10. The strategic calculus of WTO dispute initiation: evidence from the United States[1]

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INTRODUCTION

The World Trade Organization (WTO) is one of the prime examples of legalization in world politics, due largely to the existence of a highly effective institution for the enforcement of commonly agreed-upon rules, in the form of its Dispute Settlement Mechanism (DSM) (Poletti and De Bièvre 2014. This sophisticated enforcement mechanism ensures the smooth functioning of the multilateral trade regime by preventing opportunistic behavior by its members (Baccini and Kim 2012; Gawande et al. 2015), compelling members to bring policies back into compliance when they renege on trade liberalization commitments (Yildirim et al. 2018a), and reducing the odds that trade disputes escalate into trade wars that can eventually lead to tense political-diplomatic relations.

Besides contributing to the stability of the multilateral trade regime at large, the DSM provides considerable gains for WTO members that use it to seek the removal of foreign trade barriers. Existing research shows the DSM can bring about significant benefits for complainants in terms of export growth to the defendant markets, whether the dispute ends in a favorable panel ruling (Bechtel and Sattler 2015) or the litigants find a mutually acceptable solution to the dispute before a panel is set up (Kucik and Pelc 2016). In addition, in many cases the benefits of the DSM extend to all WTO members since the removal of particular WTO-incompatible trade barriers can produce benefits for many WTO members at once, irrespective of whether they acted as complainants or not (Bown 2005; Johns and Pelc 2012).

In light of the benefits that settling disputes through WTO litigation can bring about for member states, we should expect them to be willing to rely on it extensively whenever the necessity arises. Yet, empirical research on WTO disputes consistently shows that members challenge only a small fraction of the WTO-incompatible trade barriers erected by their trading partners (see De Bièvre et al. 2017 for an overview). This is a surprising finding, particularly considering that the overwhelming majority of disputes result in rulings favorable to complainants and, ultimately, compliance by defendants.

Why do WTO members sometimes seek to enforce multilateral trade rules through legal means, that is, initiating a dispute as complainant in the WTO, while in other instances they do so outside of the rule-based framework of the DSM? In other words, what makes member states decide to initiate WTO disputes? A growing body of work on the political economy of WTO dispute settlement has recently come to grapple with this puzzle. Scholars have posited that the choice to initiate a dispute is driven by factors such as states' legal capacity, the power asymmetries between WTO members, likely distributive consequences of resolving a dispute, and the lobbying of domestic trade-related interests (Busch et al. 2009; Sattler and Bernauer 2011; Davis 2012; Johns and Pelc 2018; Poletti and De Bièvre 2014; Ryu and Stone 2018; Van Ommeren et al. 2021; Yildirim et al. 2018a).

In this chapter, we suggest that an additional factor may drive WTO members' decisions over whether to initiate formal trade disputes within the organization. In addition to the important factors high- lighted above, we contend that member states engage in *strategic behavior* when deciding whether to activate the DSM to challenge allegedly WTO-incompatible foreign trade barriers. More specifically, we argue that *ex ante* expectations about the likely outcome of a dispute make up a crucial component of a potential complainant's decision to initiate a dispute. In cases where complainants are convinced of the legal merits of their dispute and the likelihood of compliance following a favorable ruling, chances of tabling disputes are significantly higher. By considering the potential outcome of a formal dispute, policymakers are able to better assess the merits of pursuing inter-state litigation and adjust their behavior accordingly.

By way of example, consider the 2003 decision of the United States to initiate a WTO dispute against its long-time trade partner, the European Union, on the approval and sale of biotechnology products. The choice of the US administration to proceed with a formal dispute was subject to numerous considerations, with domestic groups advocating the use of international litigation (Devereaux 2006), members of the US Senate siding with domestic interests and demanding swift action to enforce the rights of US producers (Grassley and Baucus 2002), and the United States Trade Representative (USTR) sorting out the legal basis of the dispute and "framing the initiation of the dispute for public perception" (World Trade Online 2013). Yet, despite continuous support from the US Department of Agriculture, the National Corn Growers Association, and the US Grains Council (Young 2011), the administration refrained from initiating a formal WTO dispute for years. Concerns about the likelihood of compliance by the Europeans after securing a favorable panel ruling played a crucial role in delaying the initiation of a formal dispute. Indeed, after a heated debate in the Senate Finance committee, then-USTR Robert Zoellick refused to commit to a specific date for the dispute initiation, claiming that a coalition of WTO members, and greater support among European governments, was needed to increase the odds of future compliance (World Trade Online 2003; Zoellick 2002). The US eventually moved forward, after securing third-party support from 16 other WTO member states, including Australia, Brazil, Canada, China and Mexico.

This example nicely illustrates the many strategic considerations that are simultaneously at play when deciding whether to initiate a dispute at the WTO. In this chapter, we focus on this interplay between policymakers' domestic incentives to initiate a dispute on the one hand, and the probability of securing a successful outcome on the other. Litigation is costly, and states can only afford to bring suits against defendants a fraction at a time (Davis 2012; Van Ommeren et al. 2021). Beliefs about the probability of victory and the likelihood of (speedy) compliance play a large role in this process.

Empirically, we support our argument by relying on data concerning the set of all potential WTO disputes for the United States between 1995 and 2012 for nine of its main trade partners,[2] examining the factors that influenced both key stages: initiation and (in the case of litigation success) defendant compliance. While demonstrating the role of several factors in decisions about rulings and compliance—including dyadic trade and defendant integration into global value chains (GVCs), in addition to characteristics of the trade barrier itself—we provide evidence that strategy matters in shaping the choice of dispute initiation. The US conditions its decision to challenge a barrier in part on the likelihood that it will see both a favorable ruling and compliance by the offending trade partner.

The remainder of the chapter is organized as follows. We begin by discussing the previous literature on trade disputes within the WTO. We then sketch a simple model of a dispute game, and note its implications. Next, we present our hypotheses and our modeling choice. We then conduct our analysis and interpret results. Finally, we draw conclusions and suggest paths for future research.

THE POLITICS OF WTO DISPUTE SETTLEMENT

A burgeoning literature on dispute initiation at the WTO has identified several factors as drivers of member states' decisions to initiate disputes. One group of works has focused on the international nature of trade, looking primarily at dyadic characteristics. In order to account for cross-country variation in dispute initiation, scholars have examined WTO members' legal capacity (Busch et al. 2009; Kim 2008), the power asymmetries between trading partners (Sattler and Bernauer 2011), the economic size of the export market (Bown 2005), and the potential free riding problems between WTO members (Johns and Pelc 2018).

A second strand of research on dispute initiation has moved away from cross-country analyses, focusing instead on within-country variation. More or less explicitly, the observation that motivates this second group of studies is that only a small fraction of the potentially problematic foreign trade barriers officially reported by domestic exporters are brought to the table by the aggrieved parties (Davis 2012; Davis and Shirato 2007; Van Ommeren et al. 2021). Showing that policymakers act as gatekeepers for the demands of domestic exporters seeking the enforcement of WTO rules prompts researchers to ask the obvious question of why they respond to some of these demands while refraining from taking action in other cases.

As Figure 10.1 demonstrates for the United States, while the USTR receives reports of hundreds of alleged trade barriers each year, the country initiates disputes in only a small fraction of these cases. With respect to the nine countries we examine below, the USTR received reports of nearly 1,000 trade barriers between 1995 and 2012. The United States took action on only 7 percent of these cases (approximately 1 percent of dispute-years).

Following the seminal work of Davis (2012), a number of political-economy accounts have explained dispute initiation focusing on the role of domestic political pressures emanating from key trade-related interest groups (e.g., Mansfield and Milner 2018; see also Frieden 1991).[3] These studies broadly point to the relative political clout of exporters, who aim to maximize market access through WTO litigation and are able to assist governments in bringing cases to the WTO by creating a public–private partnership (Shaffer 2003). For this reason, a number of studies have focused on the preferences and political mobilization of firms (Ryu and Stone 2018; Yildirim et al. 2018a) and sectors (Davis and Shirato 2007; Van Ommeren et al. 2021) that ultimately shape the behavior of the policymakers that act as gatekeepers in bringing cases before the WTO.

These important studies have contributed greatly to our understanding of the domestic political factors that render dispute initiation more likely. However, such domestic political incentives are only part of the story. A number of factors suggest that, in addition to the power and influence of domestic organized interests, *ex ante* expectations about the outcome of a dispute also play a critical role in shaping the choice to initiate a dispute.

For one, litigation brings about considerable financial and administrative burdens. This is an important factor that mostly constrains developing countries' participation in WTO

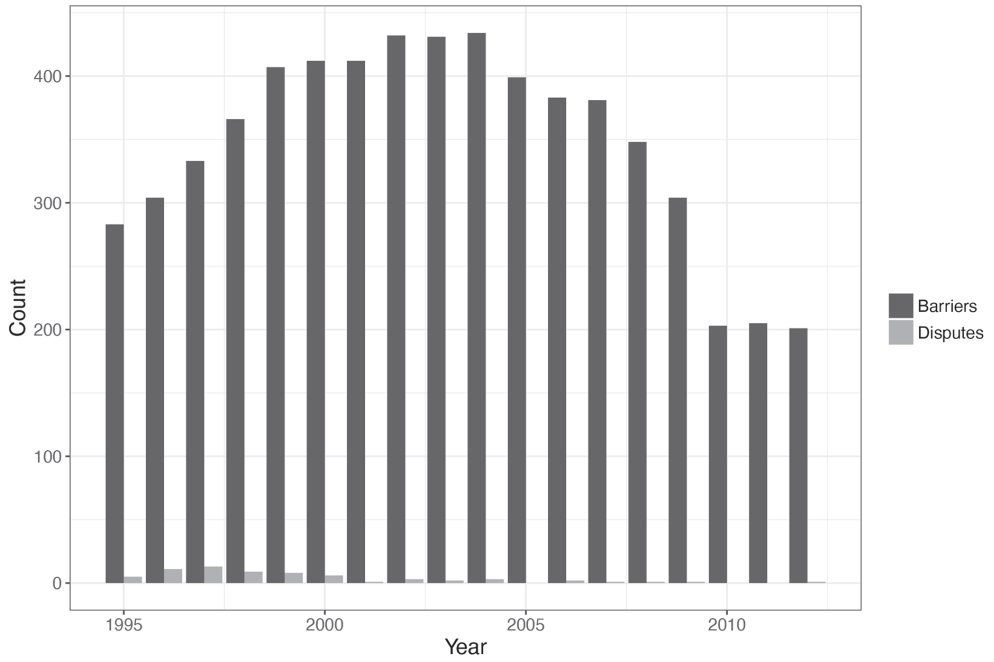

Figure 10.1 *Barriers reported and disputes filed against select countries by the United States*

dispute settlement (Busch et al. 2009; Kim 2008), but also plays an important role for the member states least constrained by legal capacity and resources, such as the US and the EU (Brutger 2017). This suggests that WTO members face considerable incentives to assess the costs of initiating disputes in advance of bringing them forth. Indeed, as former USTR Chief Negotiator Timothy Reif noted in 2013, the ability of the United States to lodge complaints at the WTO has been significantly affected by budget cuts in recent years (World Trade Online 2013).

Other authors suggest that policymakers also need to consider the potential costs that WTO disputes can bring about for a country's diplomatic relations with other countries. Long-lasting trade disputes can generate negative externalities by contributing to tensions that can harm diplomatic relations with the targeted country (Davis 2012; Odell 2000; Yildirim et al. 2018a). This argument implies that the length of the dispute is an important factor in shaping decision makers' calculus regarding the choice of initiating trade disputes. These factors therefore play a role in the assessment of the costs associated to dispute initiation, incentivizing policymakers to factor them in carefully before proceeding.

The idea that decision makers behave strategically when interacting with the WTO has also found some theoretical and empirical support in the existing literature. For instance, Johns and Pelc (2018) show that states strategically refrain from joining WTO disputes as third parties to decrease the odds of drawn-out disputes, maximizing their chances to reap private and public benefits of successful settlement. Chaudoin (2014) explains the timing of dispute initiation by showing that complainants strategically choose to initiate disputes when strong audiences

in the defendant country support compliance. Yildirim et al. (2018b) provide evidence that suggests that disputes involving defendants highly integrated in GVCs have a higher rate of compliance, increasing the odds of dispute initiation. Collectively, these works suggest that *ex ante* assessments about the outcome of disputes is a key factor determining WTO members' decisions to initiate disputes.

Yet, despite the extant literature's recognition that strategic behavior plays a role in WTO settlement, a model that fully incorporates how potential complainants' expectations about the outcome of a dispute affect the choice of dispute initiation remains to be developed.[4] The arguments presented so far suggest that the potential complainant must determine the likelihood that the Dispute Settlement Body will rule in its favor, and that in such a case, the defendant would comply with the ruling. The relative probabilities of obtaining the defendant's compliance, then, should be included in a model of strategic behavior that seeks to account for potential complainants' decision to initiate disputes at the WTO.

STRATEGY

Figure 10.2 sketches a simple version of the dispute process at the WTO, in which a potential complainant (*C*) has the opportunity to initiate a dispute against a potential defendant (*D*). Once the aggrieved state is made aware of possible non-WTO-compliant policies being practiced by its trading partner, it can choose to initiate a dispute against that country (*I*) or to do nothing ($\neg I$). If it does nothing, then the policy remains in place, and the complainant receives

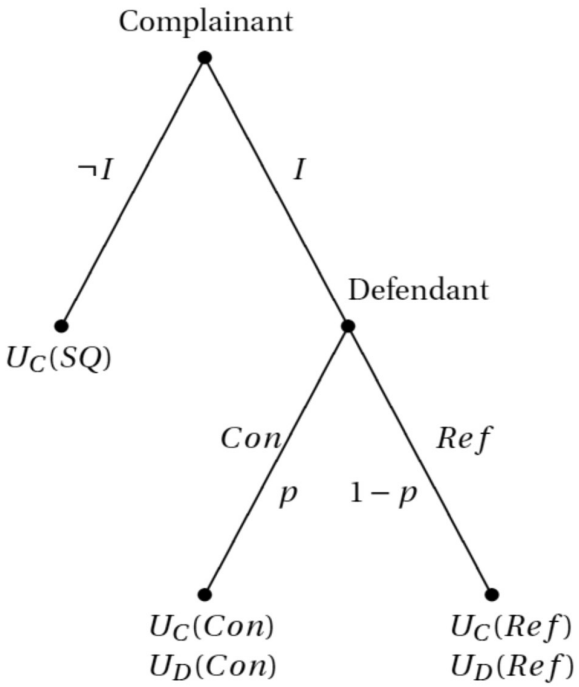

Figure 10.2 The WTO dispute process

its status quo payoff. If it initiates a dispute, then the complaint is adjudicated by the organization's dispute settlement body. During the bargaining process, the defendant and complainant can continue to negotiate. The defendant may offer some concessions in order to reach an agreement. Alternatively, they may wait until the panel renders a ruling, in which case either the defendant wins and need not concede anything to the complainant, or the complainant wins and the defendant can choose to comply or not to comply with the ruling. We condense these different outcomes as follows. First, we place both compromise and compliance under the heading of concessions (*Con*) made to the complainant. In both of these cases, *C* receives at least part of what it demands. We categorize both rulings in favor of the defendant and defendant refusal to comply in the case of a ruling for the complainant as refusals (*Ref*).

It is difficult to define a general preference ordering for either player. While it should always be the case that $U_C(Con) > U_C(Ref)$, the position of the status quo outcome is unclear. In many cases, for example, the complainant would most prefer the compliance outcome. However, there are costs to litigation, and if those costs are especially large, or the issue at stake is sufficiently small, then the state might prefer simply to deal with the status quo, even if it were guaranteed a favorable ruling and compliance by the defendant. The defendant, meanwhile, is assumed to prefer *SQ* to both *Ref* or *Con*. However, the defendant's preference over the latter two outcomes (and thus, its optimal strategy) will depend upon the issue in question and whether it is willing to accept retaliation in order to continue its policy. Thus, while the US found compliance to be in its best interest after being ruled against on steel tariffs in 2003, for example, it continually refused to comply with a 2005 ruling on cotton subsidies, ultimately terminating the dispute by paying off the complainant. The relative value of compliance and refusal for a particular policy will determine the defendant's strategy.

Let $p \in [0,1]$ denote the probability that the defendant accepts the demands of the complainant (either as a result of a ruling in favor of the plaintiff or as a negotiated settlement). Then the complainant's expected utility for initiating a dispute is given by:

$$U_C(I|p) = (p)U_C(Con) + (1-p)U_C(Ref)$$

Simply put, when $U_C(SQ)$ is smaller than this quantity, we should expect to see the complainant challenge, and when it is larger, the complainant should decline to initiate a dispute. In other words, we should expect states that have observed unfair trade practices by trading partners to look down the game tree, keeping in mind not only the value of the dispute in question, but also the likelihood of receiving concessions from the defendant. In any case, the relative values of these utilities will depend upon the factors relevant to the situation at hand. Elements that increase the probability of a pro-complainant ruling *or* of defendant compliance with such a ruling should make the complainant more likely to initiate. Conversely, those factors that make defendants less willing to budge, even in the face of a negative ruling, will make dispute initiation less attractive. This is important because it suggests the possibility of a deterrent effect, which is common in international relations (see Signorino 2002; Signorino and Tarar 2006)—we may not observe cases in which states are particularly unlikely to comply, as these are never litigated in the first place. This means that studies that have looked only at compliance (e.g., Rickard 2010; Spilker 2012; Yildirim 2018; Yildirim et al. 2018a; Yildirim et al. 2018b) have potentially underestimated the impact of important variables.

Our argument, then, relies upon knowing which factors will influence defendants' decisions to make concessions or comply with a ruling in favor of the complainant. We therefore make predictions about which factors may affect the defendant, and hypothesize that these effects will have a strategic impact upon the complainant's initial choice. First, we draw from Yildirim et al.'s (2018b) argument that disputes brought against states more heavily integrated into GVCs can lead to the emergence of pro-trade coalitions of exporters and import-dependent firms that seek to avoid the adverse effects of resistance. When a potential defendant's economy is more GVC oriented, it face pressure to make concessions in order to appease these groups. This gives us our first hypothesis:

Hypothesis 1: The greater the degree to which the potential defendant is integrated into global value chains, the more likely it will be to grant concessions.

Second, we argue that total dyadic trade will also increase the likelihood of compliance. As trade between the defendant and complainant increases, the danger from retaliation also grows. For dyads in which trade is minimal, the threat of retaliation in the absence of compliance is empty; there are no firms to hurt with retaliatory measures. At greater levels of total trade, however, defendant exposure to retaliation from the complainant grows, increasing the potential pain from non-compliance. Thus, we expect defendants who have significant trade with the complainant to concede more readily:

Hypothesis 2: The greater the level of trade between two countries, the more likely the defendant will be to grant concessions.

Finally, because of the various costs associated with dispute initiation, we generally do not expect states to begin disputes against trade partners unless they believe that they can get something out of it. The likelihood of initiation, therefore, should be a function of the likelihood of concession or compliance:

Hypothesis 3: The probability that a complainant initiates a dispute is increasing in the likelihood that the defendant is willing to grant concessions.

DATA AND METHODS

Our theoretical story relies heavily on the role of strategy in the decision to initiate a dispute. While much previous work on compliance with WTO rulings has looked only at the latter stage, that is not to say that the effect of initiation has gone altogether unnoticed within the literature. Indeed, Guzman and Simmons (2005) discuss the role of selection into disputes, and Poletti and De Bièvre (2014) take a qualitative approach to tracing the process from initiation to outcome. However, scholars have yet to provide a large-scale, systematic analysis that integrates the two stages or takes seriously the importance of strategy as a structural component. In order to examine our claims, we must address both of these problems.

The strategic nature of the WTO dispute process necessitates the use of a model that can explicitly account for the structure of the interaction (Signorino 1999; Signorino and Yilmaz 2003). A class of strategic models for binary choice lends itself well to this scenario (Signorino 2003). These estimators have been used to model a number of international phenomena,

including economic sanctions (McLean and Whang 2010; Whang et al. 2013), deterrence (Signorino and Tarar 2006), military intervention (Gent 2007), and civil war (Nieman 2015; Chatagnier and Castelli 2019). Applying the estimator requires that we use data to specify the utilities in Figure 10.2 empirically.

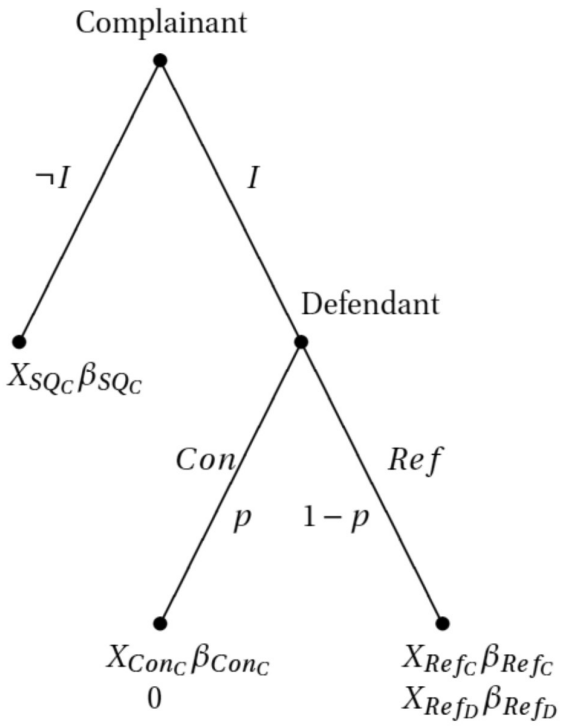

Figure 10.3 WTO disputes with utilities as covariates

Figure 10.3 depicts the game from above, with utilities for each player depicted as linear combinations of covariates. Actors choose their actions according to these covariates, with some uncertainty, ε. We assume that these errors are independent and identically distributed, such that for some actor, i, and some action $j, \varepsilon_{ij} \sim \mathcal{N}\left(0, \sigma^2\right)$.[5] To ensure that the model is

properly identified, we set one payoff for the defendant $(U_D(Con))$ to zero. Given this model, we can write the four action probabilities as follows:

$$\Pr(Con) = 1 - \phi\left[\frac{X_{Ref_D}\beta_{Ref_D}}{\sqrt{2\sigma^2}}\right] \Pr(Ref) = \phi\left[\frac{X_{Ref_D}\beta_{Ref_D}}{\sqrt{2\sigma^2}}\right]$$

$$\Pr(I) = \phi\left[\frac{\Pr(Con)\left(X_{Con_C}\beta_{Con_C}\right) + \Pr(Ref)\left(X_{Ref_C}\beta_{Ref_C}\right) - X_{SQ_C}\beta_{SQ_C}}{\sqrt{2\sigma^2}}\right]$$

$$\Pr(\neg I) = 1 - \phi\left[\frac{\Pr(Con)\left(X_{Con_C}\beta_{Con_C}\right) + \Pr(Ref)\left(X_{Ref_C}\beta_{Ref_C}\right) - X_{SQ_C}\beta_{SQ_C}}{\sqrt{2\sigma^2}}\right]$$

Note that the probability an opponent concedes in a challenge $(\Pr(Con))$ and the probability that it refuses $(\Pr(Ref) = 1 - \Pr(Con))$ both enter directly into the probability that the complainant chooses to initiate a dispute $(\Pr(I))$, as well as its complement $(\Pr(\neg I))$. In other words, the likelihood that the complainant initiates a dispute is not only a function of its own payoffs for defendant concession or refusal, but implicitly includes *the opponent's* utility for each outcome. Therefore, we cannot model the decision to open a dispute without including expectations about the potential defendant's actions. With these equations in hand, we can derive the set of probabilities for the three different outcomes:

$$\Pr(SQ) = \Pr(\neg I)\Pr(Con) = \Pr(I)\Pr(Con \mid I)\Pr(Ref) = \Pr(I)\Pr(Ref \mid I)$$

Denote these three outcomes as Y_1, Y_2, and Y_3 respectively. We use a full-information maximum likelihood approach to estimate these probabilities simultaneously. Assuming that $\sigma = 1$, this yields the following log-likelihood equation:[6]

$$\ln L = \sum_{i=1}^{N} Y_{1,i} \ln \Pr(SQ)_i + Y_{2,i} \ln \Pr(Con)_i + Y_{3,i} \ln \Pr(Ref)_i$$

Estimation of the log-likelihood is difficult not because it is technically demanding, but because the requisite data are not easy to find. It requires that we have information on the set of all possible disputes (including those that were never initiated), rulings by panels for those that were brought before the DSM, and the compliance behavior of defendants who lost the case, as well as the covariates that should affect each of the relevant decisions. We are able to compile the necessary data by limiting the scope of our analysis. Specifically, we limit our study to the US as a potential complainant, and to Canada, Japan, Mexico, Korea, Brazil, Malaysia, Singapore, India, and the EU as potential defendants. We capture the universe of potential disputes by looking at all trade barriers involving one of the nine actors above that were reported to the USTR between 1995 and 2012.

Our unit of analysis is the barrier-year. We code any year for which a trade barrier is reported against one of the potential defendants and a WTO dispute has not yet been initiated.

If the USTR declines to pursue the barrier formally in that year, then it is a coded as a status quo outcome (Y_1) for that year. If the defendant offers concessions before a panel ruling is delivered, or if the US initiates a panel, wins, and the defendant complies, it is coded as concessions (Y_2). If the US brings the case before the WTO and loses, or if it wins and the defendant refuses to comply, this is coded as a refusal (Y_3). Our data on trade barriers are an extension of Davis's (2012) dataset on reported trade barriers. Information on panel rulings and defendant compliance come from Yildirim et al. (2018a). We match the disputes to create a complete dataset.

We characterize non-zero utilities for each player as linear combinations of the appropriate variables. Table 10.1 summarizes the covariates assigned to each utility function, along with our expectations about the direction of the effect. We use empirically-observable variables to estimate players' utilities over the various outcomes. Because we estimate these simultaneously, variables can only appear in a limited number of functions or the model will not be properly identified (see Kenkel and Signorino 2014). However, this does not mean that these factors cannot affect other utilities. The defendant's Polity score, for example, appears only in the defendant's utility for refusal. However, because the complainant's decision to initiate a dispute is conditioned in part upon its expectations about what the defendant will do, this means that defendant democracy is expected to affect the complainant's decision via the latter's strategic calculus. Other variables, such as GVC integration appear in multiple utility functions, suggesting that they may affect the complainant's choice both directly and indirectly. Our model is designed to capture precisely this dynamic, in which important variables may factor into state's decisions in a direct manner, in an indirect manner, or both.

Table 10.1 Specification of utilities

Category	List of variables	Expected effect
Complainant Utility for Status Quo	Log of dyadic trade	-
	Election year	-
	Preferential trade agreement	+
	GVC integration	-
	(Constant)	+
Complainant Utility for Compliance	Breadth of barrier	+
	Developed country	-
	(Constant)	+
Complainant Utility for Refusal	Log of dyadic trade	-
	Experience	+
	Election year	-
	Simple barrier	+
	Anti-dumping/countervailing	+
Defendant Utility for Refusal	Experience	+
	Simple barrier	+
	Anti-dumping/countervailing	+
	Polity score	-
	Log of GDP	+
	Log of dyadic trade	-
	GVC integration	-
	(Constant)	-

Working backward, we expect a defendant's decision about concessions to be a function of several important factors. First, pro-compliance constituencies can push policymakers toward concessions, particularly when retaliation is at stake. Countries in which relevant sectors are more heavily integrated into global production networks will feel these pressures more acutely, making them more likely to concede quickly (Yildirim et al. 2018a). Consequently, such trade should prompt the United States to initiate disputes. We capture this by accounting for the defendant's level of intermediate trade with United States, which we take from the Trade in Value Added (TiVA) dataset, published by the OECD (see Yildirim 2020).[7] Relatedly, as retaliation can be costly, the degree to which the complainant is capable of retaliating should be salient. Although the US has high capacity in general, its retaliatory power may still vary across different defendants. We measure this using the size of the defendant's economy and the degree of trade with the United States. Larger economies and those that rely less heavily on the United States should be better able to withstand US pressure. The likelihood of concessions will also be affected by the complexity of the issue at hand. The USTR is aware that certain measures are simply less likely to be modified than others. Subsidies to producers are relatively easy to change, for example, while behind-the-border regulatory measures or measures that require a treaty change are more difficult (Brewster and Chilton 2014; Guzman and Simmons 2002). Similarly, disputes involving dumping or countervailing duties are generally easier to solve. We account for these issues by including dummy variables for whether a measure is a quota or a subsidy, both of which are inherently non-complex, and whether it deals with anti-dumping measures or countervailing duties. In addition, we expect domestic institutions to affect a state's willingness to adhere to its WTO commitments. Prior work suggests that democracies are more likely to cooperate in institutional settings (Mansfield et al. 2002). Therefore, we include a variable for the defendant's Polity score (Marshall and Jaggers 2002), which is expected to be negatively related to the probability of refusal.[8] Finally, more experienced defendants will be better able to win their cases, and should be less likely to concede. We code the total number of disputes in which a defendant has been involved prior to a given year.

Whereas the defendant makes its decision in what is essentially a non-strategic setting, the complainant must look down the game tree when deciding whether to initiate a dispute. Therefore, its decision will be a function of the probability that the defendant will offer concessions and the utilities for each of the associated outcomes. In other words, the complainant's decision will be a function of the factors included in the defendant's utility for compliance. It will also be conditioned upon a set of other variables. If the complainant is unwilling or unable to secure a favorable outcome, this can be harmful politically. Because losses should matter more when elections are near, we include a dummy for whether there is a presidential election in the associated year as a component of utilities for both the status quo and defendant refusal. Second, we expect these losses to be more painful when they come at the hands of a powerful trading partner. Therefore, we include a measure of the log of total trade with the defendant in a given year as a component of the complainant's utility for not getting what it wants (i.e., for both the status quo and non-compliance). Complainants can expect to get better outcomes when the opponent is inexperienced or when the issue is simple. So these variables will be part of the complainant's calculations as well. To proxy for the utility from concessions, we include a dummy variable for the breadth of the barrier, as trade restricts that affect a wider swath of the economy are more painful. If the trade barrier reportedly affected an entire sector (i.e., a one-digit ISIC coding), the variable is coded as one. It is coded zero otherwise. In addi-

tion, we include a dummy variable for whether the defendant is a developed country, as the US tends to demand less from developing trading partners.[9] Finally, in modeling complainant utility for the status quo, we include a dummy variable for the presence of a preferential trade agreement, as states can resort to these mechanisms in lieu of consulting the WTO.

RESULTS

The results of our strategic estimation are presented in Table 10.2. We emphasize that we estimate a single, unified model of conflict onset and outcome. The columns correspond not to separate models, but to outcomes at each node, with variables grouped by players' utility functions. For the complainant, we find greater utilities for initiation against major trade partners—perhaps to signal that it takes trade barriers seriously—and against those with which the US presently has a trade agreement. We find lower utility for initiation with respect to those partners with greater GVC integration. As expected, broader barriers bring greater benefit when the opponent concedes. Finally, we see that experience, simple measures, and anti-dumping or countervailing duties are associated with a lower expected utility for defendant refusal, possibly because they are linked to adverse rulings.

Moving to the defendants, we see that the only variable that attains statistical significance at conventional levels is dyadic trade, which reduces utility for refusal, as refusing to comply endangers other trade with the complainant, who may opt to retaliate. This is consistent with our prediction in Hypothesis 2. Although not significant, GVC integration is associated with a small positive coefficient. This is consistent with the directional effect posited in Hypothesis 1, though the lack of significance means that it cannot be taken as supporting evidence.

The relative complexity of the structural model makes simple interpretation of the coefficients somewhat difficult. Moreover, some covariates will have effects at multiple stages. For this reason, we provide an example by walking through the substantive effects of two of our variables that enter into our estimation at multiple points. Indeed, such variables lie at the crux of our argument that strategy matters. Figure 10.4 shows the predicted probabilities of dispute initiation (left panel) and defendant concessions (right panel), as we vary dyadic trade from its empirical minimum (around six billion USD) to its empirical maximum (approximately 319 billion USD) on the top row, and as we vary intermediate trade from *its* empirical minimum (just under 3.5 million USD) to maximum (about 145 billion USD) on the bottom.[10] In both cases, the shaded regions represent 90 percent confidence intervals. We can see first that the likelihood of initiation for any given dispute is relatively low. Indeed, less than 6 percent of the 995 cases in the final analysis were eventually brought before the organization. When looking at GVC integration, we see a clear (though imprecisely-measured) initial negative effect, dropping from a probability of initiation around 0.1 at the low end, to virtually zero by the median. Interestingly, the estimated effect exhibits a slight non-monotonicity at the high end, increasing marginally as intermediate trade approaches its maximum.

The estimated effect for total dyadic trade—though even less precisely measured—is perhaps more interesting. While partners with low levels of trade are highly unlikely to be the targets of disputes, the probability rises as we approach the second quartile. The effect then dips again, bottoming out near the third quartile, and rises near the empirical maximum. The clear non-monotonicity in the estimated effect is suggestive of a strategic effect for intermediate trade, which modifies the negative initial effect. This, taken with the results for GVC

Table 10.2 Strategic probit analysis of WTO dispute initiation and outcome

	Status Quo	Concessions	Refusal
$U_C(SQ)$			
Election year	-0.27		
	(0.50)		
Dyadic trade (logged)	-4.21**		
	(0.39)		
GVC integration	1.23***		
	(0.47)		
Preferential trade agreement	-1.44*		
	(0.79)		
Constant	141.67**		
	(56.89)		
$U_C(Con)$			
Barrier breadth		1.63***	
		(0.30)	
Developed country		-0.81	
		(0.77)	
Constant		51.85	
		(46.06)	
$U_C(Ref)$			
Election year			-0.69
			(1.93)
Dyadic trade (logged)			3.18
			(2.18)
Experience			-0.39***
			(0.14)
Simple barrier			-22.15*
			(11.88)
Anti-dumping/countervailing			-19.59*
			(11.56)
$U_D(Ref)$			
Polity			0.06
			(0.09)
Real GDP (logged)			0.03
			(0.03)
Simple barrier			1.32
			(5.23)
Anti-dumping/countervailing			2.23
			(4.65)
Experience			0.00
			(0.01)
Dyadic trade (logged)			-0.98***
			(0.37)
GVC integration			0.20
			(0.15)
Constant			18.55***
			(6.64)
Number of observations		1,938	
Log-likelihood		-300.58	

Note: Bootstrapped standard errors in parenthesis. $p<.10$; **$p<.05$; ***$p<.01$. All tests are two-tailed tests.

integration, provides some support for Hypothesis 3, and some empirical evidence for the contention that the US behaves strategically when bringing forth disputes at the World Trade Organization.

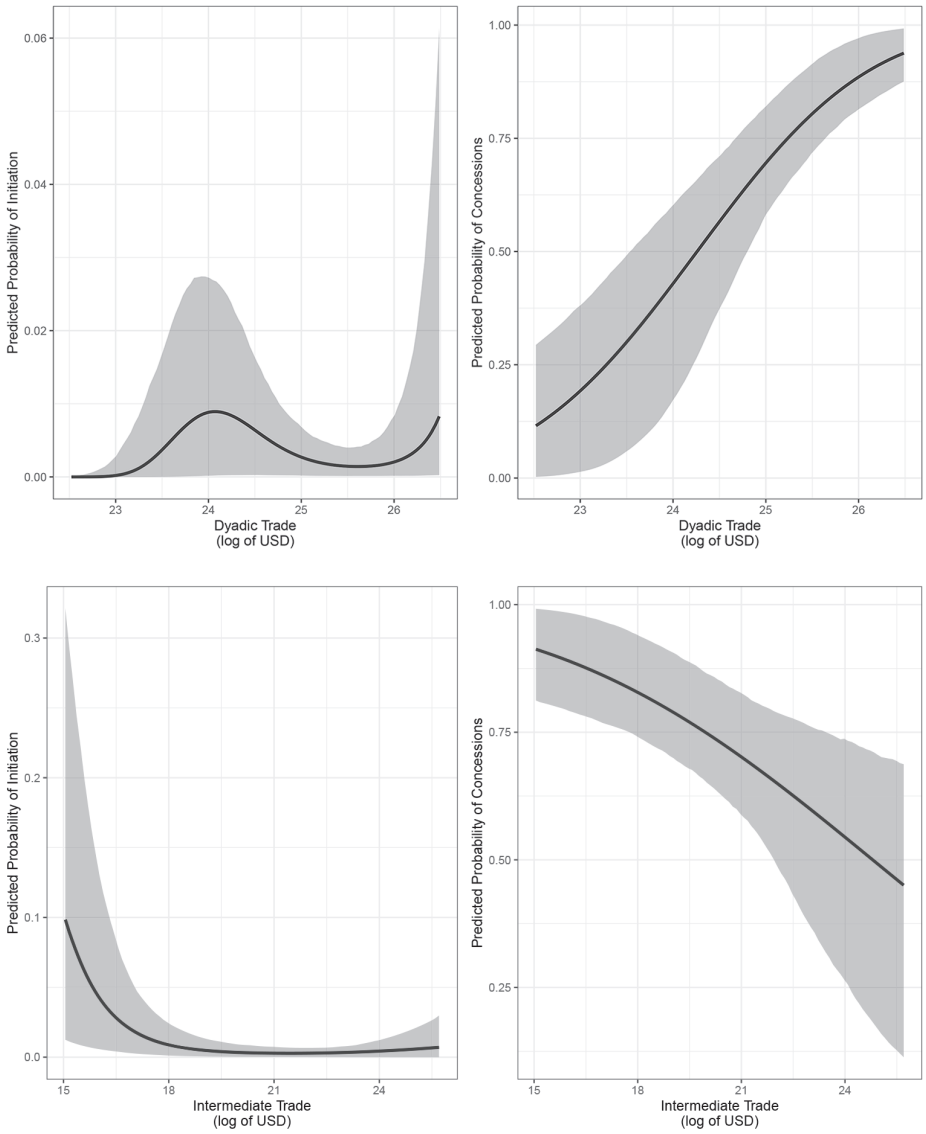

Figure 10.4 Estimated effects of dyadic trade and GVC integration

CONCLUSION

The idea that countries behave strategically in bringing forth disputes is intuitive. However, the strategic aspect of dispute initiation that takes into account different stages of a formal dispute has been largely ignored by scholars. Such interactions require explicit modeling, lest effects be tainted by model misspecification issues. The results presented above provide some initial evidence that the strategic assumption is borne out by empirical evidence, and suggest

that future research should examine this phenomenon in greater detail. The results, however, do come with certain limitations.

For one, our dataset includes the United States as a potential complainant and nine trading partners as potential defendants. Therefore it is not a random sample of WTO disputes or potential barriers.[11] Moreover, the US is the world's largest economy, the most active member of the WTO, and has significant past experience in inter-state dispute settlement even before the formation of the WTO. Therefore, it is possible that other WTO members would behave differently. We thus invite future research to seek out similar data on other WTO member states, and to see if the results hold. That having been said, it is likely that the strategic factor would be even *stronger* for other states. The US has significant economic power and extremely high legal capacity, which allows it to bear the costs of even unwinnable disputes. If indeed costs matter to the US, then they are likely to be an even greater factor for other countries. In either case, we would expect strategic considerations to be a key factor in potential complainants' decisions.

Second, due to data limitations our sample is restricted to a 17-year period between 1995 and 2012. This means we were unable to take into account more recent disputes and trade partners of US that have become more active in the WTO. This is especially relevant for China, as it has been the target of an increasing number of disputes brought by the US. We acknowledge that given the geopolitical dynamics between the US and China, combined with the increasing use of trade policy for objectives that go beyond trade—objectives like national security, the strategic incentives of the US to bring forward WTO disputes might indeed be different with respect to China.

That having been said, our results hold for a diverse group of WTO members and reveal greater nuance for a number of factors previously shown to influence WTO members' use of inter-state dispute settlement and compliance with WTO commitments. We remain confident that strategic interactions are a vital component of formal trade disputes, and we recommend that future research in this area takes these incentives into account.

NOTES

1. Authors' names are listed in alphabetical order, and do not indicate unequal contributions. We would like to express our gratitude to Christina Davis for sharing her Foreign Trade Barriers Dataset.
2. These include the European Union, Canada, Mexico, Japan, South Korea, Brazil, Malaysia, Singapore, and India.
3. These works follow political economy accounts that emphasize the relative balance between protectionists and pro-trade groups that mobilize politically and lobby for their trade policy preferences (e.g., Destler and Odell 1987; Gilligan 1997; Milner 1987). Self-interested policymakers are assumed to cater to the politically powerful constituencies that provide additional resources that allow these policymakers to achieve their own goals.
4. Notably, Sattler et al. (2014) do put forth a model of dispute settlement that includes strategic estimation. However, they look specifically at dispute *escalation*. In other words, while they incorporate elements of strategic
decision making, they do not examine decisions about initiation.
5. We use the more commonly employed agent error setup in this model (Signorino 2003), as it seems the most
substantively accurate.

6. We estimate our model using the games package in R (Kenkel and Signorino 2014), and calculate standard errors using 2,000 bootstrap iterations.
7. Data are available from https://stats.oecd.org/index.aspx. We use linear interpolation for missing years.
8. The European Union as a whole is not included in the Polity data. We choose to code it as a 10.
9. In our data, Mexico, India, and Malaysia are classified as developing countries, while all others are developed.
10. We hold other variables at mean or median values.
11. Notably, however, over 86 percent of all WTO disputes initiated between 1995 and 2012 have involved at least one of these ten countries.

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