Dispute Settlement as Rule Clarification or Enforcement? Evidence from the World Trade Organization*

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September 28, 2010

Abstract

The existing international relations literature is characterized by two perspectives on dispute settlement. One views dispute settlement as an enforcement instrument, the other as a complexity reducing and rule clarification device. We derive two empirical implications from these perspectives for dispute settlement in the World Trade Organization (WTO) to illuminate the driving forces of dispute escalation and conflict resolution. We test these implications on WTO disputes from 1995 to 2006, using a novel testing strategy that combines a three step coding of dispute escalation with a strategic bargaining model and statistical backwards induction to account for forward looking behavior of governments. The main implication of our results is that the second perspective, which views dispute settlement primarily as a complexity reducing and rule clarification device, is probably too optimistic, and that the WTO's ability to settle disputes is significantly circumscribed by domestic economic interests.

Introduction

The general trend in recent decades towards stronger legalization of international relations (e.g., Goldstein et al. 2000; Koremenos et al. 2001) has been associated with an increasing prevalence of dispute settlement mechanisms and other judicial procedures in international institutions. Important recent examples include the International Criminal Court, dispute settlement procedures in global environmental agreements and bilateral agreements on trade and investment, and the World Trade Organization's dispute settlement system (e.g., Posner & Yoo 2005; Guzman 2002; Smith 2000; Rosendorff & Milner 2001; Rosendorff 2005).

The political science and international relations literature on dispute settlement is characterized by two distinct perspectives on the role of dispute settlement in international politics. Both perspectives regard dispute settlement as an important instrument for promoting international cooperation, but they embody distinct views on how dispute settlement affects cooperation. That is, they postulate different causal mechanisms in terms of how international judicial bodies affect state behavior and thus ultimately also bilateral or multilateral cooperation and institutions. The aim of this paper is to assess the extent to which dispute settlement in the WTO works through these two mechanisms, and which of the two mechanisms is more important for dispute resolution and thus ultimately also international cooperation.

The first perspective assumes that many international cooperative efforts have the structure of mixed motive games (e.g., Downs et al. 1996; Barrett 2006). While countries are interested in the collective goods resulting from cooperation, they maintain incentives to shirk or cheat, particularly when implementing an international commitment that is costly and free riding is associated with large benefits. In this context, dispute settlement is considered part of the monitoring and enforcement process. It is a mechanism that protects cooperating countries from non-compliance by other countries and deters countries from cheating in the first place. Dispute settlement thus promotes cooperation by deterring, detecting and punishing violators (Downs et al. 1996; Mitchell 2006). In other words, dispute settlement focuses primarily on maintaining or restoring compliance with international commitments through a coercive mechanism.

The second perspective views dispute settlement procedures primarily as information and rule clarification devices. International institutions are highly complex systems of behavioral standards and regulations (e.g., Young 1994; Goldstein et al. 2000; Keohane 2002). International rules are sometimes ambiguous or so complicated that governments do not fully understand whether their current policies and practices are really in compliance

with those rules. In other words, this perspective views dispute settlement as part of a compliance management process under conditions of incomplete contracts (e.g., Chayes & Chayes 1993). The basic modus operandi of dispute settlement mechanisms, from this perspective, pertains to helping states implement their commitments by reducing complexity and providing information, rather than deterring, detecting and punishing violations of international rules.

In this paper, we make the theoretical and empirical implications of the two perspectives for the WTO dispute settlement mechanism (DSM) more explicit. By implication, we examine to what extent the two mechanisms assumed by these perspectives contribute to the resolution of international trade disputes. The principal, empirically observable implication of the first perspective is that more politicized disputes – those where the positions of the disputing countries are backed by powerful domestic interests – are more prone to escalation and, conversely, harder to solve. The principal empirical implication of the second perspective is that disputes over more complex issues are more likely to escalate, but only up to the level of the dispute settlement panel ruling, which presumably clarifies the legal situation and thus helps countries restore compliance and solve the problem.

Our results offer more support for the politicization hypothesis than the complexity hypothesis. More politicized disputes are more prone to escalation throughout all stages of the WTO dispute settlement process. Moreover, the risk of escalation increases from the first to the second stage of the dispute settlement process for highly politicized disputes. The same applies also to more complex disputes, for which we expected escalation primarily up to the panel ruling stage, but not beyond. The main implication of our results is that the second perspective, which views dispute settlement primarily as a rule clarification and compliance management device, is probably too optimistic, and that the WTO's ability to settle disputes is significantly circumscribed by the domestic economic interests at stake.

The analysis of WTO dispute settlement along these lines requires three types of innovations, relative to the existing literature. First, most of the literature on WTO dispute settlement uses a binary definition of dispute escalation – whether a dispute reaches the stage of a Panel ruling or not (e.g., Guzman & Simmons 2002). In contrast, the analysis of our arguments requires that we take into account what happens beyond the point of a Panel ruling. Hence we conceptualize dispute resolution as a three-step process. Our dependent variable measures whether a dispute is solved during the consultation phase, whether it escalates up to the level of a Panel or Appellate Body ruling, or whether it escalates even further into a dispute about compliance with the WTO verdict.

Second, measuring politicization and complexity of disputes requires a systematic classification of disputes according to these theoretical constructs. We characterize complexity in terms of the properties of trade barrier of the defendant that is disputed and the complexity of the dispute ruling. Politicization is characterized by the type and importance of the domestic sector subject to the dispute. Existing studies on dispute escalation in the WTO are chiefly interested in the implications of country characteristics, such as power, trade dependence, legal capacity, or democracy (e.g., Reinhardt 2001; Sattler & Bernauer Forthcoming). In some cases, they include some dispute characteristics, albeit mainly as control variables. Some studies also include a partial classification of disputes (e.g. as agricultural disputes), but not a consistent classification across all possible (relevant) types of disputes. Exceptions are studies by Francois et al. (2008) and Guzman & Simmons (2002).[1]

The third innovation in our paper is that we take into account forward-looking behavior of countries and design the empirical testing strategy accordingly. Forward looking behavior means that countries' choices at a given point in the dispute settlement process depend, among other things, also on their expectations about future choices of their opponent(s). For instance, if the WTO's dispute settlement mechanism (DSM) has the presumed complexity-reducing effect, countries should expect disputes over complex issues to end with the panel ruling; this, in turn, implicates that countries should be more willing to carry on disputes to the panel level because the risk of further escalation is rather small. We set up a strategic model that reflects the essential steps in WTO dispute settlement and then estimate the empirical model using statistical backward induction.

Bargaining Dynamics Across Dispute Types

Since 1995, the WTO offers to its member states a highly structured process for settling international trade disputes. The WTO's dispute settlement mechanism (DSM) becomes active when one or more WTO member countries believe that trade practices by other WTO members (e.g. tariffs, regulatory

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[1]Francois et al. (2008) include a full classification of sectors, but only look at dispute initiation (rather than escalation), and they focus on developing countries. Guzman & Simmons (2002) code disputes according to their all-or-nothing character. They argue that disputes of this type are more likely to escalate to the panel stage (escalation is coded as a two step process) because it is more difficult to arrange gradual concessions and transfer payments in such cases. This argument implies that, for example, disputes about tariff levels are easier to settle than disputes about environment, health and safety regulations.

import restrictions, export subsidies) violate existing trade rules. Whereas the dispute settlement procedure of the GATT system – the predecessor of the WTO until 1995 – left accused countries with many possibilities to delay or stall dispute settlement proceedings, the WTO's DSM provides for a multi-stage process with clearly defined time lines and virtually no possibilities for accused countries to block the process.[2]

The WTO's DSM is crucial for the functioning of the global trading system. In the WTO's own words: "Dispute settlement is the central pillar of the multilateral trading system, and the WTO's unique contribution to the stability of the global economy. Without a means of settling disputes, the rules-based system would be less effective because the rules could not be enforced. The WTO's procedure underscores the rule of law, and it makes the trading system more secure and predictable." However, according to international relations theory, the WTO's DSM can promote trade cooperation through different mechanisms. Viewed from a more political perspective, dispute settlement in the WTO is driven primarily by national interests and power politics. Viewed from a more legal perspective, the WTO's DSM is primarily a complexity reducing and information provision device that helps states implement their international commitments. In this section we elaborate on both perspectives to derive distinct empirical implications to be tested in the subsequent sections.

WTO Dispute Settlement as Interest Group Politics

Even a casual look at news media reporting on WTO trade disputes quickly reveals that some disputes are highly politicized in the sense that they attract a great deal of attention and are associated with extensive and controversial public debates in the countries involved. Examples include EU-US disputes over subsidies and other trade-relevant practices in the airline industry (no-

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[2]The parties to a dispute obtain a period of 60 days for consultations and mediation. If they fail to reach an agreement, the plaintiff can ask for the establishment of a dispute settlement panel. This panel must be set up within 45 days, and the panel, which consists of several international trade experts, has six month to issue its report. The DSB has to adopt the report within 60 days and can reject it only by consensus. This entire process takes up to one year, and approximately another 3-4 months if there is an appeal brought before the WTO's Appellate Body. After the adoption of the report, the defendant country is given a "reasonable" period of time to implement the panel's recommendations. If the defendant does not comply with the ruling, the complainant can ask the DSM to permit retaliatory measures, e.g. tariffs on imports from the defendant country. As of July 2010, more than 400 dispute settlement cases had entered the WTO system, and many of them have been resolved. See `http://www.wto.org/english/thewto_e/whatis_e/tif_e/disp1_e.htm`

tably Boeing and Airbus) and the steel sector. Strong political attention, in turn, limits the freedom of policy makers to strike bargains, and in particular bargains that are perceived as unfavorable by domestic producers, interest groups, or the domestic audience more generally. Other disputes are hardly noticed by the news media and the domestic public. Examples include a dispute between the US and Indonesia on "Measures Affecting the Production and Sale of Clove Cigarettes", or a dispute between Argentina and the EU over "Measures Affecting the Tariff Quota for Fresh or Chilled Garlic." In such cases, policy makers have more room of maneuver to negotiate with the opponent(s) in a dispute and make concessions.

The degree of politicization of a trade dispute affects governments' motivations and thus their willingness and ability to cooperate with trading partners. Defendant governments are more likely to resist demands from complainants in highly politicized disputes because domestic constituencies will punish them for backing down and exposing domestic industries to more economic competition if the disputed trade-restricting policy is weakened or removed. Similarly, to the extent a dispute is politicized the complainant government faces higher domestic political costs if it gives in and accepts that the defendant makes only some concessions or does not lift the disputed trade-inhibiting policy at all.

To identify ex ante – that is, independently of the dynamics of a trade dispute once it has been launched – how politicized a dispute is, the existing literature has focused primarily on political system and economic sector characteristics. The literature on international bargaining emphasizes that democratic governments face higher audience costs than autocratic governments if they back down during international negotiations (Fearon 1994a). Audience costs arise because domestic political support for the government decreases when the government appears weak in its interactions with other governments.

In addition, disputes concerning some economic sectors attract stronger political attention than disputes concerning other sectors. Davis & Shirato (2007), for instance, show that government decisions during trade conflicts are influenced by sector-specific factors. Whether a trade dispute in any given economic sector is more or less politicized than a trade dispute in another sector should be a function of the economic importance for the respective country (Francois et al. 2008). However, the extent of politicization can also depend on other factors, notably the respective sector's ability to organize politically, form alliances with other stakeholders, publicize the dispute, and lobby for or against trade-restricting policies or practices (Olson 1971). The EU-US dispute over genetically modified crops is one example. In that case, a heterogeneous but very large and well organized political coalition among

European farmers, consumer organizations, environmental groups, and left parties has emerged. Even though the importance of the issue in purely economic terms is quite modest, the highly politicized nature of the dispute has made it virtually impossible for the European Union and its member states to accommodate US requests to open Europe's market to GM-crops (Bernauer 2003; Bernauer & Meins 2003).

Under conditions of strong politicization, the role of a court-like international institution, such as the WTO's DSM, is twofold. First, a formal ruling by the WTO increases the political pressure on the defendant country, if the latter is found guilty, to remove the disputed trade restrictions. The main reason is that failure to comply with WTO rules despite a formal verdict adversely affects the defendant country's international reputation (Abbott & Snidal 1998; Moravcsik 2000; Simmons 2000). Such negative reputation effects, in turn, can have negative repercussions for the defendant country's ability to reach advantageous trade or other agreements in the future. These negative reputation effects, however, are most likely to be mitigated by domestic political pressure when a highly politicized sector is affected. Second, WTO (DSM) rulings legitimize the use of coercive means by the complainant if the defendant fails to make the requested concessions. The WTO itself does not have coercive means to threaten and/or punish countries that fail to comply with its rulings. If a defendant country that was found guilty fails to implement the verdict, it is largely in the hands of the complainant to impose economic pressure on the defendant. In that case, the complainant country needs sufficient retaliatory power to enforce the respective WTO ruling. Large and economically powerful countries obviously have better chances to induce a policy change by the defendant than small complainant countries with limited means to retaliate (Busch & Reinhardt 2000; Reinhardt 2001; Bown 2004*b,a*).

In explaining the risk of trade dispute escalation in terms of the extent of politicization, we also need to take into account that governments are forward-looking when initiating a WTO dispute. When governments decide whether or not to request the establishment of a dispute settlement panel, a major step towards dispute escalation in the WTO (see above), they are likely to pay considerable attention to the other country's expected behavior in subsequent phases of the process (Busch & Reinhardt 2000; Reinhardt 2001). We submit that the politicization of a dispute should become more relevant when the conflict escalates beyond the consultation phase of the WTO dispute process. The reason is that with every additional stage of the DSM process the dispute is likely to receive more attention from the domestic public. Once a WTO dispute settlement panel has been established and a ruling is issued, the case becomes more visible to a larger public and audience

costs become more important as well (Busch & Reinhardt 2000).

To summarize, dispute settlement in the WTO, as viewed from the first perspective, is driven primarily by national interests and power politics. In most cases, countries knowingly violate WTO rules to score political points domestically; hence their trade policies are influenced chiefly by powerful domestic interests. How easily disputes are settled in the WTO or, conversely, the risk that they escalate, then depends on how politicized disputes are. The causal mechanism here is that an international judicial body, in our case the WTO's DSM, imposes political pressure on governments to comply with international legal commitments. Countries that violate international law, as formally revealed by the judicial body, incur reputation costs that may negatively affect their ability to engage in beneficial cooperation with other countries in the future. Hence governments should only be willing to accept these reputation costs if pressured by important domestic actors. In addition, the judicial body's verdicts legitimize decentralized enforcement activity. The latter benefits particularly those countries with sufficient economic capabilities to credibly threaten and/or impose retaliatory measures on defendant countries that were found guilty by the WTO. The empirically observable implication, if this logic is in fact at work in the WTO, is that more politicized disputes – those where, in an ex ante observable way, the positions of the disputing countries are backed by powerful domestic interests – are more prone to escalation and, conversely, harder to solve. Hypothesis 1 reflects these arguments.

H1: WTO disputes over highly politicized trade issues are more likely to escalate than disputes over less politicized trade issues; moreover, the probability of escalation increases over the three stages of the dispute settlement process.

The WTO DSM as a Complexity Reducing Device

Another important characteristic of trade conflicts, besides politicization, is dispute complexity. Complexity pertains to the content of a dispute and reflects the varying degrees of uncertainty about the legitimacy of disputed trade restrictions. Some discriminating trade instruments and policies may be obviously inconsistent with WTO rules, but the WTO conformity of other trade-inhibiting measures may be difficult to assess. Disputes over tariffs or quotas, for example, mostly deal with non-complex issues because countries usually know relatively well whether or not a given tariff violates WTO rules. In contrast, disputes over environment, health and safety issues can be very complex in the sense that it is often unclear whether the underlying envi-

ronmental or health safety concerns are sufficient to justify a trade barrier according to WTO rules.

Similar to a high degree of politicization, a high level of complexity is likely to hamper the prospects of cooperation in an international system without central authority, albeit in different ways. In the context of WTO dispute settlement, more complex disputes can be viewed as situations of more incomplete information in which the parties to the dispute incur transactions costs, either because WTO rules are vague or ambiguous, and/or because the disputing parties hold different interpretation of which rules are applicable and how those rules should be interpreted (Coase 1960; Milgrom & Roberts 1992; Williamson 1985). Under such conditions, both the complainant and the defendant will find it difficult to establish whose interpretation of relevant WTO rules is "correct". By implication, both sides will also find it difficult to estimate the probability of winning the respective trade dispute.

Dispute complexity increases the likelihood that countries disagree with respect to what their specific rights and obligations under WTO law in fact are. Under conditions characterized by a high degree of uncertainty, it is not uncommon that governments have inconsistent expectations about winning a conflict (Jervis 1976). When one or both sides in a dispute are overly optimistic about being right, early dispute settlement is difficult to reach: the bargaining range, that is, the range of potential agreements that both parties should prefer to an escalation of the conflict, decreases or even disappears when the parties have conflicting and high expectations that they will win the case (Fearon 1995, esp. 391-392).[3]

As an illustration of variation in dispute complexity and its implications for dispute settlement, consider the dispute between the USA and Japan on measures restricting the import of apples (DS No. 245, a similar dispute has also occurred between Australia and New Zealand). This dispute, which may look rather trivial at first sight, is characterized by a relatively high degree of complexity. It concerns the rather complicated question of whether Japan's health and safety regulations for the importation of apples are in fact consistent with the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Agriculture. In this case, dispute settlement needs to clarify whether, from scientific, economic, and other viewpoints, Japan's policies and practices in this area are really necessary for reaching particular environment and health objectives – the principal concern in this case is the risk of transmission of

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[3]Fearon (1995) refers to uncertainty of winning a conflict arising from incomplete information about the opponent's strength. A similar logic applies to situations with other sources of uncertainty about the outcome of a conflict, such as uncertainty about the strength of a party's legal case.

the fire blight bacterium. It also needs to clarify how those objectives should be weighed against economic losses in the exporting country.

In comparison, the WTO dispute on cigarettes taxes, which was initiated by Chile against Peru in 2001 (DS No. 227), is arguably less complex. Peru's obligation to end its discriminatory policies were quite obvious to most trade specialists already long before the WTO panel ruling. In contrast to the apples dispute, there was virtually no legal uncertainty about whether the defendant country's trade restricting policies were compatible with the relevant WTO rules. The principal purpose of legal action by Chile against Peru was not to obtain clarification of how WTO rules should be interpreted in this case, but to increase the political pressure on Peru through a formal WTO verdict in order to obtain the desired concessions.

When WTO member countries face a dispute over a complex issue, the role of dispute settlement thus differs fundamentally from what the first perspective (see above) assumes. As illustrated by the US-Japan apples case, WTO dispute settlement serves primarily as a complexity reducing and rule clarification device (Stone et al. 2008). This second perspective subscribes to key assumptions of the legalization literature in International Relations. This literature views international courts as institutions that help countries reduce uncertainty and transaction costs and clarify legal obligations (Keohane 1984; Smith 2000; Stone Sweet & Brunell 1998). This view, in turn, is based on the more general argument that international institutions help in solving international cooperation problems by providing information, making rules explicit and pointing to deviations from officially recognized rules. WTO disputes, viewed from this perspective, escalate because international contracts are incomplete, there is considerable uncertainty over whether the disputed trade measure is legal, and both parties believe that they are likely to hold the correct interpretation of the law.

The main instruments for establishing an authoritative interpretation of applicable trade law under conditions of uncertainty is the WTO's Panel and Appellate Body (e.g., Reinhardt 2001, 180). If this second perspective on WTO dispute settlement is empirically valid, more complex disputes should be less likely to be settled already during the consultation phase and should be more likely to escalate to the Panel or Appellate Body stage. The reason is that uncertainty about whether the disputed trade measures are legal under WTO rules motivates both sides in the dispute to hold out, hoping to obtain a verdict that supports their respective position. However, trade disputes over complex issues should in most cases then be solved once the respective Panel, and (if an appeal is made) the Appellate Body have issued their verdicts. The reason is that the DSM has, at that point, reduced legal uncertainty through its verdict.

Again, anticipation is likely to play a significant role in governments' decisions on whether or not to escalate a WTO dispute to the panel level. According to legal research on the effects of courts, both sides in a conflict are likely to anticipate that the respective conflict may end once the court has reached a verdict. They are willing to take the risk of escalating the conflict up to the level of the court because both can benefit from reduced transaction costs and a lower level of uncertainty as a result of the adjudication process. This argument reflects the common assumption in legal research that court trials would not be needed in a world with zero transaction costs and full information. Absent transaction costs and uncertainty, the parties in a dispute should always come to a mutually agreed solution without going to court since adjudication always entails direct and indirect costs (Coase 1960; Williamson 1985).

The principal empirical implication of the second perspective on dispute settlement is that disputes over more complex issues are more likely to escalate, but only up to the level of the Panel or Appellate Body ruling, which presumably clarifies the legal situation and thus helps countries restore compliance and solve the problem. Hypothesis 2 reflects these arguments.

H2: Disputes over complex trade issues are more likely to escalate to the Panel or Appellate Body stage than disputes over less complex issues, but they are more likely to be resolved once the Panel or Appellate have issued their verdict.

To summarize, we expect a different escalation dynamic for complex than for politicized disputes. A Panel or Appellate Body verdict is unlikely to resolve the conflict if the dispute is a strongly politicized one. The reason is that such conflicts are usually not primarily about reducing complexity and clarifying obligations, but about satisfying powerful economic or political interests at the domestic level. These interests continue to exist throughout the dispute settlement process. In complex dispute cases, in contrast, the main value of the judicial process pertains to complexity reduction and legal clarification. In such cases, dispute escalation to the Panel or Appellate Body stage can be an important step towards dispute resolution. The following section develops a strategic model that reflects the key steps in WTO dispute settlement and the two hypotheses discussed in this section. The predictions of this strategic model are then tested through statistical backwards induction.

Empirical Design

The theoretical arguments presented above take into account the anticipatory behavior of states during the bargaining process between complainant and defendant that takes place in the WTO dispute settlement framework. The assumption of anticipatory behavior has important implications for the empirical analysis because, when actors are forward-looking, their choice at an early stage of the bargaining process depends on their expectations about future choices by the opponent. Failure to account for anticipation may lead to biased estimates of the probability that an actor takes a particular choice at the outset and during the bargaining process (Signorino 1999). We therefore develop a strategic model that reflects the essential steps in the WTO DSM. Based on this model, we can deduce the likelihood that the complainant and the defendant choose specific actions during the WTO dispute settlement process and thereby take into account anticipatory behavior. The empirical model is then estimated using statistical backwards induction (Bas et al. 2008).

Strategic Model

The game shown in Figure 1 represents the most important stages of the WTO DSM, starting with the consultation phase. If the complainant is not satisfied with the consultation outcome, he can request a Panel ruling (P) or not ($\sim$P). We define the WTO Panel and Appellate Body process in terms of one stage to simplify the analysis.[4] The dispute ends at the consultation stage if no Panel ruling is requested. After the Panel ruling, the defendant can accept the verdict (A) or not ($\sim$A). We assume that the game ends if the defendant implements the Panel verdict because there is no reason for the complainant to escalate the dispute further once he has reached his goal and the disputed trade barrier is removed. If the defendant refuses to accept and implement the panel verdict, the complainant can decide whether to back down (BD) or to escalate the conflict further; further escalation leads to an implementation dispute ($\sim$BD).

In our representation of the WTO's DSM, we do not consider the Panel as a third player, but treat the Panel ruling as exogenous. Moreover, we

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[4]The WTO's DSM includes more steps, but these are mostly procedural and of minor importance for our analysis. For instance, the parties can appeal against the Panel report, which leads to a review of the case by the Appellate Body and a report by the latter. To keep the model tractable, we do not include these detailed steps, but consider the final decisions on each stage as the relevant outcomes. At the Panel stage, this is a final report, whether this report is issued by a Panel or the Appellate Body.

Figure 1: The Dispute Bargaining Game
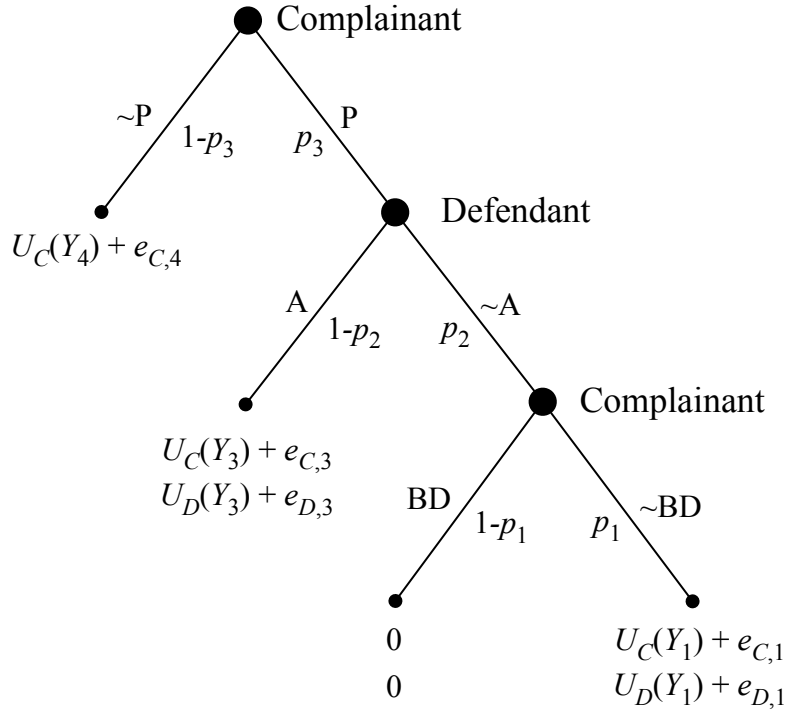
implicitly assume that, if the complainant requests a Panel ruling, the Panel typically will not fully reject the complainant's case. Although it is possible that the Panel rules in favor of the defendant, this is very rare; it has happened in only 10 out of 344 rulings (3%). This distribution makes sense because a complainant is unlikely to engage in a costly legal case if the chances of the defendant winning the case are high. Panel rulings that end with the acquittal of the defendant can thus be modeled as agent error on the side of the complainant.

Accounting explicitly for the Panel decision or even endogenizing the Panel ruling would make the model highly complex, with serious complications for the model estimation. Making the Panel ruling endogenous would in fact imply that the Panel behaves strategically and is therefore, in some way, politically motivated. For example, one could envisage the Panel taking into account power differences by ruling in favor of the more powerful country in the dispute. At the same time, however, it is also possible to

think of the Panel trying to support countries with lower legal capacity to counterbalance their potential disadvantage in the dispute process. Due to this theoretical ambiguity, and to keep the model as simple as possible, we decided to treat the Panel as a mere technical and therefore neutral body in the dispute settlement process.

The game then has four distinct outcomes. Y_1 is observed if the dispute escalates to the implementation dispute stage. Y_2 occurs if the defendant refuses to change its trade policy in line with the Panel verdict, but the complainant decides not to pursue the issue further. Outcome Y_3 is observed if a Panel issues a verdict, and the defendant accepts and implements the requested policy changes. Y_4 occurs if, after consultations with the defendant, the complainant does not request a Panel. $U_i(Y_j)$ is actor i's utility of outcome j, and $e_{i,j}$ is the error assigned to this utility. We normalize the utility of Y_2 and set it to zero for both players. The parameters p_1 through p_3 denote the probabilities that the respective move is realized.

We use quantal response equilibrium (QRE) to derive the outcome probabilities (Signorino 1999). It follows from Figure 1 which outcomes will occur in equilibrium.[5] The complainant will choose $\sim$BD if his utility of $\sim$BD is greater than the utility of BD, $U_C^\star(Y_1) > U_C^\star(Y_2)$ and vice versa, where $U_i^\star(Y_j) = U_i(Y_j) + e_{i,j}$. The defendant will opt for A if his utility of A is greater than the expected utility of $\sim$A, $U_D^\star(Y_3) > p_1 U_D^\star(Y_1)$. In the same vein, the complainant will not demand a Panel if his utility of $\sim$P is greater than the expected utility of P, $U_C^\star(Y_4) > (1 - p_2)U_C^\star(Y_3) + p_2 p_1 U_C^\star(Y_1)$.

Utilities, Variables and Data

To estimate the probability of an outcome, we need to assign empirically observable measures to the utilities of each outcome. Each of the utilities is a linear function of explanatory variables. Equations (1) through (5) define which variables are assigned to a particular utility. This structure follows from our theoretical considerations and is also largely consistent with previous formal analyses of conflict bargaining (e.g., Fearon 1994b).

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[5]Quantal response equilibrium is based on the assumption that a player may not entirely know his utility at a later decision node. This is plausible when the second move by the same player takes place far in the future (Bas et al. n.d.). This is generally the case in WTO dispute settlement because it often takes several years to move from the consultation stage to an implementation dispute. Moreover, the government can change within this period, which means that different actors take the decisions at different nodes. We leave the comparison of the QRE results with estimations based on Perfect Bayesian Equilibrium to future research.

$$U_C(Y_1) = \beta_{C,0} + \beta_{C,1}\text{DifGDP}_{CD} + \beta_{C,2}\text{DifExp}_{CD}$$

$$+ \sum_{k=1}^{3} \beta_{C,2+k}\,\text{SDum}_k + \beta_{C,6}\text{Demo}_C \tag{1}$$

$$U_D(Y_1) = \beta_{D,0} + \beta_{D,1}\text{DifGDP}_{CD} + \beta_{D,2}\text{DifExp}_{CD}$$

$$+ \beta_{D,3}\text{Market}_C \tag{2}$$

$$U_C(Y_3) = \sum_{k=1}^{5} \beta_{C,6+k}\,\text{IDum}_k + \beta_{C,12}\text{Page} \tag{3}$$

$$U_D(Y_3) = \sum_{k=1}^{3} \beta_{D,3+k}\,\text{SDum}_k + \beta_{D,7}\text{Demo}_D$$

$$+ \sum_{k=1}^{5} \beta_{D,7+k}\,\text{IDum}_k + \beta_{D,13}\text{Page} \tag{4}$$

$$U_C(Y_4) = \beta_{C,13}\text{Market}_D \tag{5}$$

It is important to keep in mind that due to the assumed anticipatory behavior of the two actors, those explanatory variables that appear in the utility function at a later stage will, indirectly, also appear in the utility functions at an earlier stage. For example, the three economic sector dummies that measure audience costs should influence the utility of the complainant at the last stage $U_C(Y_1)$ and thus his decision on whether to launch an implementation dispute. Due to the anticipatory behavior, the three sector dummies will also appear in his decision at the first stage, where the actor decides whether to ask for a Panel ruling. However, the variables do not explicitly appear in his utility function $U_C(Y_4)$, but indirectly through the backwards induction process. This means that the variables are multiplied by the likelihood of facing an implementation dispute ($p_2 * p_1$) as specified at the end of the last section.

Table 1 summarizes how the explanatory variables relate to the theoretical concepts in the conflict bargaining literature and our own theoretical discussion, and how they are measured.

The utilities of escalating the dispute to the implementation stage, i.e. the utilities of Y_1 as defined in equations (1) and (2), depend on the retaliatory power of the two countries. Countries with less power will gain less from

Table 1: Theoretical Concepts and Explanatory Variables

Level	Theoretical Concept	Variable	Measurement
Domestic Politics	Audience Costs	Demo_i	Polity IV score of country i
		SDum_k	Dummy for sector k
	Importance of Issue	Market_i	$\text{Log}[\text{GDP}(i)]$
International Politics	Retaliatory Power	DifGDP_{ij}	$\text{Log}[\text{GDP}(i)] - \text{Log}[\text{GDP}(j)]$
		DifExp_{ij}	$\text{Log}[\%\text{Exp}(ij)] - \text{Log}[\%\text{Exp}(ji)]$
Dispute Characteristics	Complexity	IDum_k	Dummy for Instrument k
		Page	Number Pages Panel Report

imposing countermeasures against the guilty country, and vice versa. Our measures for retaliatory power are the difference in economic size of the two countries (Sattler & Bernauer Forthcoming; Guzman & Simmons 2002) and relative export dependence of the two countries (Bown 2005b,a).

If the complainant does not follow through with the complaint even though the defendant resists implementation of the panel verdict, i.e. if Y_2 is the outcome, the complainant incurs an audience cost for backing down. Since the utilities of Y_2 are normalized to zero, the audience cost variables enter into equation (1). The audience cost is greater for highly politicized disputes as measured by the economic sector affected by the dispute and for democratic countries (Busch 2000; Sattler & Bernauer Forthcoming). We include three sector dummies into our model; the reference category is agriculture because we expect that this sector is the most politicized one. Equation (2) shows that the defendant simply obtains the utility for keeping the trade restrictions in place, which depends on market size (Guzman & Simmons 2005; Bown 2005b,a).

It follows from equation (4) that the defendant incurs the same audience cost if he accepts an unfavorable Panel verdict, i.e. if the outcome is Y_3. Equations (3) and (4) also show that for those disputes that are characterized by high complexity, the clarification of the disputed issue by a Panel increases the utility of both countries. We include five instrument dummies into our model; the reference category is tariffs and quotas because we assume that these instruments are the least complex. Finally, equation 5 implies that the complainant's utility of outcome Y_4 decreases the more important the destination market is for the country's economy.

The expected signs of the coefficients on the variables follow from the discussion above. A variable that has a negative effect on a country's utility from a specific outcome has a negative sign, and vice versa. These expectations generate the following implications for the probabilities of a particular move. As suggested by both theoretical arguments, the probability of a Panel ruling increases with greater politicization and complexity of the dispute. However, the probability that a dispute is settled after a Panel or Appellate Body ruling, i.e. the probability of observing outcome Y_3 (compliance after a ruling), differs depending on the two types of dispute characteristics. This probability should increase with greater complexity because both the probability that the defendant accepts the ruling, $1 - p_2$, and the probability that the complainant requests the establishment of a Panel, p_3, increase. The reason is that complexity positively affects both the complainant's and the defendant's utility of outcome Y_3. In contrast, highly politicized disputes are more likely to continue and escalate further after the Panel ruling. The probabilities that the defendant does not accept the ruling, p_2, and that the

complainant will not back down, p_1, increase because the audience costs of these two choices are high for both parties.

The data on trade disputes and their characteristics are collected from WTO documents. For each dispute, we obtained information on the defendant and complainants, and at which stage in the WTO DSM the dispute ended. Furthermore, we assigned to each dispute the corresponding economic sector and identified which trade policy instrument was used to protect this industry (e.g. tariffs or subsidies). The first disputes entered the WTO system in 1995. We included all disputes for which a request for consultations was filed until 2006. Table 2 shows the frequency distribution of the dependent variable at the three dispute stages (Y_1, Y_3 and Y_4). The table also lists, for each stage, how many disputes fall into the different instrument and sectoral categories. For example, the table shows that disputes concerning technical barriers to trade end more often in non-compliance with the Panel ruling (34 cases) than in compliance (14), whereas disputes concerning safeguards measures result more often in compliance (74 cases) than in non-compliance (2 cases). Similarly, disputes that involve the high-end manufacturing sector mostly result in compliance (34 cases), compared to non-compliance (11 cases), whereas disputes concerning the agricultural sector are more likely to end in non-compliance (52 cases) than in compliance with an adverse Panel ruling (29 cases). This last distribution already hints in the direction of hypothesis one: disputes that are more politicized (agricultural disputes) do indeed seem to be more likely to escalate throughout the WTO dispute settlement process than disputes that are less politicized (high-end manufacturing disputes).

Monadic and dyadic country-level trade data are from Barbieri et al. (2008).[6] Data on GDP are from the Penn World Tables database (Heston et al. 2009). All economic variables are log-transformed. To measure the democracy level, we use Polity IV data (Marshall et al. 2002). Table 3 presents the summary statistics.

Results

Empirical modeling of the three stages of the WTO dispute settlement process, and assuming forward-looking behavior of the actors, requires the use of

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[6]We use data from the IMF DOTS for Hong Kong, which is not included in Barbieri et al. (2008). Values for the EU are the sum of the values for the individual EU member states. For total exports and imports of the EU, we subtract intra-EU trade because, considering the EU as a single actor, we are interested in the EU's dependence on trade with non-EU countries. Data on intra-EU trade is from the IMF DOTS.

Table 2: Descriptive Statistics: Dispute Characteristics

		Last Stage		Second Stage		First Stage	
		Dispute	No Dispute	Compliance	No Compliance	Panel	No Panel
All disputes		37	80	144	117	265	226
Politicization	Simple Manufacturing	11	10	78	21	100	43
	High-end Manufacturing	4	7	34	11	45	35
	Multiple Sectors	5	26	3	31	34	48
	Agriculture	17	35	29	52	84	93
	Service	0	2	0	2	2	7
Complexity	Safeguards	0	2	74	2	76	17
	Multiple Instruments	9	22	33	31	64	23
	Subsidies	5	11	1	16	17	22
	Tech Barriers to Trade	6	28	14	34	48	69
	Anti-dumping	16	14	5	30	37	47
	Tariff/Quotas	1	3	17	4	23	48

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Table 3: Descriptive Statistics: Other Independent Variables

	Mean	Std. Dev.	Min	Max
DifGDP_{CD}	-0.50	2.44	-6.27	4.63
DifExp_{CD}	0.88	2.13	-3.64	7.89
Demo_{C}	8.78	2.89	-7	10
Demo_{D}	8.53	3.79	-7	10
Market_{C}	14.23	1.75	9.24	16.39
Market_{D}	14.73	1.70	9.14	16.39
Pages Report	487.98	341.71	47	1200

an adequate estimation strategy. To this end we employ empirical statistical backwards induction as proposed by Bas et al. (2008). This approach starts with the last decision node as shown in Figure 1, i.e. the decision of the complainant whether to escalate the case into an implementation dispute. In the second step, the defendant's decision whether to comply with the Panel ruling (second decision node) is examined. In modeling the decision of the defendant, we do not only include all factors that influence his direct utility from (not) complying with the ruling, but also take into account the factors that later on influence his utility from an implementation dispute. These latter factors are weighted by the probability that the complainant will actually choose to launch an implementation dispute, as estimated by the first regression model. Finally, we estimate the first stage of the model, which represents the complainant's decision to ask for a Panel ruling. Again, we do not only include the factors that should directly influence the complainant's utility from establishing a panel, but also all factors that influence his utilities at the later stages of the dispute settlement process. This approach accounts for the potential forward-looking behavior of the two actors at each stage of the dispute settlement process.

Table 4 shows the results of our strategic WTO dispute settlement model. The first column displays the results for the last stage, which represents the complainant's decision whether to launch an implementation dispute. The results for the defendant's decision to comply with an adverse Panel ruling are shown in the second column. The third column shows the estimates for the complainant's decision whether to request a Panel. Columns four to six display the results for a non-strategic model; in this model, the actors are assumed not to be forward looking and thus do not take into account the expected utilities of choices that implicate the game does not end, but that the dispute escalates to the next stage.

Table 4: Strategic Model of Dispute Resolution

Stage	Strategic Model			Nonstrategic Model		
	Last	Second	First	Last	Second	First
DifGDP$_{CD}$	0.090	1.277*	-0.961*	0.090	-0.210	0.127
	(0.173)	(0.660)	(0.509)	(0.173)	(0.283)	(0.115)
DifExp$_{CD}$	0.142	-2.121***	-0.323	0.142	-0.541**	-0.024
	(0.195)	(0.596)	(0.590)	(0.195)	(0.259)	(0.123)
Demo$_C$	-0.028		0.136	-0.028		0.018
	(0.097)		(0.313)	(0.097)		(0.034)
Country						
Demo$_D$		-0.100			-0.093	
		(0.093)			(0.063)	
Characteristics						
Market$_C$		-0.467			-0.196	
		(0.575)			(0.273)	
Market$_D$			-0.017			0.592***
			(0.027)			(0.107)
Simple Manu	0.870	1.342	1.306	0.870	2.685***	0.391
	(0.644)	(0.924)	(1.503)	(0.644)	(0.958)	(0.373)
High-end Manu	0.285	2.411***	-2.082	0.285	2.608***	0.098
	(0.800)	(0.645)	(2.755)	(0.800)	(0.804)	(0.398)
Politicization						
Multiple Sectors	-0.854	0.028	1.733	-0.854	-0.971	-0.504
	(0.913)	(0.758)	(4.393)	(0.913)	(1.019)	(0.520)
Safeguards		0.028	1.945***		0.301	1.539***
		(1.038)	(0.615)		(1.533)	(0.523)
Multiple Instruments		-2.763***	2.541**		-2.532**	1.533***
		(0.715)	(1.126)		(1.080)	(0.578)
Subsidies		-6.090***	6.334		-5.733***	0.329
		(0.940)	(6.808)		(1.503)	(0.558)
Complexity						
Tech. Barriers		-3.200***	0.358		-2.905***	0.134
		(0.633)	(0.701)		(0.942)	(0.443)
Anti-Dumping		-5.938***	1.612		-5.365***	0.067
		(0.960)	(2.570)		(1.290)	(0.435)
Pages Report		0.001			0.001	
		(0.001)			(0.001)	
Constant	-0.655	15.308*	-2.403	-0.655	5.055	-9.264***
	(0.992)	(8.815)	(3.481)	(0.992)	(4.059)	(1.640)
$Prob > F$	0.508	0.000	0.001	0.508	0.000	0.000
N	117	261	491	117	261	491

Standard errors in parentheses. Errors cluster on dispute

* $p<0.10$, ** $p<0.05$, *** $p<0.01$

Starting with the last stage of the strategic model, we find that none of the variables is significantly associated with the complainant's choice to launch an implementation dispute. This result seems puzzling at first glance because, according to concerns often raised in the literature on WTO dispute settlement, power variables should matter at the implementation stage. Even if they obtain a favorable Panel or Appellate Body verdict, the complainant countries still need to enforce this verdict as the WTO as an organization has no enforcement power of its own, but merely disciplines member countries in their enforcement activity. This means that differences in GDP or export dependence, reflecting the relative retaliatory power of countries in a dispute, should be important at the last decision node.

Analyzing the distribution of complainant and defendant countries at this stage of the WTO dispute settlement process helps in understanding why the power variables have no statistically significant effect. As shown in table 5, the United States or the European Union are the defendant country in more than 60 percent of the implementation disputes. This distribution implies that in the majority of the WTO dispute cases, our country-level explanatory variables take extreme values: both the EU and the USA are two actors with exceptionally large economic size and trading activity. Relative power as measured by the difference in GDP or export dependence is, therefore, very much one-sided in all dyads including one of the two countries as the defendant. The frequent appearance of the EU and the USA at the last stage of the DSB also means that these two countries often do not comply with panel rulings at the previous stage. Power thus matters earlier in the dispute settlement process when the two economically most powerful actors in the WTO ignore Panel rulings to a disproportionate degree.

The results for the defendant's decision whether to comply with an adverse Panel ruling (second stage regression in the second column) show that a systematic account of dispute characteristics is essential for understanding the dynamics of the dispute settlement process. Dispute characteristics are important factors in the defendant's decision on whether to comply with a Panel ruling. The results show that less politicized disputes, i.e. those that involve a higher-end manufacturing sector, are significantly more likely to result in compliance than disputes that involve the agricultural sector.[7] This result is consistent with Davis & Shirato (2007) who find that firms in sectors with high innovation capacity are less interested in lengthy WTO disputes.

Disputes involving simple manufacturing are also more likely to result

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[7]Agriculture is the excluded category. Therefore, the coefficients on the sector dummies indicate how the escalation probability differs relative to the agricultural sector (we expect the latter to be the most escalation-prone sector).

Table 5: Defendants and Complainants of Implementation Disputes

Country	Number Defendant	if Dispute	Number Complainant	if Dispute
USA	52	17	18	6
EU	37	6	16	4
Canada	6	5	11	5
Mexico	3	1	5	3
Argentina	2		4	2
Australia	2	2	7	
Brazil	2	1	12	2
Chile	2	1	2	
Japan	2	2	5	1
South Korea	2	1	6	2
Turkey	2		1	
Dominican Republic	1			
Egypt	1			
Ireland	1			
Thailand	1	1	9	1
United Kingdom	1			
India			6	2
Indonesia			3	1
Ecuador			2	1
Honduras			2	1
New Zealand			2	2
Guatemala			1	1
Malaysia			1	1
Norway			1	
Pakistan			1	1
Peru			1	
Poland			1	1
Total	117	37	117	37

in compliance than agricultural disputes, but the coefficient on this sector dummy is not statistically significant. Overall, these findings are consistent with the argument that disputes that are more politicized and thus generate higher audience costs – notably, agricultural disputes – are less likely to end after a Panel ruling than those disputes that generate fewer audience costs. However, we do not find support for the argument that audience costs resulting from democratic forms of government matter. One explanation for this insignificant effect is that the set of disputes that go through the WTO DSM involves primarily democratic countries. Hence the variation in audience costs that can be traced to democracy is very small.

Contrary to hypothesis H2, which reflects the complexity or rule clarification argument, disputes over more complex trade-inhibiting instruments are NOT more likely to end after a Panel ruling. The use of either subsidies, technical barriers to trade, anti-dumping, or multiple instruments (relative to tariffs or quotas) decreases the likelihood that the dispute ends after the Panel ruling.[8] This finding suggests that more complex disputes are not settled with a Panel ruling, but disagreement between the defendant and the complainant continues after the Panel has supposedly 'clarified' the case. However, it supports the argument by Busch & Reinhardt (2000) and Reinhardt (2001), who posit that a GATT/WTO Panel ruling does not reveal much information or reduce complexity and, therefore, has no or only a minor effect on compliance behavior. The authors suggest that a Panel ruling is only effective in the sense that it makes early settlement of trade disputes more likely.

Unlike for the last stage, both the difference in economic size (GDP) and the difference in trade dependence between the complainant and the defendant are significantly associated with the likelihood of the defendant complying with an adverse Panel ruling. If the defendant's GDP is smaller than the GDP of the complainant, the former is more likely to give in and comply with an adverse Panel ruling. This result suggests that the market power of the complainant is important for defendant's decision whether to further escalate the dispute. Similarly, if the complainant exports more to the defendant than vice versa, the defendant is less likely to comply with an adverse Panel ruling because he will suffer relatively less from retaliatory measures by the complainant.

The results from the first stage regression – the regression that analyzes the complainant's choice whether to request a Panel ruling – reinforce the

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[8]Tariffs and quotas is the excluded category. Therefore, the coefficients on the instrument dummies indicate how the escalation probability differs relative to the disputes on tariffs and quotas (which we expect to be the least complex types of disputes).

finding that dispute escalation mostly works through politicization (rather than complexity). Again, more complex disputes – in our definition, these are disputes about safeguard measures and disputes that involve multiple instruments – are more likely to escalate to the Panel stage than the less complex tariff and quota disputes. This result is in line with the second hypothesis, which holds that more complex disputes are more likely to result in a Panel ruling. However, the complexity argument expects that these disputes are then more likely to get settled with the Panel ruling, which is not the case. More politicized disputes – disputes involving the high-end manufacturing sector – are not significantly associated with escalation to the Panel stage. This finding is consistent with hypothesis one, which predicts that audience costs or politicization should become more important in the course of the dispute settlement process.

Again, the difference between the complainant's and defendant's economic size matters significantly. The larger the complainant's GDP relative to the GDP of the defendant the more likely the two parties are to settle their dispute without a Panel. This result means that in disputes in which the target market is rather small the complainant does not seem to be willing to incur the costs of going through the official WTO dispute process. Overall, we can conclude that power variables in fact continue to influence governments' strategic decisions, especially at the earlier stages of the dispute settlement procedure, when diversity in relative retaliatory power is fairly large. At the last stage of the DSM, the less powerful countries were already selected out of the sample because forward-looking governments anticipated the difficulties of having to face a more powerful country in an implementation dispute.

In summary, our findings are mostly in line with the predictions of the politicization argument. The politicization of a dispute becomes increasingly important as countries escalate a trade conflict to higher levels of the WTO dispute settlement process. Consequently, more politicized disputes are less likely to end with compliance since they create higher audience costs for the parties involved. Furthermore, we observe that, in line with the conflict bargaining literature (Fearon 1994*b*), more complex issues are more likely to escalate within the WTO dispute resolution process. The underlying mechanism is that more complex issues make it more difficult for the disputing parties to judge whether a given trade policy is compatible with existing WTO rules; this, in turn, can cause disputing parties to overestimate their chances of winning a dispute. Contrary to our argument, however, a Panel ruling does not appear to help in reducing complexity; in fact, more complex disputes are not more likely to end with the Panel ruling.

When comparing our findings to a non-strategic model, as shown in the last three columns of Table 4, we observe some differences. If we do not

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account for the strategic, forward-looking behavior of the actors, the power asymmetry variable (difference in GDP) turns insignificant in both the second and the first stage of the model. The difference in GDP is a measure that should capture whether the complainant has retaliatory power and whether the defendant's market is large enough to be worth the effort involved in going through the WTO dispute settlement process. We should thus expect that this variable only matters at early stages in the dispute settlement process if the actors are indeed forward-looking. This result underlines the importance of using a strategic regression model. However, the strategic model does not produce substantively different results for the dispute-type variables (the sector and instrument dummies). This finding is not consistent with the complexity argument, which postulates that the results should change when we take into account the strategic, forward-looking behavior of countries.

Figure 2: Predicted Difference in Dispute Escalation Probability – First Stage
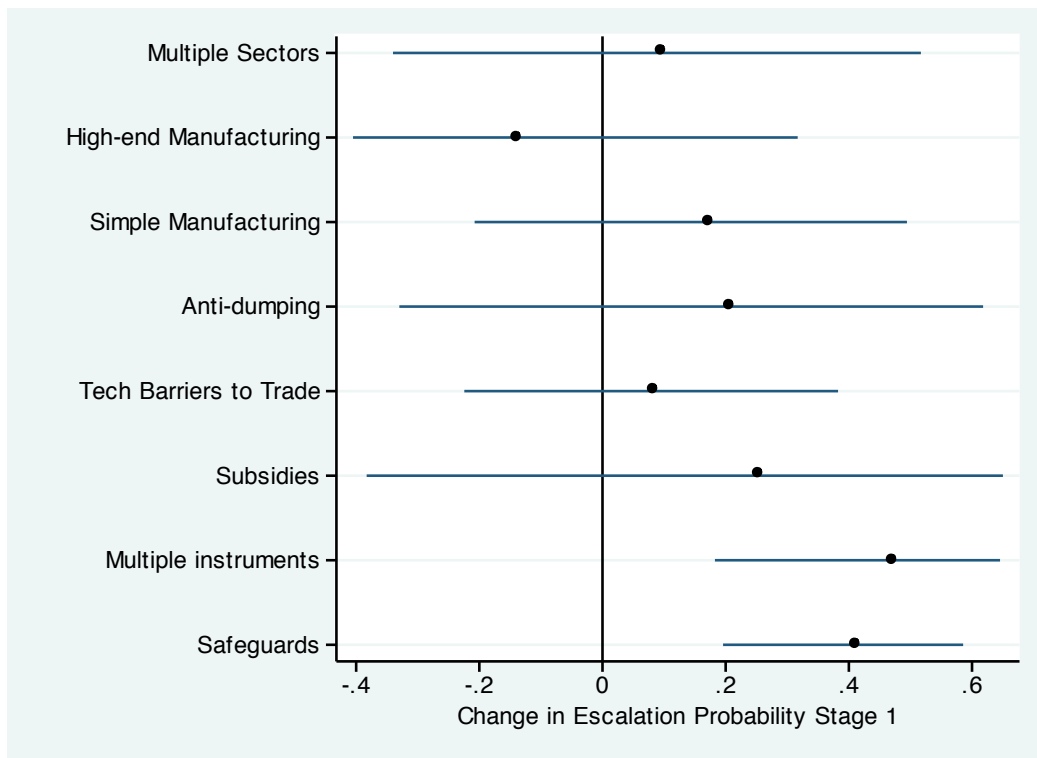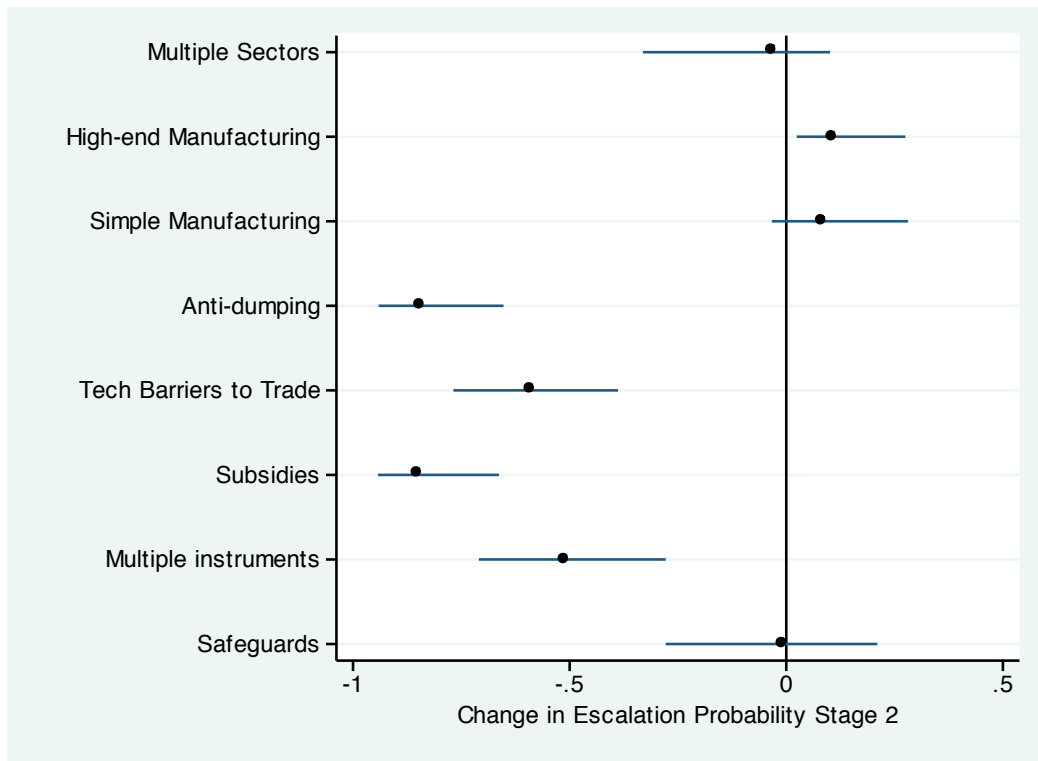

Figure 2 shows the substantive effects of dispute-type variation. It dis-

Figure 3: Predicted Difference in Dispute Escalation Probability – Second
Stage

plays the differences in the predicted probability of a Panel ruling for dif-
ferent types of disputes (first stage). Figure 3 shows the differences in the
predicted probability of observing compliance with an adverse Panel ruling
(second stage). The trade instrument and sector dummies change from zero
to one, while all other sector and trade instrument variables are set to zero
and all other variables are kept at their mean level. In Figure 2, the bullets
represent the point estimates of the difference in the predicted probabilities
of a Panel ruling (compliance with a Panel ruling in the second figure) rel-
ative to the respective reference category (agriculture in the case of sectors,
and tariff and quotas in the case of trade instruments). The horizontal lines
represent the 95% confidence intervals. If the horizontal lines cross the zero
line, the difference between the reference category and the particular variable
is not statistically significant.

The substantive effects of dispute characteristics are large. As Figure 2

shows, the probability of a Panel ruling increases by around 40 percentage points when the dispute concerns safeguards measures, compared to disputes over tariffs and quotas. The effects at the second stage are even larger for the trade instrument dummies (see Figure 3). For instance, the probability of compliance with an adverse Panel ruling decreases by 84 percentage points for disputes over anti-dumping measures, compared to disputes over tariffs and quotas. In contrast, the likelihood of compliance with an adverse Panel ruling increases by 11 percentage points for disputes involving the high-end manufacturing, compared to the agricultural sector.

Conclusion

Two perspectives on dispute settlement have left a strong imprint in theoretical and empirical work on international dispute settlement. One perspective regards dispute settlement as an enforcement instrument in settings characterized by incentives to violate international law, domestic interest group pressure, and international power politics. The other, less antagonistic perspective views dispute settlement as a complexity reducing and rule clarification device in settings where international contracts are incomplete and states require help in clarifying, coordinating, and implementing their international obligations.

We have derived two distinct empirical implications from these perspectives for dispute settlement in the World Trade Organization (WTO) and have tested these implications on WTO disputes from 1995 to 2006. We have used a novel empirical approach to that end. This approach combines a three step coding of dispute escalation with a strategic bargaining model and statistical backwards induction to account for forward looking behavior of governments. Our results offer more support for the first perspective than for the second. More politicized disputes, in which more powerful domestic interests are at stake and audience costs are higher, are more prone to escalation throughout the WTO dispute settlement process, and the risk of escalation increases along the key stages of this process. The same applies also to disputes over more complex trade-restricting policy instruments, for which we had expected escalation primarily up to the Panel ruling stage, but not beyond. The main implication of our results is that the second perspective, which views the dispute settlement process primarily as a complexity reducing and rule clarification device, is probably too optimistic. The WTO's ability to settle disputes is significantly constrained by domestic economic interests and power.

Future research should also examine the role of learning and signaling

in WTO dispute settlement. In our empirical model, governments do not learn, from actions that were previously taken during the conflict, about their opponents capabilities or resolve to escalate the conflict further. Empirical analysis based on Perfect Bayesian Equilibrium and its empirical extensions could yield more detailed insights into interactions of this kind (Lewis & Schultz 2003; Whang 2010; Bas et al. n.d.). Finally, it could be useful to consider the Panel as a separate actor that has private incentives and interests and behaves strategically, rather than a technocratic institution interpreting WTO law in an objective manner.

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