

SCREENING FOR SUCCESS:

The Effect of Firm Signaling on WTO Case Selection

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ABSTRACT: This paper presents a theory of informational lobbying by firms for trade liberalization, not through political contributions, but instead through contributions to the litigation process at the World Trade Organization. In this “litigation for sale” model, firms signal information about the strength and value of potential cases, and the government screens cases based on firms’ signals. The theory shows that firms play a key role in monitoring and seeking enforcement of international trade law, which increases a state’s ability to efficiently pursue the removal of trade barriers and helps explain the unusually high success rate for complainants in WTO disputes. I also examine dispute initiation across industries with heterogeneous firms and find that dominant firms play a key role in overcoming free-riding on WTO litigation. The theory’s implications are consistent with interviews with trade experts from leading WTO members and are tested against competing theories of direct political lobbying through an analysis of WTO dispute initiation.

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Given the consensus among economists that free trade is welfare enhancing, domestic interest groups are often blamed for the persistence of trade barriers. Yet even though “protection for sale” arguments have significant support (Gawande and Bandyopadhyay 2000; Goldberg and Maggi 2001; Grossman and Helpman 1994), domestic firms also play a prominent role in maintaining the liberal trading system and monitoring states’ international trade policies. In contrast to a significant body of work that examines when and why trade barriers arise, this paper studies how firms and governments monitor trade barriers and select which barriers to contest. While no agreement or institution has done more to liberalize the rules of the trading system than the General Agreement on Tariffs and Trade (GATT) and subsequently the World Trade Organization (WTO), states regularly impose barriers that are in conflict with their WTO obligations. In the presence of a multitude of potentially noncompliant trade barriers, states must decide how best to allocate their resources to monitor and enforce trade agreements. Building from theories of informational lobbying (Chalmers 2013; Lohmann 1995; Potters and Winden 1991), this paper analyzes the interaction between firms and their government and finds that a type of “litigation for sale” occurs. Unlike traditional models of lobbying, where interest groups make campaign contributions or offer election support, this paper identifies an alternative form of lobbying through litigation contributions – contributions to the fact-finding efforts, research costs, and litigation tasks – which play an important informational role by signaling the strength and value of potential trade disputes. In this manner, firms act as fire alarms (McCubbins and Schwartz 1984), allowing the government to screen cases and more efficiently monitor and enforce international trade agreements.

This paper examines the role and consequences of private firm participation in WTO dispute settlement, arguing that firms play an important role in monitoring WTO compliance and screening potential complaints. Although the WTO restricts dispute initiation to national governments, I show that private firms play an active role in the dispute settlement process. The theory presented here not only highlights the role of firms in maintaining the liberal trading system, but also contributes to burgeoning literatures in international relations on transnational versus interstate dispute settlement and the importance of formal versus informal rules of international organizations. I argue that the formal rules of the WTO Dispute Settlement Understanding allow its members to benefit from increased monitoring and enforcement provided by informal private firm participation, without governments taking on the additional risk associated with transnational dispute settlement, where private firms have direct legal access (Allee and Peinhardt 2010; Simmons 2014). Unlike their role

in transnational dispute settlement mechanisms, where firms' access to international arbitration can often put them at odds with their home government, I show that the WTO rules allow governments to garner increased information and resources from firms, while preserving their role as legal gatekeepers.² The result is that states are able to more efficiently screen and monitor potential WTO cases.

I show that private firms monitor WTO compliance and motivate states to seek enforcement of treaty obligations in two complementary ways. From a purely economic perspective, firms can contribute resources to support the litigation of WTO disputes, which reduces the costs of filing a complaint for the state. In this manner, litigation contributions are similar to what Hall and Deardorff (2006) refer to as legislative subsidies, however in this case they function as bureaucratic subsidies. More importantly, firms are also positioned to signal information regarding the legal strength of potential cases, which allows the government to more accurately predict the probability of success. As the gatekeepers, governments screen cases based on potential strength and value, which helps explain the nearly 90 percent success rate of WTO complainants (Davis 2012). I extend the analysis to examine firms' incentives to monitor and seek enforcement of international legal obligations across industries. Moving beyond an analysis of just a firm and government, I analyze when dominant firms within industries are likely to provide litigation contributions, overcoming free riding problems, and when firms are less likely to seek enforcement of trade obligations. The implications of the theory are consistent with qualitative and statistical evidence, suggesting that private firms use informal mechanisms to lobby for enforcement of states' WTO obligations.

In the broader context of the international compliance and enforcement literature, this paper contributes to the debate over how and when non-state actors mobilize to encourage increased state compliance with international law. While many scholars agree that private actors play important roles in determining when states comply with and seek enforcement of international law, how and when these actors change state behavior remains a contested issue (Bown 2009, Chap. 5; Chaudoin 2014; Dai 2005; Davis 2012; Johns and Rosendorff 2009). Focusing on the WTO, which is arguably the most influential international economic institution, I demonstrate the informational

²For more on the importance of informal procedures in international dispute settlement, please see Busch (2000), Kleine (2013), and Koremenos (2013).

role of private firm mobilization on states' enforcement of international trade law.

This paper proceeds in the following manner; the next section frames the debate over dispute settlement participation and discusses key determinants of case selection. I then develop a theory of firm participation, which centers on firms' ability to alter the case selection process of states by signaling the potential legal strength and value of the case by contributing to the litigation process. The implications of the theory are tested using firm-level data with a dataset of potential US trade disputes with major trading partners from around the world and are supported by interviews with international government officials and legal experts. Finally, the paper concludes with a discussion of some of the implications for theory and policy.

Framing Dispute Settlement Participation

Much of the existing discussion over WTO dispute settlement examines determinants of participation, which can be divided into research regarding which states choose to participate and which cases those states choose to bring to the WTO. It is generally agreed that countries engage in strategic decision making when considering whether to participate in WTO disputes (Betz and Kerner 2015; Chaudoin 2014; Johns and Pelc 2014, 2016), and that they choose to initiate disputes when their expected benefits outweigh the expected costs (Bown 2005b). Understanding what factors states evaluate when considering the expected costs and benefits of a case is a critical step to delineating how private parties alter the cost-benefit calculation of states.

Significant research has focused on the costs of initiating a dispute. The direct costs associated with bringing a WTO dispute are often several million dollars. According to one trade official interviewed for this project, the average cost of litigation in most WTO cases is around one million dollars per year for the duration of the dispute (Trade Official 2014).³ In addition to the direct costs of disputes, Horn and Mavroidis (2011) note that additional factors are often given causal weight in determining how states calculate the cost-benefit trade-off of WTO dispute settlement. One particular factor that has been examined in some detail is how power relations between potential

³Interviewees for this project had participated in multiple WTO disputes. Participants agreed to be interviewed anonymously, given that most are still involved in trade disputes. Participants agreed to be cited by either their *previous or current* professional position, or as anonymous.

disputants affect the probability a dispute is initiated. Research by Guzman and Simmons (2005) found that the “threat of coercive tactics by the powerful” state does not appear to be a major problem for WTO law. On the other hand, Bown (2005b) does find that states’ retaliatory capacity can play a significant role in determining whether a country files a WTO complaint.

Horn and Mavroidis (2011) also note that legal capacity and trade interest are important factors when states select potential complaints. The idea that a state’s trade interests motivate its decision to participate in a trade violation complaint is rather intuitive. Using trade interest as an explanatory variable seeks to account for the magnitude of injury a country experiences from a loss of market access derived from a non-competitive measure.⁴ Supporting this concept, Bown (2005a) concludes that the magnitude of exports affected by a particular case is positively correlated to the probability the case was initiated. This paper builds upon this and similar studies that support the understanding that states conduct a cost-benefit analysis when considering participation in WTO complaints (Horn, Mavroidis, and Nordstrom 1999; Bown 2005b).

The capacity of a state to engage in the dispute settlement process, including both the financial resources of a state and the state’s legal knowledge, also affects states’ participation in WTO disputes. Shaffer (2006) argues that two important limitations to states’ participation are a lack of legal expertise in WTO law and financial constraints to organizing effective representation in the WTO legal system. Empirical tests of the effect of litigation resources and previous WTO experience on dispute initiation have shown both to have positive effects (Bown 2005a; Davis and Bermeo 2009; Horn, Mavroidis, and Nordstrom 1999). Yet even among the WTO members least constrained by legal knowledge and resources, such as the US and the EU,⁵ the private sector often plays a role in relaxing these constraints, while also signaling the strength of the potential case. For

⁴Recent work by Bechtel and Sattler (2015) argues that, when evaluated at the aggregate level of broad industries, trade from a complainant to the defendant increases about \$7.7 billion in the years following a ruling. Examining much more specific product lines affected by trade, Bown and Reynolds (2015) find significant heterogeneity with regard to the value of trade contested in disputes, with some cases concerning less than \$1 million and others over a billion. Chaudoin, Kucik, and Pelc (2016) provide a more skeptical assessment of the impact of WTO disputes on trade flows.

⁵The EU is considered as a single entity because trade policy is centrally coordinated (Meunier 2005).

example, in the disputes DS316/DS347 and DS317/DS353 between the United States (Boeing) and the European Community (Airbus) each firm hired legal representation for the dispute settlement process (World Trade Organization 2010). Boeing employed the law firm Wilmer Cutler Pickering Hale & Dorr to assist in the WTO subsidy case and Airbus employed Sidley Austin LLP as counsel for the case (Sidley Austin 2009; Wilmer Hale 2010). The estimated contributions from the private firms to the litigation budget “were running at \$1,000,000 per month and could reach \$20,000,000 for each company...” (Shaffer 2008, 184). The striking role of private firms in the Airbus-Boeing disputes illuminates the importance of firms in mitigating resource constraints, while also playing an important informational role.

I build upon existing theories of informational lobbying to assess the role of private firms in WTO dispute initiation, while also considering the role of litigation contributions to signal the credibility of information and mitigate resource constraints that limit WTO participation. Although the WTO limits formal case initiation to governments, I choose not to limit the analysis by assuming that states’ resources are the only relevant input and instead aggregate available resources, which include the information and financial resources of the state and private firms. Although the theory focuses on the interaction between the firm and government and firms within an industry, the firm could also be a trade association, advocacy group, or other non-state actor with a vested interest and private knowledge of the case.

The Argument

Existing arguments regarding private firms’ influence on dispute settlement participation are generally limited to firms’ ability to define the trade agenda of states through traditional lobbying or government established mechanisms, such as Section 301 petitions in the United States (Bown and Hoekman 2005; Davis 2012). Although these means of influence are significant, some firms will employ additional measures, specifically contributing to the litigation process in an effort to increase the likelihood a case is brought to the WTO.

I argue that firms protect their interests through the dispute settlement process by contributing to the litigation costs of a WTO dispute, while governments use firm contributions to screen potential WTO complaints. Firms’ contributions can take many forms, including conducting research, preparing legal briefs, and even litigating the case on behalf of the state. When a government is

unwilling to pursue a case due to high litigation costs or their belief that the case is weak, firms can step in to fill the gap between expected costs and expected profits and to signal the strength of the case. Of course, governments still retain control over the gatekeeping process, so if the diplomatic externalities of the case are too high, the government may choose not to bring the case, which is a key distinction between the legal procedures of the WTO and transnational dispute settlement mechanisms.

I argue that firms have an informational advantage throughout the litigation process, given their position in perceiving and analyzing the trade barriers they face. The unique positions of firms can best be illustrated by considering their role in the three phases of litigation known as “naming, blaming and claiming” (Felstiner, Abel, and Sarat 1981). The naming phase involves identifying an injury to one’s trading prospects (Shaffer 2006). The difficulty and cost of naming varies depending on the type of potential violation. For example, when antidumping duties are implemented the country imposing them must notify the exporting firms making them particularly easy to identify, whereas the provision of subsidies that lower the cost to a competitor and reduce a company’s market share will be much more difficult and costly to identify (Bown 2009). Whether the cost is high or low, the private industry has the greatest incentive and ability to identify an economic injury. Through regular business practices, firms will be the first to experience the negative effects of WTO inconsistent measures, which means the costs of naming for private firms are relatively low when compared to the potential costs to the government.

The “blaming” phase of a dispute determines who is responsible for the injury identified in the first phase (Shaffer 2006). Once the injury is perceived, the blaming phase can be relatively straightforward. If the lost profits are due to a trade disruption with a specific trading partner or to a flood of imports from a specific country, minimal costs should be associated with identifying who is to blame.

Once the naming and blaming have been completed, the most expensive and complex phase of dispute settlement begins - “claiming.” This final phase consists of developing and pursuing a legal claim through the WTO (Shaffer 2006). Expenditures incurred during this phase include, but are not limited to, research costs, legal fees, administrative outputs, and travel expenses. A USTR official interviewed for this project estimates that half to three-quarters of the litigation expenses are devoted to the fact finding portion of claiming (USTR Official 2009). During this phase, private firms will quantify the value of lost revenue from trade, build the case connecting their losses to

the barrier in question, and then work with the government to formalize the complaint through the WTO dispute settlement process.

The comparative advantage of firms in naming, blaming, and claiming enables them to act as fire alarms, in the sense developed by McCubbins and Schwartz (1984), identifying and signaling the existence of harmful trade violations to their government. On the other hand, government efforts to act as “police patrols” are a relatively inefficient mechanism when compared to private firms. This creates an environment where private firms have an information advantage, uniquely positioning firms to monitor and signal cases to the government in an effort to protect their interests.

An example of this type of public-private relationship occurred in a WTO dispute over genetically modified foods between the European Community and the United States, DS291. In this case the United States, along with Argentina and Canada, requested the formation of a dispute settlement panel on August 7, 2003 (World Trade Organization 2012a). Prior to the initiation of consultations and the formal request for a panel, Monsanto, a producer of genetically modified foods, which had 15 products that had allegedly been adversely affected by the European Community’s actions (World Trade Organization 2012b), directly engaged the US government in an effort to ensure the case was brought.

Although domestic pressure had been rising for years for the USTR to initiate a WTO dispute, the tipping point for filing a WTO complaint occurred when private firms signaled their beliefs about the case and contributed to the litigation process. According to interviews with a USTR official, when deciding whether to initiate the case, the CEOs from the affected companies met with USTR officials and agreed to support the litigation effort (USTR Official 2009). In order to convince the government to bring the case, the firms had to fund and complete a “laundry list” of fact-finding and litigation assignments (USTR Official 2009). In this case, a relationship was built where the private firms showed their beliefs about the value and strength of the case by taking on a substantial portion of the fact-finding responsibilities and expenses. In response to the signals of the firms, the USTR moved forward with the case with greater confidence in the strength of the case and at a drastically reduced cost.⁶

⁶Firms’ litigation contributions may also increase the legal strength of the case by providing improved argumentation and additional evidence. In this paper, I do not evaluate the connection between contributions and legal strength, which means the theory provides a *conservative* approach to evaluating the importance of firms’ contributions.

From the perspective of the government, private party contributions are also important for relaxing the government's budget constraint, since the contributions act as a form of bureaucratic subsidy. For example, the USTR is responsible for initiating WTO complaints for the US, but their total budget is only about \$47.5 million annually (Cook 2013). Within their budget, the executive's top priorities are negotiating trade agreements – not litigating existing agreements (USTR 2014). This creates a situation where, as the USTR's top litigator noted, budget concerns limit the ability to initiate new legal complaints and seek enforcement of existing trade agreements (World Trade Online 2013). One attorney involved in numerous WTO disputes noted that there have been situations where governments were willing to file WTO disputes, but without litigation contributions from the affected firms, the government lacked the resources to move forward with the complaint (Associate Trade Attorney 2009a).⁷ Private firms' contributions can thus make a significant difference in which cases are likely to be brought. Government officials charged with seeking enforcement of trade agreements can increase their chance of success and their effective litigation budgets by screening cases based on firm contributions.⁸

The firms' contributions also play an informational role as a signal of the strength of the case, which is a key factor in determining when the government is willing to challenge potential WTO violations. Examining the European context, Chalmers (2013) notes that the “currency of lobbying in the European Union (EU) is information.” Firms' litigation contributions function as a signal of the firms' private information about the strength of the case, allowing the government to pursue

⁷The importance of private firm contributions has increased since the GATT years as cases have become increasingly fact intensive, which requires significantly more litigation contributions from firms in the form of research and expertise (Associate Trade Attorney 2009b).

⁸As in the case of DS291, the government can reduce its legal expenses when firms contribute to litigation costs by taking on responsibilities that might otherwise be considered the role of the state. Rather than having the state use government attorneys or publicly financed representation to prepare case-materials, firms can conduct research, prepare legal briefs, and even litigate the case on behalf of the state.

the strongest complaints. The importance of changing beliefs about the legal strength of cases was emphasized by one trade attorney interviewed for this project, who noted that there have been cases where the government did not believe there was a viable case, and that it was only through the preparation of arguments and pitch to the government by private firms that the government was convinced to bring the case (Associate Trade Attorney 2009a). Beliefs about the strength of the case are particularly important given governments' risk aversion when initiating WTO disputes. Two primary factors contribute to governments' heightened risk aversion, compared to firms. First, the government officials responsible for selecting cases face constrained budgets, and must choose from a broad set of potential cases and only initiate a select few. With this in mind, officials seek to pursue cases where they are most likely to use their resources effectively and be perceived as selecting the best cases. A European Commission official highlighted the importance of screening out weak cases, noting that the "strength of the legal issue" is of primary importance, while a USTR official noted that they seek "slam dunk" cases (USTR Official 2009; European Commission Official 2009). These statements reflect the unique risk to the government of pursuing a weak case. While firms also face resource constraints, each firm has a smaller set of potential disputes to choose from, and pursuing the firms' strongest case may still be somewhat of a gamble, whereas government officials have the opportunity to select a pool of strong cases, and are best off choosing only the strongest. Additionally, when a government pursues and loses a WTO complaint, they not only face the losses from the dispute in question, but they also face a changed legal landscape where the issue in question is given a green light by the WTO. This raises the cost of losing a complaint, because there may be potentially far reaching externalities from the adoption of similar policies by other trade partners. For example, if the US were to file and lose a complaint against China regarding currency manipulation, not only would China be able to continue their policies, but other countries would now be able to adopt similar policies without fear of legal challenges (Davis 2012, 165-168). Due to the risks associated with losing a complaint, governments place significant weight on the strength of cases when evaluating whether to challenge potential WTO violations.

For firms to play a pivotal role in WTO dispute selection, and thus in the monitoring and enforcement of international law, firm contributions must do at least one of two things. Either, the contributions lead to the government updating its beliefs about the strength of the case, such that the government is now willing to initiate a dispute, or the firm's contributions must sufficiently alter the government's calculation of the value of the case relative to the costs, by reducing the resource

constraint for the government. I now walk through the implications of the theory, examining when and how firms play a critical role in monitoring compliance with international law and seeking enforcement of those laws through WTO dispute initiation.

An obvious result of the theory is that a case will not be initiated if the litigation cost for a case is greater than the combined expected payoff to the government and firm. Such cases, by definition, are not profitable to pursue and so neither the firm nor the government would contribute to them. A further general result of the theory is that whenever the total litigation cost is less than the expected profit to the government, the firm will choose not to contribute, because the government will initiate the case without a contribution from the firm. This means that the litigation cost of the case is low enough relative to the expected payoff that it is beneficial for the government to unilaterally initiate the case. Although rare, these types of cases would likely be brought when the precedent value of a case is high, which occurred in some of the early intellectual property rights disputes (USTR Official 2009).⁹

The most interesting results of the theory are from the set of cases where the government would be unwilling to initiate the case without a litigation contribution from the firm. The first set of such cases are those where the expected profit to the government is less than the total litigation cost. In a unitary actor model, these cases would be viewed as unprofitable, however the firm's litigation contribution can alter the expected payoffs to the state by reducing the cost the government bears, making such cases profitable to the government and increasing the universe of cases where the government will seek enforcement. A second, and potentially overlapping, group of cases are those where the government's prior belief regarding the strength of a case is sufficiently low that the government does not believe case initiation is profitable. In this group of cases, if the firm knows that the case is strong, it can credibly signal the strength of case to the government, thus altering the expected payoffs of the government and motivating the government to initiate the case.

In order for the firm's contribution to be a credible signal about the strength of the case, the firm must reach a "contribution threshold" whereby its contribution must be greater than the firm's expected profit from a weak case. This contribution threshold eliminates the incentive for

⁹It has become widely accepted that the *de facto* importance of precedent can be quite high in WTO disputes (Bhala 1999; Busch and Pelc 2010; Pelc 2014).

firms to attempt to bluff the government and persuade the government to initiate weak cases, since any attempt to bluff would cost the firm more than its expected payoff from a weak case. The contribution threshold means that the government will not update its beliefs about the strength of the case when the firm contributes less than the firm's expected profit from a weak case.¹⁰ This implication of the theory helps explain the extremely high success rate of WTO complainants, given that governments are able to screen out potentially weak cases when working with private firms during the litigation process.¹¹

A further implication of the theory is that, all else equal, a case will be more likely to be initiated when the distortion caused by a particular trade barrier is greater. A higher level of distortion means that a country will be forgoing relatively more trade, which increases the value of initiating the case. Distortion also acts as a proxy for legal strength, given that proving economic harm can be an important facet of achieving compensation and securing a legal victory, and is indeed required for Article XXIII nullification or impairment complaints. Distortion impacts the expected profit and strength of the case, which means trade barriers with higher distortion should be contested in the WTO with a higher probability than similar barriers with lower levels of distortion.

Analyzing the interaction between a firm and the government provides a useful starting point for understanding WTO case initiation, but I now consider the incentives for an industry with multiple firms. Evaluating the likelihood of firm contributions within an industry with multiple firms allows me to examine how heterogeneous preferences across firms affects the case selection process. I begin by considering the situation where multiple firms within an industry may be affected by a potential trade barrier and have heterogeneous preferences with regard to the potential dispute. While firms still have better knowledge about the strength of a case, I now consider how uncertainty over the

¹⁰A proof of this statement is shown in Brutger (2016, 67-68).

¹¹Although some models of judicial case selection would suggest that defendants would anticipate this selection process and avoid going to trial when cases are strong, Davis (2012, 88) explains why many members of the WTO “stonewall” trade settlements and instead go to trial at the WTO. Since the WTO does not include retroactive punishment, many defendants will go to trial, even when facing strong cases, to delay removing non-compliant measures.

heterogenous valuations of the firms affect the likelihood they contribute to the litigation process.

In a world with multiple firms, I assume the government receives a contribution from the industry, which is the sum of the contributions from all firms within the industry, which must still reach a contribution threshold. When firms within an industry reach the contribution threshold the government will choose to initiate the WTO dispute. As in the previous discussion, the choice to bring the case by the government is dichotomous; it either does or does not initiate the case. With these constraints in mind, this setup perfectly resembles a contribution game where private actors with incomplete information engage in a game to provide a discrete public good. In this case the public good can be thought of as the initiation of the case, where the good is the benefit from the case that accrues to the firms within a given industry. Of course, not all firms within an industry will benefit equally from a given trade dispute, which is why firm level valuations for the case are heterogeneous.

To analyze the incentives and behavior of firms within an industry, I assume firms' decisions take place simultaneously in a one-shot contribution game. The contribution game specifies that all costs that are paid by firms to the litigation expenses are not refundable, which is consistent with the practice of the case selection process. This type of game has been analyzed in different contexts by Menezes, Monteiro, and Temimi (2001) in "Private Provision of Discrete Public Goods with Incomplete Information."

In the most simplistic version of the game, I consider firms strategies when the cost of contributing the good is low enough such that a single firm can initiate the case. In this situation a single firm will contribute the necessary threshold and the good is provided, which means the government initiates the case. Although multiple firms could contribute to the cost of bringing the case, the symmetric equilibrium exists where a firm with a sufficiently high payoff will provide the good on its own (Menezes, Monteiro, and Temimi 2001, 499).

The first implication to emerge from the game with incomplete information and heterogeneous firms and contributions is that industries with dominant firms will be more likely to initiate cases, since it is more likely that a dominant firm will be able to afford to pay the contribution threshold. This finding hinges on the fact that an industry where a single firm has a relatively high expected payoff from a WTO case, such that the contribution threshold is less than or equal to the firm's valuation, has a strictly greater probability of contributing to the litigation cost of a dispute than an industry where no single firm has an incentive to pay the contribution threshold, in which case the

probability that a case is initiated is strictly less than one (unless the case is initiated unilaterally by the government). Furthermore, a dominant firm will also be most likely to have the capacity to pay the necessary threshold. All else equal, in industries where dominant firms have relatively high expected payoffs and capacity to pay the litigation contribution, the probability that there exists a single firm willing to pay will be greater than in an otherwise identical industry. Thus, we should expect to see more case initiation in industries with high capacity dominant firms.

Next I consider the contribution game when no single firm can afford to pay the contribution threshold, and I find that a coordination problem exists that eventually becomes great enough that a symmetric equilibrium resulting in case initiation is no longer possible. For a wide range of costs of a public good, the coordination problem prohibits provision of the good (Menezes, Monteiro, and Temimi 2001, 496). Of particular importance is the finding that if the cost of the public good is slightly above the aggregate mean of the valuations then the unique equilibrium of the contribution game is for each player to contribute zero no matter what its value is (Menezes, Monteiro, and Temimi 2001, 502). This implies that even when an industry as a whole may stand to benefit from the initiation of a WTO dispute, if no single firm can afford to pay the necessary litigation cost to motivate the government to file and the average valuation by all firms within the industry is low enough, the case will not be initiated.¹² From this, a second implication emerges – as the mean value and capacity for the industry increases, case initiation becomes more likely, since there is a greater chance that the mean value and capacity for the industry will exceed the cost of litigation, which makes it more likely firms will contribute to the litigation process.

Evidence of Firm Signaling and Contributions

I now test the implications of the theory using firm-level data gathered from Compustat in conjunction with the Foreign Trade Barrier Dataset (FTBD), which allows me to test the effect of firms' litigation capacity, the level of trade barrier distortion, and competing theories on the probability of dispute initiation from a set of potential WTO cases. The FTBD is comprised of potential disputes,

¹²It can also be shown that the probability that the good is provided in this situation is strictly less than one, even when the mean contribution does not exceed the prohibitive threshold and when the outcome would be efficient (Menezes, Monteiro, and Temimi 2001, 496).

which are defined as harmful trade barriers to US exports identified in the National Trade Estimate (NTE) annual reports (Davis 2012).¹³ This dataset has a unique advantage over previous datasets that examined exclusively antidumping measures or self-reported trade barriers. Unlike previous datasets, the FTBD encompasses non-tariff barriers and regulations that affect a range of industries, investment policies, and trade standards as perceived by the “victim,” the US, between 1995 - 2004. The data allow me to test the model’s implications within a subset of potential trade barriers that have met a minimum threshold to be recognized by the government. The data are restricted to trade barriers against the US, which has the advantage of holding the initiating country constant, which controls for a multitude of potential covariates.¹⁴

The unit of analysis is the trade barrier, with an observation included for every year the NTE mentions the barrier in their report. I begin by testing the influence of distortion caused by a trade barrier on the probability that the barrier is challenged in the WTO. The *Distortion* variable for each trade barrier is coded as an indicator variable that identifies cases with significant market closure resulting from a ban, quota, or increase of tariff/duty of more than 10 percent, standards or rules of origin that create a de facto ban on imports, violation of intellectual property rights, or subsidies to competitors (Davis 2012). The expectation for distortion is positive, as the variable directly increases the payoff from the case and the expected legal strength.

To test the the effect of industry-specific variables, the industry affected by the trade barrier is coded at the level of the ISIC3 4 digit classification. The model predicts that across industries, those industries with dominant firms with the capacity to pay the litigation costs and with a sufficiently

¹³Trade barriers may be reported to the USTR, and thus enter the NTE reports, via numerous methods, including a telephone hotline or online reporting. This means there is a relatively low threshold for barriers to enter the dataset; however, if some low-value barriers are left out, this would attenuate the results and is thus not a major concern for this paper.

¹⁴The US acts as the requesting complainant in more than 25 percent of the disputes (Brutger and Morse 2015), making it the most active complainant at the WTO. Additionally, interviews with officials from the EU, who initiate about another 20 percent of WTO complaints (Brutger and Morse 2015), show a similar reliance on private firms’ signaling through litigation contributions.

high value for the dispute are most likely to initiate cases. To examine the capacity of dominant firms within industries, I compiled firm-level data using the Compustat database. For each industry, I test the effect of *Dominant Firm Capacity*, measured as the log of the earnings in a given year for the top earning firm in the industry.¹⁵ I also test the *Average Firm Capacity* for each industry, using the average earnings for each industry in a given year. Together, these measures allow me to examine two of the comparative statics that emerge from the analysis of heterogeneous firms and incomplete information.

To control for other case factors and to test competing hypotheses, I include a range of controls. First, I examine whether progress has been made in negotiating the removal of the trade barrier. *Progress* is coded on a four point scale indicating the level of progress toward resolving the disputed trade barrier (Davis 2012). Because a WTO dispute is a costly means of removing a trade barrier, I expect that if significant progress is being made through other means a WTO complaint will be less likely. I also control for the length of time, *Duration*, the trade barrier has been reported in the NTE. The expected sign for duration is negative, as barriers that have been constant over time are less likely to be challenged than new barriers that suddenly disrupt trade flows. I also control for whether there is an active Section 301 petition (*Active 301*). An active 301 petition requires government attention and is expected to have a positive influence on the probability a case is initiated.

To test competing hypotheses, I also test the influence of industry size and political contributions, directed exports to the trade partner, and country specific effects. The theory presented in this paper suggests that firms with the capacity to contribute to the litigation process play a critical role in the case selection of disputes by signaling information about the strength of a case. A plausible counter argument is that well-organized industries could buy litigation through traditional lobbying such as campaign contributions and electoral support. I test this competing theory by evaluating the effect of industries' political contributions to political parties and politicians. This variable is coded as the log of total political contributions in constant year 2000 dollars, as reported by the Center for Responsive Politics (Davis 2012). To evaluate whether industry size is driving the results, I also test the value of production of the industry, measured as the log of its total production (Davis

¹⁵The specific earnings are defined as "retained earnings", which are the cumulative earnings of the company less total dividend distributions to shareholders.

2012). If direct political influence or the the size of the industry is the driving force, then political contributions and production value should have a positive effect on whether a case is initiated. I also test the theory that relative economic power plays a significant role in dispute initiation, which is derived from the self-enforcing nature of the WTO dispute settlement system. I test this proposition with the log of the annual exports from the US to the trade partner imposing the barrier.

Because the dependent variable of interest is a dichotomous decision whether or not to file a WTO complaint for a particular trade barrier in a given year, I use a logistic regression to analyze the data. I employ a random effects model with groups defined at the ISIC3 4 digit level, which addresses the fact that a number of the variables, including key treatment variables, occur at the industry level.¹⁶ This selected model identifies intercepts by industry, while allowing for the effects of the key variables of interest to be analyzed across the dataset. I first test the influence of dominant firm capacity and distortion and the results are reported in Table 1.

The results of the random effects models illustrate the positive and significant influence Distortion and Dominant Firm Capacity have on the probability a trade barrier is challenged in the WTO. Model 1 analyzes the results in a basic form, while Model 2 controls for country specific effects among some of the primary trading partners of the US. The results demonstrate that the variables of interest are not sensitive to country level controls and the additional controls of Progress and Duration have the expected sign. Robustness checks were run with Mexico, Korea, or non-OECD countries as the base-group (results not reported here), and the results were consistent across specifications.

Model 3 and Model 4 introduce variables testing competing theories of case selection, in addition to controlling for an active Section 301 petition in Model 4. Model 3 tests the impact of (the log of) total exports of the US to the trade partner, which does not have a significant effect. I also examine the possibility that the relative value of the industry might be accounting for the significance of the dominant firm's capacity, which would occur if the the presence of a high capacity dominant firm was highly correlated with the production value of the industry. Model 3 controls for the log of the industry's production value and demonstrates that even when controlling for the industry's size, dominant firm capacity remains a significant factor in determining dispute initiation.¹⁷ Lastly, I

¹⁶The results are robust to grouping on trade barrier as Davis (2012) does.

¹⁷It is also possible that certain industries are more or less likely to be involved in disputes, due to the type of business they do or other traits constant to the industry. To address this concern, I

examine whether other forms of political influence, such as direct lobbying have a significant effect. Model 4 shows that political contributions are not statistically significant. The Section 301 petition has the anticipated effect and is statistically significant in the sparser model, but not so in the full specification in Model 5.¹⁸

replicate the results with fixed effects at the industry level. The results are consistent with those reported in Table 1 and are discussed in the appendix, section A-2.

¹⁸The results from Model 5 are also consistent when controlling for the value of exports from the affected industry (instead of US Exports to Trade Partner), although data limitations result in more than a third of the observations being dropped, which results in some key variables losing statistical significance.

Due to data availability the number of observations fluctuates across models. To examine whether changes in significance are driven by changes in the sample, particularly for an active Section 301 petition, all results are replicated using the same sample of 1407 observations. The results are consistent with those reported in Table 1, and are displayed in the appendix, section A-1.

Table 1: Random Effects Logistic Regression of WTO Dispute Complaints	Model 1	Model 2	Model 3	Model 4	Model 5
	Dominant Firm Capacity	0.286** (0.142)	0.312** (0.150)	0.304* (0.154)	0.265* (0.157)
Trade Barrier Distortion	2.361*** (0.766)	2.427*** (0.784)	2.257*** (0.776)	2.179*** (0.771)	2.238*** (0.807)
Negotiation Progress	-1.235*** (0.442)	-1.168*** (0.442)	-0.922* (0.467)	-1.280*** (0.444)	-1.010** (0.475)
Trade Barrier Duration	-0.262** (0.131)	-0.252* (0.134)	-0.243* (0.136)	-0.250* (0.129)	-0.134 (0.153)
EU		1.108 (1.111)			1.464 (1.276)
Japan		0.870 (1.198)			0.306 (1.547)
Mexico		1.649 (1.278)			0.284 (1.921)
Korea		0.636 (1.262)			-3.513 (2.819)
NonOECD		0.029 (1.180)			-5.167 (3.969)
US Exports to Trade Partner			0.144 (0.235)		-2.016 (1.294)
Industry Production			-0.059 (0.268)		0.310 (0.444)
Political Contributions				-0.232 (0.196)	-0.255 (0.328)
Active 301				1.620** (0.648)	1.468 (0.984)
Constant	-7.999*** (1.536)	-8.975*** (1.997)	-10.894 (7.158)	-4.099 (3.213)	43.319 (33.186)
N	1635	1635	1418	1624	1407

* $p < .1$, ** $p < .05$, *** $p < .01$

Random effect models calculated using xtlogit with STATA10. Random intercepts calculated for groups at the industry level, defined as the ISIC3 4 digit industry. Canada is the omitted comparison. P-values are calculated using a two-tailed test.

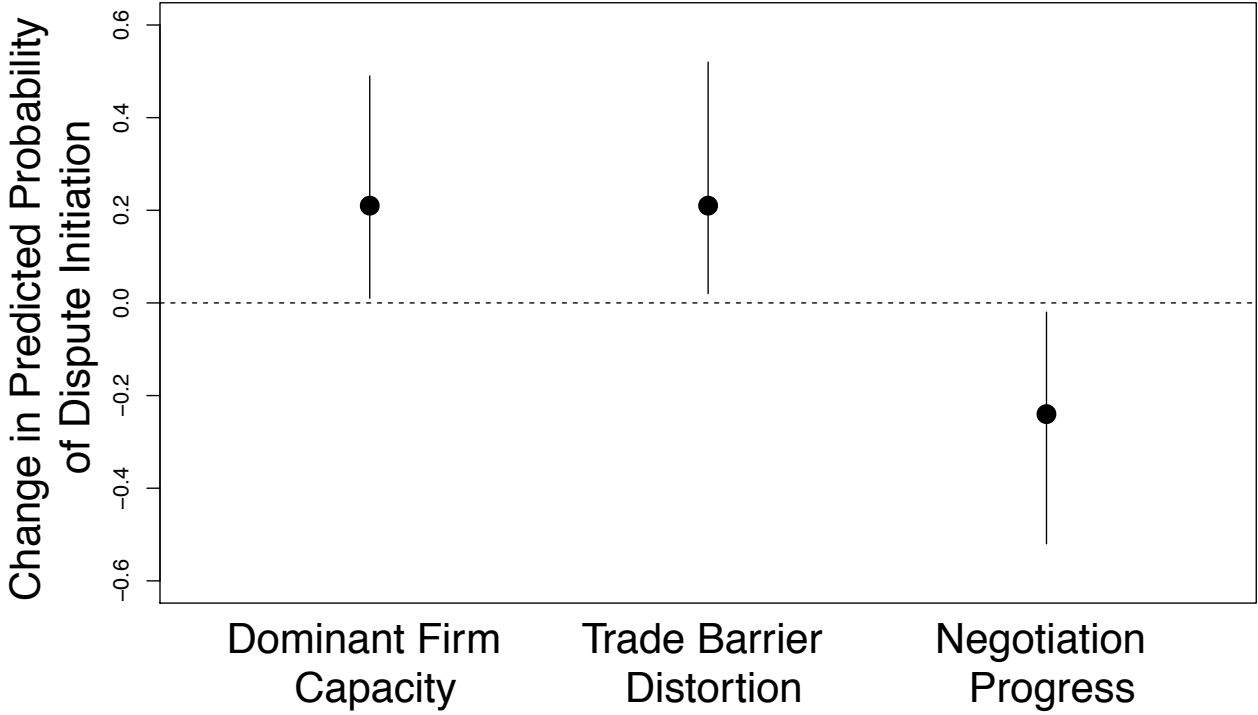
To evaluate the substantive significance of the findings, I estimate the predicted probabilities of filing a WTO complaint given varying levels of dominant firm capacity, trade barrier distortion, and progress while holding the remaining variables at their means or a value of 1 for dichotomous variables.¹⁹ I use Model 5 from Table 1, which controls for an array of competing variables and country effects, and thus is the preferred specification. From the predicted probabilities, I calculate the change in the probability of dispute initiation for a shift from one standard deviation below the mean to one standard deviation above the mean in significant variables, which are reported in the top panel of Figure 3.

The predicted probabilities of filing a complaint with dominant firm capacity one standard deviation below the mean, when the hypothetical defendant is Mexico, is 0.20. The same probability with the dominant firm's capacity one standard deviation above the mean is 0.40. In practice, this change is approximately the effect of changing from an industry manufacturing games and toys to an industry manufacturing pharmaceutical products. Similarly, the predicted probability for a case with distortion equal to 0 is 0.07, as opposed to 0.28 with high distortion. Clearly, both the capacity of the dominant firm and distortion have a significant effect on the likelihood a trade barrier is challenged.

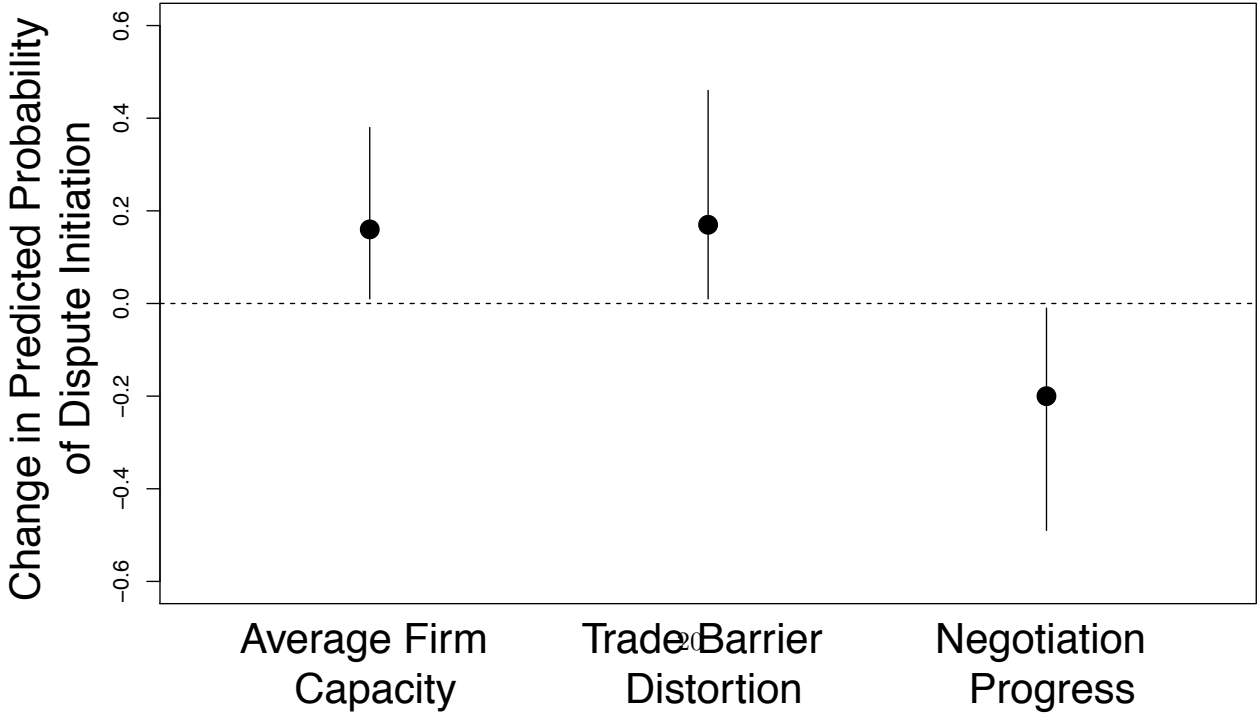
In the same progression as Table 1, I test the impact of average firm capacity with the results reported in Table 2. The impact of average firm capacity is robust to country specific effects and the full range of controls for competing theories. Using the full specification from Model 5, I examine the substantive influence of average firm capacity on dispute initiation, with the results displayed in the lower panel of Figure 3. The change in average firm capacity increases the probability of case initiation from 0.20 to 0.36, highlighting the substantive impact of average firm capacity.

¹⁹The defendant country is Mexico, so other country dummies and the non-OECD countries are set to 0.

Figure 1:
**Effect of Significant Variables
on the Probability of Dispute Initiation**



Change in predicted probability is calculated from Model 5 of Table 1



Change in predicted probability is calculated from Model 5 of Table 2. Estimates and 90 percent confidence intervals are calculated using a quasi-bayesian simulation that samples 2000 times from a distribution based on the coefficients and variance. Changes in predicted probabilities represents a shift from one standard deviation below the mean to one standard deviation above the mean of the variable, or a shift from 0 to 1 for distortion. All other variables are held at their mean or one for indicator variables, and the hypothetical defendant is Mexico.

Table 2: Random Effects Logistic Regression of WTO Dispute Complaints	Model 1	Model 2	Model 3	Model 4	Model 5
	Average Firm Capacity	0.0007** (0.0003)	0.0008** (0.0003)	0.0009*** (0.0003)	0.0006* (0.0003)
Trade Barrier Distortion	2.177*** (0.766)	2.166** (0.775)	2.070*** (0.774)	2.035*** (0.767)	1.987** (0.792)
Negotiation Progress	-1.139** (0.442)	-1.021** (0.442)	-0.879* (0.467)	-1.256*** (0.441)	-0.964** (0.470)
Trade Barrier Duration	-0.269** (0.130)	-0.262* (0.134)	-0.252* (0.135)	-0.254* (0.131)	-0.144 (0.156)
EU		0.905 (1.097)			1.213 (1.277)
Japan		0.483 (1.192)			-0.109 (1.573)
Mexico		1.397 (1.278)			0.000 (1.952)
Korea		0.165 (1.262)			-4.164 (2.929)
NonOECD		-0.395 (1.200)			-5.587 (4.043)
US Exports to Trade Partner			0.253 (0.259)		-2.037 (1.305)
Industry Production			-0.137 (0.258)		0.070 (0.443)
Political Contributions				-0.221 (0.192)	-0.114 (0.343)
Active 301				1.599** (0.663)	1.360 (1.015)
Constant	-5.697*** (0.756)	-6.126*** (1.234)	-10.23 (7.534)	-2.162 (3.176)	47.409 (33.853)
N	1635	1635	1418	1624	1407

* $p < .1$, ** $p < .05$, *** $p < .01$

Random effect models calculated using xtlogit with STATA10. Random intercepts calculated for groups at the industry level, defined as the ISIC3 4 digit industry. Canada is the omitted comparison. P-values are calculated using a two-tailed test.

The empirical results provide valuable support for the theoretical model of this paper, but they cannot identify how the theoretical mechanisms function in practice. To shed light on how the predictions of the theory function, I conducted interviews with top trade experts with the European Commission (EC), the USTR, and international law firms. The interviews are not designed to test the models, but instead to understand how private firms engage governments and what effect they have on WTO case selection. All interviewees had engaged in numerous WTO trade disputes and were still actively engaged or anticipated being engaged in WTO disputes. The interviewees included a former USTR General Counsel, USTR Legal Advisor in the mission to the WTO, International

Trade Counselor to the European Commission, and private international trade attorneys who were from or worked on cases involving Australia, Brazil, Canada, the EU, Korea, Mexico, the US, and other countries.

Reflecting their varied backgrounds and nationalities, the interviewees highlighted notable variation in how private firms and governments work together, but regardless of whether they were discussing WTO complaints raised by countries in Latin America, Europe, the Asia-Pacific region, or North America, each commented on the important role of private firms in the dispute escalation process. The USTR General Counsel noted that having firms actively engage in the fact-finding and development of the basic legal arguments was invaluable (USTR General Counsel 2009). Another USTR official commented that the agency was “very needy” when it came to preparing the facts of WTO cases and that firms commonly did much of the leg work of the fact finding (USTR Official 2009). Similarly the EC official noted that the EC is ill equipped to independently evaluate and pursue fact intensive cases (European Commission Official 2009).

Although the consensus amongst those interviewed is that private firms play a critical role in the dispute settlement process, it was also noted that different cases and countries yield different styles of government-firm interactions. For example, according to a partner at a major international law firm involved with a WTO case involving Brazil (Embraer) and Canada (Bombardier), the government contributed a mere five percent of the total costs, while the private companies paid the remaining 95 percent (Trade Attorney 2009). This example is on the high-end of private party contributions, but the same partner estimated that the average cost breakdown across WTO disputes would be distributed 20 percent to the government and 80 percent paid by private parties. These figures illustrate the reliance of governments on private parties to identify strong cases, develop them, and pursue WTO complaints. The breakdown of costs illustrates that private parties not only play a significant role in identifying harmful violations, but also play a vital role in signaling the strength of the case and offsetting costs by contributing the majority of litigation expenses in many cases.

Interviews with government officials also provided support to the argument that firms act as a form of fire alarm and are the first movers of the dispute settlement process. Even though the WTO formally blocks private dispute initiation, both USTR officials noted that private parties typically initiate the naming and blaming phases that lead to WTO complaints (USTR General Counsel 2009; USTR Official 2009). Specifically, the former USTR General Counsel noted that private parties are generally responsible for identifying a trade violation, gathering the basic facts

of the case, and preparing initial legal arguments, which are then presented to the government to be formally brought to the WTO (USTR General Counsel 2009). He also noted that in the US the agency does not actively seek out potential complaints to pursue in the WTO. Rather than acting as a police patrol the government responds to private companies who “pitch” cases to the government. Prior to the initial pitches the private parties have already substantially contributed to the litigation effort by identifying strong cases and conducting the fact finding and preliminary legal analysis of the case. In this manner, even though firms lack formal access to the litigation process such as in transnational arbitration, they still play a consequential role in the monitoring, enforcement, and litigation of WTO obligations.

The interviews illuminate some of the mechanisms of WTO case selection and lend general support to the theory and broader statistical results. In aggregate, the evidence points to a prominent informational role for private firms in helping governments around the world screen potential cases and enforce WTO obligations. The findings illustrate that industries with dominant firms react to highly distorting trade barriers by contributing to the litigation costs of the case, which leads governments to update their beliefs about the strength of the case and their assessment whether or not to initiate a WTO dispute.

Conclusion

The theory presented in this paper has direct implications for our understanding of firms’ roles in influencing trade policy. The theory shows that enforcement of international trade obligations is significantly influenced by private firms’ role in monitoring and enforcing WTO obligations and suggests that unitary actor models that focus on the formal rules of the organization underreport the number of claims that are profitable for states to initiate. Specifically, cases where costs are only slightly higher than expected profits would be deemed unprofitable under previous models. In contrast, the theory presented here predicts that these cases become the most likely cases for firm participation.

The model also suggests that the branches of literature that focus on compliance with international trade law and increasing access to the dispute settlement process for developing countries have overlooked one of the most important mechanisms to achieve their goals. Informal private firm contributions can enhance WTO participation by helping governments effectively screen potential disputes and more efficiently enforce WTO obligations. For scholars interested in increasing devel-

oping country participation in the WTO, this paper highlights a mechanism beyond international legal service centers and private sector pro bono legal assistance (Bown and Hoekman 2005). However, even though private firm participation allows states to more efficiently monitor and enforce WTO obligations, without facing the risks of formal access to private dispute initiation associated with transnational dispute settlement, it may also raise new concerns about redistributive consequences. For example, industries with dominant firms are more likely to overcome collective action challenges, making them more likely to have their interests represented at the WTO, whereas more diffuse industries may find it harder to have their voices represented at the WTO. While a notable bias in favor of industries with dominant firms exists, there are cases of more diffuse industries coordinating their activities when the stakes are high. One such example resulted in Brazil filing a WTO complaint over sugar, where Brazilian farmers auctioned off some of their equipment to pay for the litigation contributions (Trade Attorney 2009). The contributions from Brazilian farmers demonstrate that even though the barrier may be high, it is possible for less concentrated industries to coordinate their efforts when the value of the case is great and advocate for the enforcement of international trade obligations.

The theory presented here demonstrates the importance of understanding the role of firms for WTO participation and the enforcement of international trade law. While domestic interest groups are often blamed for trade protection, it is clear that private firms also promote trade liberalization by monitoring and enforcing international agreements. In a broader context, this paper contributes to the debate on the monitoring and enforcement of international law and the significance of formal and informal rules and procedures in international organizations. As presented, private firms are significant actors who play a valuable role in shaping how the international legal system functions. Even when formally denied access to dispute initiation, private parties actively engage in the international legal system and play a defining role in how states respond to violations of international law. Although non-state actors were omitted from the original text of the Dispute Settlement Understanding and were left out of much of the early literature on WTO dispute settlement, private parties' contributions to the litigation process allow governments to screen potential cases and represent a salient path that non-state actors use to effectively engage in and influence the international legal system.

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SCREENING FOR SUCCESS:

The Effect of Firm Signaling on WTO Case Selection

Online Appendix

Table of Contents:

A-1. Sample Variation in Empirical Models

A-2. Industry Level Fixed Effects

A-1. Sample Variation in Empirical Models

Due to data limitations, the number of observations varies in the empirical analysis of the paper. In the following table, the models from Table 1 are replicated, but use the same constrained sample across all models. The results show that the main results are not an artifact of the changing samples across models.

Table 3: Random Effects Logistic Regression of WTO Dispute Complaints

	Model 1	Model 2	Model 3	Model 4	Model 5
Dominant Firm Capacity	0.298** (0.151)	0.332** (0.161)	0.302** (0.154)	0.259* (0.159)	0.310* (0.175)
Trade Barrier Distortion	2.235*** (0.772)	2.335*** (0.796)	2.257*** (0.776)	2.082*** (0.777)	2.238*** (0.807)
Negotiation Progress	-0.977** (0.464)	-0.952** (0.476)	-0.919** (0.466)	-1.035** (0.466)	-1.010** (0.475)
Trade Barrier Duration	-0.239* (0.136)	-0.234* (0.138)	-0.244* (0.136)	-0.240* (0.134)	-0.134 (0.153)
EU		1.021 (1.113)			1.464 (1.276)
Japan		0.682 (1.277)			0.306 (1.547)
Mexico		1.130 (1.473)			0.284 (1.921)
Korea		0.488 (1.263)			-3.513 (2.819)
NonOECD		0.028 (1.181)			-5.167 (3.969)
US Exports to Trade Partner			0.146 (0.235)		-2.016 (1.294)
Industry Production			-0.055 (0.269)		0.310 (0.444)
Political Contributions				-0.165 (0.216)	-0.255 (0.328)
Active 301				1.335* (0.718)	1.468 (0.984)
N	1407	1407	1407	1407	1407

* $p < .1$, ** $p < .05$, *** $p < .01$

This table reports results using the smallest subset of data with results reported in Table 1 of the main paper. Random effect models calculated using xtmeologit with STATA10. Random intercepts calculated for groups at the industry level, defined as the ISIC3 4 digit industry. Canada is the omitted comparison.

A-2. Industry Level Fixed Effects

It is possible that certain industries are more or less likely to engage in trade disputes, regardless of dominant firm capacity. To address this concern the following table replicates the models from Table 1, but uses fixed effects models, with fixed effects for each industry.¹ This allows us to examine how changes in the variables of interest affect dispute initiation within industries. The results are consistent with those reported in the body of the paper, showing that Dominant Firm Capacity is not just capturing other traits of the industry.

Table 4: Industry Fixed Effects Logistic Regression of WTO Dispute Complaints

	Model 1	Model 2	Model 3	Model 4	Model 5
Dominant Firm Capacity	0.662** (0.282)	0.776** (0.345)	0.653** (0.324)	0.614** (0.286)	0.889** (0.394)
Trade Barrier Distortion	2.784*** (0.800)	2.886*** (0.881)	2.579*** (0.805)	2.582*** (0.814)	2.722*** (0.989)
Negotiation Progress	-1.299*** (0.463)	-1.133** (0.478)	-1.091** (0.486)	-1.275*** (0.472)	-1.044** (0.505)
Trade Barrier Duration	-0.225* (0.129)	-0.208 (0.129)	-0.220* (0.131)	-0.211 (0.135)	-0.051 (0.166)
EU		1.074 (1.269)			2.431 (1.906)
Japan		0.420 (1.438)			-0.170 (2.342)
Mexico		1.483 (1.386)			-0.144 (2.540)
Korea		-0.602 (1.414)			-5.179 (4.198)
NonOECD		-0.237 (1.336)			-6.439 (5.612)
US Exports to Trade Partner			0.264 (0.301)		-2.653 (1.761)
Industry Production			-0.124 (1.023)		0.071 (1.731)
Political Contributions				-0.218 (0.870)	0.189 (1.123)
Active 301				1.308 (0.909)	1.501 (1.432)
N	1059	1059	999	1056	996

* $p < .1$, ** $p < .05$, *** $p < .01$

Fixed effect models calculated using xtlogit with STATA10. Fixed effects are at the industry level, defined as the ISIC3 2 digit industry. Canada is the omitted comparison.

¹The industry is grouped at the ISIC 2 digit level for these models. This is done because 51 groups at the ISIC 4 digit level would have to be dropped due to lack of variation in the dependent variable.