

The Effectiveness of WTO Dispute Settlement:

An Evaluation of Negotiation Versus Adjudication Strategies

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Abstract

In the context of overlapping bilateral, regional, and multilateral trade agreements, states face a wide array of options for market opening strategies. This paper examines why states choose to adjudicate some trade disputes in the WTO dispute settlement process while negotiating or ignoring others. It then compares outcomes given the choice among alternative strategies. I argue that governments use choice of negotiation forum to signal commitment to resolve a dispute. This choice provides information that contributes to settlement by reducing uncertainty about government resolve to defend or challenge a given trade barrier. The argument is tested with statistical analysis of an original dataset of potential trade disputes coded from U.S. government reports on foreign trade barriers. Evidence shows that U.S. selection of WTO disputes follows a political logic favoring industries that are highly mobilized in the United States and where there is strong support for protection by the foreign trade partner. Taking into account the factors that push politicized cases into WTO adjudication, the legal forum is shown to be effective to resolve trade conflict in terms of policy change and dispute duration.

Increasing levels of trade that accompany globalization generate both wealth and conflict as states confront each other with demands for market access and protection for sensitive industries. States established the World Trade Organization in order to manage this conflict through a common set of negotiated multilateral rules and a formal dispute settlement system. Although recent studies focus on the role of the WTO to liberalize bilateral trade flows (Rose, 2004; Gowa and Kim, 2005; Goldstein *et al.*, 2007), it is also important to evaluate the WTO as a conflict resolution mechanism. Theories of the GATT/WTO emphasize the role of dispute settlement to make multilateral liberalization sustainable (Kovenock and Thursby, 1992; Maggi, 1999; Rosendorff, 2005). An effective dispute mechanism can prevent trade wars and lay the foundation for liberalization commitments. This paper evaluates how well the WTO dispute mechanism achieves the goal to resolve trade disputes.

Problems of selection bias and endogeneity are an important challenge to the evaluation of institutional effectiveness (Martin and Simmons, 2001; Simmons, 2000). One must examine why states choose to use an institution in order to understand the effect of the institutional context on state behavior. I address this problem here by first conducting a systematic analysis of the decision to file a complaint for adjudication using an original trade barrier dataset. The selection model informs the analysis of effectiveness. In order to take into account the fact that adjudication cases are substantially different from the general population of trade barriers, I use matching methods to improve the validity of inference. I compare the progress to resolve the dispute for barriers raised in dispute settlement with the progress for barriers that were otherwise similar on key covariates but were negotiated without use of dispute settlement.

While a growing literature examines WTO adjudication, few compare adjudication with alternative strategies. Since its establishment in 1995, the dispute settlement system of the WTO has been used for litigation of over three hundred trade disputes. Research has focused largely on explaining outcomes for these cases (e.g. Busch, 2000; Reinhardt, 2001; Guzman and Simmons, 2002; Bown, 2004b). Positive assessments of WTO adjudication as an effective means of dispute settlement in its early years have since given way to more cautious evaluations as several prominent cases have dragged on with extended compliance problems (Butler and Hauser, 2000; Iida, 2004). The complaints filed for adjudication, however, represent a small fraction of the total number of policies in violation of WTO agreements. In trade policy, the parallel process of creating

regional trade associations, participating in the multilateral trade system, and concluding bilateral arrangements has resulted in overlapping jurisdictions (Davis, Forthcoming). Many trade issues could be addressed in any of these negotiation fora, as well as in bilateral negotiations outside of a formal institutional structure. What determines why one trade barrier is raised as a formal complaint for adjudication while others are negotiated in different venues or simply monitored without any action? Which strategy is more effective?

Drawing on the literature about endogenous protection (e.g. Magee *et al.*, 1989; Grossman and Helpman, 1994), I propose interest group pressure as a selection mechanism and conduct an empirical test. The central argument is that influential export industries *buy litigation* to address their market access problems similar to how influential import industries buy protection. I present evidence to show that domestic political interests play a substantial role in the selection of issues for WTO adjudication. Statistical analysis of foreign trade barriers harmful to U.S. exports shows that WTO cases are more likely for those barriers which affect industries making large political contributions. Indicators measuring resistance by the trade partner to liberalization also increase the likelihood that the United States files a WTO complaint. As a result, the WTO dispute system confronts difficult cooperation problems where there are influential domestic interests at stake. On the one hand, this is a classic story of pressure group politics. On the other hand, adjudication helps to maintain support for free trade by relieving private pressure that might otherwise push governments into trade wars.

My argument shows adjudication as a solution to a government credibility problem to convince domestic export industries that it will be a tough negotiator to enforce trade agreements and defend market access. Interest groups offer political contributions in the expectation of influencing policy outcomes. When states negotiate with a foreign government for market access, however, politicians face a credibility problem in their commitment to deliver a policy outcome. Domestic export industries and their representatives in the legislature suspect the executive will be too dovish in negotiations with foreign trade partners and/or the foreign government will not comply. Uncertainty about whether the government can deliver market access reduces the incentives for export industries to offer political contributions. This credibility problem may lead a government to file a WTO dispute as a costly signal of their commitment to the domestic interest group. As a result governments select cases for WTO adjudication according to political influence rather

than just economic and legal criterion. At the same time, interest group pressure by the import industry of the respondent state influences forum choice by encouraging resistance to settlement. Here too adjudication functions as a signal of commitment to the industry. In sum, interest group pressure on both sides of a trade dispute pushes politicized trade topics into dispute adjudication. This selection mechanism reveals information about preferences that improves the ability of both sides to settle the dispute.

My argument about forum choice directly counters a central critique of theories about international institutions, which contends that the selection of easy issues for cooperation in institutions biases findings (Mearsheimer, 1994/5; Downs *et al.*, 1996). International adjudication faces the challenge of uncertain enforcement, which could give rise to a scenario in which WTO dispute settlement would only appear effective because states don't file cases where the stakes are high or compliance is unlikely. On the contrary, we observe that WTO dispute settlement confronts a docket including many of the most difficult trade disputes. Government subsidies for aircraft development and agriculture production, regulations on food safety, and safeguards to limit textile and steel imports are all some of the issues with high economic and political stakes that have been addressed in WTO dispute settlement. My argument about interest group pressure accounts for the selection process that filters hard cases into the adjudication forum. Therefore we can have confidence that the evidence WTO dispute settlement represents an effective forum for conflict resolution is not biased by selection of favorable cases.

I test the argument in the context of U.S. trade policy. The United States has pursued free trade through a domestic bargain that exchanges a commitment to open U.S. markets for the promise of access to foreign markets (Gilligan, 1997; Bailey *et al.*, 1997). Most scholarly attention examines the first side of this bargain to explain the degree to which the U.S. has opened or protected its domestic market (e.g. Baldwin, 1985; O'Halloran, 1994; Busch and Reinhardt, 1999; Hiscox, 2002). This paper instead turns to the question of how the United States has pursued market access. The role of export industries is important because they are a key actor to mobilize against protection (Destler and Odell, 1987; Milner, 1988; Davis, 2003). At the same time, U.S. exporters have also become a source of protection as they support efforts to promote exports by means of retaliatory threats to close the home market (e.g. Milner and Yoffie, 1989; Bhagwati and Patrick, 1990; Bayard and Elliott, 1994; Noland, 1997; Gawande and Hansen, 1999). Yet

the WTO rules have restricted the aggressive unilateralism that characterized U.S. efforts to gain market access in the 1980s. States now possess an expanded array of trade strategy options including a strengthened multilateral adjudication system as well as the proliferation of bilateral trade agreements. Therefore it is necessary to take a new look at how the United States manages the range of options in its pursuit of free and “fair” trade. If even the most powerful state achieves better outcomes through adjudication than negotiation, one would expect adjudication to be critical for other states who have less leverage in negotiations.

In this paper I will discuss in section 1 the selection dynamic that governments face when addressing potential trade disputes. I present a selection hypothesis that interest group pressure encourages filing complaints for adjudication and an effectiveness hypothesis that adjudication will bring progress to end disputes. In section 2 I discuss the dataset and main variables. Section 3 tests the selection hypothesis on an original dataset of U.S. complaints about market access barriers by leading trade partners. Section 4 compares the effectiveness of adjudication with alternative negotiation strategies through analysis of which strategy brings more progress towards removal of trade barriers and shortens the duration of the dispute. Section 5 offers concluding remarks.

1 Forum Choice in Trade Policy

Institutional Selection

The long negotiations that establish an institution prevent frequent renegotiation. Transaction costs, concern about creating conflict with existing institutions, and the status quo inertia all favor using or modifying existing institutions rather than creating new ones for every problem (Aggarwal, 1998). As Jupille and Snidal (2005, 16) argue, states face a problem of *institutional selection* that calls for “choice of one institution from a fixed but plural menu of extant alternatives.”

Trade is one of the most densely institutionalized areas of international relations. The multi-lateral framework of the WTO itself has several venues for negotiations including trade rounds, ongoing committees, and the dispute settlement process for adjudication. In addition, the past decade has brought a dramatic increase in the number of formal bilateral and regional preferential trade agreements. Trade issues are also addressed informally in bilateral talks or as part of discussions at summit meetings or at the OECD.

In many trade disputes, a complaint about a particular trade barrier could be raised in multiple possible negotiation fora. Indeed, many issues are raised in multiple fora simultaneously or sequentially. An overview of several important U.S.-Japan trade negotiations illustrates this point. U.S. complaints about Japan's quantitative restrictions on agricultural imports were addressed in the Tokyo Round, bilateral talks in the early 1980s, a GATT dispute panel in 1987, and in the Uruguay Round. Japan's restrictions on forestry products were addressed in comprehensive U.S.-Japan bilateral negotiations, which produced the Market-Oriented Sector-Selective (MOSS) trade agreement in 1986, the Uruguay Round, and later arose as a central issue in the APEC talks on Early Voluntary Sectoral Liberalization during the 1998 Kuala Lumpur Ministerial meeting. U.S. concerns about lack of access for U.S. semiconductors in the Japanese market were addressed through bilateral agreements in the 1980s and 1990s, and some issues were also addressed in the WTO Information Technology Agreement.

The context of multiple negotiation venues gives rise to the selection problem for analysis of WTO effectiveness as a dispute resolution mechanism. The existing literature has taken different approaches to the problem. Much research on WTO adjudication has restricted analysis to the sample of adjudication cases in order to examine the types of cases that are filed and their outcomes (Reinhardt, 2000; Bown, 2004b; Busch and Reinhardt, 2002; Guzman and Simmons, 2005). A few studies examine why some trade issues are taken before formal WTO adjudication (e.g. Horn *et al.*, 1999; Reinhardt, 2000; Bown, 2005; Busch and Reinhardt, 2002; Allee, 2003; Davis and Shirato, 2007), but more research is needed that compares alternative strategies. While there is a large literature on the relative welfare effects of bilateral versus multilateral liberalization, little attention has been given to why countries choose one approach over another for dispute settlement. As Pekkanen *et al.* (2007) point out in a study about the shift toward bilateral and regional free trade agreements, states may prefer one venue because institutional features allow them to maximize their flexibility to address domestic political constraints. Busch (2007) highlights how concern about setting a multilateral precedent determines whether a state favors multilateral or bilateral dispute settlement. The factors that influence whether states choose one forum or another need to be examined with explicit comparison of available options. Typically trade officials are not making a decision of whether to adjudicate or do nothing, but rather whether to file a legal complaint and/or raise the issue in a different venue. WTO procedures explicitly

encourage bilateral settlement and/or resolution through discussion of trade problems in WTO committees or other venues, so there is no legal obligation to forward all potential legal disputes to the formal dispute process. Thus it is entirely consistent with the institutional framework for an issue to be raised in several other fora before it reaches adjudication.¹

While it is not uncommon for an issue to be addressed in multiple fora, few are addressed in all possible fora – some selection is made. Trade authorities have limited resources to engage in negotiations on all fronts for all issues. A kind of triage is necessary to direct specific trade disputes to the most appropriate negotiation forum. The next section proposes selection principles, one based on political influence and the others based on the nature of the issue.

Interest Group Pressure and WTO Adjudication

Political lobbying has long been a prominent force to shape trade policy and is equally important to the study of disputes. The trade barriers that give rise to a dispute occur as the consequence of lobbying by import competing groups, while the pressure to challenge these barriers comes from export industries that are harmed by the trade barrier. Schattschneider (1935) uses the infamous Smoot-Hawley Act of 1930 to show how the deals made to accommodate narrow interests can produce protectionist policies harmful to the general interest. These insights are central to theories of endogenous policy formation in economics and political science (e.g. Magee *et al.*, 1989; Gourevitch, 1986). In their seminal work on the politics of interest group lobbying for trade policy, Grossman and Helpman (1994, 1995, 2002) model politicians as choosing trade policies to maximize their interest in political contributions from special interests and votes gained through serving aggregate welfare. Industries offer a contribution schedule in order to influence policy outcomes, *buying protection*. Government policy choices are a function of the weight given to aggregate welfare relative to contributions, the organization level of the demanding industry, and the degree to which economic constraints force a trade-off given the particular demands from industry.²

¹One well known example is the EU policy on bananas, which had been the subject of the Uruguay Round and bilateral consultations before the United States along with Latin American countries filed WTO complaints. See Alter and Meunier (2006).

²Goldberg and Maggi (1999); Gawande and Bandyopadhyay (2000) conduct empirical tests that provide support for the main parameters of the model.

Not only do interest group politics by import-competing industries explain protection policies, but mobilization by export industries contributes to pressure for liberalization (Milner, 1988; Destler and Odell, 1987). Indeed, the wide movement to liberalize policies since 1945 suggests the strength of the latter.³ Export industries face collective action problems to the extent that free trade is a public good and new entrants will erode their gains from market access. Reciprocal trade agreements have been the key to overcome this problem to mobilize exporters for liberalization (Gilligan, 1997). In the context of implementation of these agreements, industry associations developed for broader policy lobbying reduce fixed mobilization costs while imperfect competition and/or narrowly discriminatory trade barriers can also generate strong incentives for lobbying. Export industries generate enforcement pressure with demands for reciprocity and threats of retaliation (Milner and Yoffie, 1989; Bayard and Elliott, 1994). Private lobbying is also observed in the highly technical area of WTO adjudication (Shaffer, 2003). Interest groups help to identify specific trade problems, urge governmental action, and use their resources to support the negotiation strategy.⁴ The lobbying provides information to legislative representatives who then act on behalf of these constituent interests (Milner, 1997).

In their response to lobbying pressure by export industries, governments face a credibility problem to demonstrate their effort to deliver improved market access. Whereas protection policies for import industries are unilaterally granted by the government as tariffs or subsidies that can be easily monitored in the domestic context, the promise to increase market access for export industries requires government intervention by means of negotiations with foreign governments. More direct export promotion policies in the form of export subsidies were foregone as a result of earlier decisions to ban them in the GATT rules. Use of export subsidies is notably absent as a major policy tool (Rodrik, 1995; Deardorff and Stern, 1998).⁵ Rather, increase of market access

³Other important factors include ideas and democratic institutions (Goldstein, 1993; Lohmann and O'Halloran, 1994; Verdier, 1994).

⁴USTR officials instruct companies seeking help from the USTR to resolve trade disputes with foreign countries that companies are expected to commit resources by providing a detailed rationale for their complaint, hiring lawyers and economists to conduct relevant analyses, and lobbying of agencies and politicians (*Inside U.S. Trade*, 3 February 2006).

⁵There have been occasional disputes over indirect export subsidies, such as the foreign sales corporation tax case raised before the WTO adjudication. The GATT and now WTO have also made explicit exceptions to allow export subsidies for agricultural products, although the Uruguay Round Agriculture Agreement set constraints on

through the reduction of foreign trade barriers is a frequent policy demand of export industries. Outcomes depend upon the interaction between the two governments in trade negotiations conducted at the diplomatic level. This raises two sources of uncertainty for the industry that has lobbied its government to improve market access. First, it cannot distinguish whether a poor outcome results from inadequate effort by its own government or resistance by the trade partner. The industry may fear that the government has traded away its interests, whether for a side payment on other issues or diplomatic concerns. Second, the industry does not know whether the foreign government will comply with the negotiated agreement.⁶ To address these uncertainties, governments must convince their domestic industry that they will negotiate for market access and monitor implementation by the foreign government.

The pressure from export industries creates incentives for governments to accuse their trade partners of unfair trade. The demands for removal of trade barriers are implicitly or in some cases explicitly backed up by threats of retaliation. In the heyday of U.S.-Japan trade friction in the 1980s, the U.S. complained about the standards and quotas that hindered U.S. exports of everything from baseball bats to beef as well as the way the Japanese economy was structured. Now daily news stories report complaints about China using currency manipulation and piracy to harm U.S. export interests. As domestic pressure expands the list of complaints about foreign trade barriers, trade partners are faced with a barrage of criticism. While a trade partner would often rather offer a concession than risk a trade war, offering liberalization concessions on every complaint would bring high domestic political costs. Thus trade partners face a dilemma as they must filter through complaints to determine which ones to take seriously.

the amount. Goodhart (2006) provides a theory for why the geographic mobility of export industries relative to import industries makes politicians favor import protection over export subsidies.

⁶Schelling (1980, 131) notes that promises depend upon two conditions for enforcement: capacity to punish and ability to discern when punishment is called for. In the context of the promise by a leader to serve industry interests in exchange for political contributions, punishment is possible in future iterations of the exchange through withdrawal of contributions. But the problems noted here impinge on the ability to make an enforceable agreement because the industry cannot tell when it should punish a government for a failure to achieve market access gains.

Litigation as a Signal of Commitment

How can a government persuade both its domestic industry and the trade partner to believe that the government will be a tough negotiator? I argue that governments use choice of forum to signal their commitment to their domestic industry. A large literature has grown about the role of costly signals as a way to give information about underlying type.⁷ Through accepting self-imposed costs that are tied to fulfilling the promise, an actor increases the credibility of its commitment. In this case, a government chooses a costly strategy in an effort to convince its export lobby that it will fulfill its promise to negotiate a reduction in a foreign trade barrier. This simultaneously signals the trade partner of the government's high priority for the issue.

Adjudication represents a solution to this problem. Filing a WTO complaint is costly in terms of government resources and diplomatic relations. Reinhardt (2003, p.81) highlights how the high transaction costs of WTO adjudication can help a *defendant* state make liberalization commitments by raising the cost of protection. These transaction costs are equally important for the plaintiff that chooses to initiate the process. WTO disputes last anywhere from two months to four years depending on the case, and extensive legal resources are necessary to support building the case. The legal fees alone average \$1.5 million for a typical case that goes through panel proceedings and may reach higher for complex and lengthy disputes.⁸ The public nature of suing a trade partner can contribute to acrimonious rhetoric harmful to diplomatic relations (Alter, 2003). The partner who imposes the barrier suffers diplomatic costs for failure to follow the rules, but the state challenging the violation may also antagonize its partner. Even the most active users of WTO adjudication such as the United States and EU only file seven cases in a typical year. Consequently, the act of filing a complaint signals that an issue is receiving high priority in the government's trade policy agenda.

At the same time, WTO adjudication presents lower costs than imposing unilateral retaliation, which causes even more direct harm to diplomatic relations and also imposes costs on domestic consumers. As noted above, the high costs of unilateral enforcement with retaliatory threats motivated the United States to support strengthening the multilateral system. The design of

⁷Spence (1973) started the focus on this issue in economics with his study about the role of investments in education as a signal of quality to employers. The concept has been extended in international relations to address state efforts to demonstrate high resolve in foreign policy crises (Martin, 1992; Fearon, 1997).

⁸Lawyer for a major international law firm. Interview by author, Geneva 24 October 2007.

the WTO dispute settlement mechanism restrains retaliation by regulating its use within fixed procedures and keeping retaliation proportional to the lost trade (Lawrence, 2003; Rosendorff, 2005). The moderate costs of adjudication are sufficient to signal resolve without risk of a trade war.

The selection mechanism for adjudication provides information to help resolve disputes. In negotiations before legal action trade partners are uncertain about the exporting state's resolve to take enforcement action and the importing state's willingness to face retaliation before removing the barrier. In their effort to improve distributional outcomes and respond to domestic pressure states have incentives to misrepresent their preferences, which can lead to bargaining failures.⁹ The costs of filing a legal complaint screen out when the trade partner is serious about challenging the barrier.

Participants in the trade policy process recognize the political role of adjudication. A U.S. trade official commented that pressure from Congress on the executive to initiate more WTO disputes reflects the fact that it is an easy response for representatives to tell constituents they are seeking a case. "It really shows you are tough when you go to court."¹⁰ A WTO official told of cases that were initiated as "candy" to reward industries which had provided key electoral support.¹¹ A lawyer involved in several WTO cases spoke of instances where officials were reluctant due to concerns about the legal strength of a case, and then initiate because they get "rolled by political pressure."¹² Former Representative William Frenzel, who chairs the President's Advisory Committee for Trade Policy and Negotiations, said that input from politicians and industry can be a factor in the selection of WTO cases. He commented that too often the pressure reflects the view that a small market share can be fixed by being a tough negotiator.¹³ These political games are not limited to the United States. A Costa Rican trade official remarked that in both cases filed against the United States and against Trinidad and Tobago, taking legal action was necessary to show that they were serious about the problem.¹⁴ The Ambassador to the WTO from Pakistan

⁹This kind of bargaining failure is discussed in the legal literature in Cooter *et al.* (1982) and in conflict studies (e.g. Morrow, 1989; Fearon, 1995).

¹⁰U.S. government official, interview by author, 26 October 2007.

¹¹WTO official, telephone interview by author, 2 November 2007.

¹²Lawyer for international trade law firm, interview by author, 25 October 2007.

¹³Interview by author, 11 July 2007.

¹⁴Roberto Enchandi, senior Costa Rican trade ministry official and Ambassador to the EU, telephone interview by author, 11 August 2008.

explained that his government filed a dispute against Egypt's anti-dumping duties on matches when Egypt was not taking their demands seriously in bilateral talks and the problem was a high priority because the companies harmed were based in the northern region of Pakistan where the government needed to show its ability to provide valuable services for the local economy.¹⁵ Given that the reasons for one case being more valued than another can range from contribution levels to geographic region, it can be difficult for foreign governments to recognize politically important cases. Hence they rely on legal complaints to screen out the serious challenges.

The U.S. Trade Policy Process and WTO Adjudication

In the U.S. context, the domestic credibility problem has given rise to explicit institutional checks by Congress intended to force the executive branch to serve the interests of export industries. While Congress delegated negotiating authority to the executive in the Reciprocal Trade Agreement Acts of 1934, it uses both informal requests and its formal authority to ratify trade agreements as leverage to push the executive to support an aggressive trade agenda against foreign trade barriers. Destler (2005, 112) notes that "If U.S. trade negotiators were to keep their mandate from Congress and product interests, they had to appear tough in advancing and defending specific U.S. commercial interests." In the 1970s, dissatisfaction with apparent passiveness by the executive branch in the face of spiraling trade deficits widely blamed on foreign protectionism led Congress to enact a series of reforms.¹⁶ It established a strengthened U.S. Trade Representative office and mandated that the office publish annual reports listing foreign trade barriers and the status of U.S. efforts to address these problems. The most controversial change was a new provision for proactive export promotion, Section 301 of the Trade Act of 1974. The measure called for the executive to respond to industry petitions about foreign trade barriers by negotiating with foreign governments and enacting trade sanctions when the foreign government refused to cooperate. Subsequent amendments strengthened the measure by adding timetables and criteria for targeting foreign trade barriers.

¹⁵Dr. Manzoor Ahmad, Ambassador and Permanent Representative to the WTO of Pakistan, Interview by author, 20 August 2008, Geneva Switzerland.

¹⁶Although economists widely acknowledged that the trade deficit reflected macroeconomic conditions, foreign trade barriers represented an easy target even if their removal would have only a small effect to lower the trade deficit.

In what came to be termed “aggressive unilateralism” the United States used this policy tool extensively in the 1980s to pressure trade partners to increase market access (Bhagwati and Patrick, 1990). Bayard and Elliott (1994, 331) analyze 72 Section 301 cases and conclude that the policy was “reasonably successful in opening foreign markets.” The trend in U.S. trade policy in the 1980s to pursue free trade through threats of unilateral retaliation against trade partners was widely condemned as another form of protectionism (Bhagwati and Patrick, 1990). Even those who recognized some gains from use of the controversial Section 301 provision for trade threats called for channeling U.S. complaints through multilateral venues (Bayard and Elliott, 1994). Thompson (2007) argues that the United States was willing to accept the constraint on its power through legalization of the WTO dispute settlement as a recognition that its use of unilateral trade measures caused excessive harm to diplomatic relations. The Congressional pressure for enforcement that had been focused on section 301 cases has now turned to WTO adjudication (Dupont *et al.*, 2008).¹⁷

The Kodak-Fuji film dispute provides an example of how strong political pressure can lead to a WTO dispute on an issue that would not otherwise appear to have been a likely case for adjudication. The dispute began in 1995 when Kodak filed a petition under the provisions of Section 301 requesting that the U.S. government take action to address unfair barriers in the Japanese market that prevented access for U.S. film exports. Kodak argued that connections between retail stores and Fuji film and the structure of the distribution market were discriminatory. Fuji film denied the claims and hired a legal team to counter point by point every argument, while the Japanese trade ministry insisted this was a matter of private business actions and refused to intervene. Fundamentally the complaint was about competition policy, which could more directly be addressed by filing a complaint to the Japan Fair Trade Commission. But Kodak was skeptical that the JFTC would bring any meaningful change and wanted to see direct action by the U.S. government. After a year of getting nowhere in bilateral talks during the Section 301 investigation, political pressure built for the USTR to do something. The Japanese side had made no concession, and the terms of Section 301 call for retaliation in the case of a foreign trade partner not taking

¹⁷The number of Section 301 cases filed by industries has steadily declined since 1995 and no unilateral sanctions have been implemented. While some in Congress still make calls for unilateral trade retaliation, those on trade committees who influence the policy process recognize that this is no longer an option and WTO adjudication is the means to resolve disputes. (USTR official. Interview by author, 11 July 2007.)

actions to redress the complaint. Having just finished the auto dispute with Japan in which the Japanese government challenged U.S. retaliation measures in a WTO case, USTR was reluctant to again threaten unilateral retaliation. Kodak drew upon its political connections and calls were made by congressional offices to USTR demanding action. Despite concerns about a weak legal case, in 1996 USTR filed a WTO complaint against Japan (DS44).

Not many observers were surprised when two years later the United States lost the ruling. The entire dispute had absorbed considerable resources for all sides involved and brought no change in the policy. Yet the use of adjudication finally convinced Kodak and its political backers that nothing further could be done and that the Japanese government would not back down under U.S. pressure. Statements from Kodak representatives and the New York congressional delegation as well as a *New York Times* editorial (10 December 1997) criticized the WTO ruling but none claimed the government had made insufficient effort or that it should undermine the WTO ruling. No more calls were issued for unilateral retaliation. Even in this worst case scenario with a difficult legal case, adjudication had served as the best response to political pressure.¹⁸

Hypotheses:

Selection Hypothesis: *Trade disputes involving strong interest group pressure are more likely to be raised in WTO adjudication.*

Effectiveness Hypothesis: *WTO adjudication will increase progress to remove the trade barrier and reduce the duration of the dispute.*

Additional Strategic Considerations

Factors related to the economic and legal stakes of a case are also important. Few governments would want to challenge a trade partner's policy in court if they have no economic stakes or legal argument in support of their case.¹⁹ Trade partners will also be more likely to respond positively to bilateral negotiation demands when they have smaller economic stakes and foresee

¹⁸This brief account of the dispute draws upon interviews with U.S. and Japanese officials involved in the case and the detailed written account in Durling (2000).

¹⁹There are exceptions. The WTO does not require that a state have an industry interest in order to file a case and there are examples such as the U.S. decision to file a complaint against the EU banana import regime even when the U.S. does not produce bananas.

losing the legal ruling. While the selection hypothesis emphasizes political factors that influence the cost benefit calculation for a dispute, a more narrow focus would dictate simply weighing the costs of the dispute against the likely gains from ending the trade barrier. In the choice among industries, large export industries are more likely to present sufficient benefits to justify the cost of litigation. When choosing which trade partner to target, those with larger markets promise greater potential gains from any market access improvement (Guzman and Simmons, 2005). A state acting to maximize economic gains would favor large export industries and markets where it holds comparative advantage.

Studies of the litigation behavior of administrative agencies suggest that legal certainty pushes bureaucracies to prioritize their win-rate over the actual economic gains per case (Posner, 1972). The observation that over eighty percent of the rulings by WTO panels favor the plaintiff suggests that governments screen out weak legal cases before filing or in early settlement. Ideally, one would want a legal brief prepared to evaluate each trade barrier by a trade partner, but short of this, one can evaluate which policy issues generally represent a stronger expectation of legal victory and compliance outcome. In the record of WTO jurisprudence, some issues that directly limit imports, such as anti-dumping measures or import quotas, have led to consistently strong positive rulings and have transparent implementation.²⁰ Such measures are more likely to represent clear legal cases with high probability of gains compared with issues on standards or intellectual property where there are fewer case precedents and greater difficulty to evaluate implementation. Guzman and Simmons (2002) show that within the set of WTO disputes, those related to tariffs and quotas are easier to resolve (and hence more likely to settle early) because their “continuous” nature allows for compromise that cannot be made on “all-or-nothing” regulations. Thus a bureaucrat trying to maximize either early settlement or legal victory is more likely to choose cases related to border measures affecting goods imports.

Finally, the economic and political conditions of the trade partner also influence choice of negotiation strategy. Ultimately the trade partner must agree to change its trade barrier to bring progress towards ending the complaint. On the one hand, the state seeking market access may be less likely to adopt costly adjudication strategies for cases where high trade partner

²⁰See Tarullo (2004) for review of trend for positive rulings in anti-dumping cases. Allee (2003) shows that within the sample of anti-dumping cases, legal criterion influence the likelihood that a state will file a WTO case challenging an AD duty.

resistance reduces the likelihood of success. Strategic restraint suggests that states would only bother to file WTO cases when they anticipate low trade partner resistance. This is the logic of skeptics who suggest that cooperation in institutional fora occurs for *easy issues* that are ripe for cooperation (Downs *et al.*, 1996). On the other hand, the interest group pressure argument of this paper suggests that resistance by a trade partner pushes cases to WTO adjudication. Similar to governments that initiate a legal dispute to signal their willingness to take a high cost negotiation strategy for their export industry, respondent states will refuse bilateral settlements and wait for a WTO ruling as a way to signal their willingness to accept high cost adjudication in defense of their import industry. The two propositions about high trade partner resistance offer opposite predictions about whether adjudication is more or less likely as a strategy against high trade partner resistance. This can be tested as an empirical question by controlling for the stakes to the partner industry. Studies point to import penetration, employment share, and tariff rates as key variables to influence demand for protection (e.g. Trefler, 1993; Busch and Reinhardt, 1999; Kono, 2006), which allows one to identify the industries in which trade partners are the most likely to resist lowering their trade barriers.

2 Foreign Trade Barrier Dataset

The hypotheses will be evaluated with analysis of an original dataset of trade barriers based on coding government reports by the USTR that provide annual lists of trade barriers by U.S. trade partners that are harmful to the interests of U.S. exports. These data offer three major advantages that will contribute to the study of trade policy. First, the trade barriers which are listed in the government reports meet a minimum threshold of demand that makes them likely issues for a negotiation agenda. This facilitates analysis of a politically relevant trade barriers, unlike studies that measure trade policy barriers as the residual for any product trade flow in a gravity model of trade.²¹ The trade barriers in the dataset represent the set of *potential cases for WTO adjudication*. Second, the data include not only standard NTBs such as quotas or anti-dumping measures, but also regulations that affect the service industry, investment policies, and qualitative non-tariff barriers related to technical standards and intellectual property rights protection. In contrast, the

²¹Such gravity model studies are subject to the critique that poor fit of the model would erroneously suggest that there are high trade barriers (Laird and Yeats, 1990, 35).

UNCTAD dataset that is the most frequent source in analysis of non-tariff barriers does not include intellectual property policies. Datasets that examine anti-dumping measures miss large areas of trade disputes. For example, Japan does not apply anti-dumping duties so all of the trade disputes against Japanese market closure are entirely missed by studies that focus on anti-dumping. Third, the data are reported from the U.S. perspective as a “victim” of the trade measures that has an interest in full disclosure of the barriers taken by other countries. In contrast, the UNCTAD dataset relies on official national reports of governments about their own trade policies, and as a consequence understates barriers where governments do not desire transparency (Laird and Yeats, 1990, 20). Finally, whereas most empirical studies of non-tariff barriers focus on manufacturing industries, the data here include barriers affecting primary, manufacturing, and service sectors. In short, the data will allow me to examine the full range of trade protection whereas existing datasets focus on a small number of basic protection tools.

A brief background on the creation of the reports is necessary. They represent one tool by which Congress monitors the executive branch actions on trade policy. In the Trade Act of 1974, Congress mandated that every year the Office of the U.S. Trade Representative submit to the Senate Finance Committee, appropriate House Committees, and the President “The National Trade Estimate Report (NTE),” which should analyze market access barriers that adversely affect exports of U.S. goods and services. The report represents an inventory of trade barriers that was originally intended to help generate cases for the Section 301 process in which the U.S. Congress had mandated the government target particular foreign barriers for negotiation on a time schedule leading to possible economic sanctions. Noland (1997, 369) uses the report to measure U.S. government attention to bilateral trade problems.²² The NTE is drafted in consultation with U.S. embassies abroad, trade policy advisors (academic and industry officials with formal clearance to participate in the trade policy process), USTR officials of the relevant area and policy specialties, and a public comment process in which industries make submissions.²³ Carmen

²²He counts the number of pages in the report devoted to each trade partner for a single number measuring the attention given to the aggregate trade problems with a specific trade partner. In contrast, my dataset codes the individual trade barriers.

²³For example, there were 39 new submissions for the 2006 NTE from associations such as the California Avocado Commission and the National Electrical Manufacturers Association as well as from companies such as Pepsico and Walmart.

Suro-Bredie, the Assistant U.S. Trade Representative for Policy Coordination, confirmed that the NTE trade barriers represent the politically relevant trade barriers and said that briefing reports for U.S. officials going to a particular trade negotiation draw upon the information in the NTE.²⁴ Members of Congress have used the release of the report to urge more action by the administration to address specific foreign trade barriers.²⁵ This report is complemented by the “Annual Report on Trade Agreements Program and National Trade Policy Agenda” that provides information on the goals and reported actions and progress for specific trade agenda items.

The data are coded in cross-section time series format with a trade barrier as the unit of analysis. First, a list of trade barriers was created from each annual NTE report. The annual lists were aggregated into panels of discrete trade barriers with a start and end date. Notes on government negotiation activities drawn from the NTE reports were confirmed against the USTR Annual Reports and the WTO dispute settlement web-site list of cases. A unit represents a distinct complaint about a specific policy measure with observations for every year in which the barrier continues to be mentioned in the NTE reports. Some industries are affected by multiple trade barriers stacked on top of each other, and each one is coded separately. For example, the NTE report on Korea lists discriminatory tax policies, standards, and anti-import bias generated by media campaigns as policies that adversely affect U.S. auto exports to Korea. These are coded as three barriers. This paper analyzes the trade barriers that address a single industry that could be coded at the 2 digit International Standard Industry Classification (ISIC) level (e.g. textiles or motor vehicles) and where data was available for key economic indicators and political contributions.²⁶ Other barriers which affect several industries such as general tax policies are not included for analysis in this paper.

The data scope is for all U.S. complaints about trade barriers by nine top trade partners: Canada, EU, Japan, Korea, and Mexico represent the top five OECD trade partners. These

²⁴Interview, Washington, D.C. 11 May 2006.

²⁵Correspondence of House Ways and Means Subcommittee provided to author.

²⁶The 2 digit level is used because this is the aggregation at which data is most consistently available for both political contributions and economic control variables. Some trade barriers are more narrow (e.g. dairy rather than agriculture or woolen coats rather than textiles). Data availability forces this aggregation, but one would also expect that lobbying influence draws upon the larger industry aggregation. For the following five industries for which data was consistently available, industry is coded at the 4 digit level: pharmaceuticals, steel, aircraft, ship-building, and railroad transport equipment.

trade partners are those with the highest trade volumes with the United States. Four additional countries, Brazil, India, Malaysia, and Singapore were added to the sample as representative of top U.S. trade partners among developing countries that have also been WTO members since 1995 (note that while China is a major trade partner, it only joined the WTO in November 2001). In 2005, the value of U.S. exports to these nine countries represented 72 percent of all U.S. exports.²⁷ The time period begins with the establishment of the WTO in 1995 and continues to 2004, which is the most recent year for which industry level data from the OECD is available. There are 393 barriers with data available on covariates for inclusion in the analysis. Each barrier has multiple observations for the years it continued to be reported in the NTE with a range from one to ten years and an average of five years total duration.

WTO Dispute The initiation of a WTO dispute is the dependent variable for the selection model tested in section 3 and the independent variable for the effectiveness model tested in section 4. The indicator variable is coded one for the year the U.S. files a WTO complaint, which is the first step to initiate formal adjudication of a trade dispute.²⁸ 34 of the 393 barriers (8.65 percent) were raised in adjudication. The null values include years in which a barrier was negotiated in bilateral or multilateral settings or mentioned in the report without specific government action. For the selection model, once the barrier has been subject to a dispute complaint it is dropped from analysis.

Contributions The selection argument suggests that the U.S. government will choose dispute adjudication as the negotiation strategy in response to demands from organized interest groups. Political contributions are a key indicator of industry political influence on trade policy (Grossman and Helpman, 1994; Hansen and Drope, 2004). Trade barriers that directly affect an industry with high political contributions would be the most likely to trigger the government choice to use WTO adjudication. I use contributions data provided by the Center for Responsive Politics (CRP), a non-partisan research group that tracks money in U.S. politics.²⁹ The CRP collects the publicly listed data from the Federal Election Commission and summarizes the total contributions

²⁷WTO, International trade statistics 2006, table III.16 U.S. Merchandise Trade by Region.

²⁸Although the WTO assigns multiple dispute numbers to some cases with repeat filings, these are aggregated in the dataset and treated as one complaint filed for a given trade barrier.

²⁹Data available at <http://www.crp.org/>.

by individuals, PACs, and soft money contributions according to industry category for over one hundred industries.³⁰ The main analysis sums contributions to all parties, but additional tests disaggregate contributions by party. The amount of contributions ranges from high levels of 99.8 million dollars by the finance industry and 24.6 million dollars by agricultural producers to lower values of 2.6 million by the auto industry and 859 thousand dollars by the TV production industry (these examples are from the 1996 election cycle).³¹ The log of the U.S. dollar value is taken to smooth high values.

Section 301 Eighteen of the trade barriers in the data used for regression analysis are Section 301 cases. As described earlier, the U.S. Congress created a tool for export promotion in Section 301 of the U.S. Trade Act. The law mandates that the USTR investigate the complaints of industries that file petitions and initiate a Section 301 case for those evaluated to have sufficient merit. Congress also added provisions for the USTR to initiate Section 301 cases on its own without an industry petition when unfair trade policies by a trade partner called for such action.³² Section 301 cases follow specific deadlines for government action to request negotiations with the foreign government. When met by continued resistance by the trade partner, the procedure calls for unilateral sanctions or initiation of a GATT/WTO dispute. Given the institutional constraint one would expect that Section 301 cases would be more likely to have an adjudication strategy chosen.

U.S. Economic Interest Control Variables Industry size is an important control variable since larger industries represent greater economic stakes.³³ I use the production value of the U.S.

³⁰Contributions are measured as the amount over the two year election cycle leading up to the year of the observation. While contributions should vary in response to reward policy outcomes, studying the effect of trade strategies on political contributions is beyond the scope of this study. See Gawande (1997) for research showing that U.S. industry contributions increase as a function of NTB coverage. Mitra (1999) model lobby formation as a function of government willingness to offer policy outcomes for political contributions.

³¹The CRP industry categories have been adjusted when necessary to provide the closest match with the ISIC industry used for economic variables.

³²See Bayard and Elliott (1994) for description of the use of Section 301.

³³Others use these measures as the proxy for *political importance* (e.g. Lee and Swagel, 1997). This study is able to more directly measure political importance with data on political contributions. To the extent that larger industries will also have more resources to make political contributions, it is also necessary to control for this

industry affected by the foreign trade barrier.³⁴

I control for export interests using the world export value as reported by the The OECD STAN Bilateral Trade Database (thousand U.S. dollars). For the production and export values, the log is taken to smooth high values. Model 2 adds the annual trade balance with the trade partner for the given industry. Previous research highlights the importance of bilateral trade balance to influence the pattern of disputes and economic outcomes (Bayard and Elliott, 1994; Guzman and Simmons, 2005; Bown, 2004b). All economic control variables are converted to constant U.S. dollar values.

Trade Barrier Control Variables To analyze the selection of disputes for adjudication, one wants to control for the legal strength of a potential complaint. Unfortunately this is rarely possible.³⁵ Evaluation of the legal status of a trade barrier requires both extensive WTO legal expertise and knowledge about the specific policy and its impact on trade; even when governments conduct such internal analysis, they treat their conclusions as private information. Coding legal status was not possible for this project, which involves almost four hundred distinct trade barriers. Rather, I use a proxy variable for strong legal cases based on the nature of the trade barrier. Protection measures directly targeting imports represent a straightforward application of existing WTO rules. These policies have always been at the core of the trade regime regulations, so there is a large body of jurisprudence based on previous cases under both GATT and the WTO that can help governments to build a legal case. A government looking for strong legal cases is more likely to challenge trade barriers based on import policies over other policy areas (i.e. standards, intellectual property right protection, services, or investment policies). The NTE divides the report on each trade partner into sections for the type of trade barrier, and I code an indicator variable for those described as import policies.

The level of trade distortion from the disputed barrier increases the economic stakes and likelihood of a violation ruling, so one would expect high distortion trade barriers to be more likely to face challenge by WTO dispute adjudication. I measure the distortionary burden from the trade barrier with an indicator variable which codes cases that involved substantial market

³⁴OECD STAN database for Industrial Analysis.

³⁵Allee (2003) is one of the few studies to directly address this question. In his dataset of anti-dumping duty cases he uses the criterion of the WTO agreement for anti-dumping duties to create a variable that evaluates whether the particular duty is likely to meet these criterion.

closure resulting from policies such as high quantitative restriction (ban, quota, or increase of tariff/duty by more than 10 percent), use of standards or rules of origin to implement a de facto ban on imports, violation of intellectual property rights, or subsidies provided to competitors. Fifty-one percent of the barriers involved such high distortion policies. Other barriers coded as having a more moderate distortionary effect on trade included policies such as low level quantitative restriction or burdensome procedures.

Progress The initiation of a WTO complaint is premised on the failure of earlier requests to remove the barrier. In the selection model, controlling for progress towards resolving the trade complaint takes into account the status of policy response by the trade partner. In a year reporting substantial progress on the problem, the US would be less likely to file a WTO complaint than when there has been no progress or even backward movement to worsen the trade distortion. This variable is measured annually on a four point scale that records the level of progress according to the information in the NTE reports about any policy changes undertaken by the trade partner. Further details on the coding of the variable are given later in section 4 that evaluates the effect of filing a complaint on the amount of progress reported for years after the complaint has been filed. I also control for the duration of the dispute, which counts the number of years to date that the barrier has been included in the NTE reports.

Partner Industry Control Variables Negotiations are a strategic interaction between two states, and the demand for protection in the trade partner for its industry influences whether the government will be more or less likely to remove the trade barrier. At the same time the expected market gain for the exporter influences their incentives to push for change. The import penetration ratio (share of imports in GDP) for the trade partner industry serves as a proxy for the market stakes to both sides.³⁶ The literature offers conflicting interpretations of whether import penetration increases demand for protection by threatening the domestic industry (Trefler, 1993) or reduces the supply of protection by increasing the cost to aggregate welfare (Grossman and

³⁶The data on import penetration ratios for Canada, the EU, Japan, Korea, and Mexico at the 2-digit ISIC level is measured for the year that the trade barrier is first reported. Import penetration data is from the OECD STAN Indicators database. Since data on import penetration ratio was unavailable for the non-OECD countries, these observations are entered as zero and any effect from the systematic nature of the missing data will be captured in the non-OECD indicator variable.

Helpman, 1994). From the exporter perspective, a higher level of trade partner import penetration suggests a larger market. I also test for the impact of change in import penetration (growth from previous year).

Model 2 adds employment share and tariff rate, which are also common control variables in studies of nontariff barriers (e.g. Kono, 2006; Busch and Reinhardt, 1999; Lee and Swagel, 1997). Employment share of the industry in the trade partner proxies for the strength of demand for protection because industries that affect more voters have greater influence.³⁷ The tariff level is itself a product of past decisions that incorporate demands for protection.³⁸ I expect both high employment share and high tariff levels to increase the likelihood of adjudication as the trade partner resists settlement in other fora. For the trade partner as well, the high costs of adjudication signal government commitment to the industry. Any delays introduced by the lengthy adjudication process are viewed as a gain from the perspective of the protected industry.

Trade Partner Fixed Effects Including indicator variables for the trade partner imposing the trade barrier against U.S. exports controls for the possibility that other country specific factors such as market size or preferential trade agreements influence the choice of strategy. The U.S. could be less likely to initiate disputes against Canada and Mexico because NAFTA provides an alternative venue.³⁹ The distribution of trade complaints varies by trade partner. Of the trade barriers, twenty-two percent were EU measures, eighteen percent were Korean, and seventeen percent were Japanese. Canada and Mexico each had nine percent of the barriers, Malaysia and India had eight percent, Brazil six percent, and Singapore three percent.

³⁷The data on employment share by industry is from UNIDO's Industrial Statistics database for manufacturing employment and FAO's FAOstat database for agricultural employment, and total employment is from the ILO.

³⁸Ray (1981) showed that there is little reverse feedback from the non-tariff barrier to tariffs. Tariff rates are measured as the simple average MFN rate for the 2 digit industry, and are from the UNCTAD TRAINS dataset.

³⁹Industries are empowered to initiate disputes directly under NAFTA Article 19. Indeed, the U.S. government has only initiated one NAFTA dispute under the Article 20 provision for government to government adjudication while there have been over thirty Article 19 disputes initiated by U.S. companies against Mexico and Canada. The Article 20 dispute is included in the dataset as a bilateral negotiation, while Article 19 NAFTA cases initiated by companies are not mentioned in the NTE and are not included in the dataset.

3 Selection Analysis for WTO Adjudication

I examine the selection of WTO complaints using logistic regression model to analyze the decision to file a complaint for a particular barrier in a given year. Models 1 and 2 are population-averaged cross-section time series regression including fixed effects for partner. The first model is the base model for the analysis presenting the core variables for the selection model. Model 2 includes additional controls for the trade partner's economic interests, which reduce the sample due to missing data on some of these covariates. In both models, I estimate standard errors clustered on the individual trade barrier in order to take into account possible correlation among observations over time for the same barrier. Another way to address this correlation is to directly model the panel level variation as a random effect for each barrier. Model 3 uses a random-effects estimator that relaxes the equal-correlation assumption of the pooled estimator. The trade partner fixed effects are dropped here to improve efficiency. Results are consistent but the panel level variance estimated in this model does not have a statistically significant effect.⁴⁰ Cross-section variation across barriers rather than within-barrier variation over time provides the main power for estimating selection of WTO complaints. This reflects the fact that some important predictors related to the barrier itself such as the policy type and distortionary level do not change over time. Others that vary over time, such as political contributions, nonetheless have greater difference across sectors than by year. The generosity of the sector relative to other sectors determines political influence more than minor changes in funding year to year. It is the characteristics of the specific barrier and sector that shape choices over trade strategies.

The results shown in Table 1 confirm that political pressure influences the choice of cases for WTO adjudication. Both political contributions by the industry and the Section 301 mechanism by which Congress applies pressure on the executive branch have a statistically significant positive effect on the likelihood that a complaint will be raised as a WTO dispute.

The substantive effect of political contributions is large, as can be seen through a comparison of how changing the variable influences the predicted probability for initiating a WTO dispute when all other variables are held constant.⁴¹ I estimate the first difference for the quantity of interest

⁴⁰The likelihood ratio test for the variance is $p\text{-value} > 0.498$.

⁴¹Using the software Clarify, I simulate model parameters from their asymptotic sampling distribution and compute the Monte Carlo estimates of predicted probability of a WTO dispute initiation. See Michael Tomz, Jason Wittenberg, and Gary King (2003) CLARIFY: Software for Interpreting and Presenting Statistical Results,

Variables	Model 1	Model 2	Model 3
Contributions (log)	0.724* (0.258)	0.767* (0.299)	0.912* (0.459)
Section 301	3.002* (0.534)	3.552* (0.686)	3.272* (0.517)
Production (log)	-0.536 (0.350)	-0.219 (0.491)	-0.130 (0.714)
Exports (log)	0.443 (0.236)	0.158 (0.521)	0.203 (0.596)
MPEN (partner)	0.015* (0.007)	0.013 (0.010)	0.021* (0.011)
MPEN growth		4.445* (1.562)	4.749* (1.713)
Empl. share (partner)		-0.00 (0.014)	0.004 (0.018)
Trade balance		0.274* (0.103)	0.218* (0.074)
MFN tariff rate		-0.00 (0.008)	-0.001 (0.012)
Import policy	1.069* (0.388)	1.140* (0.458)	0.979* (0.448)
Distortion	1.217* (0.506)	0.880 (0.561)	1.073* (0.512)
Progress	-0.868* (0.347)	-0.73* (0.307)	-0.696* (0.337)
Duration	-0.164 (0.096)	-0.03 (0.101)	-0.083 (0.094)
EU	1.168 (0.746)	0.560 (0.986)	
Japan	0.761 (0.818)	-0.65 (1.332)	
Mexico	0.897 (0.805)	1.227 (1.132)	
Korea	0.538 (0.775)	0.125 (1.046)	
Non-OECD	0.394 (0.770)	1.149 (0.916)	
Intercept	-15.984* (5.807)	-18.087* (5.296)	-11.590* (54.685)
Wald Chi squared	82.62	122.61	68.82
N	1825	1428	1428
Barriers	403	327	327

Table 1: Logistic Regression Model of WTO Dispute Complaints. Data are trade barriers listed in the National Trade Estimate Reports during the period 1995 to 2004 that were industry specific. Models 1 and 2 are pooled time series with robust standard errors clustered by trade barrier shown in parentheses. Canada is the omitted comparison group for the trade partner indicator variables, and Non-OECD groups the trade barriers of Brazil, India, Malaysia, and Singapore. Model 3 uses the random-effects estimator that incorporates panel-level variance for each trade barrier. Trade partner fixed effects are dropped in model 3. In models 2 and 3, an indicator variable for cases with missing data on employment share of partner was included but is not shown. *Significant at the 5 percent level.

based on the estimates from model 1 in table 1. Increasing the level of political contributions by one standard deviation above the mean while holding other variables constant more than doubles the predicted probability of WTO dispute initiation for a given barrier in a single year.⁴² This is approximate to setting contributions to the level of the computer industry, which gave 5.8 million dollars in the 1996 election cycle, with the probability of initiating a WTO dispute when setting the political contributions variable to the level of the agriculture industry, which gave 26.4 million dollars in the 1996 election cycle.⁴³

The effect of contributions does not appear to vary substantially by party recipient. When replacing the total contributions with either the value of contributions to the Republicans or the Democrats, the coefficient is positive and significant for each although slightly larger for Democratic contributions (results not shown). There is high correlation of 0.82 between Democratic and Republican contributions by industry.

An alternative measure of political influence that examines the level of organization within the industry also has a significant positive effect on the probability that a case will be raised in either WTO adjudication or multilateral negotiations. Organization is measured by a variable that counts the number of industry associations within the aggregate 2-digit ISIC industry. For example, there was one industry association for ISIC 30 computer and office equipment, five associations for ISIC 34 motor vehicles, twenty-one associations for ISIC 17 textiles, and forty-two associations for ISIC 1 agriculture.⁴⁴ I expect that more associations corresponds with more lobbying activity. For industries with more associations there is a greater probability that any given trade barrier will affect exporters that have close ties with an industry association that will lobby for their interests. I use model 1 from table 1, and replace the political contributions measure with the organization measure. Whereas contributions vary by year, however, my measure of organization

Version 2.1. Stanford University, University of Wisconsin, and Harvard University. January 5. Available at <http://gking.harvard.edu>.

⁴²The simulation estimates a first difference of 0.008 with 95 percent confidence interval from 0.002 to 0.017.

⁴³Note that the CRP data on contributions aggregates computer and software industries together, whereas in other economic control variables measured by the OECD these are separate.

⁴⁴I thank Wendy Hansen for sharing this data. I have aggregated her industry associations data from 4 digit NAICS level to 2-digit ISIC by using the concordance provided by the U.S. Department of Commerce and summing the total number of 4 digit NAICS industry associations that fall within the corresponding ISIC category. See Hansen *et al.* (2005) for the original data explanation.

is time invariant. The coefficient for the associations variable in the WTO adjudication outcome estimates is positive and highly significant (results not presented here). This additional test shows that political influence is robust to measures of contributions or organization.

The effect of a trade measure being selected for Section 301 investigation is even larger. In the aggregate data used in the regression analysis, there are eighteen section 301 cases, and twelve were raised as WTO disputes for adjudication. When using multivariate regression to control for other factors, the pattern for Section 301 to encourage WTO adjudication is even more stark. Moving the variable for Section 301 from zero to one increases the predicted probability of initiating a WTO dispute from 0.005 to 0.09.⁴⁵

The characteristics of the partner industry also influence the decision to file a WTO complaint. Those industries with high import penetration are significantly more likely to be raised in WTO adjudication. A shift of trade partner import penetration ratio from 20 to 40 more than doubles the estimated predicted probability of dispute initiation.⁴⁶

Model 2 adds growth of import penetration, employment share of the trade partner, and MFN tariff rate as additional control variables for the strength of political resistance to liberalization. Industries with a higher employment share in the trade partner and higher tariff rate are also more likely to be raised in WTO adjudication. Rather than avoiding WTO adjudication for cases with high stakes for the trade partner, it appears that the U.S. government is more likely to use WTO adjudication for these tough cases.

The variables measuring economic interests are useful to show that the effect of political contributions holds even when controlling for industry size and trade interests, but appear to have little independent influence on the filing decision. Only the trade balance with the partner in the affected industry is significant. The positive sign confirms that the United States is more likely to file where it has a positive trade balance indicating some comparative advantage for entry into the market. Neither is there a consistent pattern of partner selection as seen by the insignificant partner indicator variables. The option of another dispute resolution venue for NAFTA partners does not substantially reduce use of WTO adjudication with Canada and Mexico.

⁴⁵The simulations estimate a first difference of 0.08 with 95 percent confidence interval from 0.028 to 0.171.

⁴⁶The mean import penetration ratio is 14, with a standard deviation of 65. Note that this variable was only available for OECD countries, and takes a zero value for the non-OECD partners. Results are robust to instead dropping the non-OECD partners from the sample.

The nature of the policy issues plays a large role in selection. Trade barriers that arise directly from import policies are the most likely trade measures to be targeted in WTO adjudication. Government agencies trying to maximize their win-rate will prefer these measures as easy legal cases where WTO rules and jurisprudence offer more clarity about the legal standard compared with newer areas of trade regulations such as services, IPR, and technical standards. The data show a strong relationship between the distortionary effect of the barrier and the choice of WTO adjudication. As expected, barriers that are showing progress towards resolution of the complaint are significantly less likely to become the subject of WTO adjudication.

Further Robustness Tests

Several alternative model specifications reveal that the importance of political contributions is robust to changing the control variables or statistical estimation model. In additional analysis models included the U.S. industry employment share, industry concentration, and FDI outflows of the industry. In all of these specifications, the political contributions variable remains approximately the same magnitude and statistical significance.

The findings are also robust to choice of a different statistical model and subsets of the data. Results are similar when separating outcomes into categories of no negotiation, negotiation, and WTO adjudication and using a multinomial logit regression model to estimate strategy choice for a single cross-section of the trade barrier dataset (contributions and control variables measured for the first year of the barrier). I also re-estimate Model 1 in table 1 on the subset of barriers where some negotiation is mentioned in the report (dropping the cases that are not even subject to a negotiation). The political contributions coefficient is remarkably consistent even for this smaller sample of 249 barriers and 1001 observations in time series analysis (Model 1 estimates a coefficient 0.88 with standard error 0.29, significant to 1 percent level).

In sum, there is a clear pattern of interest group pressure in the selection of WTO cases. The United States is the most likely to choose adjudication for barriers that affect an industry that offers political contributions and when there is strong protectionist resistance in the trade partner due to high import penetration.

A final concern may be that there is bias in the generation of the cases in the dataset because they include only trade measures listed in the National Trade Estimate Report written by the

USTR. It would only be a problem for the central conclusions reported here if industries that make more political contributions are *less likely* to have their trade problems reported in the NTE. Typically one would expect the opposite - those industries that offer political contributions are likely to have their trade problems over-represented in the NTE reports. This direction of bias would imply that the results here if anything underestimate the role of political contributions in selection of WTO cases.

4 Effectiveness Analysis for WTO Adjudication

The question of evaluating effectiveness has long been troubled by the lack of evidence for the counter-factual, what if a similar case had not been raised for WTO adjudication? Given the likelihood of a selection bias in the process that generates WTO cases, which is supported by the analysis above, cases that are raised in the WTO are not the same as other trade disputes. Yet most studies that evaluate WTO dispute outcomes have been limited to the set of filed WTO disputes (Bown, 2004b; Busch and Reinhardt, 2002, 2003; Iida, 2004). They have increased our understanding of the conditions within WTO disputes that encourage more liberalization, such as retaliatory capacity and a positive ruling. Busch and Reinhardt (2003, 725) find GATT/WTO disputes produce substantial concessions in 50 percent of cases, and partial concessions for another 20 percent of cases. But these studies do not address the broader question of how WTO dispute settlement compares with *alternative strategies*. For this question, one needs data on potential cases for WTO dispute adjudication.⁴⁷

Determinants of Progress to Remove Barrier

In this section, I evaluate WTO dispute effectiveness using the subset of my trade barrier data for the 249 trade barriers that were either negotiated or raised in WTO dispute adjudication. This allows me to compare the effectiveness of dispute settlement relative to the alternative of negotiation in a different forum.

Evaluating the effectiveness of negotiation strategies poses a significant measurement challenge.

⁴⁷Horn *et al.* (1999) and Bown (2005) are two innovative studies that generate potential disputes in order to examine the choice of whether to initiate, but they do not take the next step to analyze outcomes.

One way would be to look at the change in trade flows after settlement. Bown (2004b) uses this approach in his analysis of the economic outcomes of GATT/WTO disputes. However, as Bown himself notes, the GATT/WTO does not call for an increase of trade flows as the measure of compliance, and “Better measures of economic success would thus include detailed information on the change in the tariff or non-tariff measure under dispute” (p. 814). Along this line, a second way to evaluate outcomes requires direct evaluation of the policy change. Busch and Reinhardt (2003) use this latter approach to classify the outcomes of GATT/WTO disputes on an ordered scale. Bayard and Elliott (1994) also evaluate the outcomes of Section 301 cases in terms of a categorical variable for policy change.

I measure effectiveness by evaluating the progress in resolving the trade complaint recorded in the National Trade Estimate Reports. The advantage to this approach from a theoretical perspective is that it is closer to the goals of the WTO agreement. It also maintains consistency with the underlying data without introducing measurement error that would come with using a trade flow measure (i.e. product trade flows and period would only loosely correlate with the specific items in dispute and expected period of implementation).⁴⁸ The disadvantage is the risk of bias. There are two potential sources of bias. First, the USTR may be overly positive in order to show Congress that it has made progress. The greatest threat to the inference in this study would arise if the USTR tends to be more positive about outcomes for those disputes raised in WTO adjudication. This seems unlikely, however, since industry actors know whether their problem has been solved and will inform Congress. Overly positive reporting would also undermine the role of the reports to inform foreign governments that the United States is concerned about an issue. The USTR has not hesitated to criticize specific dispute rulings or poor compliance by members, which indicates that it is not blindly taking a positive stance towards dispute adjudication. Nevertheless, the analysis below is subject to the assumption that USTR reports on negotiation progress are not biased to report more optimistic outcomes for one negotiation venue over another. The second source of bias is in the coding of what the reports say. The reports do not grade the outcome. Coding involved a judgment about whether the report mentions specific policy improvement. Progress was first coded as a four category ordinal variable, but I use a dichotomous indicator for the main analysis.

⁴⁸Progress is measured as the policy change observed in the years after the filing of a complaint or start of a negotiation without a fixed evaluation period. The next section will analyze the time to removal of the barrier.

The following illustrates a comparison of the coding for three cases that were all WTO disputes. For the the WTO dispute about Canadian restrictions on U.S. periodicals (DS31), the report states “In June 1999, the United States and Canada announced an agreement under which U.S. publications would be allowed gradually improved access to this market.”⁴⁹ For the WTO dispute challenging EU export subsidies for processed cheese (DS104 against Belgium), it states that the United States filed a complaint in 1997 and held initial consultations that November, while noting that “The United States is considering next steps.”⁵⁰ No further mention of the dispute is made again in the reports and no settlement was notified to the WTO. A search of the widely used trade briefing report “Inside Trade,” shows that in 1999, U.S. agricultural industry sources complained about EU circumvention of export subsidies while specifically noting the example of “inward processing” for cheese.⁵¹ For the WTO dispute filed against Mexico for anti-dumping duties on high-fructose corn syrup (DS132), the 2000 report notes that Mexico will have to comply with the ruling adopted by the Dispute Settlement Body, but the 2001 report notes that the Mexican corn industry is considering filing a new dumping petition and the 2002 report notes that the Mexican Congress passed a consumption tax on beverages including high fructose corn syrup, which is described as “a major barrier to a settlement of broader sweetener disputes between the United States and Mexico.”⁵² The first case on Canadian periodicals was coded as having progress, and the second and third cases about European cheese export subsidies and Mexico’s barriers against high-fructose corn syrup were coded as having no progress.

As a first look at the problem, I examine the measure of progress in the aggregate data for the 249 cases coded for trade complaints with the 9 trade partners that were negotiated or raised in WTO dispute settlement (Table 2). Seventy-nine percent of the WTO disputes (27 of 34 cases) recorded progress. This suggests that the WTO dispute system achieves better outcomes than negotiation. Before drawing any *causal* conclusions from such *descriptive* inference, however, one needs to consider the selection mechanism that sends cases to the adjudication forum.

The variables that helped to explain the decision to file complaints in the previous section serve as control variables for the factors that make WTO adjudication cases different from other cases. The key variable of interest is the effect of WTO adjudication on progress reported towards

⁴⁹NTE 2001, p.31.

⁵⁰NTE 1999, p. 120.

⁵¹Inside U.S. Trade, 21 May 1999. “Agriculture Coalition Sets priorities for WTO, Sidesteps Radical Reform.”

⁵²NTE 2002, p. 293.

Dispute Outcome	WTO DS	Negotiation	All cases
No Progress (percent)	7 (20.59)	101 (46.98)	108 (43.37)
Progress (percent)	27 (79.41)	114 (53.02)	141 (56.63)
Total cases	34	215	249

Table 2: Measuring Dispute Outcomes *The data represents industry specific trade barrier cases coded from the National Trade Estimate Reports of the USTR from 1995 to 2004. The first column describes progress towards resolving the U.S. complaint for trade barriers that were initiated for WTO dispute settlement, and the second column describes those that were negotiated.*

removal of the trade barrier. I use logistic regression model to estimate the effect of the indicator for dispute settlement on the dichotomous outcome measure for progress to resolve the complaint (results are similar when using ordered logit to estimate the four category variable).

One may be concerned that the cases going forward for dispute adjudication differ from those that are only being negotiated. Statistical techniques of matching offer a means to bring the observational data closer to a comparison of cases that are similar in all but the treatment (e.g. Rubin, 1973, 1979). In this study, the treatment group are those barriers raised for WTO dispute settlement and the control group are those barriers that are only negotiated. The pre-processing of data involves removing observations from the sample that lack common support in terms of overlapping covariate distribution for the treatment and control groups. Creating a smaller sample of more similar units by “pruning” outlier observations in this manner allows for less model-dependent and more robust causal inference (Ho, Imai, King, and Stuart, 2007).

I conduct three-to-one nearest neighbor matching with exact restrictions on trade partner.⁵³ The propensity score, which represents a single measure summarizing variables that estimates the probability of a unit receiving treatment (in this case, WTO dispute settlement), is estimated based on logistic regression with all of the covariates from model 1 in Table 1. Exact matching on trade partner means that for each dispute case filed against a specific trade partner, the matching procedure will select control cases from within the group of negotiation cases with that same trade partner (the four developing countries are grouped together). I find that this improves the balance

⁵³I implement matching procedures using the MatchIt software available at <http://gking.harvard.edu/matchit>.

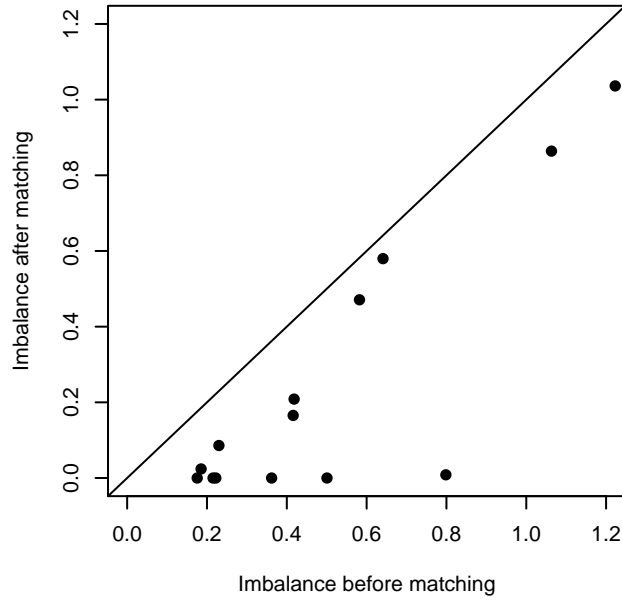


Figure 1: Imbalance Before and After Matching: Each circle represents a variable, and its coordinates indicate the level of imbalance before and after matching. The level of imbalance is measured in terms of standardized mean difference. See table 5 in the appendix for detailed description of the results summarized here in the figure.

on other covariates. The choice to exact match on partner also addresses the concern that bilateral relations are shaped by an economic and political structure specific to the trading pair.

Figure 1 shows the imbalance between the control group and treatment group before and after matching. The horizontal axis represents the standardized mean difference (i.e., mean differences measured in terms of standard deviation units) between the treatment and control groups for a variable before matching, and the vertical axis represents the remaining imbalance after matching. The 45 degree line indicates where values would lie if there is no change, and variables with improvement of balance fall underneath the line. The figure shows that the remaining imbalance after matching is smaller than the imbalance before matching for all control variables. Table 5 in the appendix describes the percent balance improvement for each covariate through a comparison of the mean difference and quantile breakdown. The exact restrictions on trade partners are reflected by improvements of 100. The table shows that matching substantially improves balance across all variables in terms of various balance measures.

After using matching to improve the balance, I use logistic regression to estimate the effect of

Variable	Coefficient	(Std. Err.)
WTO DS	1.399*	(0.568)
Contributions	-0.249	(0.214)
Section 301	3.770*	(0.987)
Production (log)	0.009	(0.089)
Exports (log)	-0.137*	(0.057)
MPEN (partner)	0.005	(0.007)
Import policy	0.720	(0.445)
Distortion	1.107*	(0.465)
EU	-0.090	(0.680)
Japan	-0.553	(0.560)
Mexico	-0.184	(0.450)
Korea	0.427	(0.658)
Non-OECD	0.503	(0.755)
Duration	0.292*	(0.124)
Propensity score	-5.987*	(1.896)
Intercept	5.269	(3.792)
Pseudo R-squared	0.119	
N	160	

Table 3: Matched Sample Logistic Regression Model of WTO DSU Effectiveness. The coefficients estimate the likelihood that the NTE reports describe progress towards trade barrier removal. Robust standard errors (clustered on industry) are in parentheses. Canada is the omitted comparison group for the trade partner indicator variables, and Non-OECD is an indicator for barriers of Brazil, India, Malaysia, and Singapore. *Significant at the 5 percent level.

dispute settlement on progress using the smaller sample of matched data. Ho, Imai, King, and Stuart (2007) show that preprocessing the data via matching reduces the sensitivity to modeling assumptions and thus yields more robust results. The propensity score is included as an additional variable. The results in table 3 show dispute settlement is effective to increase the likelihood of progress towards removal of the trade barrier. Dispute settlement increases the predicted probability of progress resolving the complaint by 33 percentage points.⁵⁴ The model correctly predicts progress 70 percent of the time.⁵⁵ In sum, WTO adjudication makes a substantively important contribution towards policy reform of trade barriers, and this is not because states are only sending *easy* issues to the forum. On the contrary, when controlling for the process that sends cases with strong interests on both sides into the dispute settlement mechanism, WTO

⁵⁴The first difference of 0.33 (95 percent confidence interval from 0.15 to 0.47) is calculated from 5,000 simulations using the estimates of table 3.

⁵⁵This calculation follows a cutoff rule to compare predictions with .50 or higher probability of progress to those in the data that actually report progress.

adjudication is effective relative to negotiation.

Analysis of Trade Dispute Duration

Another measure of the effectiveness of adjudication as a conflict resolution mechanism is the speed with which the process ends a dispute about a trade barrier. The delays of the GATT dispute process were long blamed as a flaw in the institutional design such that a major goal of reforms establishing the WTO dispute settlement system was to streamline the process. Nonetheless, even with the automated adjudication of the WTO, foot-dragging is possible and many criticize the process as being too slow. Cases settled during consultations often end within one year, and the median time for disputes filed prior to 2002 that went through the formal panel process was 34 months (Davey, 2005). The delays of WTO adjudication have made it less attractive for dynamic industries that face rapidly changing market conditions (Davis and Shirato, 2007). Yet from the perspective of evaluating the effectiveness of WTO adjudication, it is necessary to compare dispute duration with cases that were not raised for WTO adjudication. The goal of this section is to use my trade barrier dataset to evaluate whether WTO adjudication ends disputes more quickly than other strategies.

The outcome of interest here is the duration of the trade dispute. I measure a dispute by whether the National Trade Estimate reports continue to include the trade barrier as a problem for U.S. exports (note this is distinct from the duration of the dispute in the WTO process). There may be some cases in which the exporting industry loses interest and the complaint is removed from the NTE reports even though the barrier was not fully removed. For example, in the Kodak complaint about Japanese market closure the barrier is reported from 1996 to 2001. After the US lost the ruling in the WTO dispute in 1998 and Japan made some partial changes to deregulate distribution policies, the USTR and Kodak no longer pushed the issue even though Japan had not changed many of the structural policies that were central to the complaint. This would be recorded as the end of a dispute even if not the complete liberalization of the concerned measures. While conceivably a barrier could be removed from the NTE reports and later reappear, in the dataset there are no such cases. My research into the final outcome of the cases suggests that most often removal of the complaint from the NTE reports corresponds with the removal of the trade barrier.

	Coefficient	Std. Err.	Exp(Coef)	Lower .95	Upper .95
WTO DS	0.38*	0.22	1.47	0.95	2.27
Contributions	-0.24 * *	0.12	0.79	0.62	0.99
Section 301	0.13	0.29	1.14	0.65	2.02
Production (log)	0.29	0.23	1.34	0.85	2.10
Exports (log)	-0.04	0.08	0.97	0.83	1.12
MPEN (partner)	0.00	0.00	1.00	0.99	1.01
Import Policy	0.49 * *	0.19	1.64	1.12	2.39
Distortion	-0.32 * *	0.12	0.73	0.57	0.93
EU	0.13	0.43	1.13	0.49	2.64
Japan	-0.74	0.58	0.47	0.15	1.47
Mexico	0.35	0.36	1.42	0.70	2.90
Korea	-0.03	0.37	0.97	0.47	1.98
Non-OECD	-0.83*	0.50	0.44	0.16	1.15
Likelihood ratio test	32.2				
p=0.002					
N	261				

Table 4: Cox Proportional Hazards Regression for Duration of Dispute. Robust standard errors (clustered on industry) are in parentheses. Canada is the omitted comparison group for the trade partner indicator variables, and Non-OECD is an indicator for barriers of Brazil, India, Malaysia, and Singapore. **Significant at the 5 percent level.*Significant at the 10 percent level.

I use the Cox proportional hazards regression to model the “risk” that a dispute will end in a given year. The data is a cross-section of the trade barriers listing the start and end dates for its inclusion in the NTE reports. The key variable of interest, WTO dispute settlement, is measured as a time-varying covariate with one observation for the years prior to filing a complaint and a second observation for years after filing a complaint. All other control variables are measured at the year the trade barrier is first listed in the reports. I estimate robust standard errors clustered on industry to take into account possible correlation across barriers within the same industry. In order to avoid the problem of left censoring, I only include the cases that are first reported after 1995 (I lack the necessary duration information for barriers listed in 1995 because my dataset does not include earlier years). The right censoring is handled in the usual manner within the Cox proportional hazards model. The event status is coded one for the end of the dispute when the barrier is no longer included in the report. The covariates are the same as those in the previous section with the exception that I no longer control for the duration of the barrier since this is explicitly modeled.

The results of table 4 show the positive effect of filing a WTO complaint to reduce dispute

duration. The exponential coefficients are the clearest for interpretation and represent the multiplicative change in risk. The exponential coefficient of dispute settlement indicates that filing a WTO complaint is associated with a 1.5-fold increase in the risk that the trade dispute will end compared with other disputes where a complaint has not been filed. The ninety-five percent confidence interval ranges from 0.95 to 2.27 and the variable is weakly significant (p -value <0.087). Given the widely held view that adjudication is a lengthy process, the positive effect to shorten duration of a dispute is itself an important finding. This result highlights that while adjudication is slow, it may nonetheless be the fastest way to end disputes when controlling for the factors that influence selection of cases. Disputes that involve industries with large political contributions and highly distortionary trade barriers are at risk for longer duration, and yet these were also variables important in the decision to file a WTO complaint. For dynamic industries or heavily trade dependent small countries the adjudication process may take too long, but it still is likely to be more effective than alternatives.

5 Conclusion

This paper has shown the role of international institutions as a conflict resolution mechanism. The use of a formal dispute settlement mechanism helps governments to signal commitment to powerful domestic interest groups short of the more confrontational steps of unilateral retaliation. Filing a complaint challenging a trade barrier in WTO dispute settlement serves both to maintain the support of exporters and provides information to trade partners about the intensity of preferences.

The evidence that trade disputes with high political stakes on both sides are most likely to be selected for WTO adjudication counters the concern that only issues “ripe for cooperation” are being raised in institutional venues. Nonetheless, I demonstrate that WTO dispute settlement is effective to bring progress to change the trade barrier and shorten the duration of the dispute. Given that politicized cases are channeled into the WTO forum, it is remarkable that the dispute system has been relatively successful to resolve trade disputes.

A key point of this study is that the dispute adjudication mechanism solves a domestic political problem. It offers governments a way to show they are making effort for their home industry. As a costly negotiation strategy, WTO adjudication represents a signal to domestic lobbies and foreign governments of government commitment to address the foreign trade barrier. The argument is

supported by evidence that industries making larger political contributions are more likely to have a WTO complaint filed to challenge a foreign trade barrier that affects their exports. The channeling of aggressive unilateralism into WTO adjudication can also be seen from the high correlation between WTO adjudication and Section 301, which is a provision in U.S. trade law that triggers institutional constraints from Congress for the executive to take action against a foreign trade partner. In sum, when governments face political pressure to favor an industry, they choose WTO adjudication. This dynamic works on both sides of the dispute. WTO adjudication is also more likely when the respondent state faces high resistance to liberalization, such as for industries with high import penetration and a large share of employment. Acting as a lightning rod for trade conflict, the WTO dispute system attracts politicized disputes and promotes their resolution.

There may also be additional mechanisms by which dispute adjudication plays a role to maintain an open trade system. In particular, any legal system has as the fundamental goal the *deterrence* of violations. Thus any one WTO adjudication case may have ramifications beyond the change of the single barrier by one country that is in contention. Although rulings do not formally represent legal precedent, there has been a de facto evolution of jurisprudence building on earlier cases. Jackson (2001, 209) credits the high quality jurisprudence from WTO panels as one standard of institutional effectiveness. Each ruling clarifies ambiguities in the agreement, and in response, other states may decide not to adopt similar barriers. The record of strong enforcement may lead more generally to higher compliance. In this sense, each ruling has a broader trade value that cannot readily be measured. The deterrent effect of a WTO ruling is cited by industry representatives as a reason they seek WTO adjudication (Davis and Shirato, 2007). Busch (2007) argues that the desire for multilateral precedent vis a vis other states not party to a dispute accounts for why NAFTA parties often use WTO adjudication with each other even when NAFTA provides an equivalent dispute mechanism. In an analysis of preferential trade agreements, Kono (2007) shows that having a dispute settlement mechanism increases trade liberalization by promoting compliance. The broader deterrence effects of adjudication to improve compliance across members and over time would be on top of the directly observed effects analyzed in this study.

The evidence presented here has been from U.S. trade policy, and further research is necessary to investigate whether the trade policy choices of other states follow a similar political logic. Can

other states with less power also use adjudication to resolve disputes and protect their access to foreign markets? Some have argued that developing countries gain less from WTO dispute settlement than developed country members (Busch and Reinhardt, 2003; Bown, 2004a). Yet one might reach a different conclusion if comparing outcomes for developing countries in WTO dispute settlement relative to negotiation (Davis, 2006). One would expect that variables related to market size and trade dependence would be even more important outside of the legal setting that favors rule orientation over power orientation (Jackson, 1997). Once developing countries have passed the capacity threshold that enables them to use a complex legal system, they can wield the law to force a reluctant trade partner to take their complaint seriously. Indeed, given the relative power of the United States to use side-payments or threats in the informal setting of negotiations, one would expect the differential in outcomes to be the *smallest* for the United States. The effectiveness of dispute settlement relative to alternative strategies would be even greater for other countries that lack the market power to enforce agreements by other means.

6 Appendix

	Mean Diff.	eQQ Med	eQQ Mean	eQQ Max
Contributions	98.9	61.4	74.2	88.5
Section 301	9.6	0.0	8.3	0.0
Production (log)	87.0	57.5	81.1	86.6
Exports (log)	50.1	62.5	41.5	8.8
MPEN (partner)	62.6	77.5	20.5	22.0
Import policy	60.2	0.0	62.5	0.0
Distortion	18.7	0.0	17.6	0.0
EU	100.0	0.0	100.0	100.0
Japan	100.0	0.0	100.0	100.0
Korea	100.0	0.0	100.0	100.0
Mexico	100.0	0.0	100.0	100.0
Non-OECD	100.0	0.0	100.0	100.0
Duration	19.1	0.0	13.2	20.0
Propensity score	15.3	8.7	13.5	9.0

Table 5: Percent Improvement in Covariate Balance due to Matching: Each column shows percent improvement in covariate balance in terms of mean difference, the median, mean, and maximum values of differences in empirical quantile functions. The table shows that matching substantially improves covariate balance across all variables.

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