preferences and strength of audiences affect the plaintiff's decision to initiate a dispute as well as the defendant's policy choices in the shadow of potential disputes. Under certain conditions, disputes are most valuable to the plaintiff country when domestic audiences in the defendant country are most "favorable:" i.e. the audience prefers similar changes to the defendant government's policies as the plaintiff desires *and* when the defendant government cares about those audiences. Defendant governments engage in less severe violations of the agreement when they must make policy in the shadow of disputes that could potentially activate such audiences.

The relationship between audience features and the probability of a dispute is not as straightforward. Such a relationship is important for empirically evaluating the effects of institutions on member state behavior, since data on disputes is often used to assess institutional impact. The effect of audience features on the probability of a dispute depends on the separation between the defendant government's pre- and post-dispute policymaking. If defendant governments make the decision to violate an agreement without anticipating future disputes, then more favorable audiences make disputes *more* likely. If defendant governments internalize the consequences of potential disputes, then more favorable audiences can make disputes *less* likely. In the context of certain barriers to trade, I argue that the first prediction is more likely.

The model also makes an important contribution to the broader theory of international institutions by showing the conditions under which an information transmission mechanism- such as legalized dispute

settlement- can increase the costliness of violating an agreement, and therefore help facilitate cooperation. Often, these types of audience costs are assumed to exist after a government signs an international agreement. Rather than assume the existence of such a dynamic, I show how the effect of information transmission mechanisms depends on the costliness of dispute settlement itself and the constellation of member state and audience preferences. The ability of institutions to transmit information, alone, is insufficient for those institutions to have a positive effect on member state behavior. Transmitting this information must be costly enough to send a credible signal but affordable enough for the signal to be sent. The preferences of the plaintiff government (the sender) must also be at least partially aligned with those of the audience (receiver).

The next section reviews the relevant theoretical literature on dispute settlement and information transmission. The third section describes the model and its results. The fourth section concludes.

Information Transmission and Dispute Settlement

The provision of information has long been identified as a key role performed by international organizations.[4] International institutions can act as mechanisms that alert others when a member state violates the terms of an agreement. Arguments about this role of international institutions come in many forms but share common themes. One member of an institution must decide whether to comply with their obligations or defect. A domestic audience, often domestic interest groups or individual voters, cares about that government's decision but cannot perfectly observe whether or not that government has chosen to comply. If a defection occurs, the institution alerts the uninformed audiences who can then punish the deviant government. The threat of audience punishment helps member states more credibly commit to cooperation.

These theories often differ in the audience under consideration. In some theories, the uninformed audience is a set of voters and punishment is electoral: voters hear the institution's alarm sound and they punish their elected officials by not returning them to office (e.g. Mansfield, Milner and Rosendorff (2002); Tomz (2007)). Punishment can come from market actors, as in Simmons (2000), where private investors change their investment strategies when governments violate their IMF obligations. When the audience is another member state, punishment comes in the form of retaliation, where the aggrieved member states punish the offending state (e.g. Maggi (1999)). In some theories, the defecting government has private information

[4](Keohane, 1984; Milgrom, North and Weingast, 1990)

about their costs of compliance and the institution can reveal these costs which helps members cooperate efficiently, by allowing defecting in high-cost situations and facilitating punishment for low-cost defections (e.g. Carrubba (2005); Rosendorff (2005)).

Legalized dispute settlement provisions of international institutions have been prominently linked to information transmission in a number of theories. In the context of the World Trade Organization and its Dispute Settlement Understanding, B. Peter Rosendorff argues that

> [Dispute settlement] serves a crucial information-providing role. It establishes the facts, adjudicates on a violation, estimates the damages, and reports a successful completion of the process. It is this informational role of the [DSU] that determines its effectiveness in the world trading system. (2005, pg. 391)

If dispute settlement is a crucial feature of many international institutions because of its informational role, then a fundamental question is when should disputes occur? The occurrence of a dispute is often modeled as automatic- the alarm sounds after any and all violations of an agreement.[5] Xinyuan Dai (2007) considers how interests groups with different, exogenously generated. monitoring abilities can influence the behavior of politicians. The interest group with the greater monitoring capacity, i.e. the group who can better discern the government's policies from "noise," has a greater influence on government policy. In Carrubba (2005), the occurrence of disputes is endogenous, but probabilistic. In instances of noncompliance, a dispute occurs with some probability determined by mixed strategies- governments mix over comply or not comply to keep litigants indifferent between litigate or not, and litigants mix over litigate and not litigate to keep governments indifferent.

Some notable exceptions do explicitly consider the decision to initiate a dispute. For example, Songying Fang (2010) and Michael Gilligan, Leslie Johns, and Peter Rosendorff (2010) develop models that focus on the effects of institutional "strength" on the occurrence of disputes. Two countries bilaterally negotiate over an issue and have the option of appealing to an international dispute settlement body for a ruling over that particular issue. Gilligan, Johns and Rosendorff (2010) emphasize how variation in the noncompliance costs imposed on a member state who disobeys the institution's ruling varies across-institutions and how

[5]The models of Maggi (1999), Mansfield, Milner and Rosendorff (2002), and Rosendorff (2005) share this feature. This is not a criticism of these models, since their goal is not to predict disputes, but rather to establish the effect of the informational role of institutions.

this affects disputes. Fang (2010) emphasizes how variation in these costs across countries affects disputes. Johns (Forthcoming) describes how disputes can transmit information and trigger punishment by third parties, such as domestic political actors. The costliness of initiating a dispute facilitates a screening mechanism whereby member states can use dispute settlement to coordinate enforcement of the institution's judicial decisions by "disinterested" third parties. In Carrubba (2009), the decision to dispute is endogenous, but based on a constant expected probability that governments are complying or defecting from an agreement.

However, there is a large amount of variation in dispute decisions *within* particular institutions, holding the noncompliance costs associated with a particular country or institution fixed. At the WTO, some illegal trade barriers that a country adopts may be challenged with a WTO dispute, while others may not. The vast majority of illegal trade barriers go unadressed by WTO litigation. There is significant variation in the timing of disputes. One barrier may be challenged quickly, while another may go unadressed for months or years before a dispute.

Existing arguments also often treat audiences that gain information from institutions or disputes as monolithic and constant supporters of international obligations. According to audience costs theories of cooperation, international commitments are more credible because if a member state defects from an agreement, they will suffer "the surge in disapproval that would occur if a leader made commitments and did not follow through" (Tomz, 2007, pg. 823). Yet these arguments often assume that the audience is always willing and able to punish their leader for breaking a commitment.[6]

Audiences can vary along (at least) two dimensions- their preferences over their government's policy and their ability to influence government decision-making. Empirically, there is significant variation along both dimensions. With regards to preferences, audiences do not always support policies that are consistent with their government's international obligations, and often support defections from agreements. In the case of trade and the WTO, domestic political audiences often support protectionist measures and oppose compliance with adverse WTO rulings. Support for free trade may wax or wane depending on macroeconomic conditions. Snyder and Borghard (2011)'s recent criticism of audience costs arguments in the context of crisis-bargaining questions the assumption that audiences care about policy consistency apart from their

[6]For two notable exceptions, see Rickard (2010) and Tomz and Van Houweling (N.d.). Rickard (2010) analyzes how different electoral systems amongst democracies and the preferences of their constituents affect compliance behavior. Tomz and Van Houweling (N.d.) analyzes survey responses to scenarios in which candidates switch positions, accounting for the respondent's policy preferences.

preferences over policy substance. Taking this argument further, variation in the audience's substantive policy preferences should affect their reaction to additional information about their government's policies.

Audiences also vary in their ability to inflict punishment on their government. Governments vary in the degree to which they care about the preferences of broad audiences relative to specialized interest groups.[7] Cross-national variation in the degree to which governments care about audience preferences has often been linked to regime type, with democracies thought to care more about audiences than non-democracies.[8] Government sensitivity to audience preferences also varies temporally. In the run-up to democratic elections, politicians are particularly attuned to the preferences of their constituents. Canes-Wrone and Shotts (2004) argue that variation in presidential approval ratings can affect the responsiveness of executives to public preferences.

The goal of the model below is to answer two questions. First, under what conditions can the information transmission dynamic described above arise endogenously? And second, when such a dynamic is present, how do audience features affect pre- and post-dispute behavior and the decision to initiate disputes? I analyze a model with two key features: (1) within a fixed institutional setting, the decision to transmit information to a domestic audience by initiating a legalized dispute, is endogenous and (2) the preferences and political strength of this audience vary. The model shows how dispute settlement and information transmission can affects member state behavior, but that these effects are constrained by the features of the audience receiving the information. I discuss the model in the context of trade policy, since much of the literature on dispute settlement focuses on this area, but the model is applicable to other contexts sharing the features described below.

To be sure, information transmission is not the only role of legalized dispute settlement. Christina Davis (2011) argues that governments can use disputes to reassure domestic groups that the government is committed to defending their interests. Chad Bown (2005) finds that trade barriers are more likely to be challenged at the WTO when the stakes of the case are higher, and when the defendant country does not have a similar retaliatory mechanism. Todd Allee and Paul Huth (2006) analyze when countries choose legalized dispute, rather than bilateral negotiation, as a way to settle territorial disputes. They argue that legalized dispute

[7] Gawande, Krishna and Olarreaga (2009).

[8] This is the main focus of audience costs arguments in the context of security and crisis bargaining. For important exceptions, see Slantchev (2006) and Weeks (2008).

settlement provides political cover for policymakers, and empirically, countries with stronger domestic opposition groups and more democratic dyads are more likely to pursue legalized dispute settlement. It is worth emphasizing that these arguments for why countries choose legalized dispute settlement are not mutually exclusive with the information transmission mechanism described here. No one theory completely explains all of the incentives and constraints facing governments contemplating legalized dispute settlement.

The Model

Two countries are trading partners and are members of an agreement that allows them to initiate costly disputes over tariff policies. There are the three players in the model: the government of the "Home" country, $Home$, the "Foreign" government, $Foreign$, and an $Audience$ within the home country. Each player cares about the tariffs, $t \in \Re$, that the home government levies against imports from the foreign country. The audience can be thought of as any group that lacks perfect information about the home government's tariff policies. For instance, "downstream" firms paying inflated prices for intermediate production materials may lack perfect information about the tariff policies responsible for those higher prices. Consumers are even more uninformed about these policies. These audiences can potentially engage in some costly action to try and influence the home government's policies. For instance, firms could pay the costs associated with mobilizing into an organized interest group, or consumers-as-constituents can punish elected officials, as in the familiar audience costs argument.

Each of the three players has preferences over the tariff set by the home government.[9] The foreign government prefers lower tariffs, and its preferences over tariffs are represented by the utility function: $u_F(t) = -t$. The audience has a most preferred tariff level, $t = A$, and its preferences over tariff policy are represented by the function: $u_A(t)$, which is maximized at $t = A$, concave, decreasing in t when $t > A$, and increasing in t when $t < A$.[10]

The home government's most preferred tariff policy, H, depends on its type. The home government can

[9] In some models, like that of Mansfield, Milner and Rosendorff (2000), preferences over tariff levels are generated by an underlying economy. Groups with different factor endowments or technologies have different preferences over tariffs as a result of the economy or market in which they will operate. For simplicity, I leave the microfoundations of these preferences unspecified, but their existence and the potential for preferences to diverge across groups is well established elsewhere.

[10] I describe a single audience as opposed to a collection of audiences for simplicity. The preferences of the audience could also be thought of as an aggregation of the preferences that arises in a common agency setting, like that of Bernheim and Whinston (1986) or Grossman and Helpman (1994).

be a "good" government from the perspective of the audience, and have preferences identical to those of the audience, where $H = A$. Alternatively, the home government can be a "bad" type whose most preferred policy is $t = B > A$.[11] The preferences of the home government are represented by $u_H(t)$ and have the same properties as the audience's utility function, apart from the point at which the function is maximized. The probability of a bad home government, $Pr(H = B)$, is $\lambda \in (0, 1)$ and is commonly known. The audience does not observe their government's type.

The sequence of the game is as follows. First, Nature selects the home government's type. Next, the home government chooses their initial tariff level, t_1. The foreign government observes the home government's type, their initial policy, and draws the costs to initiating a dispute, k, from a commonly known distribution, $F(k)$ that is continuous and differentiable, with associated density function, $f(k)$.[12] The foreign government then chooses whether or not to initiate a dispute, D or $\sim D$.

The audience observes the foreign government's decision over whether to initiate a dispute and then decides whether to pay costs, $m > 0$, and mobilize to influence the policy chosen by the home government. If the audience chooses not to mobilize, $\sim M$, then the initial policy chosen by the home government, t_1, is the final policy. If the audience chooses to mobilize, M, then the home government chooses a new policy, t_2, and must partially internalize the preferences of their audience. Specifically, the home government must choose their post-mobilization final policy by maximizing an α-weighted combination of their own preferences and those of the audience: $U_H(t_2) = \alpha u_A(t_2) + (1 - \alpha)u_H(t_2)$.[13]

The decision to mobilize can be thought of as a decision to gather precise information about the home government's policy, mobilize politically to lobby the government, or make political contributions that are conditioned on changes to policy. All of these are costly actions that can make the home government pay more attention to the preferences of that audience. $\alpha \in [0, 1]$ represents how much the home government cares about the audience, should the audience mobilize. For example, if $\alpha = 1$, mobilization causes the

[11] There are many ways that politics can drive a wedge between the preferences of the government and the preferences of a particular audience. Mansfield, Milner and Rosendorff (2002) use a fully specified economy to generate preferences over tariff policy. Grossman and Helpman (1994) model government preferences as an aggregation of concern for social welfare and special interest group contributions.

[12] Whether or not the foreign government observes the home government's type does not affect results. The foreign government only cares about the home government's type insofar as it affects the home government's policies.

[13] This assumption is a reduced form of an electoral or political constraint. In the common agency settings mentioned above, the equilibrium policy chosen more heavily "weights" the interests of mobilized groups. The assumption made here simply says that after mobilization, the government must assign more weight to that group's preferences.

home government to act as though it were a member of that group. If $\alpha = 0$, mobilization has no effect. The audience does not observe the initial policies chosen by the home government or the home government's type, but can potentially condition their mobilization decision on whether or not the foreign government initiates litigation.

Equilibrium Analysis

The tension that arises in the model is similar to the concept of agency slack. The audience is like a principal, who would like their agent, the home government, to choose policies in line with the principal's preferences. But the potential divergence in preferences between the principal and agent, combined with the principal's inability to observe the agent's actions, allows the agent to choose policies that stray from the desires of the principal. This model examines the conditions under which a third party, in this case- the foreign government- who has preferences that are partially aligned with those of the principal, can strategically use costly disputes as signalling mechanism that enhances the principal's control over their agent.

I first establish the conditions under which an "information transmission equilibrium" (ITE) exists. An ITE has the features that are associated with information transmission or audience costs or credible commitments in the literature. A government who signs agreement, and if they violate the agreement and an institutional alarm sounds or a dispute occurs, then that government suffers some additional costs or punishment. In this model, an ITE is one in which the foreign government's decision to initiate a dispute causes the home audience to mobilize with the goal of changing policy. Without the dispute, the audience does not mobilize. In other words, audiences condition their behavior on the signal sent by an institution or dispute.

Proposition 1. *There exists an information transmission equilibrium, such that,*

- *The audience chooses* $M|D$ *and* $\sim M| \sim D$
- *The foreign government chooses* L *if* $t_1 - t_2^* \leq k$
- *Good home governments choose* $t_1^* = A$ *and* $t_2^* = A$
- *Bad home governments choose* $t_1^* \in (A, B)$ *and* $t_2^* \in (A, t_1^*)$

– *The probability of D for a good government is $F(0)$*

– *The probability of D for a bad government is $F(t_1 - t_2^*)$*

if and only if:

(i) $Pr(H = B| \sim D)[u_A(t_{2b}^*) - u_A(t_{1b}^*)] \leq m \leq Pr(H = B|D)[u_A(t_{2b}^*) - u_A(t_{1b}^*)]$

(ii) $Pr(H = B|D) > Pr(H = B| \sim D) > 0$.

Proof. For the audience to choose $M|D$, $U_A(M)|D \geq U_A(\sim M)|D$. I call the optimal initial policies chosen by bad governments t_{1b}^* and t_{2b}^*.

$$Pr(H = A|D)u_A(A) + Pr(H = B|D)u_A(t_{2b}^*) - m \geq Pr(H = A|D)u_A(A) + Pr(H = B|D)u_A(t_{1b}^*)$$

$$m \leq Pr(H = B|D)[u_A(t_{2b}^*) - u_A(t_{1b}^*)]$$

$$\text{where } Pr(H = B|D) = \frac{\lambda F(t_{1b}^* - t_{2b}^*)}{\lambda F(t_{1b}^* - t_{2b}^*) + (1-\lambda)F(0)}.$$

For the audience to choose $\sim M| \sim D$, $U_A(\sim M)| \sim D \geq U_A(M)| \sim D$..

$Pr(H = A| \sim D)u_A(A) + Pr(H = B| \sim D)u_A(t_{1b}^*) \geq Pr(H = A| \sim D)u_A(A) + Pr(H = B| \sim D)u_A(t_{2b}^*) - m$

$m \geq Pr(H = B| \sim D)[u_A(t_{2b}^*) - u_A(t_{1b}^*)]$

where $Pr(H = B| \sim D) = \frac{\lambda[1-F(t_{1b}^* - t_{2b}^*)]}{\lambda[1-F(t_{1b}^* - t_{2b}^*)] + (1-\lambda)[1-F(0)]}$.

The remaining parts of the proof are developed in greater detail below. □

Condition (i) of Proposition 1 says that mobilization costs must be high enough to keep the audience from always mobilizing and low enough to allow them to mobilize when they observe a dispute. If mobilization costs were very low, then the audience would want to mobilize even in the absence of a dispute, causing the foreign government to always eschew disputes, since they don't gain any additional benefits from a dispute. If mobilization costs were very high, the audience would not want to mobilize, even after observing a dispute, again causing the foreign government to avoid disputes.

Condition (ii) is straightforward in terms of the intuition of signalling models, but counterintuitive in its implications for the role of litigation costs in international dispute settlement. Condition (ii) says that the audience's posterior belief about probability that their government is bad has to be higher after observing a

dispute than in the absence of a dispute. The signal, i.e. the dispute, that the audience receives has this effect because litigation is costly, and therefore informative, to the audience. If litigation costs were too low, then the audience would not gain enough information from the signal to justify spending mobilization costs. The optimal level of litigation costs, from the audience's perspective, is not zero. If the audience could pick the distribution of litigation costs, they would balance two concerns: on the one hand, they want the signal to be sent often, but on the other hand, they want the signal to be withheld frequently enough so that it retains its informative value.

The costliness of different dispute settlement institutions affects the degree of scrutiny that government policies received from disputes, and why some dispute settlement bodies have much higher profiles than others. In 1999, Chile increased tariffs on vegetable oils from Argentina which had a significant effect on Argentine vegetable oil exports to Chile. Argentina first tried to address the tariffs bilaterally, and then through MERCUSOR's dispute settlement system. Chile refused to adjust the tariffs, and even strengthened them. Argentina then took Chile to the WTO's dispute settlement mechanism in 2000. Describing Argentina's experience with regional dispute settlement, Tussie and Delich (2005) observe that "The [MERCUSOR] dispute system was out of the public eye and at the same time it was both fast and low-cost. Chile did not, meanwhile, modify its reclassification." In contrast, their description of Argentina's experience with the WTO's dispute settlement mechanism notes both the costliness and additional exposure gained from the WTO's mechanism relative to MERCUSOR's:

> Although accessible only to highly profitable sectors because participation is too costly and time consuming, the WTO provides the intangible benefit of exposure. Pressure through exposure can help countries unable or unwilling to retaliate to obtain more favourable results than in bilateral or regional instances.

The existence of an information transmission equilibrium also requires the partial alignment of preferences between the foreign government and the audience. For tariff policies that are greater than the audience's ideal point, the foreign government and the audience both prefer lower tariffs than the home government. But if the audience preferred higher tariffs than the government, then the information transmission dynamic breaks down. If the audience preferred higher tariffs than the government, and disputes caused those audiences to mobilize, then the foreign government would not want to ever initiate disputes for

fear of activating a protectionist audience. In such a case, the foreign government would only file disputes when they drew sufficiently negative litigation costs to offset the worsening of policy that resulted from the dispute. Snyder and Borghard (2011)'s recent critique of the theory of audience costs in the context of crisis bargaining notes how the omission of audience preferences in most theories of audience costs is important, because of the possibility that the public has *more* hawkish or dovish preferences than their political leaders, and that this divergence implies that audience costs need not always be present.

An example of dispute settlement inadvertently activating an extreme audience arose in a WTO dispute between Japan and the European Communities as complainants and Canada as the respondent. In 1965, Canada and the United States signed a bilateral agreement that lowered tariffs on trade in the auto industry between the United States and Canada. Approximately four years after the entry into force of the new WTO regime, in 1994, Japan and the European Communities challenged U.S. Canada auto agreement at the WTO's new dispute settlement body on the grounds that the pact violated the WTO's Most Favored Nation (MFN) rules against providing special treatment to only select trading partners. The auto pact with the United States was very popular in Canada and credited with generating significant economic growth, and was supported strongly by interest groups representing the auto sector. As a result, the audiences activated by the WTO dispute proved extremely hostile to changing this policy in the way desired by the complainants. According to one observer:

> Despite facing almost certain defeat, Canada vigorously defended and then appealed on the matter at the WTO. ... there was considerable public pressure on federal officials to take a strong stand not only in favour of the cherished Auto Pact but also against 'interference' by an international body on a matter of domestic public policy. Once the WTO claim was made public, the significant media attention and the corresponding 'court of public opinion' limited the government's ability to enter into a negotiated settlement. At that point, the government had virtually no choice but to defend the Auto Pact vigorously even in the face of certain defeat. (Krikorian (2005)).

Ironically, the end result of the WTO dispute was for Canada to *raise* its tariffs, applying them to more countries, in order to comply with MFN rules. The ability of dispute settlement to activate domestic

audiences is not always a force for increasing the amount of international cooperation associated with an international institution.

Audience Features and Equilibrium

The second set of questions motivating the model concerns how audience features affect government behavior. First, consider the effects of audience features on post-dispute policy. If disputes can trigger audience mobilization, then how would mobilization affect the home government's updated policy, t_2^*? After mobilization, the home government faces the following optimization problem:

$$max_{t_2} \ \alpha u_A(t_2) + (1-\alpha)u_H(t_2)$$

Proposition 2. *The optimal post-mobilization policy,* t_2^* *satisfies:* $\frac{\alpha}{1-\alpha} = \frac{u'_H(t_2^*)}{-u'_A(t_2^*)}$.

Proof. The proof follows from the first order conditions of the post-mobilization maximization problem, $\alpha u'_A(t_2^*) + (1-\alpha)u'_H(t_2^*) = 0$. □

Proposition 2 says that, the ratio of the audience and home government's marginal utilities matches the (inverse) ratio of their strength after mobilization. If the home government and audience's utility functions, u_H and u_A, were identical apart from their maximization points and were symmetrical, then the optimal policy would be an α-weighted combination of the two ideal points, $t_2^* = \alpha A + (1-\alpha)H$.[14] If the audience and the home government share the same ideal point, $A = H$, as in the case of a "good" government, then $t_2^* = A$.

Corollary 1. *In equilibrium:*
(i) $\frac{\partial t_2^*}{\partial A} > 0$*, (ii)* $\frac{\partial t_2^*}{\partial \alpha} < 0$*, and (iii)* $\frac{\partial t_2^*}{\partial B} > 0$*, for bad home governments.*

Corollary 1 and Figure 1 show how audience features affect the optimal post-mobilization policy. As the audience and the home government prefer higher tariffs, the home government will choose higher tariffs

[14]For instance, this would be the case if both the home government and audience held preferences represented by the familiar quadratic loss function.

after mobilization.[15] As the audience's strength increases, the optimal policy decreases. Stronger audiences "pull" the optimal policy downward, with greater weight, towards the ideal policy of the audience.[16]

Figure 2 shows how the effects of audience preferences on policy are conditioned by the audience's strength. For example, the effects of a change in audience preferences can be magnified by the audience's strength, when the audience is stronger. A marginal increase in the audience's ideal tariff will have a larger effect on the final policy when α is higher than when α is lower. On the other hand, when α is low, or zero, changes in audience preferences have dampened effects on the final policy, or no effect at all. From the above example of symmetric utility functions, where $t_2^* = \alpha A + (1-\alpha)H$, the derivative of t_2^* with respect to A is simply α.

These empirical findings of Dai (2007) are consistent with this conditional effect of audience preferences and strength. When pro-compliance interests groups compete with anti-compliance interest groups, the policy chosen by the government is more compliant as the electoral leverage and monitoring ability of the pro-compliance interest group increases. Analyzing the 1985 Sulfur Protocol of the LRTAP convention, she finds that countries with pro-compliance (pro sulfur-reduction) interest groups that were politically stronger and better able to monitor their governments enacted policies that resulted in greater reductions in sulfur emissions.

The foreign government chooses to initiate a dispute when the benefits outweigh the costs. The foreign government potentially benefits from a dispute if a dispute causes the audience to mobilize, and thus change the home government's policy from its initial tariff, t_1, to a new policy, t_2. In an information-transmission equilibrium, audiences mobilize only after disputes. The utility to the foreign government of initiating a dispute is $-t_2^* - k$, and the utility of not doing so is $-t_1$. Recall, for a good home government, $t_2^* = A$, and for a bad home government, $t_2^* > A$. In an information-transmission equilibrium, the foreign government initiates a dispute if and only if their costs are lower than their expected gains:

$$k \leq t_1 - t_2^*$$

For a good home government, therefore, the foreign government only initiates a dispute if it draws a

[15] From Proposition 2, for a fixed α, increasing A means that u'_A increases by the concavity of u_A, so u'_H must increase, which means a higher t_2^* by the concavity of u_H. The same argument applies for increases in H.

[16] Increasing α means $u'_H(t_2^*)$ must increase and $u'_A(t_2^*)$ must decrease, implying that t_2^* must increase.

negative litigation costs, i.e. it has some extraneous benefit to initiating a dispute, apart from the potential effects on home's policies.[17] Facing a bad home government, the benefit of a dispute comes from the effect that any subsequent audience mobilization will have on changing the initial tariff policy to a new, lower final policy. If the foreign government draws a litigation cost that is higher than the benefits from changing the home government's policy, then it will not initiate a dispute. The probability of a dispute for a particular initial policy, which I call $\Pi(t_1)$, is the probability that the foreign government draws a low enough litigation cost that it will choose to initiate a dispute.

$$\Pi(t_1) = Pr(k \leq t_1 - t_2^*) = F(t_1 - t_2^*)$$

For a particular initial policy, features of the audience have a straightforward effect on the probability of a dispute. As the audience prefers lower tariffs, the expected gains from mobilizing that audience with a dispute increase, which increases the probability of a dispute by expanding the range of litigation costs over which the foreign government's gains outweigh their costs. As the audience grows stronger, the benefits from a dispute also increase, increasing the probability that the foreign government will draw litigation costs low enough to justify a dispute.

Proposition 3. *For a fixed initial tariff, t_1, and, when $H > A$, the probability of a dispute, $\Pi(t_1)$, is: (i) decreasing in A, (ii) increasing in α, and (iii) decreasing in H.*

Proposition 3 shows how features of the audience affect the foreign government's cost-benefit calculations for a dispute. The ideal audience for the foreign government to mobilize with a dispute is one that prefers lower tariffs and which has more sway over their government's policies. Audiences that prefer higher tariffs do not make attractive allies for the foreign government. Similarly, impotent audiences are not worth paying litigation costs to activate. As the home government prefers higher tariffs, it will be more recalcitrant in the face of a mobilized audience, which makes disputes less attractive.

These results explain a puzzling contradiction in the empirical evidence on tariffs and legalized WTO disputes. Milner and Kubota (2005) argue that democracies have lower tariffs, and Mansfield, Milner and Rosendorff (2002) argue that democracies are more likely to sign trade agreements with each other. Yet, despite their

[17] For instance, Davis (2011) argues that some countries initiate WTO disputes as a way to placate domestic industries.

apparent penchant for lower tariffs, the three most frequent respondents (defendants) in WTO disputes, by far, are established democracies: the United States, the European Union, and Japan. Autocracies are very rarely defendants in WTO disputes. If democracies are so free-trade-loving and have lower tariffs, then why do they find themselves in court over illegal trade barriers so often? These results argue that countries who are more likely to respond to disputes with lower tariffs make themselves more attractive targets for disputes. If democracies are more likely to have constituencies that prefer lower tariffs and more sensitive to the preferences of these audiences in general, then it is not surprising that they are frequent defendants.

What is the home government's optimal initial policy? The home government's initial optimization problem and related first order condition are:

$$max_{t_1} \quad \Pi(t_1)u_H(t_2^*) + (1 - \Pi(t_1))u_H(t_1)$$

$$max_{t_1} \quad F(t_1 - t_2^*)u_H(t_2^*) + (1 - F(t_1 - t_2^*))u_H(t_1)$$

$$[1 - F(t_1^* - t_2^*)]u_H'(t_1^*) = f(t_1^* - t_2^*)[u_H(t_1^*) - u_H(t_2^*)]$$

For a good home government, their optimal policy choice is $t_1^* = A$. Good home governments can do no better by choosing a different initial policy. If the foreign government draws a negative litigation cost and initiates a dispute, then the good home government will still choose $t_2^* = A$. If the foreign government draws a higher litigation cost, they will not initiate a dispute and the audience will not mobilize, leaving the home government's ideal policy in place.

Bad governments face a more complicated tradeoff. They can raise the initial tariff towards their ideal tariff level, which will be better for them if they avoid a dispute. But at the same time, choosing a higher initial tariff increases the probability of a dispute by increasing the relative attractiveness of a dispute to the foreign government. The first order condition shows how, in equilibrium, the marginal gain from raising the initial tariff, i.e. the marginal utility of the tariff times the probability of avoiding a dispute, equals the marginal costs, i.e. the additional probability of a dispute times the home government's utility lost from having to update its policy in the face of audience mobilization.

How do audience features affect the home government's initial policy choice? This question is particularly important because we are concerned with the affect of dispute settlement mechanisms on the tariff

policies chosen both in the presence of disputes *and* when we do not observe disputes. If the presence of a dispute settlement causes governments to choose lower tariffs, even in the absence of disputes, then this supports the contention that dispute settlement mechanisms are an important component of how institutions affect member state behavior.

Proposition 4. *The home government's optimal initial policy, t_1^*, is: (i) increasing in A, (ii) decreasing in α, and (iii) increasing in H if $f(t_1^* = t_2^*)$ is "smooth enough" in the neighborhood of t_1^*.*

Proof. Observe that for bad governments, $t_1^* \in [t_2^*, B]$. The home government can do no better by choosing an initial policy higher than B: lowering the policy to B decreases the probability of a dispute and leaves them better off if they avoid a dispute. Similarly, the home government can do no better by choosing a policy lower than t_2^*: raising the policy to t_2^* lowers the probability of a dispute by decreasing the distance between t_1^* and t_2^* and leaves the home government better off if they avoid a dispute.

Now, consider $A < A'$. Suppose A and A' cause the home government to choose the optimal equilibrium initial polices t_1^* and $t_1^{*\prime}$, and that $t_1^{*\prime} < t_1^*$. I show this necessitates a contradiction. First, $A < A'$ implies $t_2^* < t_2^{*\prime}$ by Proposition 2. This yields the following ordering of the two policy pairs: $t_2^* < t_2^{*\prime} < t_1^{*\prime} < t_1^*$. Second, the first order conditions for t_1 and t_1' are:

$$f(t_1^* - t_2^*)[u_H(t_2^*) - u_H(t_1^*)] + [1 - F(t_1^* - t_2^*)]u_H'(t_1^*) = 0$$

$$f(t_1^{*\prime} - t_2^{\prime *})[u_H(t_2^{\prime *}) - u_H(t_1^{*\prime})] + [1 - F(t_1^{*\prime} - t_2^{\prime *})]u_H'(t_1^{*\prime}) = 0$$

Subtracting the first conditions from the second yields:

$$f(t_1^{*\prime} - t_2^{\prime *})[u_H(t_2^{\prime *}) - u_H(t_1^{*\prime})] - f(t_1^* - t_2^*)[u_H(t_2^*) - u_H(t_1^*)] +$$

$$[1 - F(t_1^{*\prime} - t_2^{\prime *})]u_H'(t_1^{*\prime}) - [1 - F(t_1^* - t_2^*)]u_H'(t_1^*) = 0$$

The terms in the second line, are positive. $u_H'(t_1^{*\prime}) > u_H'(t_1^*)$ by the concavity of u_H. From the above ordering of the two pairs of policies, $1 - F(t_1^* - t_2^*) < 1 - F(t_1^{*\prime} - t_2^{\prime *})$.

The terms in the first line are also positive, which yields a contradiction. From the policy ordering above and the fact that u_H is increasing in t over this range, $u_H(t_2^*) - u_H(t_1^*) < u_H(t_2^{\prime *}) - u_H(t_1^{*\prime}) < 0$. For the

distribution of litigation costs chosen, $f(t_1^{*\prime} - t_2^{\prime *}) = f(t_1^* - t_2^*)$. This also shows how this result is robust to distributions of litigation costs that are "smooth enough." The only way that the two first order conditions do not result in a contradiction is if $f(t_1^{*\prime} - t_2^{\prime *}) >> f(t_1^* - t_2^*)$.

This same proof suffices for the other two parts of Proposition 4, since they both rely on ensuring that orderings of policy pairs like the one above do not occur. □

Proposition 4 shows how audiences features can magnify or constrain the ability of dispute settlement mechanisms to affect member state behavior, *ex ante*. As the audience prefers lower tariff levels, the home government must make policy in the shadow of potentially more severe consequences from audience mobilization. The same is true for increasing or decreasing audience strength. Stronger potential audiences who prefer lower levels of tariffs make dispute settlement a stronger deterrent to higher initial tariffs for bad governments.

However, these results also show how the ability of dispute settlement to affect the home government's behavior is tempered by features of the audience. As the audience prefers higher tariff levels, the home government is less constrained by dispute settlement and chooses higher initial tariffs. Similarly, when facing weaker audiences, the specter of a dispute and potential audience mobilization is less frightening.[18]

The effect of audience features on the home government's initial policy choice complicates a description of how audience features affect the equilibrium probability of a dispute, $\Pi(t_1^*)$. The effects of audience features on the probability of a dispute for a fixed initial policy were straightforward and discussed above. The complication in analyzing $\Pi(t_1^*)$ arises because of anticipatory behavior in the home government's choice of initial policy. Consider a decrease in the audience's ideal tariff level. For a particular initial policy, this makes a dispute relatively more attractive to the foreign government, because they will mobilize a more agreeable audience. But the home government partially internalizes this possibility by choosing a lower

[18]The "smooth enough" condition describes the degree to which the home government is willing to take advantage of changes in their audience. If their audience becomes more favorable- the audience's preferred tariff level rises closer to the ideal tariff of the home government- then the home government is tempted to take advantage of this and raise their initial tariff. This change in audience preferences grants them more "agency slack." More protectionist audiences mean that the post-dispute policy that the home government would choose is closer to the home government's ideal tariff, should a dispute occur. In addition, for a fixed initial policy, this change in audience preferences makes a dispute less likely, from Proposition 3. However, if there is a large probability mass of litigation costs in the neighborhood of t_1^*, then raising the initial tariff could increase the probability of litigation so much that the movement becomes unattractive. In other words, the home government can become locally insensitive to audiences changes. Even when this condition is not met, the intuition of Proposition **??** still holds since a large enough change in audience features can overcome this "local desensitization" effect.

initial policy, which makes a dispute relative less attractive, because the *status quo* policy is less harsh on the foreign government. Which effect dominates depends on the shapes of the various utility functions and the distribution of litigation costs. There are not general conditions on these parts of the model that that guarantee the monotonicity of the effect of audience features on $\Pi(t_1^*)$.

This suggests that careful attention needs to be paid to linking the occurrence of disputes with compliance. An often-used dispute settlement mechanism may not be an effective one, if the frequency of its use is because of its failure to deter initial violations. A rarely-used dispute settlement mechanism may, in reality, be the most effective. Governments refrain from violating their agreements too severely because they fear the possibility of a dispute.

Empirically linking audience features to the probability of a dispute is most straightforward when the government's initial decision is distinct from its post-dispute compliance decision. This separation occurs if different political actors make the pre- and post-dispute decisions. For example, in the context of U.S. trade policy and WTO disputes, private firms petition bureaucratic agencies like the Department of Commerce and International Trade Commission for protection in the form of antidumping and countervailing duties. These duties have often been targeted as WTO-illegal in subsequent WTO disputes. Yet the handling of WTO disputes and any subsequent policy adjustments are handled by the Executive branch and the U.S. Trade Representative. The possibility of audience punishment does not affect the initial policy decisions of bureaucracies in the same way that it affects the executive's decisions.

The length of time between many violations and subsequent disputes further disconnects the initial policy decision from the post-dispute policy decision. For example, a policymaker may erect a trade barrier even if they fear possible audience repercussions because they know that any dispute is likely to come much later, if at all. The policymaker may discount the audience's preferences in their initial decision, but be responsive to the audience after a dispute. Audience features also change after the government has chosen its initial policy. If audience features change *after* the initial policy decision, then government's might make policy according to the preferences and strength of their current audience, or expected future audience. But if those audience features changed in the future, that could make disputes more or less likely.

In these types of situations, where there is separation between the pre- and post-dispute decisions, the equilibrium probability of a dispute inherits the features described in Proposition 4. More favorable audi-

ences make disputes more likely. With the initial violation already committed, foreign governments observe audience features and decide whether the audience is "ripe" for activation with a dispute. Empirically, this appears to be the case. Chaudoin (2010) shows how the timing of trade disputes against the United States is consistent with this theory. The United State's trade partners are more likely to initiate WTO disputes during low-unemployment election years. In other words, they litigate against the U.S. when the audience is more amenable to free trade (lower unemployment, better macroeconomic conditions) and when policymakers actually care about these broad constituencies (during elections).

Conclusion

The ability of dispute settlement to transmit information to domestic audiences is a potentially powerful role of these institutions. However, existing theories often treat disputes as automatic and the audiences receiving information from the disputes as monolithic. This paper showed how features of the audience hearing the dispute matter. The preferences and political strength of the audiences to the dispute affect the post-dispute policy chosen by the dispute target. As a result, these audience features affect the decision to initiate a dispute *and* and the ability of dispute settlement to constrain the target's behavior, *ex ante*. Audiences that prefer that their government cooperate and audiences that are most able to politically influence this decision are better able to induce governments to cooperate "in the shadow of a potential dispute." However, audience features can have the opposite effect. Audiences that weakly prefer cooperation or are politically insignificant constrain the ability of dispute settlement mechanisms to induce cooperation. Dispute settlement is neither irrelevant, nor a panacea, for the difficulties of international cooperation. Rather, dispute settlement can constrain member state behavior in some instances and fail to do so in others, depending on the features of the audience listening to the dispute.

Second, when treated as an endogenous decision, dispute settlement is like a third-party signalling mechanism that affects the relationship between a principal and an agent. A foreign government (the third party) can use disputes to strategically signal to a domestic audience (the principal) that their government (the agent) has stepped out of line. This dynamic "works" because the principal has divergent preferences from the agent, yet is unable to perfectly observe the agent's decision. Third-party signalling is costly, and if the preferences of the third party and the principal are at least partially aligned, these signals can enhance the

principal's ability to affect the agent's behavior.

In many theories of how international institutions affect member state behavior, the conclusion of this dynamic- that international agreements can generate audience costs or act as credible commitments- is often assumed, even though key parts of the dynamic may not be present. For instance, the information transmitting role of institutions would be most applicable to audiences that lack information about government policies and would not have an effect on well-informed audiences. In the context of trade and tariff policies, it is not hard to imagine audiences, like the broader public, being generally ignorant of these policies and benefitting from additional information about their government's behavior. On the other hand, in the context of international finance, it is unlikely that an institution like the IMF transmits information to audiences like multinational investment banks, since those audiences are already extremely well-informed. The information transmission role of institutions also relies on the alignment of foreign government and audience preferences relative to those of the home government. Audiences also often actively support governments who disobey international obligations. Dictators using repression against minority groups often receive the support of the majority group, regardless of whether or not that repression violates an international agreement. If audiences who gain information from the international institution actively oppose compliance with international obligations, then we should not assume that the institution constrains their government's behavior "just because."

Finally, the model provides ways to empirically test the theory of dispute settlement as an information transmission mechanism. Existing empirical work on the effects of international institutions on member state behavior has focused most heavily on establishing that institutions "matter." After empirically establishing the effect of institutions, many studies then hypothesize about the way that the institution brought about that change in behavior. As a result, these studies are often susceptible to the criticism that their findings are the result of the endogenous relationship between joining an international institution and a country's propensity to comply with their obligations (Downs, Rocke and Barsoom (1996)). This model generates predictions that are specific to the information transmission dynamic which, if supported empirically, would increase confidence in findings about the effect of institutions on member state behavior.

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Figures

Figure 1:

Effect of Audience Preferences on $t_2^*(A > A')$

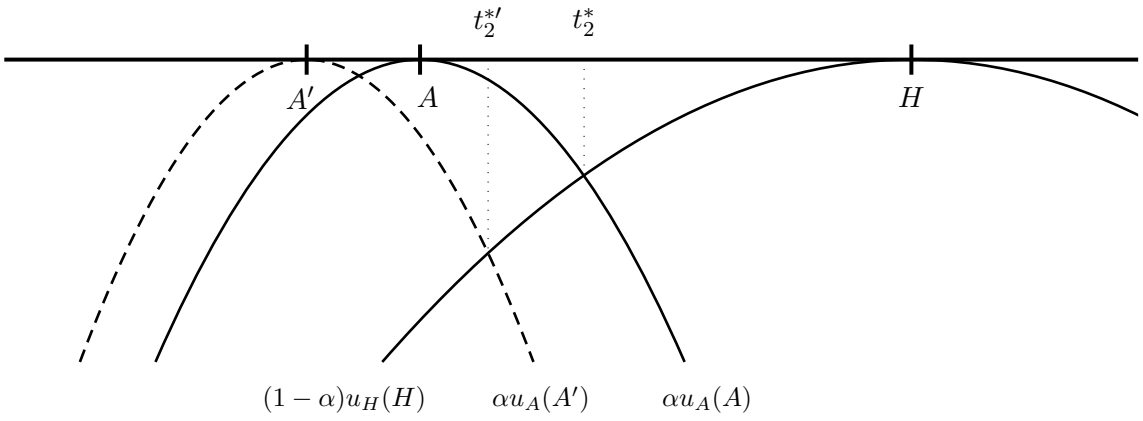

Figure 2:

Effect of Audience Strength on $t_2^*(\alpha < \alpha')$