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**Dispute Initiation in the World Trade Organization: An Evaluation  
of Trade Complaints Filed with the U.S. Trade Representative's  
Office Between 1995 and 2004**

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Dispute Initiation in the World Trade Organization: An Evaluation of Trade Complaints Filed  
with the U.S. Trade Representative's Office Between 1995 and 2004

by

Jennifer Dikler

Submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts in Economics, Hunter College  
The City University of New York

2020

May 12, 2020

\_\_\_\_\_  
Date

Jonathan Conning

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## Table of Contents

<b>Acknowledgment</b>	1
<b>Abstract</b>	2
<b>Introduction</b>	3
<b>Background</b>	5
<b>Literature Review</b>	11
Trade Gravity Model	11
Settlement Theory	15
Polity in Dispute Initiation	20
Concentration of Trade Barriers	21
<b>Hypothesis</b>	22
<b>Data</b>	23
<b>Methods</b>	26
<b>Results</b>	27
Part I	27
Part II	29
Limitations	32
<b>Conclusion</b>	33
<b>Figures</b>	35
<b>Tables</b>	36
<b>Works Cited</b>	40

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## **Abstract**

The World Trade Organization (“WTO”) encompasses a Dispute Resolution System that is widely regarded as efficient: cases are resolved within a relatively short time frame and compliance with rulings has been high. The dispute resolution mechanism encompasses three phases: consultation, arbitration through a panel, and arbitration through an appellate body if a panel decision is appealed. While there exists an extensive body of literature exploring the determinants of settlement at the consultation stage of the WTO’s Dispute Resolution Mechanism, I explore the determinants of settlement prior to the initiation of any sort of formal proceedings in a database of 2,334 complaints filed at the USTR between 1995 and 2004. My outcome variable is a binary that represents the complaints filed with the U.S. Trade Representative’s Office (“USTR”), distinguishing between those that the USTR chooses to escalate into a WTO dispute and those it chooses to resolve through other means. My base specification is motivated by a simplified gravity model which I later augment to other variables of interest including a ‘continuity’ variable that codes for the nature of the good or service in dispute, and for a measure of the concentration of the trade barrier at hand. I also explore polity scores of the trading partner enacting the barrier. I find that the gravity model helps explain whether the USTR escalates a complaint into a dispute, and continuity, concentration, and polity all help increase the probability that the USTR escalates a complaint into a WTO dispute. My results affirm that the gravity model continues to hold explanatory power and point to the importance of the characteristics of the barrier itself in explaining WTO dispute initiation.

## **Introduction**

The World Trade Organization (“WTO”) encompasses a Dispute Resolution System that is widely regarded as efficient: cases are resolved in accordance with a clear protocol and within a relatively short time frame, and compliance with rulings is generally high. The WTO’s success as an efficient multilateral institution in its first two decades of existence have garnered legitimacy for the trade institution, and have invited numerous studies surrounding its complex dispute resolution mechanism. Notably, however, less research has been performed on the trade barriers that end up as the focus of this dispute resolution mechanism before they become WTO disputes. This paper seeks to shed more explanatory power on the attributes of complaints that the U.S. government chooses to pursue and escalate into WTO disputes.

Though the gravity model has long been used to predict trade flows between two countries, I explore whether the model is able to explain the United States’ dispute propensity, and validate the notion that larger economies and those with a greater bilateral trade volume become involved in disputes disproportionately often. Specifically, I test whether the economic size and trade volume between the U.S. and its trading partners helps predict if the U.S. Trade Representative’s Office (USTR) will escalate a complaint into a WTO dispute. Prior literature suggests that the gravity model is efficient in predicting the amount of WTO disputes between two countries, but I test whether it successfully predicts the escalation of a complaint into a dispute, specifically in relation to the United States. To do so, I examine 2,334 complaints filed with the USTR between 1995 and 2004, 114 of which were escalated by the USTR into WTO disputes. If the gravity model proves to be significant in explaining dispute escalation, this confirms that economy size and trade volume are prime predictors of whether the USTR will escalate a complaint.

In combination with the classic gravity model, I also explore additional variables that theory suggests may help augment the original specification. I first test a novel variable that controls for the nature of the complaint in question. Namely, I manually code for a binary variable that distinguishes between complaints of a relatively continuous nature, as opposed to those that are non-continuous, and test whether it has an effect on whether the USTR escalates the case at hand. For example, cases surrounding import restrictions provide greater bargaining room than cases that have to do with bans of certain goods based on a technical issue, because they have a larger set of possible solutions. In the case of import restrictions, both countries can advocate for their side and reach a middle ground, while a case surrounding a ban will have a clear winner and loser, no matter whether the ban gets lifted or remains in place. Hence, the first group of cases are relatively easier to settle and are considered “continuous.”

Though the variable has previously been used to explain whether disputes settle in the first phase of WTO proceedings, it has not been used to explain dispute initiation. Resolving disputes outside of formal adjudication, i.e. reaching a settlement, is generally regarded as more efficient than judicial proceedings due to lower costs and favorable outcomes that are more likely to come with settlement. Apart from being less expensive and producing quicker results, settlement helps nations avoid all the legal complexities that come with formal judicial proceedings, and allows the details of proceedings to escape the public eye. Settlement theory predicts that continuous cases are more likely to settle outside of formal adjudication, due to the increased bargaining room that they provide. I therefore hypothesize that this remains the case when it comes to the trade barriers that formulate the complaints that have the potential to be escalated into WTO disputes.

I also explore whether the polity level of a trading partner, the concentration nature of a barrier (i.e. whether the barrier affects many countries or just the United States), and fixed year effects help explain which complaints the USTR chooses to escalate to the WTO. Theory suggests that more democratic states are likely to settle outside of formal adjudication. Further, studies have shown that the United States is more likely to challenge policies that are targeted specifically at the U.S., rather than at a vast number of countries.

Though the gravity model is widespread in literature concerning trade and dispute resolution in the WTO, it has not yet been used to explain my variable of interest, i.e., what affects the USTR's decision to escalate a complaint into a dispute. Further, the additional variables that I am interested in have the potential to create a unique augmented gravity model that has not been tested before.

### **Background**

Established in 1995, the World Trade Organization is a relatively novel institution that emerged out of the earlier-established General Agreement on Trade and Tariffs ("GATT"). Despite its young age, the WTO's impact on international law and general international relations has been transformative. In the last two decades, the organization has been able to improve trade by establishing clear rules of trade between nations and providing a channel for dispute resolution that aims for compliance, efficiency, and efficacy. In numerous cases, the WTO has achieved all three. However, through dispute resolution, the WTO has been found to favor larger members such as the United States and European Union, both, in terms of participation and in terms of outcome. Such is the case because these parties can afford the WTO's extremely high litigation costs and fare better in handling the legal complexities of its dispute resolution system. Even then, as this paper explores, the United States only escalates a minority of complaints that it



receives into formal WTO disputes.

Though disputes are filed by WTO members, i.e. countries, in the United States they are often escalations of complaints filed by domestic entities such as corporations. The United States has the legal capacity and economic might to pursue more disputes than most other WTO members, but only a fraction of the complaints filed with the U.S. Trade Representative's Office actually turn into disputes. This paper seeks to provide a novel explanation for why these complaints are escalated, based on an augmented gravity model.

### History of Trade Institutions

Trade, which refers to the exchange of goods and services, has been traced back to prehistoric times – arising alongside the development of human communication. For the purpose of this paper, I will be examining contemporary international trade relations and the institutions governing these relations throughout the 20th century. I will then explain the factors that created the need for the World Trade Organization and culminated in its eventual formation.

International trade generally flourished prior to World War I: despite a lack of multilateral cooperation or institutional oversight, countries enacted relatively low trade barriers which resulted in very little trade discrimination. World War I and the economic reconstruction that followed brought about protection that led to significant trade barriers and no mechanisms to reduce them, creating a global economy that stood in stark contrast to that of the pre-war era. Following the economically dismal interwar period and the war that ensued, countries looked at the end of World War II as a blank slate – a chance to finally put in place mechanisms through which the international community could come together and efficiently lower trade barriers.

Motivated by the international economic failure that occurred during the interwar period, countries came together and signed the Bretton Woods Agreement of 1944. The international

treaty, signed by 44 countries, aimed to restore the international economy and provide it with stability. In effect, the Bretton Woods Agreement set up the modern rules and institutions that continue to govern the international political economy to this day. Among the institutions set up by Bretton Woods were the International Monetary Fund and the International Bank for Reconstruction and Development.

Following the Bretton Woods Agreement, in 1947, 23 countries agreed to what would become the predecessor to the World Trade Organization – the General Agreement on Trade and Tariffs (GATT). This agreement was specifically meant to restrict protectionism and trade barriers in order to avoid future economic slowdowns. The signing of the GATT was indicative of the paradigm shift that had commenced at the time – a shift that stressed the importance and benefits of free trade as opposed to protectionism and, as a result, encouraged the eventual formation of regional trade agreements. In 1992, for example, the European Union eliminated its internal barriers to trade between its members, both in goods and in labor. In 1994, Canada, Mexico, and the United States also entered into a regional trade agreement known as the North American Free Trade Agreement (NAFTA).

As discussed by Douglas Irwin in “The GATT in Historical Perspective,” the GATT featured both, many achievements and many shortcomings. Its initial success was indisputable – the 23 countries that participated in its first round implemented tariff cuts and implemented those cuts on a Most-Favored Nation (MFN) basis, meaning they were non-discriminatory. Furthermore, countries agreed to lock-in these trade cuts, which proved crucial in helping prevent backsliding in terms of tariffs as other trade barriers arose in the coming decades. Despite this early success, the following 15 years saw progress in the GATT slow down significantly. Though GATT membership expanded, the institution “made only minor progress

in reducing tariffs” (Irwin 325). Members became frustrated at the GATT’s process. Particularly, the GATT lacked clear dispute resolution mechanisms, resulting in a backlog of cases that never got solved. This inefficiency, coupled with a lack of enforcement and, hence, compliance with rulings, led the GATT to lose most of its legitimacy as an institution.

### History of the WTO

In 1994, the signing of the Marrakesh Agreement marked the completion of the Uruguay Round of GATT negotiations, which resulted in the formation of the World Trade Organization. The WTO was meant to replace several parts of the GATT, focusing on “liberalizing agricultural trade, eliminating voluntary restraint agreements, and strengthening dispute settlement procedures” while preserving the GATT and its initial main purpose (Irwin 327).

The WTO Dispute Resolution System’s legal basis is the Dispute Settlement Understanding (DSU). The DSU outlines a very clear and streamlined process that involves three clear stages of solving a dispute: consultation, empanelment, and appellate hearings. Once a member country complains to the WTO, this serves as a formal request for consultations, which constitute the first stage of dispute resolution in the WTO and take up to 60 days. Attorneys on behalf of the Complainant and Respondent are forced to talk to each other to see if they can settle their differences by themselves or through mediation, even though these parties “may have already gone through extensive bilateral attempts to solve the problem” (Stanton 54). Notably, as a way to shield governments from domestic interests, consultations occur behind closed doors. It is also critical to note that the “settlement” sought through consultations in the first stage of the WTO dispute resolution process occurs in the context of formal adjudication. This is in contrast to a resolution that occurs prior to any sort of legal proceedings, which is the settlement that I am interested in exploring in this paper.

If a case is unable to be resolved through settlement or a mutually-agreed solution (MAS), i.e., consultations fail, the Complainant may initiate the appointment of a panel. It takes up to 45 days for this three-person panel to be appointed, and its members have to be approved by both parties. If they cannot agree, the WTO Director-General may be asked to appoint individuals onto the panel instead. Once formed, the dispute officially enters the second stage of dispute resolution. The panel takes an additional six months to gather evidence, hold meetings, listen to oral arguments, seek expert advice, draw conclusions and issue a report. The report contains a factual background, the panel's findings and conclusions, and is normally adopted by the Dispute Settlement Body within 60 days.

Parties then have the right to appeal a panel's decision through the Appellate Body, a permanent seven-member body which is set up by the Dispute Settlement Body and broadly represents the range of WTO membership. Of this body, three judges are appointed to consider an individual appeal. Once they are appointed, the case moves into the third stage of dispute resolution, and the Appellate Body makes a decision based exclusively on issues of law. Appeals are usually handled within 60 to 90 days and, once adopted, are legally binding on the countries affected.

The WTO is unique in that its dispute settlement system is completely decentralized, meaning there is no central body to police the organization's members throughout and after the dispute resolution process. This precludes the organization from having enforcement or punishment power (other than authorization of retaliatory measures in cases of failure of compliance) over its technically binding legal rulings, known as "recommendations" (Busch et al. 4). That the WTO has been able to garner so much legitimacy and such high member participation without any enforcement power is notable.

Overall, the WTO has been regarded as a large success in comparison to its predecessor, the GATT. Though the WTO is far from perfect, its “sophisticated body of jurisprudence” has allowed cases to get solved in a relatively quick timeframe (Busch et al. 1). The institution’s legitimacy is further bolstered due to the fact that it is the only international legal body that, through the authorization of retaliatory measures, has any sort of enforcement discretion over binding commitments of so many states. Crucially, compliance with WTO rulings has also been relatively high as opposed to compliance within the GATT. Though decisions rendered through both institutions are not technically enforceable, non-compliance in the GATT was far more common, most often taking the form of Respondents not implementing rulings. In terms of inclusiveness, the WTO is certainly more equitable than the GATT, encouraging participation among far more developing countries.

However, the institution still faces various lines of criticisms. The most important line of issues with the WTO, with regard to this paper, is that WTO dispute initiation is notoriously an expensive and convoluted process that even large and economically powerful players such as the United States may be wary of. As a result, only a minority of complaints are raised to the status of disputes.

#### A Complaint’s Journey to the WTO in the United States

For the purposes of this paper, I detail how a complaint becomes a dispute, specifically in the United States. The U.S. Trade Representative’s Office (“USTR”) initiates disputes in the WTO on behalf of the United States under Section 301 of the Trade Act of 1974. The USTR is able to do so through two channels: either by complaint of an interested party, or on its own accord. Though private individuals and corporations do not have direct access to the WTO, they are able to file such complaints, which may later be escalated into disputes by the USTR. This is

a critical component of the dispute resolution system: in effect, it gives domestic entities in the United States a pathway to resolving an issue caused by the decisions of other countries.

It is important to note that the United States keeps track of “allegedly WTO-illegal trade barriers reported to them by internationally active firms” (Yildirim et al. 39). This gives the USTR access to a list of complaints, any of which it may decide to escalate and bring to the WTO as a dispute.

### **Literature Review**

Broadly, the literature relevant to this study tends to deal with the following topics: analysis of the explanatory model of the gravity model as it relates to trade and disputes within the World Trade Organization, how settlement theory has played into the World Trade Organization’s dispute resolution mechanism thus far, how the concentration of a trade barrier affects its likelihood of being challenge in the WTO, and how a nature’s polity level generally affects dispute initiation. Each of the subsections that follows provides justification for the key variables and mechanisms in my regressions.

### **Trade Gravity Model**

The gravity trade model is based on an adaptation of Newton’s universal law of gravitation in physics, and is used to predict the amount of interaction between two places. As noted by a 1999 study, “since the latter half of the nineteenth century, it has been used to explain social flows, primarily migration” (Wall 1999). The classic gravity model of international trade was introduced by Jan Tinbergen in his 1962 paper titled “An Analysis of World Trade Flows.” By utilizing GDP to account for countries’ economic size in combination with distance between the countries, Tinbergen was able to show that economic size and the distance between two units were significant determinants of empirical bilateral trade flows. Specifically, he found that as

distance between two countries grows, trade tends to fall, much like the force of gravitation diminishes when two bodies are separated. Under the classic form of this model in log-linear form, using  $Y_i$  and  $Y_j$  to denote national incomes, and  $D_{ij}$  to denote distance, trade between countries  $i$  and  $j$  can be expressed as:

$$\ln X_{ij} = \alpha + \beta \ln Y_i + \gamma \ln Y_j - \delta \ln D_{ij}$$

where  $\alpha, \beta, \gamma$  are positive constants.

Tinbergen's finding has since been shown to be extremely robust, and the model has been used in hundreds of research papers relating to trade, including those that have been used to shape trade policy. As discussed by Yotov et al. in their 2016 paper titled "An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model," the model is advantageous in that it is very intuitive, is grounded in solid theoretical foundations, offers a realistic general equilibrium environment, a flexible structure, and has strong predictive power. In 1985, Jeffrey Bergstrand expanded on Tinbergen's model in his paper "The gravity equation in international trade: Some microeconomic foundations and empirical evidence," in which he found that price and exchange rate variables "have plausible and significant effects on aggregate trade flows." This finding rejected the assumption of perfect international product substitutability, utilized by the classic gravity model of trade.

Recent literature has attempted to augment the gravity model by modifying its variables to explain trade trends that the classic gravity model does not explain well. For example, In their 1999 paper titled "Controlling for Heterogeneity in Gravity Models of Trade," Cheng and Wall improved on the gravity's model tendency to overestimate trade between low-volume traders and to underestimate trade between high-volume traders. In order to account for this tendency, Cheng and Wall relaxed the notion that all countries must share the same gravity constant (in log-linear

form, same intercept  $\alpha$ ). Instead, their fixed-effects method assumed that there are fixed factors in the relationships between all countries that make the gravity constant different for each trading pair. Through their new model, Cheng and Wall were able to control for new factors that are typically hard to quantify – such as consumer preferences, historical links, and cultural similarities – as they were now included in each trading pair’s gravity constant. Furthermore, the authors were able to improve on their ability to capture distance effects. The classic model utilized distance between two capital cities, which became problematic for countries like the United States, which has economic centers on both coasts of the relatively large country. These economic distance effects could now be captured in each country pair’s unique gravity constant. Other studies that aimed to augment the classic gravity model utilized GDP per capita instead of GDP, captured not only distance but contiguity and border effects, and incorporated common language and colonial links.

As it relates to trade disputes, Horn et al. demonstrated in their 1999 paper “Is the use of the WTO dispute settlement system biased?” that larger economies have more opportunities to become involved in a trade conflict because their economies are usually more diversified and they have a larger range of industries. Greater economies such as the United States or Japan, for example, have a significantly larger range of industries than highly developed small economies such as Switzerland or New Zealand. As a result, in relation to exports, these larger economies will be more likely to encounter trade restrictions and initiate disputes. Conversely, given larger economies’ more diverse set of imports, they are more likely to encounter an import-restricting measure and raise a dispute.

In their 2005 paper titled “Power plays and capacity constraints: The selection of



defendants in WTO disputes,” Andrew Guzman and Beth Simmons further explore how the economic size of opposing parties affects countries’ decisions to get involved in trade disputes. Specifically, they find that larger economies are not only more likely to initiate disputes, as shown by Horn et al., they are also more likely to be targets of trade disputes. This is explained by their larger market sizes, which raise the economic stakes involved with every trade restriction, and incentivizes a country to take legal action against a larger economy. A decision in favor of the complainant in the case of such a decision and compliance with such a decision by the defendant garners more gains for the complainant.

The gravity model’s explanatory power in relation to World Trade Organization litigation is explored by Thomas Sattler and Thomas Bernauer in their 2010 paper titled “Gravitation or discrimination? Determinants of litigation in the World Trade Organization.” Sattler and Bernauer test concerns that dispute resolution in the World Trade Organization was largely motivated by discriminatory factors such as small legal capacity. However, the authors find no evidence of such discriminatory practices in the WTO. Instead, their findings point to the significance of the gravity model in explaining dispute initiation.

In order to answer their research question, namely whether WTO litigation is motivated by discriminatory or gravity factors, the authors utilize a dataset of all directed WTO member state dyads between 1995 and 2003. Their dependent variable measures how many trade disputes a country initiated in the WTO in a given year. Sattler and Bernauer determine two “Full Models,” both of which are enhanced Gravity Models. These models control for  $\log(\text{Trade})$ ,  $\log(\text{GDP A})$ ,  $\log(\text{GDP B})$ , Power Asymmetry, Democracy A, and Democracy B, with the first model also controlling for the number of WTO delegates each country has, and the second model also controlling for  $\log(\text{GDP/Capita A})$ ,  $\log(\text{GDP/Capital B})$ . Apart from WTO delegates in the

first model, *all* of the other variables are significant in explaining how many WTO disputes are initiated by each dyadic pair.

Problematically, however, by utilizing trade as one of their independent variables, Sattler and Bernauer likely run into endogeneity problems. This is because trade and trade disputes are likely jointly determined. While country characteristics such as GDP and polity scores might arguably be thought of as exogenous and can help explain both trade and trade disputes between two countries, it is somewhat unsatisfactory to put trade on the right hand side alongside the variables that predict trade in a regression with complaint/dispute status on the left-hand side. Furthermore, by utilizing GDP and GDP-per-capita of both countries, as well as their Power Asymmetry (which the authors define as the absolute value of  $\log(\text{GDP Ratio})$ ), Sattler and Bernauer run seemingly run into multicollinearity issues. GDP-per-capita is just GDP divided by population and GDP Ratio divides both GDPs by each other. Putting all three on the right-hand side of the regression means the three independent variables will be highly correlated with each other. Although the bundle of regressors may be significant, the standard errors are enlarged. It becomes difficult to interpret each coefficient in the regression separately, and small changes to the input data can lead to large changes in the parameter estimates. In order to avoid these issues in my own regressions, I use only log of distance in my specifications alongside log GDP (hence capturing the main components of a gravity trade equation) but I do not use the GDP-per-capita and ‘Power Asymmetry’ variables which, as just pointed out, are functions of partner  $\log(\text{GDP})$  already.

#### Settlement Theory

My continuity variable is backed up by settlement theory, which generally carries explanatory power when it comes to the initiation and resolution of disputes. Specifically, theory

dictates that the nature of disputes makes certain cases relatively easier and therefore more likely to settle, and certain cases harder and therefore harder to settle.

Ronald Coase's paper titled "The Problem of Social Cost," is one of the pillars of settlement theory. As he pointed out, in a world free of information asymmetry and transaction costs, every single dispute will settle outside of formal adjudication – if settling a dispute leads to gains to trade then it will be in the parties' interest to resolve those disputes and capture those gains. In the context of the WTO, for example, member countries would resolve disagreements over allegedly illegal trade barriers outside of the dispute resolution system to avoid the costs associated with formal adjudication. However, in the real world, bargains take time, energy, and are subject to various issues. One such issue, information asymmetry, occurs when the parties of a dispute have access to different amounts of information and are, hence, unable to clearly see the bargaining range they are facing. Either countries think their likelihood of winning is higher than it actually is, or they fear that they don't stand a chance against their adversary. Another issue, transaction costs, refers more broadly to the costs associated with the parties involved in trying to find a settlement outcome that is suitable to both sides.

Most research that attempts to explain dispute settlement in the WTO focuses on the idea that in a world with information asymmetry, states will typically fail to reach agreements through settlement. However, in their paper titled "To Settle or Empanel?," Beth Simmons and Andrew Guzman offer a unique application of settlement theory to WTO disputes in that they explore transaction costs as the main reason behind a case's likelihood of settlement.

Specifically, Simmons and Guzman explore the explanatory power of the nature of a dispute when it comes to whether or not a case settles. In their paper, Guzman and Simmons classify discontinuous cases as "lumpy" and relatively continuous cases as "non-lumpy." The

former group involves “all-or-nothing” cases (e.g. those concerning bans or health and safety regulations) for which there is relatively little bargaining space. For example, the two most likely outcomes in the case of a disputed ban are (1) lifting the ban, which is a win for the party disputing it and a loss for the party that instated the ban, or (2) keeping the ban, which is a win for the party that instated the ban and a loss for the party disputing the ban. In the case of an import quota, on the other hand, countries are able to negotiate a number that is acceptable to both sides, i.e., reach a middle ground. The latter group, therefore, includes goods that are more easily divisible, such as tariffs and quotas. The scholars hypothesize that when the subject matter is “lumpy,” i.e. non-continuous, the parties’ ability to reach an agreement through the use of transfers is restricted. Conversely, goods that are relatively continuous provide for a more expansive bargaining space, and as a result, result in a larger likelihood of settlement. The authors analyze data for all cases brought to the WTO from its inception until the end of 2000. Simmons and Guzman find support for their hypothesis, but only among democratic states. In other words, classic settlement theory seems to hold up: cases with more bargaining room are more likely to settle.

The authors give three reasons behind the existence of such transaction costs in WTO disputes. First, in a settlement, the inclusion of concessions unrelated to the dispute at hand is harder to approve through parties’ domestic political institutions and as a result create a constraint. Second, in a settlement, the inclusion of concessions unrelated to the dispute at hand is unfavorable to the nation making the concession, as it will have to be extended to all members of the WTO under the MFN principle. Lastly, the use of cash, which is an easily divisible settlement device that technically makes every single dispute “continuous,” is extremely rare. As a result, these constraints point to the presence of significant transaction costs, which are

essential to study as a possible explanation for why some disputes are able to settle and others are not.

Importantly, Guzman and Simmons focus on settlement of a dispute once a dispute has already been initiated. The “settlement” that formulates my dependent variable is resolving an alleged illegal trade barrier outside of the WTO dispute resolution system entirely, rather than escalating it into a dispute. It is also crucial to note that the Guzman-Simmons paper was written much earlier into the establishment of the WTO and hence featured a relatively small sample size of 216 disputes.

A wide range of settlement literature provides additional explanations as to why some cases are successfully able to settle, while others are not. Leandra Lederman, for example, argues that cases go to trial because of a failure to establish a common bargaining range in which a surplus is created and divided among the two parties. This failure can be attributed to four reasons: (1) classic information asymmetry – the parties' estimates of the trial outcome are not identical (2) the parties do not have symmetric stakes in the litigation, (3) the parties are not risk-neutral and (4) the parties engage in strategic behavior in negotiating the division of the costs they will save by not going to trial (Lederman). The second reason is especially applicable to the WTO, given that parties may differ in size and political system, and stand to lose or gain very different amounts economically and politically. The third reason also makes sense in the context of the WTO; it can be argued that states are risk-averse (at least in democracies) because governments are accountable to the people they represent.

Though settlement is the preferred outcome, if it is not achieved, courts are essential in partaking in bargains and achieving the same efficient outcome that would be achieved in the ideal world that Coase theorized about. Empirically, however, cases are generally far more likely

to settle outside of judicial proceedings, pointing to the fact that there are high benefits of settlements and/or very high costs to adjudication. Trade-related complaints are in line with classical settlement theory, as most complaints fail to be escalated into WTO disputes. Once WTO disputes have been initiated, however, disputes settle at far lower rates than cases in domestic court systems.

Marc Galanter and Mia Cahill explain general benefits to settlement through cost-reduction arguments, party-preference arguments, superior-outcome arguments, and superior general effects arguments. The cost-reduction arguments stress that settlement saves both, the parties and the courts, time, energy, and money. Party-preference arguments point to parties' desire to avoid court, greater satisfaction among parties, and a better meeting of parties' needs when a case is resolved through settlement. The third body of arguments, superior-outcome, states that settlement helps parties achieve the "golden mean" of all possible outcomes and leads to outcomes that rest on superior knowledge of the cases. Additionally, settlement allows parties to utilize a wider set of norms, encourages their inventiveness when it comes to finding a solution, leads to greater compliance, and changes the nature of participants' general behavior. Lastly, the superior general effects arguments state that settlement is beneficial because it acts as a deterrent of future undesirable behavior, acts as a moral example and educator, encourages or discourages future claims, and sets precedents about legal standards for other parties.

The cost-reduction arguments are easily applicable to complaints filed by corporations with their domestic governments against trade restrictions – settlement helps states avoid spending the money, time, and legal resources that formal adjudication, i.e., WTO dispute initiation, requires. Additionally, unlike outcomes achieved prior to or during settlement, reports

issued by formal panels are accessible by the public, and “litigants no longer enjoy insulation from domestic interests” (Busch et al.).

Apart from examining the causes and benefits to settlement in general settlement literature, I also examine what factors specific to the WTO have been found to increase the likelihood of settlement. In “Settling WTO Disputes: What do Litigation Models Tell Us?,” Amelia Porges questions why the likelihood of settlement in the WTO’s dispute resolution system is so much lower than in that of domestic courts. Porges divides litigation and negotiation models into two categories: ones that are based on optimism of negotiation WTO members, and ones that are based on information asymmetry. She comes up with three explanations for why members of the WTO are less likely to settle: both sides are too optimistic, asymmetries of information are most possible at the time of settlement, or the defending party has insufficient incentives to “pay to make the case go away.”

In sum, settlement between two states in the WTO is less likely than traditional settlement between two individual parties because the two groups often have different levels of incentives, investment, and information in pursuing certain outcomes. These are all considerations that countries keep in mind not only once a WTO dispute has been initiated, but also when deciding whether or not to bring a dispute to the WTO in the first place. Porges’ examination of the complexities of the WTO dispute resolution system make it clear that though complaint and dispute settlement in the WTO can be explained by general settlement theory, it is also far more nuanced than settlement within domestic courts.

#### Polity in Dispute Initiation

A partner nation’s polity score controls for how democratic it is in terms of an index that accounts for factors such as the competitiveness and openness of its elections, the nature of its

general political participation, and the level of limitations on the nation's executive authority. The score can range from -10 to 10, with scores of 6 to 10 classified as democracies. Past literature has conjectured that a nation's polity score, which I control for in my augmented gravity model, is positively related to dispute initiation. As explored by Todd Allee in his 2002 paper titled "Legal Incentives and Domestic Rewards: The Selection of Trade Disputes for GATT/WTO Dispute Resolution," the argument behind this is that "leaders of societies that hold strong beliefs in the rule of law and the desirability of allowing courts to resolve disputes" are more likely to then utilize these courts, as opposed to "resolving" these disputes through other means.

#### Concentration of Trade Barriers

In my augmented model, I also explore whether the concentration of a trade barrier, namely, whether a barrier affects many WTO members or only a few, affects the likelihood of its escalation as a dispute in the WTO. For example, banning a good from a specific country is a barrier concentrated on that one specific country. On the other hand, something like subsidizing domestic companies that produce certain goods depress prices of that good worldwide, thereby affecting all countries that also produce this good. This is a prime example of a diffuse trade barrier. Previous theory suggests that a barrier that affects a small sample of WTO members, or the United States alone, are less likely to settle outside of formal adjudication. In their paper titled "Free-Riding on Enforcement in the WTO" written in 2016, Leslie Johns and Krzysztof J. Pelc found that in cases of diffuse policies, many can benefit from litigation but no one country wants to take on the costs. In other words, collective action problems make it less likely that the United States will escalate a complaint based on a barrier that affects many other countries.



## Hypothesis

This study has two primary goals. First, I explore whether the gravity model has explanatory power when used to analyze whether trade barriers enacted against the United States are pursued by the USTR and escalated into disputes. Second, I explore the extent to which novel variables such as the continuity of a complaint and the concentration of a barrier can add explanatory power to the gravity model. These hypotheses are all specific to explaining whether complaints filed by international firms are then brought to the WTO by the USTR as formal disputes.

I hypothesize that the gravity model should help explain whether a complaint is escalated by the USTR into a dispute, or whether it is instead resolved outside of formal adjudication. Prior literature suggests that the gravity model helps explain the number of disputes that are initiated between pairs of countries within the WTO, and similarly, in line previous literature, I believe that it should hold explanatory power when determining whether the USTR disputes a barrier in the WTO.

**H1:** Trade and the escalation of complaints to disputes should rise directly with GDP of the trading partner and inversely with distance between the U.S. and the trading partner.

I hypothesize that the nature of a complaint has a direct effect on whether the complaint is brought to the WTO as a dispute by the USTR, or whether it is resolved outside of the WTO by other means. Past literature has shown this relationship to be significant, albeit early on in the existence of the World Trade Organization and in relation to disputes that have already been initiated. I believe that cases that are non-continuous and therefore harder to settle outside of formal adjudication, will have a higher chance of being brought to the WTO's dispute resolution system. Furthermore, as explored by past literature, I believe that polity and barrier concentration also hold explanatory power in determining the escalation of a complaint into a dispute.

**H2:** Trade and the escalation of complaints to disputes should rise directly with the polity level of the trade partner enacting an allegedly illegal trade barrier, the concentration of the trade policy, and the continuity of the trade policy in question.

### Data

The bulk of my data stems from a dataset originally compiled by Christina Davis in 2012, and later expanded by Professors Yildirim, Poletti, Chatagnier, and De Bievre in 2018. This dataset compiles all allegedly illegal trade barriers enacted against the United States by Canada, Mexico, the EU, Brazil, India, Japan, Korea, Malaysia, and Singapore, reported between 1995 and 2012. The final dataset produced an unbalanced panel of 2,334 complaints, of which 5% became WTO disputes. Each observation enters the dataset in the first year that the allegedly illegal trade barrier is reported to the U.S. Trade Representative's Office. My dependent variable is coded one if the US initiates a WTO dispute over the barrier following the enactment of the barrier, and zero otherwise. Additional characteristics that were most of interest to me for each complaint were the parties involved, trade volume between the US and the partner in each complaint, and the policy in question (i.e. why the barrier is allegedly illegal).

In contrast to the dataset utilized by Sattler and Bernauer that included all dyadic pairs in the WTO but only one observation per dyadic pair and year, my dataset is limited to the USA and the nine trading partners listed above. However, my dataset contains multiple complaints per partner-pair and year, and my focus is the factors that determine the transition from complaint to WTO dispute. The dataset also includes only trade barriers reported by internationally active firms to the United States as complaints, possibly leaving out observations representing barriers enacted that were never reported.

I merged this dataset with the Dynamic Gravity Dataset for 1948-2016, compiled by Tamara Gurevich and Peter Herman and released by the United States International Trade

Commission. This dataset seeks to provide core gravity-related characteristics for every country pair in every year between 1948 and 2016, including macroeconomic, cultural, and geographic indicators. From this dataset, I was most interested in obtaining GDP characteristics of the parties in the complaints in my original dataset, which I merged with my original dataset by partner name and year. I also utilized the distance and polity scores from the Dynamic Gravity Dataset.

Finally, I also manually coded for the ‘continuity’ of each complaint. I modeled my coding based off of the work published by Simmons and Guzman. The authors published their coding for WTO cases that they analyzed prior to 2000, where they label disputes as either “continuous” or “non-continuous.” Disputes concerning import bans, technical regulations, and intellectual property, for example, leave little room to compromise and are considered “all-or-nothing.” In my paper, therefore, I code them as non-continuous. Disputes concerning import quotas, quantitative restrictions, and anti-dumping duties, on the other hand, leave greater room for outcomes acceptable to both parties, and are coded as continuous. I summarize the theory behind this coding in my literature review.

In order to create my binary independent variable, I followed the pattern used by Simmons and Guzman. I determined the continuity based on the policy in question of each complaint, which was reported in the Yildirim et al. dataset. Continuous cases were coded as one and non-continuous cases were coded as zero. Cases were only coded as continuous if they had to do with tariffs, nonzero quotas, import restrictions, and subsidies. Otherwise, I coded them as non-continuous. It is important to note that the original paper that coded for this variable had three people cross-checking each other’s work. In order to keep the variable as robust as possible, I utilized a strict rule system to code for it, as described above.

The following are some statistics summarizing the distribution of my key variables: according to the classification that I used, about 81% of complaints are considered non-continuous, while 19% of complaints are considered continuous. In regard to my dependent variable, 95% of complaints do not end up becoming disputes, while 5% do. In absolute terms, out of 2,331 complaints in my dataset, 114 end up becoming disputes.

As observed from the summary statistics below, the number of cases per year is rising, but the fraction of complaints that become WTO disputes is falling. This suggests that it is important to have year dummies in my regressions to control for year fixed effects.

Summary Statistics Table 1

Year	Complaints		Continuity		Concentration		Avg. Polity Score	Total
	0	1	0	1	0	1	-	
1995	163	20	141	42	161	22	7.49	183
1996	173	17	150	40	171	19	7.46	190
1997	183	17	157	43	182	18	7.80	200
1998	202	11	174	39	196	17	8.13	213
1999	227	14	194	47	220	21	8.19	241
2000	236	11	200	47	228	19	8.24	247
2001	237	8	199	46	226	19	8.07	245
2002	262	9	226	45	253	18	8.23	271
2003	267	5	228	44	253	19	8.20	272
2004	270	2	232	40	252	20	8.17	272
<b>Total</b>	<b>2,220</b>	<b>114</b>	<b>1,901</b>	<b>433</b>	<b>2,142</b>	<b>192</b>	<b>2,334</b>	<b>2,334</b>

Summary Statistics Table 2

Partner	Complaints		Continuity		Concentration		Avg. Polity Score	Distance	Avg. GDP - 1995	Avg. GDP - 2004	Total
	0	1	0	1	0	1					
Brazil	195	8	179	24	198	5	8.00	8058	1.39E+12	1.72E+12	203
Canada	194	19	161	52	201	12	10.00	2135	1.10E+12	1.48E+12	213
EU	416	42	389	69	430	28	10.00	7596	1.20E+13	1.57E+13	458
India	223	3	156	70	214	12	9.00	13163	6.04E+11	1.03E+12	226
Japan	410	9	374	45	387	32	10.00	10229	5.06E+12	5.58E+12	419
Korea	401	13	308	106	359	55	7.48	10,646	5.51E+11	8.61E+11	414
Malaysia	162	0	129	33	140	22	3.00	14807	1.29E+11	1.94E+11	162
Mexico	104	20	97	27	98	26	6.73	2493	6.87E+11	9.27E+11	124
Singapore	115	0	108	7	115	0	-2.00	15101	1.02E+11	1.59E+11	115
U.S.A.	-	-	-	-	-	-	10.00	-	1.03E+13	1.39E+13	-
<b>Total</b>	<b>2,220</b>	<b>114</b>	<b>1,901</b>	<b>433</b>	<b>2,142</b>	<b>192</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2,334</b>

### Methods

Since my outcome variable is dichotomous, I employ a logit model across all of my specifications to model the probability of settlement.

In the first set of regressions below, I model the relationships governed by a basic gravity model, where partner country GDP – or really the product of US GDP and partner country GDP – and product of distance determine the volume of trade and disputes.<sup>1</sup> I also test an alternate specification of this gravity model, in which I replaced distance with trade, as did Sattler and

<sup>1</sup> In a classic version of the gravity equation, we have  $Y_{it} = G \cdot (GDP_{usa\_t})^{b1} \cdot (GDP_{partner\_t})^{b2} / (distance)^{b3}$ , which in log form yields a regression of the form:

$\ln Y_{it} = b0 + b1 \cdot \ln GDP_{usa\_t} + b2 \cdot \ln GDP_{partner\_t} - b3 \cdot \ln Distance_{i\_t}$ , where  $b0 = \ln G$ . However since  $b1 \cdot \ln GDP_{usa\_t}$  is constant across partner countries in year t, this will be observed in the year fixed effects.

Bernauer in their augmented gravity models. I tested both models with and without fixed year effects.

In the next set of my regressions, I expand from this base specification to include my continuity variable in order to test whether it holds any explanatory power in determining whether a complaint is pursued by the USTR and is therefore escalated into a WTO dispute. I next augment my gravity model even further, by including polity and trade barrier concentration. I created two versions of each specification: one with fixed year effects and one without.

## **Results**

### **Part I**

The stripped-down gravity model proved to be significant in determining whether complaints were escalated into WTO disputes (Table 1, Column 1). As expected, the coefficient on  $\log(\text{Distance})$  was negative and the coefficient of  $\log(\text{GDP B})$  was positive. The further away a country is from the United States, the less the United States trades with that country, and the less likely the United States is to initiate a WTO dispute with that country. At the same time, the more economic power a trading partner holds, the more interest the United States has in trading with that country, and the more likely the United States is to initiate a WTO dispute with that country if it enacts trade policies which are unfavorable to the U.S. Signs and significance of the coefficients stayed consistent when I controlled for fixed year effects (Table 1, Column 2).

Given that my specification is a logit model, in order to interpret the coefficients of my variables, I cannot look at their values directly but rather turn to their marginal effects. Marginal effects are beneficial in that they present results as differences in probabilities, which is more informative than odds ratios and relative risks. In other words, by looking at the margins, I can

tell what each specific variable's effect is on increasing the likelihood of my dependent outcome (WTO dispute initiation), provided all other variables are kept at their means.

I first examine the marginal effects of my simple gravity model (Table 2, Column 1). Though distance in my dataset is measured in kilometers, because it is logged, its effects are discussed in percentage terms. Making the distance greater by one percent decreases the odds of escalation of a dispute by 5%, holding all other variables (i.e. GDP of the trading partner) at their means. This effect is statistically significant. On the other hand, increasing GDP B by one percent while holding  $\log(\text{Distance})$  at its mean. increases the likelihood of complaint escalation by 1%. This marginal effect is also statistically significant. The value and significance of the marginal effects stay the same when I control for fixed year effects (Table 2, Column 2).

When I ran the same model substituting  $\log(\text{Trade})$  for  $\log(\text{Distance})$ , I found that though trade itself is significant in determining dispute initiation,  $\log(\text{GDP B})$  becomes insignificant (Table 1, Column 3). The sign and significance of the coefficients remain the same, when controlling for fixed year effects. This points to the notion that  $\log(\text{Distance})$  seems to better capture the bilateral relationship between the U.S. and its trading partners than  $\log(\text{Trade})$ , since  $\log(\text{GDP B})$  and  $\log(\text{Distance})$  predict  $\log(\text{Trade})$  and elements that predict trade on the right-hand side of my regression creates problems. This may further indicate the endogeneity problems embedded in utilizing trade to determine the likelihood of a WTO dispute.

In terms of marginal effects, trade has less of an effect than does distance in predicting the likelihood of WTO dispute initiation (Table 2, Column 3). Increasing the volume of trade between the U.S. and its trading partner by one percent increases the odds of escalation of a dispute by 3%, holding all other variables (i.e. GDP of the trading partner) at their means. This effect is statistically significant. On the other hand, increasing the  $\log(\text{GDP B})$  by one unit, i.e.

increasing GDP B by one percent, while holding  $\log(\text{Trade})$  at its mean increases the likelihood of complaint escalation by 0.4%. This marginal effect is not statistically significant, as isn't the coefficient in the original regression. The value and significance of the marginal effects stay the same when I control for fixed year effects (Table 2, Column 4).

## Part II

I next augment my basic gravity specification to explore the hypotheses that other variables have potential explanatory power in predicting whether the USTR will escalate a complaint into a WTO dispute.

The continuity variable proved to be significant in determining whether complaints were escalated into WTO disputes when added to my previous gravity model specification (Table 3, Column 1), increasing the likelihood of dispute initiation by 4%, according to its marginal effects (Table 4, Column 1). Paradoxically, the variable had a positive coefficient, pointing to the notion that cases that are continuous and theoretically less likely to be escalated into disputes, are actually more likely to be escalated by the USTR. The sign, significance, and marginal effects of  $\log(\text{Distance})$  and  $\log(\text{GDP B})$  remained the same as in the regressions in Part I. The addition of the continuity variable therefore points to the robustness of the previous gravity specification. The sign, significance, and marginal effects of all variables also stayed consistent when I controlled for fixed year effects (Table 3, Column 2 and Table 4, Column 2).

With regard to the positive coefficient obtained on the "continuity" variables in Columns 1-8 of Table 2, perhaps, the reverse story is happening. When cases are continuous and therefore easier to reach a compromise on, the USTR thinks the odds are heavily in its favor. The USTR may then think that it has a chance of obtaining even more favorable results (i.e. "winning") through formal adjudication than through any concessions obtained through settlement. It is



therefore more likely to escalate a complaint and initiate dispute proceedings within the WTO. This is in line with the “too optimistic” story told by Porges.

Alternatively, in non-continuous cases, it is a lot harder for cases to find a “middle ground,” meaning any solution will likely have a clear winner and a clear loser. The only way for the USTR to “win” the case is if the outcome of its settlement or adjudication results in a complete reversal of the policy in question (e.g. a ban in question gets lifted). Given that this outcome is harder to achieve through settlement and adjudication alike (as opposed to a relatively smaller adjustment in policy), the USTR calculates that the risk and resources involved with initiating a dispute based on such a matter is not worth the potential rewards. Instead, the USTR decides to focus its resources elsewhere and avoids formal adjudication altogether. This is in line with Porges’ claim that asymmetries of information are heightened at time of settlement.

Next, I augment my model by controlling for the polity score of the trading partner in each complaint. The coefficient on polity proves to be positive and significant at a 5% level (Table 3, Column 3), though this significance disappears when the specification controls for fixed year effects (Table 3, Column 4). This points to the notion that the United States is *more* likely to initiate a dispute with a more democratic trading partner, which is contrary to what theory may predict. One possible explanation for the signage of the polity coefficient is that the United States is more likely to share closer relations with its more democratic trading partners, and is more successfully able to resolve a complaint without resorting to dispute initiation in the WTO.

In the specifications that control for polity (Table 4, Columns 3 and 4), the sign, significance, and marginal effects of  $\log(\text{Distance})$ ,  $\log(\text{GDP B})$ , and continuity remained the same as in all earlier regressions. The marginal effects of polity reveal that the variable increases

the likelihood of WTO dispute initiation by 0.6% (significant), and this effect goes down to 0.4% (non-significant) when controlling for fixed year effects.

My final variable of interest is the concentration of a barrier and whether it affects its likelihood of being escalated as a formal WTO dispute. I add it to my previous regression, and find that the variable has a positive coefficient, as expected, but is not significant at a 5% level (Table 3, Column 5). Its p-value, however, reveals that the variable is significant at a 10% level. The coefficient of the variable remains positive and insignificant when the regression controls for fixed year effects (Table 3, Column 6). Its p-value, however, reveals that the variable is significant at a 10% level. My regressions reveal that the United States is more likely to challenge barriers that affect solely the United States, as opposed to a multitude of countries, but at relatively lower significance levels.

The marginal effects of all variables but concentration proved to be significant at this stage of the regression (Table 4, Column 5). The sign, significance, and marginal effect of these remaining variables remained consistent with earlier regressions, with and without controlling for fixed year effects. Notably, in the specification that controlled for fixed year effects (Table 4, Column 6), the marginal effects of concentration were significant at a 10% level, revealing that a case being concentrated increased its likelihood of being escalated into a dispute by 2%.

When I ran the same model substituting  $\log(\text{Trade})$  for  $\log(\text{Distance})$ , I found that the only significant variables in the specification were  $\log(\text{Trade})$  and continuity (Table 3, Column 7). This result was consistent when controlling for fixed year effects (Table 3, Column 8). In terms of marginal effects, a one percent increase in trade between the U.S. and its trading partner, increased the likelihood of dispute initiation by 3%, with and without controlling for fixed effects (Table 4, Columns 7 and 8). The results once again point to the notion that

$\log(\text{Distance})$  seems to better capture the bilateral relationship between the U.S. and its trading partners than  $\log(\text{Trade})$ , even when the model is augmented with the previously discussed variables, because utilizing distance avoids probable endogeneity issues that utilizing trade causes.

Notably, certain key results, such as the sign and significance of  $\log(\text{Distance})$ ,  $\log(\text{GDP B})$ , and continuity proved to be robust to changes in specification, as did the sign and significance of the marginal effects of these variables. The augmented gravity model that utilizes  $\log(\text{Distance})$ , continuity, concentration, polity, and controls for year fixed effects is my preferred specification. The model most closely incorporates the classic gravity model and includes variables of interest backed up by theory that are typically under-utilized but hold explanatory power in predicting WTO dispute initiation.

#### Limitations

Though my results are robust and largely in line with what theory predicts, they also face several limitations that are important to mention. First, it is difficult to capture in a simple empirical framework relationships that are complicated, nonlinear and simultaneous, such as the relationship between two countries and their propensity for dispute initiation. It is also hard, if not impossible, to ‘identify’ causal mechanisms in such a world as there are no obvious instrumental variables to identify simultaneous equation models. In making an effort to try to remove endogenous right-hand side variables, the regressions I estimated are reduced forms.

It is also critical to note that this paper was specific to the United States and only nine of its WTO-member trading partners. Future research may expand on this paper by including all of the United States’ WTO-member trading partners, and by performing similar studies specific to other countries (e.g. the European Union). Furthermore, this paper assumes that if a complaint is

not escalated into a WTO dispute, it is resolved and/or settled through other channels, outside of formal adjudication. However, it may be the case that the USTR simply chooses to ignore some of the complaints that it receives and that from the companies' perspectives, they never actually get "resolved." Though it is beyond the scope of this paper, future studies can consider incorporating a two-stage model that explains how trade relationships first escalate into complaints and from there turn into WTO disputes.

### **Conclusion**

My results reveal that a simple gravity model can be successfully used to predict whether the USTR will escalate a complaint filed by an international company into a dispute. The economic size of a trading partner and the distance between the partner and the United States points not only to a larger propensity for trade between the two, but also to a larger propensity for disputes. In other words, the larger and more diverse economies are, and the closer they are geographically, the more they will trade. With more trade comes a greater possibility of allegedly illegal trade barriers, and the United States becomes more likely to initiate a dispute in the WTO.

It remains puzzling why polity's coefficient is signed in the opposite direction of what theory would predict. A potential explanation for this is that the United States is likely to have closer relations to its trading partners that are more democratic, and is therefore able to resolve a complaint through negotiations that take place outside of formal adjudication.

Similarly, continuity's sign is contradictory to what theory suggests. This signifies that perhaps, the story behind settlement prior to dispute initiation in the WTO is different than what prior literature states. Alternatively, this finding suggests the potential of curvilinear data – a distribution in which cases that are very continuous (i.e., theoretically very easy to settle) and very non-continuous (i.e., theoretically very hard to settle) both settle. The first group of cases

contains an enormous amount of bargaining room for both parties and follows what classic settlement theory would predict, while the second group of cases is difficult to solve and likely to make the United States wary of the costs involved in pursuing the case. The “difficult” nature of these complaints therefore causes the USTR to avoid formal adjudication. The cases in the middle of the spectrum, therefore, are the ones that are likely to end up adjudicated through the WTO dispute resolution mechanism.

The consistent signage and significance of the distance and GDP across various specifications points to the robustness of the variables under the gravity model. Distance also seems to be a better predictor than trade, which is what has been used in prior literature, but is an endogenous variable that may skew findings. Additionally, variables such as continuity, polity, and concentration successfully augment the gravity model, and add explanatory power to why certain complaints escalate into WTO disputes. These variables are relatively underutilized in studies exploring dispute initiation, but my results reveal that they hold explanatory power. My augmented specification is also unique in its balance of inclusion of characteristics of the parties involved in each potential dispute and the inclusion of characteristics specific to the complaint itself.

As discussed above, future research may expand on this paper to include the United States’ trading partners beyond solely Canada, the EU, Mexico, Brazil, Singapore, Malaysia, India, Japan, and South Korea. Additionally, my preferred specifications may be tested from the perspective of other countries and their trading partners, as opposed to just from the perspective of the United States. Finally, future studies may explore a two-stage model that explains how trade relationships affect the filing of complaints, and how these complaints eventually turn into WTO disputes.

## Figures

Figure 1: Disputes and Complaints, by Year

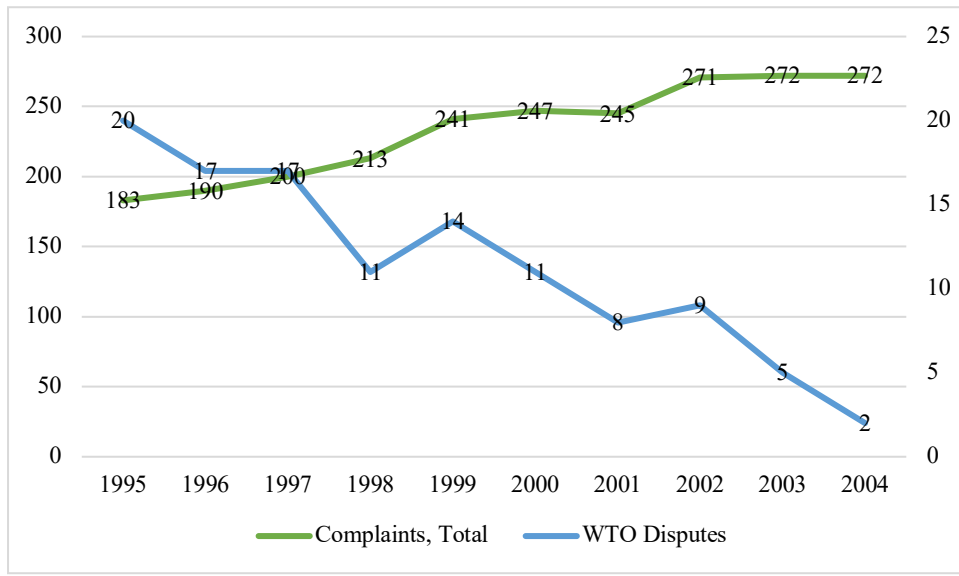
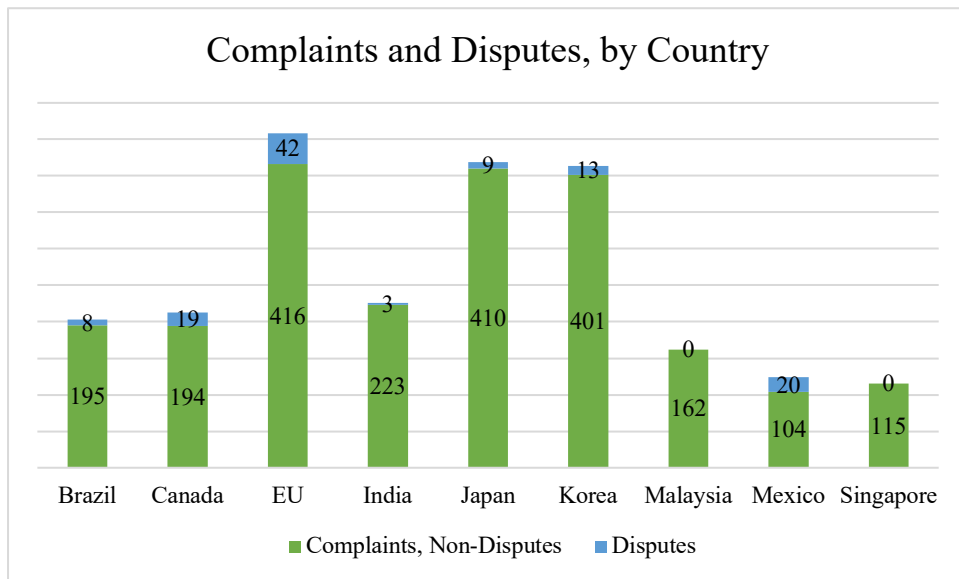


Figure 2: Disputes and Complaints, by Country



**Tables**

Table 1  
Effect of Gravity Specification in Predicting WTO Dispute Initiation

WTO_dispute	(1)	(2)	(3)	(4)
Indistance	-1.108*** (-7.21)	-1.110*** (-7.01)		
Intrade			0.651*** (4.51)	0.754*** (4.85)
Ingdpother	0.328*** (3.92)	0.362*** (4.26)	-0.0903 (-0.93)	-0.101 (-1.03)
_cons	-2.547 (-1.11)	-2.564 (-1.10)	-21.52*** (-6.27)	-23.60*** (-6.33)
Fixed Year Effects	No	Yes	No	Yes
Observations	2334	2334	2334	2334

Standard errors in parentheses = "\*" p<0.05, "\*\* p<0.01, "\*\*\* p<0.001"

Table 2  
Marginal Effects of Gravity Specification in Predicting WTO Dispute Initiation

WTO dispute	(1)	(2)	(3)	(4)
lndistance	-0.0500*** (-6.45)	-0.0486*** (-6.43)		
lntrade			0.0298*** (4.28)	0.0336*** (4.61)
lngdpother	0.0148*** (3.76)	0.0158*** (4.09)	-0.00413 (-0.93)	-0.00451 (-1.03)
Fixed Year Effects	No	Yes	No	Yes
Observations	2334	2334	2334	2334

Standard errors in parentheses = "\*" p<0.05, \*\* p<0.01, \*\*\* p<0.001"



Table 3  
Effect of Augmented Gravity Specification in Predicting WTO Dispute Initiation

WTO_dispute	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indistance	1.086*** (-7.05)	1.108*** (-6.98)	1.249*** (-7.14)	1.209*** (-6.91)	1.238*** (-7.07)	1.211*** (-6.91)		
Intrade							0.617*** (4.15)	0.719*** (4.44)
Ingdpother	0.356*** (4.22)	0.384*** (4.50)	0.541*** (4.43)	0.512*** (4.16)	0.544*** (4.43)	0.513*** (4.13)	-0.0535 (-0.46)	-0.0994 (-0.85)
continuity	0.840*** (3.92)	0.809*** (3.72)	0.886*** (4.11)	0.844*** (3.86)	0.734** (3.09)	0.691** (2.90)	0.734** (3.12)	0.663** (2.81)
polity_o			-0.153* (-2.21)	-0.104 (-1.48)	-0.147* (-2.08)	-0.0963 (-1.34)	0.0150 (0.23)	0.0329 (0.49)
concentrated					0.523 (1.73)	0.557 (1.84)	0.494 (1.66)	0.475 (1.59)
_cons	-3.744 (-1.60)	-3.435 (-1.46)	-6.272* (-2.39)	-5.303* (-1.97)	-6.524* (-2.46)	-5.441* (-2.01)	- 21.85*** (-5.11)	- 23.06*** (-4.89)
Fixed Year Effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2334	2334	2334	2334	2334	2334	2334	2334

Standard errors in parentheses ="\* p<0.05, \*\* p<0.01, \*\*\* p<0.001"

Table 4  
Marginal Effects of Augmented Gravity Specification in Predicting WTO Dispute Initiation

WTO dispute	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Indistance	0.0484*** (-6.38)	0.0479*** (-6.45)	0.0556*** (-6.44)	0.0523*** (-6.40)	0.0549*** (-6.41)	0.0522*** (-6.40)		
Intrade							0.0279*** (3.98)	0.0316*** (4.26)
lngdpother	0.0159*** (4.04)	0.0166*** (4.32)	0.0241*** (4.23)	0.0221*** (4.02)	0.0241*** (4.23)	0.0221*** (4.00)	-0.00242 (-0.46)	-0.00437 (-0.85)
continuity	0.0375*** (3.82)	0.0350*** (3.66)	0.0394*** (3.99)	0.0365*** (3.78)	0.0326** (3.04)	0.0298** (2.87)	0.0332** (3.06)	0.0291** (2.77)
polity_o			-0.00682* (-2.19)	-0.00451 (-1.47)	-0.00651* (-2.06)	-0.00415 (-1.34)	0.000677 (0.23)	0.00145 (0.49)
concentrated					0.0232 (1.72)	0.0240 (1.83)	0.0224 (1.65)	0.0209 (1.59)
Fixed Year Effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2334	2334	2334	2334	2334	2334	2334	2334

Standard errors in parentheses =\*\* p<0.05, \*\* p<0.01, \*\*\* p<0.001"

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