

# Agro-Food Dispute Participation: A Bleak Outlook for Agricultural Trade Liberalization?

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## Abstract

Agricultural trade and its blatant protection has long been a contentious world trade issue. The World Trade Organization (WTO) has mandated to end protectionist behavior in this sector, but trade negotiations remain stagnant. While negotiations stall, the WTO dispute settlement system provides small gains for countries that sue partners over trade protection issues. This paper looks at participation in the WTO dispute settlement system to uncover the decision-making process for countries deciding whether or not to participate in a dispute. Using bilateral agro-food trade data and new variables for litigation capacity, I reexamine dispute participation with a focus on the agricultural sector. This analysis of countries' interactions in the agro-food trade sector proves that the expected gains from a dispute are the cost of litigation factor into a country's decision about whether or not to participate in a dispute.

## Introduction

Connecting developed and developing economies through international trade markets is the challenge that World Trade Organization (WTO) members still face and debate today. Dropping trade barriers such as tariffs and domestic subsidies generates trade expansion and economic growth (Dollar 2004, Winters 2004). Liberalizing agricultural trade would add \$300 billion to the world economy in the next decade, greatly benefitting developing country economies (Anderson and Martin 2006). With the livelihoods of millions of agricultural producers in the balance, the interactions between WTO members are pertinent in understanding how to accelerate trade liberalization that will increase global growth.

Barriers to market access in the agro-food sector persist to favor large economies like the United States and the European Union. A primary function of the WTO is to address this power imbalance by holding all members in court accountable to trade agreements in order to prevent unchecked protectionist escalation. A multilateral system is connected by agreements to which all members agree as well as a functional mechanism that ensures all members abide by these agreements. The WTO's dispute settlement system is this accountability mechanism. However, it is used disproportionately more by developed countries than developing countries (Horn *et al.* 1999, Bown 2003). The purpose of this study is to determine why developing countries underuse this mechanism. I test the likelihood that a country will participate in a dispute with one of its agro-food trade partners based on the trade benefits, assurance of the ruling being implemented, and the country's capacity to absorb legal costs. The results contend with a study by Göetz *et al.* (2010) that argues neither bilateral agro-food trade

flows nor legal capacity affect a country's decisions to participate in disputes but trade adversity does. I find proof that bilateral trade flows and the ability to absorb litigation costs dictate a country's interest and confidence in participating in a dispute.

### **Institutional Liberalization of Agricultural Trade**

Following WWII, the international trade of goods started a gradual process of liberalization. The General Agreement on Trade and Tariffs (GATT) was established in 1949. The GATT was cooperative effort to reduce trade barriers in order to stimulate growth through international competition and comparative advantage production.

Although this multilateral organization was the start of the evolution of trade unrestricted by tariffs and trade barriers, agricultural products were left out of the discussion.<sup>1</sup> Over forty years later in 1994, the first agreements specifically addressing trade of agricultural goods came in the form of the Uruguay Round Agreement on Agriculture. Now in the second round of agricultural trade negotiations, the Doha Round, there has been little headway between clashing developed and developing countries on enhancing agro-food sector liberalization. The success of these talks and continued liberalization in the agro-food sector is linked to the quality of the WTO and its court system that holds member countries accountable to the organization's multilateral agreements (Gardner 2003, Leche 2009).

The tenets of the WTO's Dispute Settlement Understanding (DSU) are the foundation of multilateral functionality. The DSU holds all parties accountable to common trade policy agreements (WTO 2007). All countries have the right to file complaints against another WTO member whose trade policy or activity prevents goods

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<sup>1</sup> The GATT was intended to cover all trade goods, but agriculture was left untouched because of varying exceptions; Josling *et al* (1996) and in Anderson and Josling (2005).

from being traded fairly in the defendant's domestic market. However, developing country participation is disproportional to developed country participation, implying that the dispute settlement system is biased against developing countries.

Countries file disputes with one of their trade partners through a time-restricted process (see Figure 1) that prevents blocking and delaying strategies and ensures there will be a ruling (Hoekman and Kostecki 2001). Once a plaintiff, or "complainant", has initiated a dispute, countries are given the opportunity to participate as a co-plaintiff, or "third party". Third parties are countries that wish to voice an interest in the dispute and are granted the opportunity to submit their case in writing to the court. They are not entitled to claim the same trade rights granted the complainant but their submissions can have an influence on the judgments of the court. Disputes must either be mutually resolved outside of a WTO court, or a Dispute Settlement Body (DSB) will mandate a resolution following litigation. A mutually agreed upon jury of experts handles each case, but each country is responsible for its own litigation fees (Busch and Reinhardt 2004). The DSU provides the framework for fair use by all members, but the existence of the institution does not ensure that there is equal opportunity for all members to use the system.

### **The Dispute Literature**

The purpose of this paper is to look beyond the egalitarian rules provided by the DSU and examine what costs and benefits WTO members assess when deciding whether or not to participate in a dispute. The power relations favoring developed countries during the years of the GATT leaves many scholars skeptical that institutional biases continue to harm the trade interests of developing countries by excluding their interests

from proper consideration by other WTO members. Developed countries participate in a much higher proportion of disputes compared to developing and least developed countries. Dispute literature focuses on three main areas that help explain why countries participate or abstain from WTO disputes. First, there is the idea that disputes reflect the *commercial capacity* of trade, i.e. countries that trade more are more likely to participate in disputes. Second, the *retaliation hypothesis* argues that the power to retaliate on a trade partner as a means to uphold a dispute resolution indicates how confident countries are with initiation. Third, *litigation capacity* highlights the differences in a country's ability to allocate money towards a lawyer and research costs that are crucial in the court system. The latter two explanations for dispute behavior prove the biases of an institution that is intended for use by all member countries. Each of these subjects must be considered in understanding why countries initiate disputes.

Commercial capacity is important to consider because trade infringements, or disputable trade measures (DTMs), are correlated with trade volume and diversity (Horn *et al.* 1999). Assuming that DTMs are evenly distributed across traded goods, the more a country trades, the higher the probability that DTMs are part of the country's trade schedule and the more likely the country will be involved in a trade dispute (Bown and Hoekman, 2005). The logic suggests that any country that trades would be implicated in some sort of DTM and would bring a dispute to the DSB, but this is not the case (Holmes 2003). Other factors contribute to the decisions to participate in disputes.

The WTO cannot guarantee enforcement of trade dispute outcomes. The organization grants countries the right to impose trade restrictions on partners that are proven guilty in a dispute, but the application of this strategy is different for countries

with different trading capacities. As countries weigh the cost and benefits of initiating disputes, the retaliation effects of bringing a defendant to court have to be weighed based on the relationship with that country both inside and outside of bilateral trade. There is evidence that the share of the trade sector can influence the effectiveness of trade disputes, connecting the idea of commercial capacity importance to disputes from a different perspective (Bown 2004). These theories flow into a vein of literature that finds a country's litigation capacity influencing dispute behavior.

The pertinence of legal capacity to a country's decision to initiate a dispute is contested. The increased legalization of the system since moving from the GATT is understandable as more agreements and the DSU court mechanism make for more legal work (Kim 2008). An increase in the institution's legalization means countries with fewer legal resources are less capable of participating in disputes (Bown 2003, Francois *et al.* 2008).<sup>2</sup> The most recent and strongest evidence of this is found in a survey conducted by Busch *et al.* (2009).<sup>3</sup> The survey reveals that there might be closer ties to commercial capacity, or value, of the domestic agricultural sector since most countries look to private funding for litigation costs. The notion of the agro-food sector's domestic value translating over to legal capacity has yet to be tested. My study explores this idea. Increases in legal capacity, measured by GDP per capita and number of delegates serving a country in Geneva, shows which countries can afford disputes and which countries are more ready to participate in them because of personnel advantages (Busch and Reinhardt

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<sup>2</sup> Legal costs for dispute proceedings range between \$130,000 - \$700,000, a significant cost (Nordström 2005).

<sup>3</sup> The survey was conducted with the understanding that country-linked data would remain anonymous, preventing the use of an index for the purpose of this paper. The survey finds a normal distribution of legal capacities and finds that there are marked differences between the size and capabilities of legal teams.

2003; Guzman and Simmons 2005). However, Götz et al. (2010) disproves the relevance of legal capacity in the agricultural sector, showing that delegation size is not predictive of dispute participation. In order to approach the idea differently, I choose to include a bureaucratic quality variable to indicate the effectiveness of government personnel representing the interests of the country at the WTO.

### **The Study**

The unit of analysis for this study is each exporting trade partner of a dispute defendant in the agro-food sector.<sup>4</sup> I look to explain the actions and non-actions of these countries who have trade interests with the defendant. Following the assumption that every trade flow could potentially contain an uncovered DTM, the study includes all countries with export interests in a defendant country as potential litigants in a dispute. In this case, potential litigants are defined as all WTO members who trade with the defendant's agro-food sector. If each accused defendant country is assumed to actually have interfered trade agreements, then all countries that are partners with this country have an interest in suing the country. For this reason, only disputants that are non-discriminatory are included in the study, eliminating disputes that concern discriminatory protection against a single complainant country. Non-discriminatory disputes require that all trade partners make a decision about whether or not to participate.

The dependent variable for this study is a measurement of participation in a trade dispute. A country participates in a dispute as a complainant or a third party, while non-participating trade partners of the defendant are "by-standers." By-standers gain from the defendant being forced to enact trade-liberalizing reforms. The model proceeds on the

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<sup>4</sup> This measurement qualifies these units as formal disputes that are brought before the DSB by at least indicating a "Request for Consultations." (Busch and Reinhardt, 2004). Disputes are classified to include trade in raw agricultural goods as well as food and beverages.

assumption that the choice alternatives are ordered along potential benefits, suiting an ordered logit model that takes into account the relative differences in “benefit utility.” The more involved a country is with a dispute, the higher the probability of liberalization as well as the extent of liberalization. Unlike dispute initiation, this variable enables us to draw comparisons between actors and non-actors as well as between the actors.

The explanatory variables for the study are proxies for each of the themes discussed in dispute literature. The variables all relate to agro-food trade and are measured from the founding of the WTO in 1995 through 2009.

***Adversity to Commercial Capacity Controls:***

**Trade Adversity** is measured by MA-OTRI value, an index that measures how the extent to which the protectionist policies of a country’s trade partners limit said country’s actual trade potential (Kee 2009). The more protection that blocks a country’s exports, the more commercial capacity potential that country has in a more open trade system. The higher the index value, the more trade adversity a country faces and the more it is expected to dispute.

**Log(Trade)<sub>t-1</sub>** is the value of all agro-food imports and exports in thousands of US dollars. The variable controls for expected DTMs, as a country that trades more is likely to encounter more trade infringements. The variable is lagged one year to account for a yearlong time lapse necessary for preparing a dispute. All trade values, unless noted otherwise, come from United Nations Conference on Trade and Development (UNCTAD 2011).

***Size of Liberalization Gain:***

**Log(PartnerX)<sub>t-1</sub>** is the defendant's trade partner's agro-food exports to the defendant's economy. More exports should result in an increase in incentive to challenge the defendant on a trade infringement.

**Partner's Share<sub>t-1</sub>** is the exporter's share of defendant's import market. The larger the percentage of the respondent market a trade partner holds, the more they have to gain from the passing of a liberalization measure, both in immediate gains and potential to increase trade to the country.

**Ag%Exports** is agro-food exports as a percentage of total exports. It measures the effect that the liberalization gain will have on the trade economy of a certain country. Data comes from the FAOstat (FAO 2011).

***Retaliation Strength of Partner:***

**Log(DefendantX)<sub>t-1</sub>** is the defendant's exports to a trade partner in thousands of US dollars lagged one year. The more defendant exports to a trade partner, the more retaliation strength the trade partner has to retaliate on a defendant's exports.

**Defendant's Share<sub>t-1</sub>**, which is the percentage of the defendant's exports that goes to the partner's economy, are measures of retaliation leverage the partner has on the defendant. The larger the percentage, the more a partner can damage a defendant's exports with retaliation.

### ***Legal Capacity:***

**Log(Prod)** is the value of the entire agricultural sector. It is included to measure the private funding that is behind the litigation costs of finding and initiating and a dispute (FAO 2011).

**Bureau** is the measure of bureaucratic quality of a government from the International Country Risk Guide.<sup>5</sup> The measure of bureaucratic quality is included to indicate the quality of the personnel representing a country at the WTO. A better score indicates an experienced delegation of intelligent individuals in Geneva

**Corporate Legal Corruption Component (CLCC)** is an index that measures the legal influence of lobbying on political actors. The score is expected to interact positively with the value of the agro-food sector to attribute lobbying money to increases in participation (Shaffer 2003).

### **Method**

A series of dichotomous probit and multinomial ordered logistic models test the reasons for participation, breaking down the question on the three explanatory categories: gains in liberalization, retaliation strength, and litigation capacity. The probit models analyze to what extent the explanatory variables explain any form of participation, clumping complainant and third party participation together. The ordered logistic model describes not only the relationship between participation and by-standing, but also analyzes the degree of separation between three discrete, but interrelated, participation decisions. Thus, it differentiates between the decision to participate in a dispute as a complaint or join as a third party. Two hypotheses are tested that explain how adversely

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<sup>5</sup> The ICRG Bureaucratic Quality measurement indicates the merit-based admission to a bureaucracy and the independence from political pressure. A less clientalist, more competitive bureaucracy means more intelligent and experience public employees.

affected trade partners choose to dispute in the WTO. First, the greater the trade adversity a country faces, the more likely that country will participate in a dispute. Second, countries analyze total expected costs and total expected benefits when deciding whether or not to participate. The models of other researchers have attempted to highlight to what extent the WTO system discriminates against the poorer countries that have not initiated an agricultural dispute. I use a method that incorporates a more descriptive dependent variable and a more specific unit of analysis.

### **Bivariate Probit Analysis**

In understanding the reasons for participating in a dispute, I first use a dichotomous interpretation of dispute participation. A majority of studies have used dispute initiation as a unit of analysis, asking similar questions to this study about the disparities in dispute settlement participation. I open up this question more to include all countries that have entered into a dispute as either a complainant or third party. This dichotomous dependent variable begins to unpack the hypotheses and introduce the more descriptive method of ordered logit analysis.

The controls for the study are total agricultural trade flows for each country and trade adversity. Agricultural trade is measured for each year and is lagged one year to account for the time that a country takes to plan a dispute once they are convinced they will participate. The variable is a determinant of commercial capacity, and with increased trade flows it is expected that there will be increased dispute participation. MA-OTRI is an index that “summarizes the impact of other countries’ trade policies on each country’s exports.”<sup>6</sup> The index is specified for agricultural production and is

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<sup>6</sup> Kee, Hiau L., Alessandro Nicita, and Marcelo Olarreaga. 2009. “Estimating Trade Restrictiveness Indices.” *The Economic Journal*. 119 (January): 172-199.

standardized across countries to allow for cross-country comparisons. These variables combined attempt to control for the DTMs a country faces and uses this concept to show the level of adversity an agro-food trader faces. The more adversity a country faces, the more that country is expected to dispute. A country that suffers more protection has more issues over which to dispute. These countries are also well below their trade potential if none of their partners protect against their goods. A country that suffers a low rate of protection has relatively less to gain per increased trade unit since they are already operating at a trade level that is relatively in line with their trade potential. With these ideas in mind we look at how the controls perform without explanatory variables included.

The control baseline model generates the expected positive signs for both of the variables (see Table 1). Both variables are significant at the  $p < .01$  level, and with a sufficient predictive strength,  $R^2 = .193$ . The standardized coefficients of the two variables permit interpretation about the marginal effects of these two estimators. The commercial capacity variable's coefficient (.525) means that the agro-food trade volume is a stronger indicator than the average tariff adversity (.100) a country faces. Trade adversity is still significant, indicating that more adversely affected countries participate in disputes because of the larger number of trade limitations they face.

In the context of this study, commercial capacity is important for countries both in addressing their current and future trade interests. The level of commercial capacity is important for this study in identifying the number of DTMs a country may face and in determining to what extent a country is adversely affected. A country's trade volume is more indicative than trade adversity of its propensity to participate in a dispute. The

more protection that country suffers, the more trade barriers hinder its commercial capacity. Yet, to explain disputes in the present, trade volume is a stronger predictor of participation behavior. Still, the more adverse the conditions are for a country's exports, the more inclined it will be to open up these markets by participating in a dispute. More affected countries are more prone to participating in a dispute and confidently representing their interests.

### ***Expected Liberalization Gains***

The second hypothesis of this study states that countries weigh all expected costs and benefits when disputing against fellow WTO member countries. The alternative interpretation and null hypothesis is that WTO countries only think about the potential gains to their trade regime, or the "size of liberalization" gains.<sup>7</sup> Assuming that the WTO dispute settlement system is egalitarian and does not involve risk, countries only act on trade infringements to increase their trade flows. Before testing this hypothesis, it is necessary to determine if there is any validity to the idea that member countries act in accordance with this assumption. If there is no sign of this explanation existing then the estimators are poorly fitted for the study or the assumptions of all researchers in this field are disproven.

### **Results**

The liberalization estimators prove to be significant and have the expected relationship with participation, except for the percentage of exports attributed to agro-food sector (Ag%Exports), (see Table 1). For both the value of trade from a trade partner

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<sup>7</sup> Bown, 2003 frames the benefits side of countries' cost/benefit analysis in disputing as a quantified "size of liberalization" that countries expect upon winning a dispute and the concessions associated with this liberalization victory.

to the defendant ( $\text{Log}(\text{PartnerX})_{t-1}$ ) and the share of that partner's exports in the defendant's market ( $\text{Partner's Share}_{t-1}$ ), there is a positive correlation with dispute participation. In the case that countries suffer disputes with multiple countries, these results suggest the expected behavior that they target the countries to where a larger number of their exports flow. Overall, Country A's propensity to actively participate in a dispute against Country B increases as the importance of Country B for Country A's export market increases. The standardized coefficients show that the export flows to a defendant's market are the most predictive of participation behavior (.525). This coefficient is almost five times as strong as partner's share variable.

By including the control variables for the study, the results are even clearer,  $R^2 = .242$ . The positive signs for a partner's trade volume and share of the respondent's market remain positive, though their importance in explaining behavior diminishes (.288 and .053, respectively). According to these results, commercial capacity influences a country's participation decision more than the explanatory variables. Agro-food exports percentage of overall exports is now positive and significant at the  $p < .01$  level. The variable shows the expected positive relationship (.124) with dispute participation.

Increases in trade value, share in respondent's market, and the importance of the agro-food sector for a country's export market are all correlated with increased likelihood to participate in a dispute. Once the controls are applied, the weights of the estimators' coefficients drop relative to the coefficients in the previous test. The results for value of trade are self-explanatory, though its importance differs from previous findings. Bown (2003) finds that dispute participation was more readily measured by the percentage of a defendant's market a trade partner holds. According to Bown, a larger share in a

defendant's market leaves countries thinking that they have advantages over other defendant trade partners in this specific market. The findings for this sector suggest that raw trade value is more important for countries. The relative lack of strength from the percentage variable could be due to high protectionism in the sector. Countries are not as concerned with other countries' competitiveness in the sector. A country is more likely to achieve beneficial gains from liberalization if they already have a strong share in the market, but the protectionism may disrupt this seemingly rational thought by complicating reasons case by case. Standardized by commercial capacity, country behavior reflects the expected logic to partake in disputes based on interpreting how the expected gains liberalization will bring said country. These simple findings are not the sole explanations for WTO dispute participation behavior.

### ***Retaliation Strength***

Having determined some of the obvious reasons why countries participate in disputes, the validity of the hypothesis needs to account for potential costs associated with bringing a dispute to the WTO. These costs have been fleshed out in research, and the specified modeling of the agro-food sector supports some of these results (Bown 2003, 2004). According to findings, the more a country provides to a respondent, whether in the form of export markets or aid, the more confident the country is to initiate or participate in a dispute. Reversing the variables used to analyze the expected gains from liberalization operationalizes the idea of retaliation. Trade flows ( $\text{Log}(\text{DefendantX}_{t-1})$ ) from the defendant to its trade partner and the defendant's stake in the partner's market ( $\text{Defendant's Share}_{t-1}$ ) are both assumed to have economic importance to the

defendant similar to the application on the trade partner side for the liberalization gains test.

## Results

The initial test with only the explanatory estimators yields both concepts as significant factors that determine trade participation (Chart 2). Both variables are significant at the  $p < .01$  level. The standardized coefficients show results similar to the “liberalization gains” variables above. The value of trade flows (.370) are much more influential than percentage of the defendant's exports to the trade partner (.087) in predicting how confident a country is in its retaliatory power. The explanatory power of the model  $R^2 = .100$  is not particularly strong initially.

When combined with control variables, the explanatory power of the model doubles to  $R^2 = .195$ , still below that of the liberalization gains model. The defendant's stake in a trade partner's market drops out of significance. Trade flow retaliatory strength remains significant at the  $p < .01$  level, along with all three control variables. The relationship between trade values and participation drops with the addition of the controls (.129), but the estimator is still the second strongest predictor in the model. Commercial capacity, controlled by the trade flows variable, is the strongest predictor of the participation in this model. A country considers not only how much it can gain from a dispute, but also how much retaliatory power it has against a country in enforcing the dispute ruling. Retaliation was an instrument of the GATT that the WTO has tried to eliminate to the point that its members automatically abide by DSB rulings. The variable is a statistically significant predictor of what countries participate in disputes, though not in the proportional variable that proxies the strength of this retaliation more clearly.

### ***Litigation Capacity***

The dispute settlement system has attempted to level the power tactics between WTO members with an organization more controlled than the GATT. However, increased legalization can still impede countries without resources to fund disputes and effectively find, manage, and oversee disputes because of bureaucratic weaknesses. The only other study that has focused on the agro-food sector concluded that legal capacity, measured by the number of each country's Geneva delegates, does not influence a country's likelihood to initiate a dispute (Götz et al. 2010). A model employing the value of the private, domestic agro-food sector and the quality of the government's bureaucracy as litigation capacity proxies counters the findings of Götz et al. (2010).

The litigation capacity model (Chart 3) is built on three variables that test influences of a quality of a bureaucracy and the potential for private lobbying supplying money for cases with a different method than other studies. A government's bureaucratic quality (Bureau) is measured by the consistent performance of bureaucracy and is important to member relations in the WTO, assuming that delegates to Geneva are part of this bureaucratic framework, is an important measurement to consider. The other two variables show the effect of lobbying, or private sponsorship of cases, has on the promotion of cases for certain countries. The value of the entire agro-food sector (Log(Prod)) differentiates between the money that domestic markets have to throw towards these disputes. In an attempt to tie this variable to lobbying, I include a variable that measures the influence of legal lobbying on political decisions in a country (CLCC). It is expected that the more influence lobbying has on the political sphere, the more rapidly private sector money will be available to fund disputes.

## Results

The results mostly support the theory of litigation capacity influencing a country's ability to participate in a dispute. Quality of bureaucracy and overall value of the agro-food sector have strong influences on a country's dispute participation and are highly significant ( $p < .01$ ). The coefficient for each of these variables is much stronger than that found for the lobbying influence variable. A one-point score increase in the bureaucratic quality variable results in a .342 unit increase in the likelihood that a country will participate. The production value of the sector (.380) has an even more perceivable influence on participation. The control variables perform as expected from the previous models, but the bureaucratic quality and value of the domestic sector show stronger coefficients (.248 and .212 respectively) than the commercial capacity control (.192). The negative relationship between lobbying influences on government continues to be negative (-.130) with a weaker coefficient than the other variables.

Private value in a country's food sector and the quality of a country's bureaucracy are both reasons for increased participation in disputes. Having an experienced, merit-driven bureaucracy is a key to maintaining a quality team of individuals who are representing a country at the WTO's headquarters in Geneva. Aside from this, the quality of a bureaucracy can ensure that pertinent issues affecting a country's trade regime are brought to the WTO, a potential link between these two positively significant variables.

The legal lobbying influence cannot contribute to the positive influence of the sector's value to explain private money sponsoring cases. On the contrary, its negative

significance questions the validity of a connection between private money and dispute participation. There are measures for illegal lobbying as well, but if bureaucratic quality is significant in the model, then illegal lobbying would not likely increase with an increase in bureaucratic quality. Regardless of the unexpected sign for the lobbying variable, the other two variables still have weight in proving that there is private money involved in agricultural disputes and the quality of government extends to relations in Geneva. Both these variables are stronger predictors of dispute participation than the lobbying index and have consistent significance in the models.

### ***Complete Model***

Combining the variables from the individual models presents a coherent picture of why countries participate or do not participate in disputes (Chart 5). Participation, measured as a dichotomous variable, is determined by all three explanatory elements: potential gains in liberalization, retaliation strength, and litigation capacity. All variables from the previous models are included as explanatory variables.

### **Results**

The final model predicts participation as expected from the three specified models. Trade flows to and from a defendant, agro-food goods percentage of total exports, and bureaucratic quality are all positively related to dispute participation, all at the  $p < .01$  level. These four variables are the best explanatory indicators of whether or not a country chooses to dispute (each about .180). Breaking down the model by explanatory category, liberalization gains and litigation capacity are the two main reasons that a country chooses whether or not to enter a dispute. Retaliation strength is not as

strong a reason for countries to enter disputes. Export value from the defendant to a trade partner is still significant at the  $p < .1$  level, but the coefficient of .08, far below that of the other significant explanatory variables.

The controls are explanatory in different ways as well. Trade adversity falls out of significance in the final model, suggesting that the adversity faced by countries is no longer of serious importance to dispute participation. Commercial capacity is the strongest variable in the complete model (.231). The variable has proven to be a significant reason for dispute participation in each of the specific models and continues to do so in this model at the  $p < .01$  level. The lack of significance from the trade adversity variable rejects the first hypothesis that the most adversely affected countries are more likely to participate in disputes.

Countries that participate in agro-food disputes are those with the largest values to gain from trade with the funds to litigate and with quality bureaucracies. These findings partially provide support for the second hypothesis. Before making complete conclusions I analyze the data with a more nuanced dependent variable addresses the subtleties of exactly how countries gauge their expected costs and benefits in deciding whether or not to participate in a dispute.

### **Multinomial Ordered Logistic Model**

The results above are largely helpful because they determine the characteristics of countries based on the simple separation between by-standers and participants, a seemingly much clearer delineation than the distinction between the two types of participation. Countries that participate, even when grouped by complainant and third

party classifications, are expected to be more similar to each other than by-stander countries. However, the possibly differences and between complainant and third party participants is not fully explained in the dichotomous probit model above. The participation variable is specified more descriptively in a multinomial ordered logit model to account for differences between the choice to initiate a dispute or simply be a third party to a dispute. This model accounts for more behavior and can measure these distinctions with "cut-points" that give ranges for what choice a country of certain characteristics will make. A cut-point separates between the levels of each independent estimator on a scale of predicted probabilities generated from dependent variable values that allow analysis of behavior within the range of a certain independent value. This more specific analysis will explain participation behavior more clearly.

Going through and testing the individual models from the probit series as ordered logistic models proves the expected assumption that the choice to be a complainant or third party are much more closely related than the choice between being a third party or by-stander. These differences are indicative of the clear separation between countries in the WTO. The range of explanatory variables that explain the cases for the by-stander output of 0 is much larger than the range between being a third party participant and a complainant. Each of the explanatory factors and their descriptive variables are positively associated with the dependent variable that rises in response to increased participation. In thinking about the discrepancies in the size of the dependent variable ranges, it appears that in order to participate as a third party, a country needs a more liberalization gains, more retaliatory power, and more litigation capacity. If the ranges between the cut-points were more evenly distributed, then only claims could be made

about the relative levels of each of the explanatory variables would be necessary for a country to fit the characteristics of a dispute participant. The greater the difference between these ranges over the three dependent variable possibilities, the greater the bias of the system in favor of one group of countries.

The cut points are also indicative of the weaknesses of making distinct comparisons between the complainants and third parties. The confidence intervals around the cut points indicate that the model cannot properly account for differences between different dependent variables. For instance, the confidence interval for the upper-most cut point (15.860) goes from 14.166 to 17.554. The lower cut point (14.450) is in this confidence interval range. This forces us to reject any conclusions that we wish to make between complainants and third parties. However, the findings that the cut points are disproportionately separated are telling of the difference between participants and by-standers. This finding reinforces the strength of the probit model as the correct method to gauge the reasons for dispute participation.

The results from the ordered logit model are similar to those found in the probit version of the complete model, but cannot be accepted because of the cut point behavior. There is no statistical significance in determining a difference between complainants and third parties. The ordered logit testing strengthens the conclusions found with the probit model. Participation behavior delineates two different groups of countries that are described by the probit findings.

### **Conclusions**

The assumption that countries facing more trade adverse conditions will dispute more is left insignificant at the end of the analysis. Using the MA-OTRI variable as a

proxy, the trade adversity a country's trade regime faces does not appear to be overall significant for determining dispute participation. These findings counter the claims by Götz et al. (2010) that protection levels against a country are important determinants of a country initiating a dispute. Opening this idea up to participation yields no significant findings for the variable in a complete model where other determinants are much more important. The size of the benefits that a country predicts it will gain from liberalization concessions by winning a dispute are important deciders for whether or not to participate in a dispute. This motive alone is balanced by the interpretation of litigation costs, as countries also give the costs of litigation serious consideration.

The testing of different explanatory elements proves the second hypothesis true. Countries incorporate all expected costs and benefits into a decision about participating in a dispute. This is justified in a probit model measuring dispute participation as active initiation (complainant) or passive participation (third-party), while all other trade partners of the defendant country are considered to be non-participants. A country that is deciding to participate in an agro-food dispute is concerned with the value increase the dispute will bring their economy, but also weighs the costs of litigation. The liberalization explanations are important in showing that only countries with large sums of money to gain, relative to their trade values, are countries that take part in disputes. These countries are not the most adversely affected countries, which is maybe explained by the legal capacity cost involved with the dispute decision. The less prepared a country is to provide private financing for a dispute the less feasible it is to take the risk spending money on litigation fees for potentially limited gains from the result. In addition, the bureaucracy variable shows that countries with experienced and intelligent delegations to

the WTO are better prepared to serve the best interests of their countries. Countries with less efficient bureaucratic governments are at an initial disadvantage. Retaliation strength is considered, but not as strongly as would be expected from the results of other studies (Bown 2003, 2005).

Agro-food sector disputes are still prone to power differences that lie in capacity of private industry and nuanced effects of retaliation scares. It is apparent from participation trends that countries do not participate in disputes at the socially optimal level and these reasons support this claim. Otherwise, countries would only take the gains to their economy into consideration when participating in a dispute. The WTO has more progress to make in trying to equate relations between its member countries. The pertinence of this study not only is derived from the need to study the mechanism of liberalization in the absence of a Doha agreement, but also in light of the effects that dispute dynamics have on deliberations by countries in the Doha Round.

The Doha Round has been ongoing for a decade with slow gains in agreements. Dispute behavior in the sector does not bode well for the perceived confidence of smaller countries. The Cairns group and other countries will continue to oppose agreements on agricultural liberalization only if they are sure that huge players in the markets, namely the US, EU, and Canada not only make fair concessions but also are held accountable to their words. In a dispute settlement system that still favors large players because of their ability to litigate and to retaliate on smaller players equality before the law of the trade organization is undermined. The issue of bureaucratic efficiency is not readily fixable for all WTO member countries. However, there can be more liberal measures proposed that

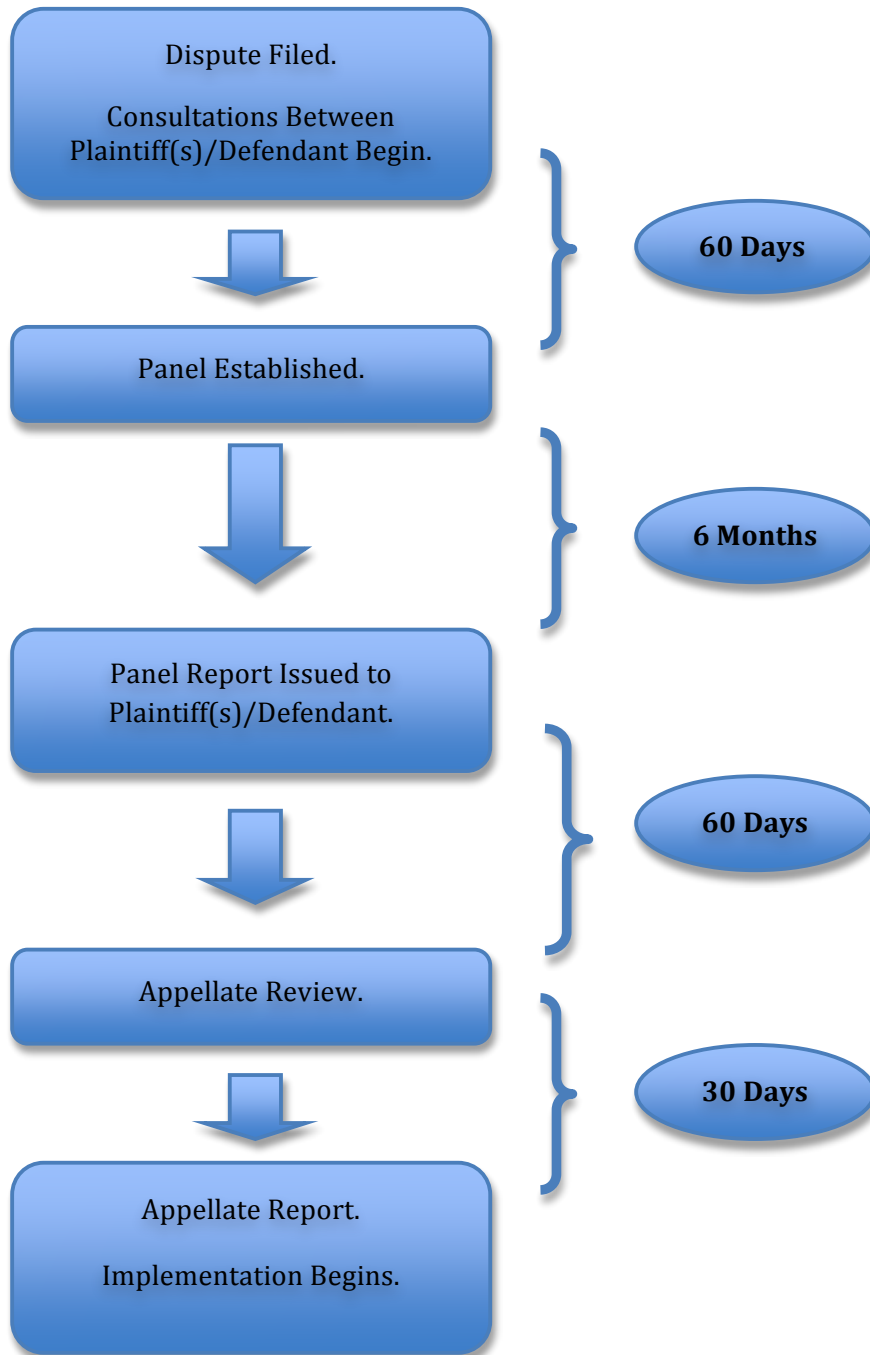
ensure that each country is granted free entry into a dispute at least as a third party each year.

Liberalization, particularly in agriculture, has historically taken long periods of time and immense effort. Continued analysis of dispute participation can continue to narrow the reasons for participation versus by-standing by examining specific political and economic reasons for disputing.<sup>8</sup> The ordered logit model incorporated into this study shows at least that there should be continued attention given to the inclusion of third parties as participants, instead of only analyzing the complainants. These parties are both enjoy benefits of participation and way the potential costs of the dispute against these benefits. While research is concerned with explaining why developing countries fail to dispute, they should look at the countries that participate as third parties. Countries that remain completely silent as by-standers need to be the focus of research so that the WTO can continue to become a more inclusive multilateral institution that holds all members accountable to its agreements.

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<sup>8</sup> See Zejan and Bartels (2006) for a study on the influence of bilateral aid and dispute initiation.

**Figure 1.** Dispute Settlement Process



**Chart 1.** Bivariate Probit Estimates of Participation: Liberalization Gains Model

Variable	Baseline Controls	Liberalization Estimators	Controlled Model
Log(PartnerX) <sub>t-1</sub>		.525 (.011)***	.288 (.013)***
Partner's Share <sub>t-1</sub>		.116 (.004)***	.053 (.004)***
Ag%Exports		-.253 (.124)**	.124 (.160)***
Trade Adversity	.100 (.194)***		.035 (.223)
Log(Trade) <sub>t-1</sub>	.525 (.016)***		.405 (.023)***
Constant	-7.076 (.261)***	-3.773 (.144)***	-7.415 (.354)***
N	7511	9458	7344
LR Chi <sup>2</sup> (2)	598.34	663.54	745.94
Pseudo R <sup>2</sup>	.193	.193	.242

Notes: Dependent variable is bivariate: Dispute Participant (Complainant and Third Party) = 1 or By-Stander = 0.

Standard errors in parentheses; \* p< .10, \*\* P< .05, \*\*\* p< .01

**Chart 2.** Bivariate Probit Estimates of Participation: Retaliation Concerns Model

Variable	Retaliation Estimators	Controlled Model
Log(DefendantX) <sub>t-1</sub>	.370 (.011)***	.129 (.012)***
Defendant's Share <sub>t-1</sub>	.087 (.003)***	.005 (.003)
Trade Adversity		.113 (.198)***
Log(Trade) <sub>t-1</sub>		.451 (.020)***
Constant	-3.253 (.122)***	-6.933 (.286)***
N	9695	7325
LR Chi <sup>2</sup> (2)	354.46	598.00
Pseudo R <sup>2</sup>	.100	.195

Notes: Dependent variable is bivariate dispute participation estimator: Dispute Participant (Complainant and Third Party) = 1 or By-Stander = 0

Standard errors in parentheses; \* p< .10, \*\* P< .05, \*\*\* p< .01

**Chart 3.** Bivariate Probit Estimates of Participation: Litigation Capacity Model

Variable	Litigation Estimators	Controlled Model
Bureau	.342 (.038)***	.248 (.048)***
Log(Prod)	.380 (.016)***	.212 (.029)***
CLCC	-.134 (.002)***	-.130 (.002)***
Trade Adversity		.070 (.330)**
Log(Trade) <sub>t-1</sub>		.192 (.312)***
Constant	-5.845 (.266)***	-6.348 (.317)***
N	5956	5135
LR Chi <sup>2</sup> (2)	511.89	489.84
Pseudo R <sup>2</sup>	.175	.180

Notes: Dependent variable is bivariate dispute participation estimator: Dispute Participant (Complainant and Third Party) = 1 or By-Stander = 0

Standardized coefficients are recorded with standard errors in parentheses.

\* p < .10, \*\* P < .05, \*\*\* p < .01

**Chart 4.** Bivariate Probit Estimates of Participation: Complete Model

	Variable	Litigation Estimators
Liberalization Gains	Log(PartnerX) <sub>t-1</sub>	.177 (.018)***
	Partner's Share <sub>t-1</sub>	.076 (.006)***
	Ag%Exports	.179 (.196)***
Retaliation Strength	Log(DefendantX) <sub>t-1</sub>	.080 (.0188)*
	Defendant's Share <sub>t-1</sub>	-.038 (.005)
Litigation Capacity	Bureau	.181 (.051)***
	Log(Prod)	.140 (.032)***
	CLCC	-.102 (.002)***
Commercial Capacity Controls	Trade Adversity	-.008 (.375)
	Log(Trade) <sub>t-1</sub>	.231 (.047)***
	Constant	-7.372 (.438)***
N		4840
LR Chi <sup>2</sup> (2)		567.85
Psuedo R <sup>2</sup>		.213

Notes: Dependent variable is bivariate dispute participation estimator: Dispute Participant (Complainant and Third Party) = 1 or By-Stander = 0

Standard errors in parentheses; \* p< .10, \*\* P< .05, \*\*\* p< .01

**Chart 5. Multinomial Logit Estimates of Participation: Complete Model**

Variable	Litigation Estimators
Log(PartnerX) <sub>t-1</sub>	1.521 (.037)***
Partner's Share <sub>t-1</sub>	1.178 (.009)***
Ag%Exports	1.521 (.399)***
Log(DefendantX) <sub>t-1</sub>	1.221 (.036)*
Defendant's Share <sub>t-1</sub>	-.900 (.009)*
Bureau	1.624 (.098)***
Log(Prod)	1.483 (.064)***
CLCC	-.786 (.004)***
Trade Adversity	1.005 (.767)
Log(Trade) <sub>t-1</sub>	1.656 (.088)***
Cut 1	14.450 (.854)
Cut 2	15.860 (.860)
N	4840
LR Chi <sup>2</sup> (2)	590.51
Pseudo R <sup>2</sup>	.188

Notes: Dependent variable is trivariate dispute participation estimator: Dispute Participant is Measured By-Stander = 0, Third Party = 1, Complainant = 2

Standard errors in parentheses; \* p< .10, \*\* P< .05, \*\*\* p< .01

## Appendix I: Countries

Albania	Dominican Republic	Mongolia	Thailand
Angola	Ecuador	Mozambique	Togo
Antigua and Barbuda	Egypt	Myanmar	Tonga
Argentina	El Salvador	Namibia	Trinidad and Tobago
Armenia	Estonia-EU	Nepal	Tunisia
Australia	Finland-EU	Netherlands-EU	Turkey
Austria-EU	France-EU	Netherlands Antilles	Uganda
Bahrain	Gabon	New Zealand	Ukraine
Bangladesh	Gambia	Nicaragua	United Arab Emirates
Barbados	Georgia	Niger	United Kingdom-EU
			United Republic of
Belgium-EU	Germany-EU	Nigeria	Tanzania
Belize	Ghana	Norway	US
Benin	Greece-EU	Oman	Uruguay
Bolivia	Grenada	Pakistan	Venezuela
Botswana	Guatemala	Panama	Viet Nam
Brazil	Guinea	Papua New Guinea	Zambia
Brunei Darussalam	Guinea-Bissau	Paraguay	Zimbabwe
Bulgaria-EU	Guyana	Peru	EU
Burkina Faso	Haiti	Philippines	
Burundi	Honduras	Poland-EU	
Cambodia	Hungary-EU	Portugal-EU	
Cameroon	Iceland-EU	Qatar	
Canada	India	Republic of Moldova	
Cape Verde	Indonesia	Romania-EU	
Central African Republic	Ireland	Rwanda	
Chad	Israel	Saint Kitts and Nevis	
Chile	Italy-EU	Saint Lucia	
		Saint Vincent and the Grenadines	
China	Jamaica	Saudi Arabia	
China-Hong Kong	Japan	Senegal	
China Macau	Jordan	Sierra Leone	
China- Taipei	Kenya	Singapore	
Colombia	Korea	Slovakia-EU	
Congo	Kuwait	Slovenia-EU	
Costa Rica	Kyrgyzstan	Yugoslavia	
Côte d'Ivoire	Latvia-EU	Solomon Islands	
Croatia	Lesotho	South Africa	
Cuba	Luxembourg-EU	Spain-EU	
Cyprus-EU	Madagascar	Sri Lanka	
Czech Republic-EU	Malawi	Suriname	
Dem. Rep. Congo	Malaysia	Swaziland	
Denmark-EU	Maldives	Sweden-EU	
Djibouti	Mali	Switzerland	
Dominica	Malta-EU		

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