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Rheinischen Friedrich-Wilhelms-Universität zu Bonn

Economic incentives of the WTO dispute settlement system with an empirical focus on the agro-food sector

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It always pays leading things to their end.

Chinese fortune cookie saying

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Abstract of the Dissertation
Economic incentives of the WTO dispute settlement system with an empirical
focus on the agro-food sector

Christian Götz

The thesis contributes to the understanding of the drivers in countries' decision to adjudicate trade issues under the Dispute Settlement Mechanism (DSM) of the World Trade Organization (WTO). The DSM is a rules-based device for the resolution of conflicts arising over the interpretation of trade law under the regime of the organization. The DSM is self-enforcing, i.e. all actions of disputes are driven by the parties to the dispute. This Member-driven nature of the DSM implies that the conditions of its use are determined by market-related incentives, Members' resource endowments and constraints, and the characteristics of the political economic relationship between potential complainants and defendants.

Negotiations on improvements of the DSM are going on since 1997 without yielding any resolution so far. The negotiations aim at making the DSM more effective and to allow for equal accessibility of the system to all types of Members. Reform proposals span a broad field; however, a targeted improvement of the system requires a thorough understanding of economic incentives and constraints faced by the potential users of the system.

Apart from an introduction, the thesis comprises two empirical and a theoretical chapter. The empirical parts are focused on the agro-food sector to provide a more in-depth analysis of sector-related characteristics. The starting point is an aggregated analysis on capacity- and sector-related traits of initiating Members and is based on a Binomial dispute distribution model adapted from the literature. The second empirical chapter builds upon the analysis of the first but shifts the focus to bilaterally dependent characteristics, which are of essential relevance for the enforcement of compliance. The empirical intricacy implied by the pure bilateral approach is solved by the application of the Weighted Endogenous Sampling Maximum Likelihood (WESML) estimator.

Results show that Members' tendency toward protectionist policies decrease and the level of protectionism faced in their exports increase their probability to initiate disputes. The first finding suggests a strategic behavior and may also reflect Members' general tendency towards market liberalization. The second finding is in line with the system's objectives. Also, Members' operating experience shows a positive effect on their number of filed disputes. This can be rationalized by decreased fixed costs of litigation and by gained efficiency in the processing of disputes through experience. In addition, the positive influence of lobbying activity, their dependency on the defendant's market for exports and the value of agro-food imports from the defendant country could be supported.

The empirical investigations are complemented by a theory paper. Drawing on the findings mentioned above and those from previous empirical investigations on WTO dispute settlement, the chapter develops a comprehensive economic modeling framework for the initiation of disputes. It thereby may serve

as a tool for the evaluation of the system's status quo and the assessment of envisaged system changes.

Zusammenfassung der Dissertation

Die ökonomischen Anreize des WTO Streitschlichtungsverfahrens mit empirischem Schwerpunkt auf dem Agrar- und Lebensmittelsektor

Die Dissertation leistet einen Beitrag zum Verständnis der Einflussfaktoren in der Entscheidung von Ländern, ihre Handelsauseinandersetzungen im Rahmen des Streitschlichtungsmechanismus (SSM) der Welthandelsorganisation (WTO) zu verhandeln. Der SSM ist eine regelbasierte Institution für die Lösung von Konflikten über die Interpretation des Handelsrechts unter dem Geltungsbereich der Organisation. Es handelt sich dabei um ein selbstgesteuertes Verfahren, d.h. dass alle damit verbundenen Aktivitäten von den Streitparteien getragen werden. Diese mitgliedergetriebene Eigenschaft des SSM beinhaltet, dass seine Nutzungsbedingungen bestimmt werden durch marktbezogene Anreize, durch die Ressourcenausstattung der Mitglieder der Organisation und durch die Beschaffenheit der politikökonomischen Beziehung zwischen potentiellen Klägern und Beklagten.

Über eine Verbesserung des SSM wird seit 1997 verhandelt, ohne dass es bislang zu einer Lösung gekommen wäre. Die Verhandlungen zielen darauf ab, die Effektivität des SSM zu erhöhen und seine Nutzbarkeit allen Arten von Mitgliedern zu ermöglichen. Die Reformvorschläge sind breit gefächert. Jedoch erfordert eine gezielte Verbesserung des Systems ein tiefgründiges Verständnis der ökonomischen Anreize und der Einschränkungen, denen potentielle Nutzer des Systems gegenüberstehen.

Zusätzlich zu einer umfangreicheren Einleitung umfasst die Dissertation zwei empirische und ein theoretisches Kapitel. Die empirischen Teile sind auf den Agrar- und Lebensmittelsektor fokussiert, um eine eingehendere Untersuchung der sektorbezogenen Eigenschaften bereitzustellen. Der Ausgangspunkt ist eine aggregierte Analyse von kapazitäts- und sektorbezogenen Charakteristiken von Klägern, und hat als Grundlage ein Binomiales Verteilungsmodell für Streitfälle, welches aus der Literatur entnommen wurde. Das zweite empirische Kapitel baut auf dieser ersten Analyse auf, verschiebt den Fokus jedoch hin zu bilateral abhängigen Ländereigenschaften, welche von entscheidender Bedeutung für die Durchsetzung der Regeleinhaltung sind. Die mit dem bilateralen Ansatz verbundene empirische Komplexität wird durch die Anwendung des Weighted Endogenous Sampling Maximum Likelihood (WESML)-Schätzers gelöst.

Die Ergebnisse zeigen, dass die protektionistische Tendenz von WTO-Mitgliedern ihre Klagewahrscheinlichkeit verringert und der Umfang protektionistischer Politiken, welchen sie in ihren Exportströmen ausgesetzt sind, ihre Klagewahrscheinlichkeit erhöht. Ersteres mag ein strategisches Verhalten der Länder oder auch ihre generelle Einstellung im Hinblick auf Handelsliberalisierung widerspiegeln. Letzteres befindet sich in Übereinstimmung mit den Zielen des Systems. Die Anwendungserfahrung mit dem System zeigt ebenfalls einen positiven Einfluss auf die Anzahl von Klagen. Dies kann erklärt werden mit abnehmenden Fixkosten und zunehmender Effizienz in der Bearbeitung von Streitfällen durch die gewonnene Erfahrung. Zusätzlich zeigen Lobbyaktivität, die Relevanz des beklagten Marktes für Exporte und der Wert

von Agrar- und Lebensmittelimporten von diesem einen positiven Effekt auf die Klagewahrscheinlichkeit von Ländern.

Die empirischen Analysen werden durch ein theoretisches Kapitel ergänzt. Indem es sich auf die oben zitierten Ergebnisse sowie auf diejenigen vorhergehender empirischer Untersuchungen zum WTO-Streitschlichtungssystem stützt, entwickelt das Theoriekapitel ein umfassendes ökonomisches Modell für die Initiierung von Streitfällen. Es mag daher als Mittel zur Evaluierung des status quo des SSM, wie auch zur Bewertung der anvisierten Änderungen des Systems dienen.

Keywords: World Trade Organization, WTO dispute, Agro-food sector, Binary choice model, Testing hypotheses, Weighted Endogenous Sampling Maximum Likelihood (WESML) estimator, Economic model

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Abbreviations

ACWL	Advisory Centre on WTO Law
DSM	Dispute Settlement Mechanism
DSU	Dispute Settlement Understanding
EC	European Communities
FEP	Fraction of exact predictions
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Products
HS	Harmonized Commodity Description and Coding System
LDC	Least developed countries
LRTS	Likelihood ratio test statistic
MAD	Mean of absolute deviations
MFN	Most-favored-nation treatment
ML	Maximum likelihood
NGO	Non-governmental organization
SPS	Agreement on Sanitary and Phytosanitary Regulations
TPRM	Trade Policy Review Mechanism
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
U.S.	United States of America
WESML	Weighted Endogenous Sampling Maximum Likelihood
WTO	World Trade Organization

1 Extended introduction

1.1 Motivation and research purpose

Established on 1 January 1995 by the Marrakesh Agreement¹, the World Trade Organization (WTO) succeeded the General Agreement on Tariffs and Trade (GATT). The WTO provides the institutional framework for trade between its Members by administering and implementing the multilateral and plurilateral trade agreements under its regime. Its major objectives are fostering the national welfare of its Members through opening markets and promoting global competition in international trade. Members' deeper integration into world trade is put into practice by the reciprocal exchange of liberalization commitments that are negotiated among them primarily through periodic rounds of multilateral trade negotiations. The rationale for the organization is that through this exchange, governments are able to overcome political constraints in order to adopt more efficient trade policies (HOEKMAN AND KOSTECKI 2001). The three main agreements are the GATT, the General Agreement on Trade in Services (GATS) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). In addition, the Organization covers twelve multilateral and four plurilateral² agreements.³ It also acts as a forum for multilateral trade negotiations and for resolving trade disputes, supervises national trade policies, and cooperates with other international institutions involved in global economic policy-making. The organization's membership to date comprises 153 countries.⁴

As an international organization the WTO does not provide for hierarchical enforcement of its trade rules. Enforcement is decentralized to its Members by the establishment of the Dispute Settlement Mechanism (DSM). It is the central and only enforcement mechanism of the multilateral trading system. Enforcement under the DSM has far-reaching distributional effects, both for complainants' and

¹ Marrakesh Agreement Establishing the World Trade Organization.

² In contrast to the multilateral agreements membership in the plurilateral agreements is not a precondition of WTO-membership.

³ The most relevant agreements for agro-food trade are the Agreements on Agriculture, on the Application of Sanitary and Phytosanitary Measures, and on Technical Barriers to Trade.

⁴ Effective by 2011-09-30.

defendants' economies as well as for the whole membership (HOEKMAN AND KOSTECKI 2001).

WTO complaints provide a stimulus for targeted states to bring their policies into compliance with the rules of an agreement. A successfully litigated complaint can produce benefits for a particular industry or sector in terms of expanded market access both for the complainant as well as for other affected Members. As the multilateral agreements are on Most-favored-nation (MFN) basis, the benefits reaped from a dispute are bestowed de jure to all WTO Members. This implies a public good characteristic of the system. Furthermore, the DSM serves as a signaling device at the multilateral level indicating the violator and the nature of the violation and thereby supplies information on Members' compliance with the system's rules (SEVILLA 1997). The incentive for governments to make concessions in WTO trade negotiations and to abide by agreements is likely to depend on the effectiveness of enforcement by the DSM. Effective enforcement provisions are particularly important for economically weak countries, as they will rarely be able to exert credible threats against large trading entities that do not abide by the negotiated rules. The realization of the WTO's benefits in terms of countries' deeper integration into world trade and the fostering of economic growth, is thereby critically dependent on the DSM's effectiveness and its accessibility to all different types of Members.

By this rules-based system for dispute settlement, i.e. ex ante principles agreed upon for adjudicating trade issues, the WTO contributes to leveling the playing field between economically stronger and weaker economies. However, if some Members faced high barriers toward using the system, this would challenge not only the utility of the DSM to them, but also the value of the multilateral trading system in total.

Impaired access to the DSM entails several negative consequences. It could lead to the notion that the system is unfair and decrease confidence in the system both of governments as well as in the private sector. As a result, governments might, first, be less prone to make concessions in successive trade negotiations and, second, invest less in building up WTO-relevant institutional capacity. The first point is an impediment to the WTO's general objectives and functions. The success of trade negotiations may not only depend on Members' commitment opportunities but also on their willingness to pursue them in general. Tendencies of resentment with respect to the system are reflected in statements from political

bodies of developing countries (see SOUTH CENTRE 1999) as well as from diverse NGOs politically acting in favor of them. The second point provides a further handicap for active participation in the system, thereby preserving or even intensifying the Member's access problem. Less confidence on the private sector level is likely to have similar effects. The private sector may not see the WTO as a means to ensure settlement of its trade issues. Lower attentiveness to WTO-related trade issues and fewer investments in structures to identify and communicate them to their official representatives are a likely result.

Members who cannot effectively use the DSM may seek other means to solve their trade grievances, which might result in more protectionism. This issue of 'vigilant justice' as a backup position presents the plight that violations particularly by smaller members remain unrevealed due to the trade-related drivers of the system. Small markets and henceforth the involved trade stakes may not justify cost adjudication of WTO infringements (GUZMAN AND SIMMONS 2005, SEVILLA 1997). As a consequence, the signaling and enforcement functions of the DSM are not fully exploited. This applies both to trade infringements that are not challenged because affected trade partners face barriers toward using the system, as well as to the affected partner who may take recourse to protectionist measures.

Furthermore, if unrevealed protectionism is a likely issue for small economies, this suggests that WTO law is unevenly enforced, as argued by SEVILLA (1997). If barriers to effectively use the DSM are related to resource constraints, as identified by economists and groups of developing countries (see e.g. ALAVI 2007, BESSON AND MEHDI 2004, DELICH 2002 and SOUTH CENTRE 1999), then, this questions the WTOs' objectives with respect to the group of developing country Members. The special needs and demands of developing and least developed countries are in focus in the ongoing Doha round of trade negotiations, semi-officially called the "Doha Development Agenda". It was officially launched at the WTO's Fourth Ministerial Conference in Doha, Qatar, in November 2001. According to the Ministerial declaration, enhanced market access and balanced rules are targeted "to ensure that developing countries, and especially the least-developed among them, secure a share in the growth of world trade commensurate with the needs of their economic development." (WTO 2011a).

The system's public good characteristic might not be sufficiently exploited if a part of its Members abstains from participation in the system (HOEKMAN AND KOSTECKI 2001, SEVILLA 1997). The incentives for free-ridership also may be even higher in the face of access trouble. A further point is that the international law applied in WTO agreements is formed by its interpretation through cases of precedent. Prior adjudicated cases under the DSM originally are not intended to serve as cases of precedent. However, both Members' appraisal of former outcomes in their decision to file or not, as well as the fact that panel decisions may be guided by interpretations of prior cases, indicate that a broadly-based usage might be more appropriate to ensure a balanced interpretation of WTO law with respect to the trade interests of all types of Members (BOWN 2004a, 2005a).

The review of the Dispute Settlement Understanding was decided in a Ministerial declaration on 1 January 1995 and negotiations started in 1997 ending in 1999 without an agreement. The negotiations aiming at improvements and clarifications of the procedure have been continued since 2002, however without any resolution up to date and they still seem far from completion. There is a broad spectrum of proposals from Members related to compliance issues, to developing country interest, to timeframes and transparency issues and to other procedural subjects like panel composition and third party rights in disputes. ZIMMERMANN (2006) has classified them into either aiming at strengthening the system's 'rule orientation' or its 'power orientation', where the latter in contrast to the first means that Members' bargaining power in terms of economic size would play a greater role in dispute resolution. Members' proposals reflect their political objectives and constraints.

However, a targeted improvement of the system requires an understanding of the system's drivers. This means that all efforts to increase the system's effectiveness have to be based on the understanding of Members' incentives to engage in the system as well as their constraints that are connected to that. The thesis aims at the fundamental understanding of the DSM in order to facilitate the reform discussion and to provide a basis for the system's evaluation with respect to its objectives.

1.2 Problems and shortcomings of empirical studies on the subject

Empirical investigation on the DSM started in 1999 with the analysis of HORN ET AL. (1999) focusing on the question whether the use of the system is biased. Since then a number of studies followed, focusing on different agreements and Member characteristics (see e.g. REINHARDT 2000a and BOWN 2005b), Members' role in a dispute (complainant, co-complainant, interested third party, see BOWN 2005a), on developing countries' access to the DSM (see e.g. DAVIS AND BERMEO 2009, DELICH 2002 and GUZMAN AND SIMMONS 2005), and their success in disputes (BESSON AND MEHDI 2004). This was accompanied by case studies and qualitative evaluations of the system (see e.g. ALAVI 2007, HUSSAIN 2005, MICHALOPOULOS 1999 and 2001) and assessments on reform proposals both by lawyers (see ZIMMERMANN 2006) and economists (BAGWELL ET AL. 2003 and 2006, and BAGWELL AND STAIGER 2006). Theoretical studies complemented the research on the topic, either focusing on certain aspects of the DSM procedure (see BOWN 2002 and 2004b) or on the economics of the multilateral trading system in general (BAGWELL AND STAIGER 1999 and 2002).

Empirical investigations on the issue may involve several problems. They are related to decisions on the setup of the analysis as well as to informational and data measurement challenges. Regarding analyses on the determinants for dispute initiation, there is the question of how disputes should be counted. Most studies count the formal initiation under the WTO as a dispute.⁵ One problem of this approach is that it pools very different disputes together that vary with respect to the stage they reach. About 45% of disputes do not reach the panel stage and a lot of disputes remain pending without notification of settlement (BUSCH AND REINHARDT 2002). As variables of interest might be related to certain stages of a dispute this entails that the information contained is not fully exploited. Testing hypotheses should ideally have information about all instances of disputes; however the required data are presently not available (BUSCH AND REINHARDT 2002).

⁵ The notification of a request for bilateral consultations to the WTO is the official start of a dispute.

A second problem of this compilation method is that it precludes Members' controversies about trade policies raised in the form of comments in the General Council and in the Trade Policy Review Mechanism (TPRM)⁶ as well as in the form of unilateral actions, e.g. by policy measures implemented under the U.S. section 301 of USTR⁷ (BUSCH AND REINHARDT 2002). If the settlement of disputes under the DSM is not independent of Members' activity in those other bodies or their unilateral opportunities to address trade issues under the WTO, then concentrating on official disputes without accounting for those alternatives may involve a sample selection bias. For instance, a trade issue might have been successfully addressed in other bodies and addressing it by other means might under certain circumstances appear more suitable to the parties. In this case there was no need to use the DSM.

If alternative ways to solve trade issues under the WTO had a considerable share in the whole spectrum of trade issues, then estimations of determinants to use the DSM would perhaps be biased. The conditions that lead to alternative ways for arbitration cannot be considered in the investigation of the DSM's use. Apart from unilateral actions, the aforementioned alternative ways to address trade issues can be assumed to play a minor role since they are lacking enforcement power. One could argue that contested policy measures in the General Council and the TPRM cause political pressure on the respective Member having imposed them; however this is likely to be of minor relevance. Nonetheless, according to the author's information this issue to date has not been taken into account in the literature on WTO disputes.

A matter that is related to this and may be of greater relevance is that many potential cases are not filed under the WTO. The motivating factors which act as deterrents from filing a complaint may be manifold. Involved costs of a dispute, political obligation issues with the defendant and the fear of counter-suits may

⁶ The General Council is a body composed of all WTO Members with general authority to oversee the agreements under the WTO. The Trade Policy Review Mechanism is a WTO review mechanism aimed at domestic and international transparency in Members' trade regimes. This is conducted by regular reviews of Members' trade regimes. Issues may be raised also if they are not covered by WTO law (GOODE 2004).

⁷ Section 301 of U.S. Trade Act of 1974 is designed to enforce U.S. rights under trade agreements and to act against foreign unfair trade policies based on petition and investigation. It provides the USTR (Office of the U.S. Trade Representative) for limiting imports from countries that restrict U.S. trade in an unfair manner (GOODE 2004).

prevent potential complainants from filing a dispute. Complainants may also be unwilling to bring cases forward, because they do not want to draw attention to inconsistencies in their own WTO trade policies as argued by PETERSMANN (1994) and REINHARDT (2000b). There might as well be cases where the parties to the dispute may prefer to seek a cooperative settlement without notification to the WTO because they feel that such a settlement ‘in the shadow of the law’ is more likely (MNOOKIN 1998). Trade disputes usually are only observable after their notification to the WTO.

If only a subsample of potential trade issues is brought to the WTO, this might mean that there is something special about those that are brought (BUSCH AND REINHARDT 2002). For instance, it could be the case that only the simple or the sophisticated trade issues are considered. A sample selection bias would result from this if the variables to explain dispute initiation were strongly correlated with unobserved variables. (BUSCH AND REINHARDT 2002) propose an approach to deal with this problem. They suggest considering the potential sources of selection bias and then drawing the empirical implications to test these.

Furthermore, there is the problem of missing information on the existence of WTO infringements over trade flows. Actually, the test of indicators of their influence on dispute initiation should be related to identified WTO infringements. However, there is no information available to identify the trade flows facing disputable trade policies. Yet the identification issue itself may serve as a constraint for several Members from participating in the system. Observations related to the approach of counting official disputes only arise with the official notification of ‘request for bilateral consultations’ by the parties to the dispute; and the real number of issues that are addressed in informal consultations ‘in the shadow of the law’ or that are not addressed at all cannot be observed. As a consequence, the true population of WTO violations or ‘disputable trade measures’ is unknown.⁸

An approach that has been applied in several studies following the first empirical investigation on dispute initiation under the WTO (HORN ET AL. 1999)

⁸ HORN ET AL. 1999 were the first using this term to refer to the number of WTO violations Members may face. They used an aggregated approach based on Members’ number of trade flows with all other WTO Members and worked on the assumption that infringements are uniformly distributed over Members and commodities.

is to work on the simplifying assumption that WTO infringements are uniformly distributed over trade partners, markets and commodities. Most studies (exceptions are e.g. BESSON and MEHDI 2004, BOWN 2005a and 2005b)⁹ work on this approach. This entails that the estimation of dispute initiation is merged with the estimation of the incidence of infringements. Hence, the influence of incorporated variables on the likelihood to file a complaint cannot be completely separated from the influence on the probability for the occurrence of trade infringements. One approach to deal with this problem could be to exploit information from reviews of Members' trade policy regimes in the context of the TPRM and to introduce variables that contain information on Members' average market protection. KEE ET AL. (2006) provide such a measure by calculating a tariff equivalent of all protectionist measures that countries face and also impose on their trade partners on average.

Furthermore, there are some data and measurement challenges that empirical investigations on the issue face. First, precise information on the affected market or commodities is often not available. This implies that the economic stakes of a dispute are not easy to define, which is, however, essential for the assessment of their relevance to the affected Members. Regarding analyses on the successful resolution of disputes, information about the precise nature of the settlement is often not available. The parties to the dispute usually notify the WTO only of the existence of a settlement (BUSCH AND REINHARDT 2002). Studies that are based on counting bilateral trade flows as potential trade infringements face the problem that disputes may arise in the absence of trade flows, e.g. because of banned trade on SPS grounds or because trade flows are not collected for the sample as their value is reduced due to protectionist measures of the violator. This is a weakness of this approach and has to be taken into consideration for the interpretation of the model's results.

⁹ BOWN (2005a) analyses countries' probability to join disputes as interested third parties or co-complainants. The approach is to start from WTO violations that are implemented on MFN-basis and identify countries that are affected. The question is then why some affected countries join disputes and others do not. The analysis is based on an ordered multinomial model. BOWN (2005b) investigates the influencing factors for challenging trade remedy measures (those refer to antidumping, safeguard and countervailing duty measures) imposed by the U.S. Almost all trade remedies that have proceeded to a Panel or Appellate Body ruling have been found to have some inconsistencies with WTO law. Hence, in an abridged sense the analysis is based on the assumption that any imposed trade remedy measure can be challenged under the WTO or that the probability for an inconsistency accounts for almost 100% in any trade remedy.

Investigations about the system's distortions in terms of impaired accessibility toward certain types of Members essentially require a normative definition of the conditions under which a trade issue should be brought to the WTO. Obviously, this normative issue is at least partly politically driven and its ambiguity is reflected in the ongoing negotiations on the improvement of the DSM both encompassing more 'rule oriented' and more 'power oriented' systemic changes. Assessments on a 'biased use' of the system – a widely used term in this context – are to be based on a normative framework. This definition of fundamental reasons on which dispute initiations should be based is not available to date. Descriptions like 'equal access' are quite vague. The establishment of a comprehensive economic modeling framework encompassing Members' various trade and non-trade-related incentives to use the DSM could provide a valuable basis for the definition of such standards and also for the appraisal of the status quo. So far there has been no such comprehensive economic modeling framework for dispute initiation under the WTO.

1.3 Contributions of the thesis

The thesis encompasses two empirical chapters and a theory chapter. The two empirical chapters have been published and throughout the thesis they are referred to as if they were single studies. They are cited as GÖTZ ET AL. (2010) referring to the first, and GÖTZ AND HECKELEI (2011) referring to the second chapter. The empirical studies focus on the agro-food sector to account for a more in-depth analysis of sector-specific characteristics. The theory paper draws on their findings and on those of previous empirical studies to establish an economic modeling framework and encompassing description of the drivers of the DSM.

Agro-food related trade issues account for about 25% of all WTO disputes (WTO 2011b) and typically emerge in markets that have competitive characteristics. They thereby are likely to differ from disputes in oligopolistic markets, like, for example, the market for aircraft (BAGWELL AND STAIGER 2002). The drivers of dispute initiation may vary depending on characteristics on the market, i.e. its market form, structure and the involved commodities. Hence, a specialization of the investigation may be valuable in order to account for differences between markets and also to be able to incorporate more specific information on the related characteristics of the trade issues. Regarding special

attention to the interests of developing countries in the WTO, the agro-food sector is especially relevant to them, as it typically accounts for a high share in their economies. Special attention should be attributed to this sector, for, to date no agro-food related complaint has been filed by the group of Least developed countries.

GÖTZ ET AL. (2010) is the starting point and uses the binomial dispute distribution model first applied by HORN ET AL. (1999). In addition to accounting for indicators on Members' legal capacity, financial means and their operating experience with the system, it complements previous empirical studies by newly introduced unilateral determinants. The sector-focus is reflected by the indicators on the relevance of the agricultural sector and of the agro-food export sector. Political economy issues are of particular relevance in agricultural markets, as protectionism is often attributed to powerful farm lobbies. This issue is captured by incorporating an indicator for the influence of private lobbying on governmental decision. Also considered is a variable on governmental efficiency to account for Members' institutional capacity. This is seen as especially relevant in the pre-litigation phase of disputes (see DAVIS AND BERMEO 2009). GÖTZ ET AL. (2010) provide the first attempt to mitigate the problem of missing information on WTO violations. This is implemented by the newly incorporated variables on complainants' own protectionist tendency and the level of protectionism faced in their agro-food related trade flows.

Results show that Members' own protectionist attitude lowers and the level of their faced protectionism increases their likelihood to initiate disputes. The first finding suggests that Members who are more inclined towards protectionism are less prone to fight for market liberalization. It might also imply a strategically intended caution, precisely not to provoke a counter-suit on their own WTO-inconsistent trade policies. The second finding is in line with the system's objectives. Their operating experience with the system shows a significant positive impact on their number of filed disputes. The relevance of Members' operating experience can be rationalized with its decreasing influence on fixed costs of disputes and on its positive influence on Members' efficiency in processing trade issues.

Bilaterally dependent characteristics should be in the center of interest as they consider issues that might show a critical influence on the usage of the DSM. Their influence on Members' initiation probability is in the focus of the

investigation of GÖTZ AND HECKELEI (2011) that builds upon GÖTZ ET AL. (2010). GÖTZ AND HECKELEI (2011) provide the first purely bilateral model that is based on Members' whole sample of agro-food-related trade flows. They extend the empirical analysis by bilaterally dependent indicators on the sector-related trade between complainant and defendant, their relevance as trade partners to each other and complainants' trade retaliatory capacity. Complainant's retaliatory power and their dependency from exports and imports with respect to the defendant's market are especially relevant for enforcing compliance after a successfully litigated complaint.

However, taking a pure bilateral approach in this context involves a serious estimation problem. The binary choice approach requires at first a decision about what should be compiled as observations. In the context of WTO disputes it is obvious to compile Members' different commodity-related bilateral export flows with their trade partners, as a dispute could arise over infringements affecting a single commodity. This involves the problem that the number of disputes is vanishingly low compared to the number of observations in the sample. The skewed sample leads to poor estimates of the relevant parameters (COSSLETT 1981).

A first approach to deal with this problem in the second empirical analysis was to group Members in order to reduce the number of observations related to the number of disputes. Members were grouped according to The World Bank Atlas method of national income.¹⁰ The resulting sample comprised 16 Member group combinations, where data on their characteristics were averaged across the group. The procedure was then to estimate Member groups' probability to initiate disputes against other Member groups. This approach solved the estimation problem, however implicated a serious loss of information. Members with very different characteristics are grouped together and the information contained in their diversity is lost by this method. This unsatisfactory solution demanded for further research on estimation methods bringing up the Weighted Endogenous Sampling Maximum Likelihood (WESML) estimator developed by MANSKI AND

¹⁰ Income classes are: low income, \$1,005 or less; lower middle income, \$1,006 - \$3,975; upper middle income, \$3,976 - \$12,275; and high income, \$12,276 or more. The description of The World Bank income country classification method is available online at: <http://data.worldbank.org/about/country-classifications>, 2011-10-04.

LERMAN (1977). Their method is based on oversampling the infrequently occurring event, which is a bilateral WTO dispute in this context. The included sample selection bias is then corrected in the estimation process. The advantage of this approach is twofold. First, it allows for more precise estimates than could be obtained from the original sample and, second, all information in the data can be preserved for the estimation, namely the variation in the parameters of interest across Members.

Regarding the incorporated unilateral determinants, Members' faced protectionism, their operating experience with the system, and the influence of private lobbying activities could be supported to show a positive effect on their initiation probability. The finding on private lobbying influence shows that Members' environment for the private sector to communicate its trade interests to the government matters. It thereby empirically confirms the findings of SHAFFER (2003a and 2003b) on the importance of co-operation between the private and the public sector for WTO adjudication and suggests the establishment of related institutional structures. Of the bilateral trade-related characteristics, the positive impact of Members' Agro-food export dependency and their Agro-food import value from the defendant could be substantiated. The first variable indicates the defendant's relevance as trade partner to the complainant. More important markets are likely to imply a higher incentive to open them. The second determinant reflects complainant's capacity to threaten retaliation with respect to the defendant's market. Hence, complainants who have more retaliation power also have a higher propensity to engage in disputes. Their greater retaliatory capacity involves a greater probability for a successful solution of the trade issue in terms of enforced compliance.

According to the author's information, the theory chapter is to date the first attempt to systematically integrate the findings of empirical studies from the literature into an extensive theoretical framework for modeling the economic incentives of the DSM. This comprehensive modeling framework may serve as a tool for the appraisal of proposed systemic changes of the system and also as a foundation for defining the criteria of equal accessibility of the DSM for all types of Members.

1.4 Identification of potentially relevant future research

Most insignificant findings of empirical studies, both from the literature as well as of the thesis papers, may be due to weak proxies, especially regarding the indicators on Members' institutional capacity, their legal capacity and their financial means. Their relevance is obvious and confirmed by the findings of case studies or are stated by Members who see themselves constrained in their access to the DSM (see e.g. HUSSAIN 2005, SOUTH CENTRE 1999); however, except for (BESSON AND MEHDI 2004) on the issue of developing countries' success in disputes, no empirical study could support their influence. The problem is that Members' overall administrative power is difficult to assess, since the applied indicators only refer to certain aspects of their domestic environment. The aforementioned resources may substitute each other with respect to their function for the use of the DSM. This aspect may be worth a more precise analysis. It could reveal valuable information about the strategies that Members apply depending on their constraints toward different resources.

It may be worthwhile to compare different sectors (agro-food sector vs. industrial sector, manufactures vs. services) to learn if the drivers of the system change with respect to the traded commodities or market forms (e.g. competitive markets vs. oligopolistic markets). This might also apply when different Member groups are compared. Members' incentives or the characteristics of the disputed trade issues may depend on their economic development and resource endowment.

An issue that may be intricate to address is that of cases that are not brought to the WTO. Questions related to this are, whether there is a considerable amount of trade issues which are not adjudicated under the WTO, and why Members file cases at the WTO while they prosecute others unilaterally or settle them in a cooperative way. A further question is why some disputes are settled with liberalization while there is no change in the defendant's trade regime in others (BUSCH AND REINHARDT 2002).

Most Least developed countries are not only absent as complainants but also as defendants. It is unlikely that the latter is due to their full compliance with WTO rules. WTO inconsistent policy measures may not be revealed by the system caused by its own incentives. Small markets and thereby small trade

stakes may not justify costly WTO adjudication. To date, this issue of unrevealed protectionism has not been addressed in studies.

The system's public good characteristics provide incentives for free-ridership. Free-ridership may provide an additional rationale for some Members not to file disputes by themselves but to save the costs of the dispute. The benefits of a successful ruling in their interest may accrue to them as well. The most appropriate way to address this question may be by case studies. BOWN (2005a) provides an empirical approach that is related to this issue.

A more general question is whether the greater legalization of the WTO system made dispute settlement more effective. This question about effectiveness is not only related to the number of issues adjudicated under the WTO, but especially to the liberalization outcome. As notifications on settlement outcomes to the WTO usually are not very precise, this issue may be very difficult to address with a quantitative approach.

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2 What makes countries initiate WTO disputes on food-related issues?¹¹

Abstract

This paper analyses relevant determinants for the probability to initiate a dispute on policy measures under the World Trade Organization (WTO) dispute settlement system. The empirical analysis differs from existing assessments by focusing on agro-food related disputes and provides a more in-depth analysis of specific country and sectoral characteristics not considered in previous studies. Contrary to recent analyses of overall trade disputes, the results show that some determinants such as legal capacity and monetary means are not statistically significant. Own protectionist behavior, endured protectionism, and the duration of WTO membership, however, could be identified as relevant determinants with the expected direction of impact.

Key words: WTO dispute, Agro-food sector, Binary choice model

JEL Classification: C12, C13, C25, Q17, Q18

2.1 Introduction

The dispute settlement system of the World Trade Organization (WTO) was set into force as a part of the WTO Agreement on January 1, 1995. It is the device for the resolution of conflicts arising between Members over the interpretation of their commitments under the regime of the organization. Dispute settlement must be self-enforcing, i.e. from the consultation to the potential compliance phase all actions are driven by Members. Referred to as the “central pillar of the multilateral trading system” (WTO 2007a) the design of the WTO dispute settlement system is central to the debate on institutional reforms of the WTO and has also been under negotiation at the current WTO Doha round of negotiations. A major desire is to make the settlement system more effective and to allow for the appropriate consideration of developing countries’ demands. Reform proposals span a wide field from tightening time frames regarding panel proceedings over more effectively dealing with compliance and compensation procedures to assistance for developing countries ensuring their equality of

¹¹ This chapter was published as GÖTZ C., HECKELEI T. AND B. RUDLOFF (2010): What makes countries initiate WTO disputes on food-related issues? *Food Policy* 35 (2010), pp.154-162.

opportunity (PETERMAN 2003). However, the understanding of the factors that drive the system is required for targeted improvement.

The question addressed in this paper is, therefore, which Members' characteristics explain their activity as complainants in WTO food-related trade disputes. Compared to previous empirical studies, this investigation provides an in-depth analysis of food-related disputes and considers new potential determinants that may supplement the understanding of what drives the use of the dispute settlement system. The empirical investigation is based on a dispute distribution model developed and employed by HORN ET AL. (1999).

This paper is organized as follows: After a short description of the WTO dispute settlement's features and the food-related caseload of the investigation period, a survey on existing empirical studies is provided. The model specification, including a discussion of considered determinants, is described in the next chapter. Statistical implementation and estimation results are subsequently presented before concluding.

2.2 Facts and figures on WTO dispute settlement

All Members are provided with equal right to seek adjudication through the WTO dispute settlement system. Acceptable reasons for filing a complaint are a trading partner's measures that nullify the benefits or impair the attainment of any objective of one or more of the WTO agreements. The system's rules and procedures generally are administered by the General Council, i.e. the plenary meeting of the WTO at the level of governmental officials, which turns itself into the Dispute Settlement Body when adjudicating trade disputes. Dispute settlement procedures are stricter under the WTO compared to those in force under its predecessor GATT 1947. This is due to the elimination of blocking or delaying tactics through the adoption of time limits for all stages of adjudication, the implementation of standard terms of reference for panels, and an improved mechanism for enforcement of compliance with panel rulings (HOEKMAN AND KOSTEKI 2001). This is in particular owing to the implementation of the so called 'negative consensus', which means that a panel is established, a panel report

adopted, or the complainant authorized to trade related retaliation unless the DSB decides by consensus to reject.¹²

The consequences of this reform are reflected by economists' notion of the new multilateral trading system as a more "rules-oriented" compared to the more "power-oriented" system of the GATT 1947 (e.g. JACKSON 1997; PETERSMANN 1997, TREBILCOCK AND HOWSE 1999). However, there exists empirical evidence on the relevance of power-based relationships between Members (e.g. BESSON AND MEHDI 2004, BOWN 2004a), thereby challenging that the new system adequately considers the economic inequalities of its Members.

In the area of food-related disputes, 147 cases have been initiated over the period from January 1, 1995 to June 30, 2006.¹³ Regarding country participation the figures on current and previous food-related WTO disputes reveal that the majority of cases are related to the economically advanced countries. Table 2.1 shows the participation pattern by development classification of the UNITED NATIONS (2008) for the period January 1, 1995 to June 30, 2006.¹⁴ The Members of the European Communities are not separately captured in the statistic, thus reducing the number of WTO Members to 134 instead of 149¹⁵.

¹² The 'Understanding on Rules and Procedures Governing the Settlement of Disputes' is laid down in Annex 2 of the 'Marrakech Agreement Establishing the World Trade Organization' from April 15, 1994.

¹³ These 147 cases refer to nine different Agreements related to issues on food, see footnote 7.

¹⁴ The developing status according to the WTO is based on members' self-declaration and not on verified economic attributes.

¹⁵ The European Communities comprised 15 Members until April 30, 2004. Disputes of its 10 new Members from May 1, 2004 on are captured separately and not assigned to the EC in Table 2.1.

Table 2.1: Food-related dispute initiations by development classification until June 30, 2006

Group	No. of Members	Share in membership	No. of Disputes	Share in disputes
Developed	31	0,23	97	0,66
Developing	71	0,53	50	0,34
Least Developed	32	0,24	0	0
Total	134		147	

Source: Own compilation based on WORLD TRADE ORGANIZATION (2007b) and UNITED NATIONS (2008)

Representing 23% of the WTO membership, the group of developed countries are the most active users with 66% of all initiated food-related disputes. 34% of all disputes are initiated by the large group of developing countries. The group of Least Developed Countries¹⁶ accounts for about 24% of WTO Members, but they did not use the system at all for food related issues. This is remarkable since food-sector related exports generally represent a substantial share in their export structure.

As there exists no established principle for the assignment of the developed or developing status in the United Nations system, a pattern which more precisely defines the economic status refers to the World Bank classification of income levels¹⁷. Table 2.2 depicts the initiation pattern related to per capita income groups.

¹⁶ 32 of currently 150 WTO members are classified as Least Developed Countries. The identification of their status by the United Nations is dependent on the following economic criteria: (1) a low per capita income criterion, (2) a human resource weakness criterion and (3) an economic vulnerability criterion (United Nations, 2007).

¹⁷ Per capita income classification according to The World Bank (2008): Low income: \$875 or less, Lower Middle Income: \$876-3465, Upper Middle Income: \$3466-10,725, High Income: >\$10,726.

Table 2.2: Food-related dispute initiations by per capita income classes until June 30, 2006

Per capita income class	No. of Members	Share in membership	No. of Disputes	Share in disputes
High income	25	0.19	91	0.62
Upper middle income	30	0.22	20	0.14
Lower middle income	36	0.27	31	0.21
Low income	43	0.32	5	0.03
Total	134		147	

Source: Own compilation based on *WORLD TRADE ORGANIZATION (2007b)* and *WORLD BANK (2008)*

High income Members initiated 62% of all food-related disputes. Members of the Upper middle and Lower middle income groups account for about 25% of all initiated disputes, whereas Members of the Low income group are almost completely absent. The United States and the European Union dominate the High income group, followed by Canada, Australia and New Zealand. Brazil, Chile, Ecuador, Philippines and Thailand in the Middle income groups, and India in the Low income group are examples for comparatively active users of the system.

As is evident from the brief description above, the WTO dispute settlement system's rules themselves do not discriminate between Members and offer equal opportunities for dispute initiation. Therefore, it is of some interest to investigate what are the major determinants for observing this pattern of dispute initiation across countries and whether other than the most prominent attribute "income" may influence a Member's decision to file a complaint.

2.3 Empirical analyses on general dispute initiation

A few empirical assessments on the WTO initiation of disputes exist considering various determinants, agreements referred to, and roles in a dispute (complainant, defendant, co-complainant and interested party). Table 2.3 depicts their investigation period, dispute coverage, main issue of analysis and the models used. Table 2.4 comprises the detected influences of determinants under previous investigations.

HORN ET AL. (1999) mark the first empirical investigation by using a binomial dispute distribution model. According to their analysis the dispute initiation pattern is to a large extent reflected by the pattern of export diversity and value. GDP did not reveal a significant influence, but a country's legal

capacity shows a slight positive influence on its probability to complain. BESSON AND MEHDI (2004) find empirical evidence that legal capacity matters with respect to a country's likelihood to win disputes. This supports the conclusion of BUSCH AND REINHARDT (2003) that early settlements of developing countries, i.e. in the consultation stage or in the Panel stage before a ruling, are missing due to the lack of legal capacity.

Table 2.3: Survey on investigation period, dispute coverage, main issue and used model of previous empirical studies

Empirical study	Investigation period and dispute coverage	Main issue of analysis	Used model
Horn et al. (1999)	WTO disputes; 1995-1998; 155 complaints; all agreements	Determinants for the initiation of complaints	Binomial Dispute Distribution Model
Holmes et al. (2003)	WTO disputes; 1995-2002; 279 complaints; all agreements	Involvement in complaints (both sides) and success in disputes	Descriptive statistics
Bown (2004a)	GATT & WTO disputes; 1973-1998; 174 complaints; all agreements	Determinants for compliance after trade disputes	Linear regression
Bown (2004b)	GATT & WTO disputes; 1992-2003; complaints against U.S. trade remedies	Initiation of complaints against U.S. trade remedies	Probit Model
Besson & Mehdi (2004)	WTO disputes; 1995-2002; 40 complaints of developing against developed countries	Success in disputes: Developing against developed countries	Probit Model
Bown (2005)	WTO disputes; 1995-2000; 54 complaints; complaints against import protection on MFN-basis	Engagement as Co-Complainant or Interested third party	Ordered Multinomial Logit Model

Source: Own compilation

The self-enforcing nature of the dispute settlement system has been the starting point for BOWN (2004a, 2004b and 2005): A focus lies on costs of running a dispute and a country's retaliation power to finally enforce compliance by penalty tariffs on imports of the condemned party. BAGWELL AND STAIGER (2000) and DAM (1970) state that the retaliation threat always has been a central component of the GATT system. The success of this power is linked to the countries' relevance as trade partner and there exists also theoretical support that the

retaliation threat is not uniformly distributed over Members and that imbalances relating to trade volume and market size shows influence on their force under trade disputes. BOWN (2002) demonstrates that a country's capacity to influence its terms-of-trade determines the credibility of its retaliation threat which is confirmed as well by JOHNSON (1953) and KENNAN AND RIEZMAN (1988).

BOWN (2005) concentrates on the question whether to join complaints as co-complainant or interested party and demonstrated a positive impact of the capacity to absorb legal costs on both decisions. Additionally, he identifies a positive effect of a Member's retaliatory capacity in terms of its relevance as trading partner and a negative impact of countries' dependencies on bilateral development aid. BOWN (2004c) shows that the threat of retaliation is significant for determining whether a government chooses to abide by its international obligations. BOWN (2004b) demonstrates that the successful economic resolution to disputes is influenced by the threat of retaliation by the complainant. In respect of developing countries success in disputes BESSON AND MEHDI (2004) discover empirical support for the influence of their trade retaliation power.

Market access and exporting interests are expected to be relevant for the decision on initiation or participation and there exists empirical substantiation for this. BOWN (2005) provides support for the positive impact of a country's volume of exports at stake in its decision to attend disputes as co-complainant or interested third party and BOWN (2004d) demonstrates its positive influence on the likelihood to complain against United States (U.S.) imposed trade remedies. In the broader sense there is evidence for the relevance of trade volume or share respectively. HOLMES, ROLLO AND YOUNG (2003) reach the conclusion that a Member's trade volume determines its likelihood to file complaints on the basis of simple descriptive statistics. This supports the findings of HORN ET AL. (1999) that trade volume and export diversity are closely correlated.

BOWN (2004a) finds only limited confirmation that international obligations affect a country's decision to fulfill its commitments whereas BOWN (2005) finds empirical evidence on the positive influence of a Member's international economic relationships – measured by its engagement in preferential trade agreements – on its decision to formally engage in a dispute as co-complainant or interested third party. On the topic of success in disputes, the results of BESSON AND MEHDI (2004) suggest that international economic relationships show influence on a Member's likelihood to win and they conclude

that the reliance on bilateral assistance has a negative impact on the success. Further, they discuss the impact of military power and find confirmation for the negative influence that military powerful defendants have on the performance of developing countries in dispute.

Table 2.4: Survey on findings of previous empirical studies

Determinant	Empirical study	Influence on the likelihood to			
		Initiate dispute	Partake in initiated disputes	Win a dispute	Reach compliance after ruling
Export diversity	Horn et al. (1999)	+			
Exporting interest	Bown (2005)		+		
Export volume	Holmes et al. (2003)	+			
Gross Domestic Product	Bown (2005)		+		
	Horn et al. (1999)	0			
Political economy relationship with respondent	Bown (2004b)				0
	Bown (2005)		+		
	Besson and Mehdi (2004)			-	
Reliance on bilateral assistance	Besson and Mehdi (2004)			-	
	Bown (2005)		-		
Legal capacity	Horn et al. (1999)	+			
	Besson and Mehdi (2004)			+	
Military power	Bown (2004b)				+
	Besson and Mehdi (2004)			+	
Retaliatory capacity	Bown (2004d)	+			
	Bown (2005)		+		
	Besson and Mehdi (2004)			0	

+ positive influence; - negative influence; 0 no influence
Source: Own compilation.

2.4 Assessing relevance of determinants

2.4.1. A binomial dispute initiation model

This analysis is based on the model first presented by HORN ET AL. (1999): The initiation decision is described through a binary choice model in which the Member's probability to complain against another Member is *dependent* on a set

of the complainant's traits or the characteristics of its specific environment. The implicated conditional probability function for this binary choice situation is the Bernoulli distribution

$$f(y_{ij} | \mathbf{x}\boldsymbol{\beta}) = \pi_i(\boldsymbol{\beta}_i)^{y_{ij}} [1 - \pi_i(\boldsymbol{\beta}_i)]^{1-y_{ij}} = \begin{cases} \pi_i(\mathbf{x}\boldsymbol{\beta}) & \text{for } y_{ij} = 1, \\ 1 - \pi_i(\mathbf{x}\boldsymbol{\beta}) & \text{for } y_{ij} = 0. \end{cases} \quad (2.1)$$

where y_{ij} is the binary dependent variable which takes 1 for a complaint and 0 for no complaint, $\boldsymbol{\beta}$ denotes the vector of K coefficients, i and j indicate the complainant and the defendant respectively. The set of K influences is merged in vector \mathbf{x}_i . Function $\pi_i(\mathbf{x}\boldsymbol{\beta})$ calculates the individual probability to complain for a prospective complainant i which can be represented by any cumulative probability distribution function. Here, we use the widely employed conditional logistic distribution,

$$\pi_i(\mathbf{x}\boldsymbol{\beta}) = \frac{\exp(\mathbf{x}\boldsymbol{\beta})}{1 + \exp(\mathbf{x}\boldsymbol{\beta})}, \quad (2.2)$$

which would result in the well-known Logit model when applied to single trials.

The proceeding for the assessment of determinants is the reproduction of the observed sample of dispute initiation over the period from January 1, 1995 to June 30, 2006 based on a dispute distribution function which yields probabilities for positive integers, i.e. the number of a Member's initiated disputes. Assuming that the probability for a litigation decision $\pi_i(\mathbf{x}\boldsymbol{\beta})$ is constant from one trial to the next and that successive trials are independent, Member i 's probability for c_i complaints in n_i trials against all other WTO Members is then specified through the Binomial distribution

$$f(c_i | \mathbf{x}\boldsymbol{\beta}, n_i) = \binom{n_i}{c_i} \pi_i(\boldsymbol{\beta}_i)^{c_i} [1 - \pi_i(\boldsymbol{\beta}_i)]^{n_i - c_i}, \quad (2.3)$$

where $c_i = \sum_j y_{ij}$. The expected number of Member i 's complaints against all other WTO Members is then given by the expected value of the Binomial distribution,

$$E(c_i) = n_i \pi_i(\mathbf{x}\boldsymbol{\beta}), \quad (2.4)$$

which is strictly proportional to the number of independent Bernoulli trials n_i .

The applied method is maximum likelihood (ML) estimation. Assuming that the data drawn from this Binomial distribution is independent and identically distributed with unknown parameter $\boldsymbol{\beta}$, the likelihood function, i.e. the joint probability density of observing the given sample of complaints (c_1, c_2, \dots, c_m) is specified by

$$L(\boldsymbol{\beta} | c_i, \mathbf{x}_i, n_i) = \prod_{i=1}^m \binom{n_i}{c_i} \pi_i(\mathbf{x}, \boldsymbol{\beta})^{c_i} [1 - \pi_i(\mathbf{x}, \boldsymbol{\beta})]^{n_i - c_i}. \quad (2.5)$$

Starting from the logarithmic likelihood function

$$\ln L(\boldsymbol{\beta} | c_i, \mathbf{x}_i, n_i) = \sum_{i=1}^m \left[\ln \binom{n_i}{c_i} + c_i \ln [\pi_i(\mathbf{x}, \boldsymbol{\beta})] + (n_i - c_i) \ln [1 - \pi_i(\mathbf{x}, \boldsymbol{\beta})] \right], \quad (2.6)$$

the first order conditions for a maximum are

$$\frac{\partial \ln L(\boldsymbol{\beta} | \cdot)}{\partial \boldsymbol{\beta}} = \sum_{i=1}^m \left[\frac{c_i - (n_i - c_i) \exp(\mathbf{x}\boldsymbol{\beta})}{[1 + \exp(\mathbf{x}\boldsymbol{\beta})]} \right] = 0. \quad (2.7)$$

Restricting the vector of determinants to a constant, the probability to complain reduces to $\pi_i(\mathbf{x}\boldsymbol{\beta}) = \pi$ for all Members i and can be determined analytically by solving the first derivative of equation (2.6) with respect to π

leading to $\pi = \frac{\sum_i c_i}{\sum_i n_i}$. Hence, for the restricted model, the maximum likelihood

estimator of the probability to initiate a dispute is simply the number of observed complaints over the total number of independent Bernoulli trials.

The definition of the number of independent Bernoulli trials requires information about the exact number of infringements that each Member faces, as the aforementioned binary choice model refers to the litigation decision when WTO obligations are violated. For the reason that we have no a priori information about the existence of inconsistent trade measures – their existence can merely be assured after a positive Dispute Settlement Body or Appellate Body ruling – the analysis is based on an assumption about their distribution. For HORN ET AL. (1999) the number of independent Bernoulli trials is dependent on a country's export diversification, i.e. its number of different exported goods over all products and trading partners under the regime of the WTO. Each counted bilateral export

flow is considered as one trial. They worked on the assumption that “disputable trade measures” (DTM) are uniformly distributed over all bilateral export flows. The problem of this approach is that the determinants for the occurrence of disputes cannot be separately identified from the impacts on the existence of DTM, leading to an “export diversity bias”, i.e. an increase in disputes with increasing export diversity. This problem already was a central criticism of HOLMES ET AL. (2003).

Following the approach of HORN ET AL. (1999) we try to mitigate the problem of missing information about the distribution of infringements by incorporating two new indicators: Endured Protectionism by Trade Partner and Own Imposed Protectionism. In addition to this information on the likelihood of DTM in export flows, the attempt of HORN ET AL. (1999) to select the relevant export flows is slightly modified by taking empirical instead of parameterized values for average induced litigation costs into account.

2.4.2. Determinants considered

Deviating from existing studies, this paper focuses specifically on agricultural and food-related disputes in order to develop an in-depth analysis of determinants relevant in this sector and to additionally introduce new potential determinants. The set of determinants or countries’ traits already used in prior studies is reflected by agricultural trade flows characterizing the export diversity, a country’s wealth and its legal capacity. Due to limited data availability for some determinants under investigation the Members sample is limited to 53 while maintaining the distribution over income classes.

Disputes data

Dispute initiations were collected that affected products of the food sector.¹⁸ The investigation covers the period from January 1, 1995, to June 30, 2006. Each

¹⁸ Agricultural and food related issues comprise initiated disputes which were raised under the following agreements: Agreement on Agriculture, Agreement on Sanitary and Phytosanitary Regulations, Agreement on Technical Barriers to Trade, Agreement on Safeguards, General Agreement on Tariffs and Trade, Agreement on Subsidies and Countervailing Measures, Agreement on Trade Related Investment Measures, Anti-Dumping-Agreement and the Agreement on Import Licensing Procedures.

initiation is counted once to avoid double counting, thus omitting re-uptakes of disputes that occur when the consultation period of 12 months is exceeded. For jointly filed initiations, each participant is assigned one dispute. When one Member simultaneously requests for consultations on the same subject but with different defendants each one is counted on its own. Since the European Communities (EC) is a single customs union with a harmonized trade policy and common tariffs all disputes initiated by its Members are assigned to the EC. On the other hand, when disputes are initiated against several EC Members there is only one dispute assigned, including all defendants. The number of disputes for each Member is related to the whole investigation period,

$$y_i^* = \frac{y_i^o}{t_i} \cdot T, \quad (2.8)$$

where y_i^* is the time-corrected number of disputes of Member i , y_i^o assigns Member i 's observed disputes over its WTO membership time t_i and T stands for the investigation period. This proceeding is self-evident, since the number of filed disputes ought to be linked to a Member's membership time in the WTO. By this means the time-bias is taken care of.

Export diversity

Here we adopt the approach first presented by HORN ET AL. (1999). Members' export diversity is calculated as the average number of their bilateral agro-food related export flows per year. The average is taken over the investigation period 1995-2006 and different thresholds on bilateral export value apply. Strictly speaking, export diversification is not an explanatory variable, but an intrinsic component of the underlying binomial dispute distribution model as the total number of trials depends on the number of export flows. HORN ET AL. (1999) found empirical support for the dependency of a Member's activity as complainant from its export diversity, i.e. its number of different exported goods over all trading partners. The underlying principle lies in the expectation of an increased probability to encounter infringements if a Member's export diversity increases. This is self-evident if we assume infringements to be uniformly distributed over all markets, products and trading partners. Hence, we expect the number of disputes to be positively related to Members' amount of different bilateral export flows. The export diversification factor's explanatory contribution

content is just confirmable by excluding all other variables as the expected number of complaints is proportional to the number of a country's export flows.

With this approach, export diversity might be underestimated for countries experiencing banned trade on SPS-grounds. This is a limitation of the analysis, however, it is mitigated to some extent by taking the average of Members' number of export flows per year. Export flows come from EUROCARE (2006) available at HS¹⁹-4-level.

Endured protectionism by trade partner

This is to our knowledge the first empirical effort to incorporate information about the distribution of WTO-inconsistent trade barriers to reduce the lack of information about the existence of actual infringements which is the precondition to each dispute. It is assumed that the more protective the trade policy of a country's trading partners is, the higher the probability that it faces disputable trade barriers. Hence, we expect the number of initiated disputes to be positively related to a country's faced trade restrictiveness. For this purpose the Market Access Overall Trade Restrictiveness Index (MA-OTRI) provided by KEE, NICITA AND OLARREAGA (2006) is used. It comprises a tariff equivalent of all barriers in the agro-food sector that exporters of the respective country face on average across the rest of the world. The indicator refers to data stemming from 1995-1998 concerning the non-tariff component and from 2000-2004 for the tariff component of the aggregated MA-OTRI.

Own protectionist behavior

Another hypothesis is that the number of its filed disputes is negatively related to a country's tendency towards protectionism. The rationale behind this is the assumption that a more protective Member faces also a greater likelihood to become "victim" of an accusation. We presume a more protective country to pursue a defensive and peaceful strategy to not provoke to be challenged itself. On the other hand we hypothesize that more protective countries have a lower propensity to fight for market liberalization. For this purpose the Overall Trade Restrictiveness Index (OTRI) by KEE, NICITA AND OLARREAGA (2006) is used as

¹⁹ Harmonized Commodity Description and Coding System of the World Customs Organization (WCO)

a measure for a country's inclination to restrictive policies. It is a tariff equivalent for all trade barriers in the agro-food sector which the respective country imposes in average upon the rest of the world. Consequently, it provides the mirror image of the aforementioned MA-OTRI indicator, measuring the trade restrictiveness from the potential complainant's perspective and refers on the same period.

Relevance of the agricultural sector

Independent from a country's contact to a trading partner we expect the overall importance of the agricultural sector having a positive influence on initiating a case: the higher the overall economic relevance, the more sensitive a country may be regarding violations. To quantify the sector's importance the agricultural share of a Member's GDP is employed. This rather crude indicator is used due to missing data on the value of the countries' food industry. An improved measure should comprise information on the relevance of a Member's whole agro-food sector. The data is drawn from the UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (2002 and 2003).

Importance of the agro-food export sector

Since disputes are dependent on agro-food related trade, the relevance of Members' agricultural sector is complemented by an indicator on the importance of their agro-food exports. The hypothesis is that the more important Members' agro-food export sector, the higher their general incentive to fight for their agro-food related export interests. Hence, their number of observed disputes is expected to be positively related to this importance. Members' importance of the agro-food export sector is measured as the share of agro-food related export value in their total export value. The data comes from WORLD BANK (2007). The indicator represents an average over the investigation period, i.e. the average share of Members' export value in total exports.

It has been suggested by an anonymous referee that the incentive to complain could also be positively related to country size or the share of a Member's agro-food exports in world trade. We generally agree with this possibility, but would argue that the relative importance of the agricultural food export sector is more closely related to the incentive than the size. Furthermore, in the next subsection, we use the GDP to measure the capacity to absorb legal cost. This is clearly a variable measuring country size. Consequently the GDP

potentially also picks up an effect related to a Member's incentive to complain that is not captured by the relative importance of the agro-food export sector.

Capacity to absorb legal costs/wealth

The capacity to absorb legal costs is supposed to be essential for the accomplishment of disputes as explicit compensation for litigation costs is not intended by the system. Even though the expected gains from removing the trade barrier exceed the induced litigation costs, this potential payoff lies ahead and is uncertain. For this reason each potential complainant must anticipate substantial costs that are involved by prosecution and, if applicable, also by enforcement of compliance. It is assumed that the number of complaints is positively related to a Member's capacity to absorb legal costs. As proxy for such financial means we use a country's Gross Domestic Product in US-Dollars, provided by the WORLD BANK (2007). The indicator is an average of Members' yearly reported GDP over the investigation period.

Legal capacity

One argument often raised to explain the limited access of the system to developing and low income countries is their lack of human and legal capacity (see e.g. WHALLEY, 1996). HORN ET AL. (1999) found empirical evidence on the matter of a country's legal capacity in respect of initiating disputes. We hypothesize that the larger a country's endowment with skilled legal personnel, the higher its capability to challenge arguable trade measures of its trading partners and we expect the number of bilateral complaints to be positively linked. The respective determinant should comprise the whole extent of a country's trade administration, i.e. its budget, its staff's size and quality. Since there is no differentiated information on Members' legal capability we use, like HORN ET AL. (1999), their delegation size at Geneva as proxy. The respective information comes from the UNITED NATIONS (2004). The indicator provides information on the status of Members' permanent delegation in 2004, however it is alleged that this endowment represents their administrative power over the investigation period.

Some other potential indicators on Members' ability to follow through with a case have been considered as well but were discarded due to data availability issues. Since disputes on SPS-matters are incorporated in the sample, Members'

scientific capacity could play a role to make a good case in such disputes. A possible objection to this rationale is that skilled personnel can reside in one Member state but be under contract for another Member in WTO matters. To capture the aspect of scientific capacity, indicators on Members' expenditure on research and development, on their total number of researchers and on their number of published scientific and journal articles have been compiled from WORLD BANK (2007). Unfortunately, the three indicators are not available for all Members in the sample and could therefore not be incorporated. However, it is likely that almost all information will be captured by Members' GDP as this is highly correlated with the three indicators for the overlapping observations (pair wise correlation all > 0.98). Consequently, a potentially significant influence of the GDP will include the influence of available legal capacity to some extent.

Influence of private actors and governmental efficiency

The influence of private pressure groups on the government is relevant as only the government may finally enter a dispute but can be persuaded by private actors in doing so. This power may differ among countries depending on the national framework for organizing private lobby activities and on their respective relevance. It is increasingly seen as especially relevant for developing countries in determining the use of the settlement system (SHAFFER 2003a; BOWN AND HOEKMAN 2005). SHAFFER (2003a and 2003b) demonstrate the relevance of private-public partnerships for the initiation and prosecution of trade disputes at the WTO and BESSON AND MEHDI (2004) argue that domestic variables should be incorporated to handle the potential sources of distortion of the dispute settlement procedure.

To our knowledge this is the first empirical attempt to capture some aspects of the aforementioned interaction between the public and the private sector regarding dispute initiation. For this purpose two domestic variables are included which are provided by KAUFMANN (2004): (i) the Corporate Legal Corruption Component (CLCC), measuring legal dimensions of undue political influence by the private sector and (ii) the Judicial/Legal Effectiveness Integrity Index (JLEI), assessing the effectiveness and integrity of the legal and judicial system. The greater the influence of lobbyists, e.g. by legal political finance or by the voice of interests of powerful firms, the more successful the private sector is supposed to be in achieving its export interests. Accordingly, the number of challenged disputes should be positively correlated to the amount of undue influence,

aggregated in the CLCC variable. It is hypothesized, that the higher the efficiency and integrity of the legal and judicial system of a country, the higher its ability to identify illegal trade measures and to pursue a legal action. Hence, the probability for litigation is presumed to be positively dependent on the JLEI variable.

Membership time

The time of membership may be negatively related to the costs of filing a dispute as learning occurs. Hence, we suspect a Member's experience through its membership in the WTO to be positively related to its number of filed disputes. An index is created over the time since the inception of the organization until June 30, 2006, relating each Member's membership time to the whole observation period. The associated data is from WTO (2007c).

The following table provides a survey on all explanatory variables with their respective data source and expected impact on the initiation of disputes.

Table 2.5: Survey on explanatory variables, data and expected sign

Explanatory variables	Data	Source	Expected sign
Export diversity*	Census of different export flows on HS-4 level	EuroCARE (2006)	(+)
Capacity to absorb legal costs/wealth*	Gross Domestic Product	World Bank (2007)	+
Legal capacity*	Size of permanent delegation at Geneva	United Nations (2004)	+
Influence of private actors	Measure of legal dimensions of undue political influence by the private sector	Kaufmann (2004): Corporate Legal Corruption Component (CLCC)	+
Governmental efficiency	Measure of effectiveness and integrity of the legal and judicial system	Kaufmann (2004): Legal and Judicial Effectiveness and Integrity Index (LJEI)	+
Relevance of the agricultural sector	Percentage share of GDP produced in agriculture	UNCTAD - Statistical Yearbook (2002, 2003)	+
Importance of agro-food export sector	Share of agro-food related export value in total export value	World Bank (2007)	+
Endured protectionism by trade partner	Average endured tariff equivalent	Kee, Nicita, Olarreaga (2006): Overall Trade Restrictiveness Index (OTRI)	+
Own imposed protectionism	Average imposed tariff equivalent	Kee, Nicita, Olarreaga (2006): Market Access Overall Trade Restrictiveness Index (MA-OTRI)	-
WTO membership time	Index based on a member's percentage membership share over investigation period	World Trade Organization (2007c)	+

* Influencing factors already integrated in previous empirical investigations
Source: Own compilation.

2.5 Statistical Implementation and Results

For the restricted model, the probability to complain is identical for all Members and its estimate only dependent on the number of all observed disputes and of the sum of bilateral export flows between all trading partners. Hence, improved model prediction is merely owing to changes in the distribution of export flows over Members by weighing the relevant exports flows, i.e. introducing thresholds for accounting only export flows beyond a certain value. The average number of export flows declines from 4254 in case of no threshold to 489 when the highest threshold of \$700K is used. The fit of the model is measured by two different indicators: the fraction of exact predictions and the mean of absolute deviation (MAD) between observed and predicted disputes

$$MAD = \frac{1}{m} \sum |c_i - \hat{c}_i|, \quad (2.9)$$

where c_i denotes the number of observed and \hat{c}_i the number of predicted disputes of Member i and m assigns the sample size of 53 Members.

The fraction of exact predictions (FEP) rises from 0.13 to 0.43 and thereby shows an increased fit of the model by imposing a threshold of \$300K but the MAD remains almost unchanged. The model's fit is not improved by imposing higher thresholds than \$300K as the MAD remains almost unchanged around 2 and the FEP is only raised from 0.43 under threshold \$300K to 0.45 under threshold \$700K. Contrary to HORN ET AL. (1999) this result shows that the selection of trade flows is only relevant for the difference between no threshold and the lowest threshold of \$300K, but seems not to be relevant for the selection at higher values of trade in the agro-food sector. Hence, their findings that the pattern of dispute initiation is to a large extent reflected by differences in Members' diversity and value of trade is only partially supported by our result for the agro-food sector. Table 2.6 comprises the results for the restricted model.

Table 2.6: Results for the restricted model subject to different thresholds for export flows

Threshold on export flow value	Number of export flows			Mean of absolute deviations	Fraction of exact predictions		
		min	max			avg	
	Beta0	-5.28					
\$0	Prob	0.0006	126	54,965	4254	2.00	0.13
	Beta0	-5.28					
\$300K	Prob	0.0035	23	15,514	712	2.02	0.43
	Beta0	-5.28					
\$500K	Prob	0.0043	19	12,821	572	2.00	0.45
	Beta0	-5.28					
\$700K	Prob	0.0051	18	11,146	489	2.04	0.45

Number of observations: 53

Source: Own compilation.

For the unrestricted model, the Akaike information criterion is used to select the relevant variables. Based on this, the incorporation of additional variables is traded off against the increased fit of the model. By incorporating additional explanatory variables the goodness of fit is improved regardless of the number of free parameters in the data generating process. The indicator penalizes increasing complexity thus mitigating the danger of over-fitting. It is then sought after the

model specification showing the lowest information criterion value. All different model specifications are evaluated, i.e. all specifications are estimated and their corresponding information criterion value calculated. For each threshold the best specification, i.e. that one yielding the lowest information criterion value, is then selected and subject to a test on joint significant influence. For the best model under each threshold, standard errors of the coefficients are derived using bootstrap methods. The quality of the unrestricted model is further on validated by a likelihood ratio test. In this process the logarithmic likelihood function value of the unconstrained ML estimator $\hat{\beta}$, is compared with the likelihood function value of the constrained ML estimator $\tilde{\beta}$, which is obtained by maximizing the logarithmic likelihood function subject to the linear restrictions $\tilde{\beta}_k = 0 \forall k \neq 0$. The LR test statistic is computed as

$$LR = 2 \left[\ln L(\hat{\beta} | c_i, \mathbf{x}_i, n_i) - \ln L(\tilde{\beta} | c_i, n_i) \right], \quad (2.10)$$

which has a Chi-squared distribution with degrees of freedom equal to the number of imposed restrictions.²⁰

According to this proceeding six of the considered determinants are retained in the final model: (1) *Endured protectionism*, (2) *Own imposed protectionism*, (3) *Legal capacity*, (4) *Influence of private actors*, (5) *WTO membership time* and the (6) *Importance of the agro-food sector* result in a sufficient increase in the goodness of fit for no threshold. For the application of all higher thresholds the variable *Legal capacity* is discarded in the selection process whereas the other indicators are included in the specification. Table 2.7 comprises the results for the selected specifications of the unrestricted model subject to different thresholds for export flows. The standard errors are given in brackets behind the respective coefficients. All included variables show the hypothesized sign. The influence of *Endured protectionism*, *Own imposed protectionism* and *WTO membership time* is proven to be statistically significant

²⁰ Estimation, selection of variables, the likelihood ratio test and the bootstrap re-sampling and testing procedure are implemented in GAMS (General Algebraic Modeling System), see BROOKE, A., KENDRICK, D., MEERAUS, A. AND R. RAMAN (1998): GAMS – A User’s Guide, GAMS Development Corporation, Washington, DC. The standard errors of the coefficients are calculated for 2000 re-sampling iterations.

for the thresholds \$300K to \$700K; for the lowest threshold only *Endured protectionism* and *Own imposed protectionism* show a significant influence. The variables' joint significant influence is verified by an asymptotic significance test based on the bootstrapped sampling distribution of the estimator (see EFRON AND TIBSHIRANI 1993). Compared to the restricted model, the FEP is substantially higher for the lowest and slightly higher for the remaining thresholds. The MAD between observed and predicted complaints is substantially lower under all thresholds compared to the restricted model. This is mainly due to improved model behavior for Members with a large number of observed disputes, predominantly for the EC and the U.S. Both measures show that the model amendment is much higher for the \$300K threshold and the specification without threshold.

Table 2.7: Results for unrestricted specification selections subject to different thresholds for export flows

Explanatory variable	Threshold on export flow value			
	\$0	\$300K	\$500K	\$700K
Beta 0	-13.46	-11.45	-11.29	-11.17
Endured protectionism by trade partner	2.54* (1.57)	3.60*** (1.35)	3.73*** (1.39)	3.83*** (1.41)
Own imposed protectionism	-2.34* (1.21)	-2.44** (1.21)	-2.45** (1.21)	-2.43** (1.21)
Legal capacity	0.92 (1.04)	not included	not included	not included
Influence of private actors	0.96 (0.82)	0.45 (0.67)	0.37 (0.67)	0.31 (0.67)
WTO membership time	4.55 (3.83)	5.07* (3.60)	5.13* (3.62)	5.18* (3.64)
Importance of agro-food export sector	1.34 (1.50)	0.67 (1.22)	0.65 (1.23)	0.62 (1.23)
Mean of absolute deviations	1.13	1.09	1.11	1.06
Fraction of exact predictions	0.49	0.51	0.51	0.53
Significance level for likelihood ratio test on model specification	1%	1%	1%	1%

Standard errors are given in parentheses below the coefficient estimates.

Standard errors are given in parentheses below the coefficient estimates.

Number of observations: 53

* significant at the 10% level,

** significant at the 5% level

*** significant at the 1% level

Source: Own compilation.

The probability to complain per export flow covers a wide range: For the specification without threshold the highest probability is 489 times, for the highest threshold it is 589 times the lowest probability. However, Member's activity in dispute initiation cannot be inferred from its probability to complain without considering the number of its export flows: Being one of the two most active users of the system, the probability to complain for the EC falls into the lower third whereas the probability of Australia, Canada and the U.S. belong to the highest for all thresholds. For the \$500K threshold the probability of the U.S. constitutes 3.77 times the EC's probability. Corresponding to their reciprocal ratio with respect to their bilateral export flows (1: 28) this results in 31 predicted disputes for the U.S. (but 34 actually observed) and 30 for the EC (only 24 actually observed).

The likelihood ratio test proves a significant amendment of the model based on the incorporation of the addressed determinants. For all thresholds the concerned variables' contribution could be substantiated at a 1% level.

The findings of HORN ET AL. (1999) on a significant influence of *Legal capacity* could not be supported in our analysis of food related disputes. The variable is selected for the lowest threshold but does not survive the significance test. This may be explained by the fact that legal capacity increasingly becomes an internationally tradable good such that each Member can purchase legal expertise, provided that it has sufficient financial resources. The Advisory Centre on WTO Law (ACWL)²¹ lists eleven law firms and four individuals on its 'Roster of External Legal Counsel'. On the other hand, the finding of BOWN (2005) with respect to the influence of monetary means is not confirmed by our results either. Therefore, it seems more likely that legal capacity and monetary means are more relevant determinants for the overall number of dispute initiations but simply less important for the variation of probabilities across countries for the smaller food sector.

²¹ The ACWL is a WTO institution supporting developing countries with general legal advice on WTO matters and was established in 2001 at Geneva. Its "Roster of External Legal Counsel" is available at: http://www.acwl.ch/e/tools/news_detailsphoto_e.aspx?id=3c188583-5884-4a1d-ae02-e65b14370ce9, 15-04-2008.

The indicators *Influence of private actors* and *Importance of the agro-food export sector* are selected under all thresholds based on the Akaike information criterion but their statistically significant influence could not be substantiated.

The indicators on *Governmental efficiency* and *Relevance of the agricultural sector* did also not survive the variable selection process. The latter might simply be an insufficient proxy for the relevance of a Member's agro-food-industry.

2.6 Conclusions

This paper presented an analysis of the determinants for initiating WTO disputes related to the agro-food sector. Apart from this new sectoral focus, the analysis extended the literature with a more in-depth analysis of potentially relevant determinants. The empirical model representing the number of initiated disputes by country as a sequence of Bernoulli trials – with probabilities modeled by a logistic distribution – was applied to 53 WTO Member countries.

The results show that some of the determinants relevant in previous dispute studies such as legal capacity and monetary means could not be confirmed as statistically relevant in the context of the agro-food sector. It could be shown that increasing own protectionist attitude lowers the probability to complain and the level of protection faced by a country leads to an increase as both variables prove to be statistically significant determinants of dispute initiation in the agro-food sector. At the same time, the duration of WTO membership clearly contributes to a larger likelihood to initiate a WTO dispute. Though selected under all thresholds with their expected sign, the Influence of private actors and the Importance of the agro-food export sector do not turn out to show a significant influence. This is also the case for the indicator Legal capacity, that has only been selected under the model incorporating all export flows.

The outcome on endured and imposed protectionism shows that trade restrictive policy measures and the willingness to fight for market liberalization are important drivers in WTO disputes which is intended by the Dispute Settlement Understanding. The variables Legal capacity and Influence of private actors are selected with their expected sign but the hypothesis of no statistical influence could not be rejected. From the validation of Legal capacity would follow that there are resource constraints in WTO disputes and that reform

approaches should consider for strengthening developing country Members in the process of preparing and pursuing disputes, e.g. by means of the ACWL institution. A validation of the Influence of private actors would suggest to promote proposals of encouraging Members' private sector in providing dispute settlement related legal assistance, as analyzed by BOWN AND HOEKMAN (2005).

Further research should focus on the improvement of data quality to validate or disprove the findings on insignificant influences of some variables, for example the importance of the agro-food sector for the country considered. A generalization of the model allowing to simultaneously incorporating characteristics of the defendant country would also be very useful. Currently, the implied assumption that probabilities to be a defendant are equal across all countries could only be partially mitigated by including the determinant Endured protectionism of the complaining country.

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3 Determinants of Bilateral Food Related Disputes²²

Abstract

This paper analyses relevant determinants for the probability to initiate a dispute on policy measures under the World Trade Organization (WTO) Dispute Settlement Mechanism (DSM). The empirical analysis focuses on agro-food related disputes to provide sector specific information on the driving factors in dispute settlement, and complements and extends previous studies by incorporating new potential determinants. The focus is shifted to bilaterally dependent characteristics to take care of trade related and power based relationships between Members, such as relevance of the defendant's market and the complainant's trade related retaliation capacity. Contrary to recent analyses of overall trade disputes, the results show that capacity-related determinants such as financial means and legal capacity and simple trade-related characteristics like export and import volume do not show a statistically significant impact on dispute initiation in the agro-food sector. However, the level of protectionism that Members face in their export markets, their operating experience with the DSM, the influence of private sector interests, complainants' agro-food related export dependency as well as the size of their agro-food imports from the defendant party could be identified as relevant determinants of dispute initiation behavior.

Key words: WTO dispute, Agro-food sector, Binary choice model, Weighted Endogenous Sampling Maximum Likelihood (WESML) estimator
JEL Classification: C12, C13, C25, Q17, Q18

3.1 Introduction

Negotiations on improvements of the WTO dispute settlement mechanism (DSM) are going on since 1997, but seem far from completion. The major objectives are to make the system more effective and to allow equal access to all different types of Members. The system's Member-driven nature determines the conditions of its use, i.e. it creates incentives that are both market driven and related to Members' resource endowments and constraints. This investigation aims at identifying relevant countries' characteristics having an impact on the probability to observe a bilateral dispute between them. Information on the factors explaining Members'

²² This chapter was published as GÖTZ C. AND T. HECKELEI (2011): Determinants of Bilateral Food Related Disputes, *Discussion Paper Series*, No. 3/2011, Institute for Food and Resource Economics, Bonn.

involvement in or absence from the system could help rationalizing the reform discussion. The empirical analysis focuses on agro-food-related disputes to provide sector-specific information on the driving factors in dispute settlement. This paper builds upon GÖTZ ET AL. (2010) shifting the focus to bilaterally relevant issues in disputes. Previous empirical studies are complemented by incorporating new potential trade-related determinants and bilaterally dependent market and power based relationships.

This paper is organized as follows: After depicting the motivation for the shift to a purely bilateral approach with reference to previous empirical findings, the model specification and estimation approach are described. This is followed by a brief description of the unilateral variables used in GÖTZ ET AL. (2010) and the discussion of the newly introduced bilateral determinants. Statistical implementation and estimation results are subsequently presented before concluding.

3.2 Motivation for a bilateral approach

Like most empirical studies on the subject GÖTZ ET AL. (2010) have taken a non-bilateral approach and thereby mainly addressed capacity and aggregate sector related characteristics of Members that are likely to come into play in a WTO dispute. Capacity related determinants are unilateral in nature, like Members' endowment with financial means, legal capacity, administrative power and operating experience with the system. They play a major role in the pre-litigation phase for monitoring trade issues, gathering information and communication with the private sector and during the course of a panel process to prepare a strong case and to effectively engage in the panel procedure.

Their influence on Members' use of the system and also their success in disputes has been stressed and substantiated by several empirical studies. The positive influence of Members' financial means in terms of GDP has been shown by BOWN (2005a) and DAVIS AND BERMEO (2009). BESSON AND MEHDI (2004) have demonstrated that legal capacity measured as their delegation size in Geneva increases countries' likelihood of success in disputes. GÖTZ ET AL. (2010) and DAVIS AND BERMEO (2009) have provided empirical evidence on the positive influence of Members' operating experience with the system on their probability to file disputes. The relevance of Members' experience with democratic

governance has been emphasized and supported by BUSCH (2000), BUSCH AND REINHARDT (2000) and DAVIS AND BERMEO (2009). It can be interpreted as their general ability to effectively use legalized and rules-based systems like the DSM.

However, it is at the compliance stage after a successful panel ruling where bilaterally dependent issues play a major role for enforcement. The importance of the complainant party's trade-related retaliatory capacity has been emphasized and its positive influence been substantiated by several studies (see e.g. BOWN 2005a, 2005b, and BUSCH AND REINHARDT 2000). Also, political economy linkages between complainant and defendant like preferential trade access and bilateral economic aid may show an effect on Members' initiation decision. This has been supported by BESSON AND MEHDI (2004) for countries' success in litigation and by BOWN (2005a) for their decision to engage as co-complainants or interested third party in disputes. In addition, it is worthwhile to complement aggregate market-related interests with more specific information connected to the trade relationship between the parties to the dispute. In this context, BOWN (2005a) has demonstrated that the size of affected exports and the defendant market's export relevance to the complainant influence its decision to file a dispute.

Such bilateral attributes reflect the characteristics of the trade relationship and economic linkages between the parties. For instance, Members' retaliatory capacity is not a general feature in the DSM context but dependent on their relevance as trade partner for individual defendants. The merits of a bilateral analysis are also evident in respect of characteristics of the affected sector or market. Sector related trade between complainant and defendant may reveal information on the trade issue that cannot be captured by unilateral indicators. In general, more selective indicators allow for a more precise assessment of influences.

3.3 A bilaterally dependent dispute initiation model and estimation approach

This analysis is based on the model developed by HORN ET AL. (1999) and applied by GÖTZ ET AL. (2010) to agro-food trade disputes. It is modified here to capture also characteristics that differ for each bilateral trade relationship. The dispute initiation decision is described through a binary choice model in which a

Member's probability to complain against another Member depends on a set of the complainant's traits or the characteristics of its specific environment and on the trade-related and power-based relationship between complainant and defendant. The implicated conditional probability function for this binary choice situation is the Bernoulli distribution

$$F(y_{ij_o} | \mathbf{x}\boldsymbol{\beta}_o) = \pi_{ij}(\boldsymbol{\beta}_{ij})^{y_{ij_o}} [1 - \pi_{ij}(\boldsymbol{\beta}_{ij})]^{1 - y_{ij_o}} = \begin{cases} \pi_{ij}(\mathbf{x}\boldsymbol{\beta}) & \text{for } y_{ij_o} = 1, \\ 1 - \pi_{ij}(\mathbf{x}\boldsymbol{\beta}) & \text{for } y_{ij_o} = 0. \end{cases}$$

(2.11)

where y_{ij_o} is the binary dependent variable which takes 1 for a complaint and 0 for no complaint, i and j indicate the complainant and the defendant respectively and o refers to the observation, i.e. a certain dispute initiation decision, \mathbf{x}_{ij} is the vector of K determinants and $\boldsymbol{\beta}$ denotes the vector of K corresponding coefficients. Function $\pi_{ij}(\mathbf{x}\boldsymbol{\beta})$ calculates the individual probability to complain for a potential complainant i against a potential defendant j which can be represented by any cumulative probability distribution function. Here, we use the widely employed conditional logistic distribution,

$$\pi_{ij}(\mathbf{x}\boldsymbol{\beta}) = \frac{\exp(\mathbf{x}\boldsymbol{\beta})}{1 + \exp(\mathbf{x}\boldsymbol{\beta})},$$

(2.12)

resulting in the bilaterally dependent Logit model of agro-food related dispute initiations. Note that equations (3.1) and (3.2) are the same as the first two equations in Götz et al. 2010 except that variables and probabilities are double indexed by i and j and not only by i .

Observations or binary choice situations are defined as bilateral agro-food related trade flows from the potential complainant to the potential defendant Member. The proceeding for the assessment of determinants is the reproduction of the observed sample of dispute initiations over the period from January 1, 1995 to December 31, 2005. Due to the limited number of disputes in bilateral

relationships, efficient estimation requires application of the weighted endogenous sampling maximum likelihood estimator developed by MANSKI and LERMAN (1977). Observations with $y = 1$ were oversampled to enrich the skewed original sample. The resulting sample selection bias is then mitigated in the estimation process by weighting the likelihood contributions based on their proportion in the enriched sample in relation to their true proportion in the population. Under the assumption of independent and identically distributed observations the log-likelihood function is given as

$$\ln L(\boldsymbol{\beta} | \mathbf{x}_{ij}; n_{ij}, c_{ij}) = w_1 \sum_{i,j;i \neq j} c_{ij} \ln \pi_{ij}(\mathbf{x}_{ij} \boldsymbol{\beta}) + w_0 \sum_{i,j;i \neq j} (n_{ij} - c_{ij}) \ln \pi_{ij}(-\mathbf{x}_{ij} \boldsymbol{\beta}),$$

(2.13)

where $c_{ij} = \sum_o y_{ijo}$, n_{ij} is the number of bilateral agro-food related observations for the bilateral relationship between Member i and Member j , $w_1 = Q_1 / H_1$ and $w_0 = Q_0 / H_0$ are the weighting factors for the single likelihood contributions of observations on $y = 1$ and $y = 0$ respectively, Q_1 and Q_0 are the population proportions, and H_1 and H_0 are the enriched sample proportions of $\sum_{i,j;i \neq j} c_{ij}$ and of $\sum_{i,j;i \neq j} (n_{ij} - c_{ij})$ respectively.

The expected number of Member i 's complaints against Member j is then given by the expected value of the sample of observations,

$$E(c_{ij}) = n_{ij} \pi_{ij}(\mathbf{x}_{ij} \boldsymbol{\beta}),$$

(2.14)

which is strictly proportional to the number of observed bilateral trade flows n_{ij} .

Similarly to the non-bilateral case in GÖTZ ET AL. (2010), the number of independent Bernoulli trials for each Member combination requires information about the exact number of infringements that each Member faces in its trade relationship with potential defendants, as the aforementioned binary choice model refers to the litigation decision when WTO obligations are violated. Since we have no a priori information about the existence of inconsistent trade measures,

the analysis is based on the assumption that they are uniformly distributed across export flows. We cannot separately identify the determinants for the incidence of trade infringements and their influence on Members' probability to file disputes. Following GÖTZ ET AL. (2010) we mitigate the problem of missing information about the distribution of infringements by incorporating the indicators *Endured protectionism* and *Own imposed protectionism*. Likewise, the compilation of bilateral export flows between Member combinations is due to a value threshold defined by empirical estimates of induced litigation costs. The number of independent Bernoulli trials n_{ij} is then defined as the yearly average of different agro-food related export flows over the investigation period sent from the complainant's to the defendant's market.

3.4 Determinants considered

Deviating from most existing studies but similar to GÖTZ ET AL. (2010), this paper focuses specifically on agricultural and food-related disputes. This sector focused approach provides the basis for testing more precise hypotheses and especially the newly introduced bilaterally dependent determinants are sector specific. Due to limited data availability for some determinants under investigation the sample is limited to 53 Members while maintaining the distribution over income classes according to The World Bank atlas method²³.

Differing from GÖTZ ET AL. (2010), the data on disputes, on trade flows and on all trade related indicators (*Agro-food export value*, *Agro-food import value*, *Agro-food export dependency from defendant*, *Agro-food import dependency from defendant* and *Agro-food related trade retaliatory capacity*) are varying with the bilateral relationship considered.

Table 3.1 provides an overview on all explanatory variables grouped as unilaterally and bilaterally dependent with their respective data source and expected impact on the initiation of disputes. The unilateral control variables have

²³ Income classes are: low income, \$1,005 or less; lower middle income, \$1,006 - \$3,975; upper middle income, \$3,976 - \$12,275; and high income, \$12,276 or more. Available online at: <http://data.worldbank.org/about/country-classifications>, 2011-10-04.

already been incorporated in GÖTZ ET AL. (2010) and the bilateral control variables are newly introduced.

Table 3.1: Survey on explanatory variables, data and expected sign

Type of variable	Explanatory variables	Data	Source	Expected sign
Unilateral control variables	Endured protectionism	Average endured tariff equivalent	Kee, Nicita, Olarreaga (2006)	+
	Own imposed protectionism	Average imposed tariff equivalent	Kee, Nicita, Olarreaga (2006)	-
	Legal capacity	Size of permanent delegation at Geneva	United Nations (2004)	+
	Capacity to absorb legal costs/wealth	Gross Domestic Product (GDP)	World Bank (2007)	+
	Governmental efficiency	Measure of effectiveness and integrity of the legal and judicial system	Kaufmann (2004)	+
	Influence of private actors	Measure of legal dimensions of undue political influence by the private sector	Kaufmann (2004)	+
	Importance of agro-food sector	Share of agro-food related export value in GDP	World Bank (2007)	+
	WTO membership time	Index based on a member's percentage membership time over investigation period	World Trade Organization (2007)	+
	Agro-food export value	Complainant's total agro-food export value to defendant	EuroCare (2006)	+
	Agro-food import value	Complainant's total agro-food import value from defendant	EuroCare (2006)	-/+
Bilateral control variables	Agro-food export dependency from defendant	Share of complainant's agro-food export value to defendant in complainant's total agro-food exports	EuroCare (2006)	+
	Agro-food import dependency from defendant	Share of complainant's agro-food imports from defendant in complainant's total agro-food imports	EuroCare (2006)	-/+
	Agro-food trade retaliatory capacity	Share of defendant's agro-food exports to complainant in defendant's total agro-food exports	EuroCare (2006)	+

Source: Own compilation

3.4.1. Unilateral variables

It follows a condensed description of the unilateral variables and related data that are taken from GÖTZ ET AL. (2010). The set of unilateral country characteristics is reflected by *Induced costs of litigation*, *Members' Legal capacity*, their *Capacity to absorb litigation costs/wealth*, *Governmental efficiency*, the *Influence of private actors*, the *Importance of the agro-food sector*, their *Endured protectionism* and *Own imposed protectionism*, and their *WTO membership time*. For their motivation and related hypotheses please see GÖTZ ET AL. (2010).

Induced costs of litigation

To account for *Induced costs of litigation*, bilateral trade flows between Member combinations are compiled based on value thresholds. Following GÖTZ ET AL. (2010) export flows are counted based on average litigation costs of WTO cases of different complexity as calculated by NORDSTRÖM (2005). Likewise, the analysis is conducted for four different litigation cost levels, i.e. excluding all flows below the respective threshold: \$0 when no threshold is applied, \$300K for low costs, \$500K for medium costs and \$700K for high litigation costs. The rationale behind this is to account for fixed costs of litigation. Put differently, it is hypothesized that trade flows have to exceed a certain threshold to be considered worth enough to justify costly WTO adjudication.

Legal capacity

As in GÖTZ ET AL. (2010), Members' size of standing delegation in Geneva in 2004 is used as proxy for their overall *Legal capacity* connected to WTO adjudication. *Legal capacity* is required to effectively participate in the panel procedure and for countries' general ability to process trade issues under the WTO. The data stems from UNITED NATIONS (2004).

Capacity to absorb litigation costs/wealth

As proxy for Members' *Capacity to absorb litigation costs/wealth* their GDP in US-Dollars, provided by the WORLD BANK (2007) is used. It may be interpreted as substitutive factor for *Legal capacity* and also as a measure of Members' overall freedom to engage in their trade issues. The indicator is an average of Members' yearly reported GDP over the investigation period.

Governmental efficiency and Influence of private actors

To account for Members' *Governmental efficiency* related to processing WTO trade issues the 'Judicial/Legal Effectiveness Integrity Index (JLEI)' is incorporated. It assesses the effectiveness and integrity of countries' legal and judicial system. It may be interpreted as the processing ability of their administrative structures that play an important role especially at the pre-litigation phase of disputes for gathering and exploitation of information on trade issues and communication with the private sector.

The *Influence of private actors* on governmental decisions in the DSM context is measured by the 'Corporate Legal Corruption Component (CLCC)', measuring legal dimensions of undue political influence by the private sector. It provides information on the private sector's ability to communicate its interests and petition the government, which is important as only governments have legal standing at the WTO. Both indicators are provided by KAUFMANN (2004).

Importance of the agro-food sector

The *Importance of the agro-food sector* for their economies is measured as the share of Members' agro-food related export value in their GDP. The data comes from the WORLD BANK (2007). The indicator represents an average over the investigation period.

Endured protectionism and Own imposed protectionism

Members' faced level of protectionism is measured by the Market Access Overall Trade Restrictiveness Index (MA-OTRI) provided by KEE ET AL. (2006). It comprises a tariff equivalent of all barriers in the agro-food sector that exporters of the respective country face on average across trade partners and commodities. The indicator refers to data stemming from 1995-1998 concerning the non-tariff component and from 2000-2004 for the tariff component of the aggregated MA-OTRI.

The indicator on Members' Own imposed protectionism is intended to capture aspects of strategic behavior in the DSM context and to account for Members' overall inclination towards the WTO's objective of free trade. It is a tariff equivalent of all trade barriers in the agro-food sector which the respective country imposes in average upon the rest of the world. It provides the mirror image of the aforementioned MA-OTRI indicator, measuring the trade

restrictiveness from the potential complainant's perspective and refers to the same period of measurement.

WTO membership time

To account for Members' operating experience with the DSM, the approach of GÖTZ ET AL. (2010) is followed by creating an index over the time since the inception of the organization until the end of the investigation period, relating each Member's membership time to the whole observation period. The associated data is from WTO (2007).

3.4.2. Bilateral variables

In the following the compilation of disputes, of trade flows and the newly introduced bilaterally dependent characteristics are motivated and described together with the data used. Disputes are the dependent variable in the estimation. Bilateral trade flows are not control variables but the foundation of the binary choice model, i.e. the observations or the binary choice situations. Data on bilateral trade flows come from EURO CARE (2006) available at HS-4-level. In contrast to GÖTZ ET AL. (2010) trade flows are purely bilateral, i.e. refer to the trade relationship between potential complainant and defendant Member.

Disputes data

Dispute initiations were collected that affected products of the agricultural and food sector. The investigation period is from January 1, 1995, to December 31, 2005, thereby slightly shortened compared to GÖTZ ET AL. (2010) to make the compilation of disputes consistent with the data on trade. The modus operandi for counting disputes is identical to GÖTZ ET AL. (2010): initiations are counted once excluding re-uptakes of disputes, jointly filed initiations are assigned each participant, filings on the same trade issue but with different Members are separately counted and for disputes of as well as against European Community (EC) Members there is one dispute assigned the EC, as complainant in the first and as defendant in the latter case. The data on disputes stem from WTO (2011).

Agro-food related trade retaliatory capacity

Members' trade retaliatory power is seen as especially relevant for the compliance phase after a pro-complainant ruling by the panel or Appellate body. The self-enforcing nature of the DSM charges the complainant with the enforcement of compliance. If the defendant refuses to bring its trade regime into account with its WTO obligations, the complainant party may be entitled to impose penalty tariffs on imports from the defendant party. Although retaliation may also be entitled under other agreements the level of imports in the affected sector is supposed to reveal information about the complainant's overall trade retaliation capacity. However, this retaliatory threat is only credible if the defendant's exports to the complainant's market accounts for a substantial amount in its total exports. The complainant's trade retaliatory power is measured as the defendant's share of agro-food export value to the complainant in the defendant's total agro-food export value. The data on trade flows and value come from EURO CARE (2006).

Agro-food export value to defendant

To complement the unilateral indicator *Importance of the agro-food sector* Members' aggregate agro-food related exports to the defendant's market is incorporated. The indicator provides an average over the investigation period. It is assumed that the overall export value provides information on the relevance of agro-food trade of the respective trade relationship between complainant and defendant. Hence, the aggregate export value is supposed to show a positive impact on complainant parties' dispute initiation probability. The data on Members' trade volume is from EURO CARE (2006).

Agro-food import value from defendant

The volume of imports from the potential defendant's market may reflect two different aspects of the relationship between complainant and defendant. First, the larger the volume of trade sent from the defendant to the complainant's market, the higher may the complainant's opportunities for trade retaliation be with respect to the defendant's market. Second, the volume of imports may be interpreted to incorporate information about intra-industry trade or agro-food products for consumption. A high volume of trade sent from the defendant to the complainant may thereby be associated with a dependency of the complainant's on the defendant's market, either for its industry or its domestic consumption.

This makes effective retaliation through penalty tariffs less likely. Hence, the complainant's import value may show a positive or a negative influence. The indicator is compiled as an average over the investigation period and the data is taken from EUROCARE (2006).

Export dependency and Import dependency from defendant

Both indicators show the defendant's relevance as trade partner. A complainant party's agro-food export sector might be more or less dependent on the defendant party's market. It is hypothesized that Members' export sector is more dependent on the defendant's market, the more they export to this market in relation to their overall agro-food exports. Hence, Members' stronger *Export dependency* on certain trade partners is assumed to show a positive influence on their probability to complain against those partners.

Members' *Import dependency* might show a positive or a negative influence. The more they import from certain partners relative to their overall imports the more dependent their import sector from those partners. This *Import dependency* might have a negative impact on their ability to impose retaliation measures against those partners for the reason that they just cannot afford to cut off the affected imports. From this follows that *Import dependency* might show a negative impact on their decision to initiate disputes against their respective partners because their dependency makes potential retaliation measures and thereby also the successful accomplishment of the dispute unlikely. On the other hand a high *Import dependency* may imply a substantial amount of imports from the respective defendant, suggesting a high retaliation capacity. Hence, the indicator on *Import dependency* might capture the aspect of trade retaliatory power and thereby could show a positive influence on Members' probability to complain against the respective partners.

Export dependency is measured as the share of complainants' agro-food export value to the defendant's market in complainants' overall agro-food export value. Members' *Import dependency* is measured as the share of complainants' agro-food import value from the defendant's market in complainants' overall agro-food import value. The data on trade flows and values stem from EUROCARE (2006).

3.5 Statistical Implementation and Results

The selection of relevant variables is based on the Akaike information criterion. This procedure trades off the inclusion of additional variables against the increased fit of the model. Incorporating additional explanatory variables improves the goodness of fit regardless of the number of free parameters in the data generating process. The increased complexity is penalized by the Akaike indicator thereby mitigating the danger of over-fitting. The preferred model specification is that one showing the lowest information criterion value. All different model specifications are evaluated, i.e. all specifications are estimated and their corresponding information criterion value calculated. A test on joint significant influence is conducted for the best specification under each value threshold on export flows, i.e. that one yielding the lowest information criterion value. Variables' joint significant influence is verified by an asymptotic significance test based on the bootstrapped sampling distribution of the estimator (see EFRON AND TIBSHIRANI 1994). The quality of the model is further on validated by a likelihood ratio test. In this process the logarithmic likelihood function value of the unconstrained ML estimator $\hat{\beta}$, is compared with the log-likelihood function value of the constrained ML estimator $\tilde{\beta}$, which is obtained by maximizing the logarithmic likelihood function subject to the linear restrictions $\tilde{\beta}_k = 0 \forall k \neq 0$. The LR test statistic is computed as

$$LRTS = 2 \left[\ln L \left(\hat{\beta} \mid \mathbf{x}_{ij}, c_{ij}, n_{ij} \right) - \ln L \left(\tilde{\beta} \mid c_{ij}, n_{ij} \right) \right],$$

(2.15)

which has a Chi-squared distribution with degrees of freedom equal to the number of imposed restrictions.²⁴

²⁴ Estimation, selection of variables, the likelihood ratio test and the testing procedure are implemented in GAMS (General Algebraic Modeling System), see BROOKE, A., KENDRICK, D., MEERAUS, A. AND R. RAMAN (1998): GAMS - A User's Guide, Washington, D.C. Standard errors of the coefficients are calculated for 2000 re-sampling iterations. The bootstrap re-sampling procedure is conducted in GAUSSTM, see <http://www.aptech.com/>, 2011-04-17.

According to this proceeding six of the considered determinants are retained in the final specifications: (1) *Endured protectionism*, (2) *Own imposed protectionism*, (3) *Influence of private actors*, (4) *WTO membership time*, (5) *Agro-food import value*, and (6) *Agro-food export dependency* from defendant result in a sufficient increase in the goodness of fit. However, their selection changes dependent on the imposed threshold. For the application of the \$0 threshold the (3) *Influence of private actors*, (4) *Operating experience*, (5) *Agro-food import value*, and (6) *Agro-food export dependency* are selected, under the \$500K and the \$700K thresholds the (3) *Influence of private actors*, and (6) *Agro-food export dependency*, and for the \$300K threshold Members' (2) *Own imposed protectionism* are additionally discarded in the variable selection process. The (3) *Influence of private actors* is only selected when no threshold on export flows is applied in their compilation. Table 3.2 comprises the results for the selected specifications of the unrestricted model subject to different thresholds on export flows. The standard errors are given in brackets behind the respective coefficients. All variables show their expected sign and except for the variable (2) *Own imposed protectionism* are shown to be statistically significant. The indicator (5) *Agro-food import value* turned out to show a positive impact on Members' likelihood to file cases, as expected under the trade retaliation related hypothesis.

Table 3.2: Results for specification selections subject to different thresholds on export flows

Exploratory variables	Threshold on export value			
	\$0	\$300K	\$500K	\$700K
BETA 0	-14,025	-12,078	-11,811	-11,643
Endured protectionism	not included	2.150*** (0.89)	2.196*** (0.92)	2.269*** (0.87)
	included	not included	-0.516 (0.66)	-0.511 (0.66)
Influence of private actors	0.734*** (0.31)	not included	not included	not included
	3.923* (2.67)	3.754* (2.47)	3.887** (2.09)	3.864** (2.31)
WTO membership time				
Agro-food Export dependency	0.972** (0.47)	not included	not included	not included
	2.652*** (0.21)	1.384*** (0.33)	1.108*** (0.30)	0.981*** (0.35)

* Significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level
 Level of significance for Likelihood ratio test on model specification: 1% under all thresholds.
 Source: Own compilation.

The likelihood ratio test proves a significant amendment of the model based on the incorporation of the addressed determinants. For all thresholds the concerned variables' joint contribution could be substantiated at the 1% level.

As hypothesized Members facing higher levels of protectionism in their agro-food trade relations show a higher probability to file agro-food related disputes. This is in accord with the objectives of the system where we would expect that more protectionist policy measures are likely to trigger arbitration about them. Demonstrated as relevant influence in the empirical study of GÖTZ ET AL. (2010) and even though selected with the hypothesized sign the impact of Members' own tendency towards protectionist policies could not be substantiated in this bilateral context.

Supporting the arguments of SHAFFER (2003a, 2003b) and HOEKMAN AND MAVROIDIS (2000) on the relevance of private lobbying activities during the pre-litigation stage, the influencing power of private sector interest is demonstrated. However, the respective control variable is only included under the lowest threshold. This suggests that when higher valued trade stakes are involved lobbying activities are of minor relevance in governments' decisions on adjudication. Put differently, lower expected gains from disputed trade may require higher lobbying efforts to prompt governments to pursue a costly WTO dispute.

Confirming the findings of DAVIS and BERMEO (2009) and GÖTZ ET AL. (2010), Members' operating experience clearly shows a significant impact under all thresholds on export value. This may be due to its fixed cost decreasing influence as emphasized by DAVIS AND BERMEO (2009) and GÖTZ ET AL. (2010) and increased efficiency in processing disputes through learning.

Members' *Agro-food export dependency* has a significant positive impact, confirming the relevance of the trade relationship with the defendant, i.e. the relevance of the disputed market in the decision to file a case. Although the more selective indicator on *Agro-food related trade retaliation capacity* does not turn out to show an influence on variation in disputes, Members' *Agro-food import value* from the defendant is selected with positive sign under all thresholds and significant. Hence, the higher volume of trade that goes to complainants' markets from defendants is not decisively reflected in their overall agro-food related importance to defendants. However, the positive influence of the absolute market-related import value may imply that Members have the potential to impose a critical damage to the defendant's market. On the other hand, Members' import value might be connected to the issue of import-competition. In this case the indicator may reflect the value of prospective gains for domestic import-competing firms suggesting an incentive for related disputes. However, a more precise assessment of this potential issue would require a more detailed and case study based analysis incorporating information on the subject of the dispute and on affected firms and trade flows.

The *Importance of Members' agro-food export sector* could not be supported. This may reflect that agro-food exports play a minor role in the economy of the most active users of the system, e.g. the U.S. and the EC. As in GÖTZ ET AL. (2010) the influence of Members' *Capacity to absorb legal costs/wealth* and their *Governmental efficiency* could not be substantiated. Also, their *Agro-food export value* to and their *Agro-food import dependency* from the defendant could not be demonstrated to show an influence.

3.6 Conclusions

This paper presented an analysis of the determinants for initiating WTO disputes related to the agro-food sector. The investigation built upon on the analysis of GÖTZ ET AL. (2010) but shifted the focus to bilaterally dependent Member

characteristics that are connected to their trade relationships. Bilateral indicators reflect Members' relevance as trade partner to each other and are especially relevant for enforcement of compliance, like the complainant's trade related retaliatory capacity and its dependency on the defendant's market. Unilateral characteristics taken from GÖTZ ET AL. (2010) were also tested. The empirical model representing Members dispute initiation decision as Bernoulli trials – with probabilities modeled by a logistic distribution – was applied to 53 WTO Member countries. The bilateral approach involved an estimation problem related to a skewed sample in terms of few bilateral WTO disputes in contrast to the huge number of trade flows as observations. To allow for an efficient estimation the Weighted Endogenous Sampling Maximum Likelihood (WESML) estimator developed by MANSKI AND LERMAN (1977) was applied.

The results show that some of the determinants relevant in previous dispute studies such as financial means and legal capacity could not be confirmed as statistically relevant in the context of the agro-food sector. Also, the influence of simple trade related characteristics like export and import value in the sector could not be substantiated. It could be shown that the level of faced protectionism, the relevance of private sector influences in their economy, and their operating experience with the DSM significantly increase Members' likelihood to file complaints. Regarding bilaterally dependent trade characteristics, the positive impact of Members' Agro-food export dependency and their Agro-food import value from the defendant on their initiation probability is empirically supported. Their influence can be motivated as showing the defendant's relevance as trade partner for the complainant and the complaint's capacity to threaten retaliation with respect to the defendant's market, respectively.

Further research should focus on the improvement of data quality to validate or disprove the findings on insignificant influences of some variables, for example on Members' overall dispute processing and administrative capacity. A more selective measurement of Members' trade related retaliatory capacity, which is relevant for enforcement, might contribute to a better understanding of this issue in trade disputes.

3.7 References

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4 The drivers of dispute initiation under the World Trade Organization

4.1 Introduction

The Dispute Settlement Mechanism (DSM) is the central device to resolve trade issues between Members related to their multilateral agreements under the World Trade Organization (WTO). The arbitration and enforcement of WTO law is not hierarchical but Member-driven in nature. This implies that all stages and actions of a dispute, starting from the request for bilateral consultations over panel proceedings up to the enforcement of panel and Appellate Body rulings are based on the initiative of the parties to the dispute. From this follows that two major factors influence Members' decision about filing of and their performance in WTO disputes. First, disputes are based on economic incentives of the adjudicated trade issue, i.e. expected gains from disputed trade and related costs, and, second, Members' endowment with resources and the characteristics of their economic environment and political economic relationship with each other.

Several empirical papers have focused on the DSM in order to identify the determinants of its use. This chapter aims at integrating their findings into an extensive theoretical framework for the use of the DSM in view of its economic incentives. The focus is laid on Members' decision about filing a dispute.

The procedure of the chapter is to set up an economic model in order to demonstrate the underlying rationales for initiating WTO disputes together with the related major influencing factors at the different stages of disputes. The first part of the chapter is along the line of a cost benefit analysis. We start from a simple rationale where we assume that the gains from disputed trade are traded-off against related litigation costs. This trade and litigation cost model is then stepwise refined by extending it to further aspects of disputes, specifically uncertainty issues and Members' political and economic linkages. Hypotheses about the economic rationales that lead to the establishment of the model and the relevant influencing factors are motivated both by the discussion of empirical findings as well as economic theory, where determinants are content-wise grouped under sections. This cost-benefit analysis is then complemented by the second part of the paper stressing issues of the pre-litigation phase of disputes, especially the private sector role and political economy drivers.

The structure of the chapter is as follows: The first part discusses the determinants of the assumed cost-benefit analysis behind disputes and comprises (1) complainant's trade objective and related direct costs, the (2) potential indirect costs of dispute initiation that might occur due to political and economic linkages with trade partners, and the (3) problem of uncertainty of a successful resolution of the issue. This is complemented by the second part on aspects of the pre-litigation phase and the political economy process behind disputes before concluding.

Table 4.1 provides a survey on the empirical studies cited in this chapter. It comprises information on their investigation period, dispute coverage, and research question, used model and incorporated determinants. Table 4.2 depicts their findings referring to the issue of the analysis and grouped according to the sections of this chapter.

4.2 Determinants of the economic initiation condition

4.2.1. Trade objective and related direct costs

The primary objective of filing a dispute is improved access to the respondent's market. Trade disputes may target protective policy measures that directly decrease the complainant's market access through tariffs or non-tariff policies like SPS-measures or trade remedies or they may relate to measures that indirectly harm the complainant's market through subsidies, the discrimination between products from different sources or by non-compliance with the provisions on intellectual property rights.²⁵ In either case the complainant's export opportunities are impaired through the deterrence from the market or through distortion of competition.

Filing a dispute is rational from the constrained trade related cost-benefit perspective, if the net present value of the dispute is positive, i.e. if the present value of the gains from expanding trade exceeds the direct costs of the dispute

²⁵ Trade remedies refer to measures under the Antidumping agreement, the Countervailing duties agreement and the Safeguards provisions.

(see BOWN AND HOEKMAN 2005).²⁶ Direct costs include all necessary expenditures that are associated with preparing and pursuing the case, namely pre-trial costs stemming from gathering information, communication with affected export- and import-competing firms, preparing the case, conducting bilateral consultations and preparing submissions and panel hearings. Formally, Member i 's decision to file a dispute is rational, if

$$\sum_{t=1}^T \delta_i^t \left[\prod_{ijk}^t(0) - \prod_{ijk}^t(\tau) \right] - C_{ijk}^D > 0, \quad (3.1)$$

where $\prod_{ijk}^t(\tau)$ are export profits of prospective complainant i from trade in commodity k with potential defendant j in period t with the trade barrier τ in place, $\prod_{ijk}^t(0)$ are export profits without export restriction, δ_i is complainant i 's discount factor and C_{ijk}^D are the costs that are associated with the formal WTO dispute settlement process as well as with the phase of preparing the dispute and possible informal bilateral consultations. Direct costs are associated with the affected market k as they might differ dependent on the trade issue's characteristics. T denotes the planning horizon, i.e. a reasonable number of periods considered as relevant for the government's calculations.

A finite planning horizon seems to be more realistic in this cost-benefit calculation than an infinite time horizon. As the described cost-benefit calculation refers to the allocation of scarce resources, i.e. administrative and monetary capacities raising costs almost instantly compared to the uncertain pay-offs, it is reasonable to assume that gains of the remote future do not come into play, since such pay-offs would be rather dependent on unforeseeable influences on production and market developments than on today's decision about initiating the dispute. Direct costs occur with government's decision to accept the case for consultation under the WTO. After the government was informed about a trade infringement – whether by affected private sector firms or by its trade monitoring agencies – it has to decide to further pursue or to discard the case. Hence, for simplicity all costs gathered in C_{ijk}^D can be assigned the time of the government's

²⁶ BOWN AND HOEKMAN 2005 start from this simple model to discuss proposals that could reduce the size of litigation costs for poor country complainants and the uncertainty about the size of those costs and of potential market access benefits.

acceptation decision, whereas gains from expanded exports are assumed to occur later.²⁷

Both for tariff as well as for non-tariff measures the benefit from expanded trade through removing the trade barrier is supposed to be positively related to the value of affected exports. As non-tariff policies like SPS-measures may lead to a cut of the affected exports up to their total amount the potential export gain is increasingly related to $\prod_{ijk}^t(0)$. Likewise, a percentage cut of exports through tariff measures is non-decreasingly related to the maximal trade value in the absence of the trade barrier.

Future gains from expanded trade are weighed with discount factor δ_i . The lower the government's discount factor, i.e. the more present-oriented the complainant, the larger the weight of the liberalization outcome in the calculation, i.e. the higher trade gains must be to fulfill equation 1. Differences in planning horizon and discount factor may reflect characteristics of trade issues and capacities of Members. First, this may reflect the difference between governments' general strategies for the enforcement of their trade opportunities under the WTO and long-term trade interest on the one hand and short-run market-opening concerns of private firms on the other hand that come onto the government's agenda through private lobbying activities. A larger planning horizon T together with a low discount factor then reflects a more strategic and future-oriented trade policy. Second, planning horizon and discount factor may reflect capacity constraints of the Member. If a Member has a larger planning horizon and high discount factor current direct costs then carry a lower weight in the calculation. Put differently, the complainant has more means and freedom in terms of resources and can afford to enter disputes even if the invested resources would pay off only in the longer run.

²⁷ If the parties to the dispute reach a mutually agreed solution in their bilateral consultations leading to a removal of the infringement, the gains from expanded trade may occur after several months, depending on the respondent's ability to restructure its trade regime quickly. However, if the dispute takes the full length of the settlement procedure a final ruling is due with the Appellate Body's ruling after 18 months according to the WTO provisions. If the final ruling is in favor of the complainant the respondent is required to comply with the violated agreements during the course of an arbitrated 'reasonable period of time'. Hence, even in the case where the respondent is willing to comply with the ruling, a time span of two to three years until the expected trade gains occur is not very unlikely.

The positive influence of trade stakes, i.e. of the dependence on the affected export market and of the costs of litigation on the decision for filing a dispute is substantiated by the literature. According to REINHARDT (2000) “Increasing dependence on foreign trade raises the stakes in leveling the playing field, which motivates states to lodge disputes against their partners”. DAVIS AND BERMEO (2009) identify the stake in liberalization which is dependent on the level of trade volume as one of the main reasons that justifies investing resources into a trade dispute. HORN ET AL. (1999) mark the beginning of empirical studies on the use of the DSU and show by their application of a binomial dispute distribution model that Members’ overall export value and diversity increases their probability for dispute initiation.²⁸ For the group of developing countries DAVIS AND BERMEO (2009) could not confirm a significant impact of trade diversity on their propensity to initiate disputes. This might suggest that their initiation behavior is influenced by other characteristics that are opposed to their liberalization interests in their trade partner’s markets.

GÖTZ ET AL. (2010) focus on disputes in the agro-food sector and show that the variation of disputes across Members is partly explained by selecting trade flows based on a value threshold. They apply three different value thresholds to count Members’ overall WTO-related bilateral export flows, where the value thresholds correspond to average litigation costs for cases of different complexity under the DSU. The application of the lowest threshold improves the model’s prediction quality, however higher thresholds do not show a considerable effect. This may suggest that export flows have to exceed a minimum value to make them relevant for the consideration to dispute, where this minimum threshold corresponds to average litigation costs for a less complex case under the DSU as reported by NORDSTRÖM (2005).²⁹ HOLMES ET AL. (2003) without differentiating

²⁸ HORN ET AL. (1999): Their model is based on 77 Members’ total number of different export flows in all sectors against all other WTO Members in the sample including 155 requests for bilateral consultations over the period from 1995-01-01 to 1998-21-31. They conclude that the variation in dispute initiation is to a large extent reflected in Members’ export diversity. As for their sample export value is strongly correlated with Members’ export diversity (0.64), they argue that both export diversity as well as export value to a large extent reflect the differences in dispute initiations over Members.

²⁹ NORDSTRÖM (2005): Based on Data stemming from the Advisory Centre on WTO Law (ACWL) he calculates average litigation costs for three scenarios in terms of cases’ complexity. According to their calculations less complex cases involve about \$300K, medium complex cases about \$500K and highly complex cases about \$700K. Cost calculations merely incorporate the legal expenses

between exports and imports show that Members' number of disputes is highly correlated with their overall share in world trade³⁰, supporting the findings of HORN ET AL. (1999) that trade volume and export diversity are closely correlated.

Concerning countries' decision to join filed disputes as co-complainant or as interested third party BOWN (2005a) provides support for the positive impact of a country's volume of exports at stake and BOWN (2005b) demonstrates its positive impact on the likelihood to complain against United States imposed trade remedies.³¹ BOWN (2005a) argues that Members that are more reliant on the defendant's market for their exports are more likely to participate in disputes. Their dependency on the defendant's market may stem from a market-specific fixed cost of exporting, e.g. by investments in terms of a sales and logistic infrastructure. As a consequence, they may be more concerned about their ability to deflect lost trade to alternative third markets and thereby be more prone to engage in a dispute on this market. However, BOWN (2005a) could not find empirical support for this argument.

REINHARDT (2000) shows that states are more likely to initiate disputes, and to be targeted as well, when a high proportion of their Gross Domestic Product derives from imports and exports with the respective partner, i.e. if they are more dependent on trade with their partner both as exporter and importer. Focusing on developing countries DAVIS and BERMEJO (2009) could not confirm a significant impact of trade interest measured as overall trade value in GDP and argue that trade interests may be more useful to explain variation of disputes between countries with more and less diversified export sectors, but not for the subset of developing countries.

oriented at legal fees for hired international lawyers that are associated with persecution and do not involve any other costs related to preparing the case, allocating governmental and administrative resources or potential political costs that might result from the trial. Information on the ACWL is available online at <http://www.acwl.ch/e/index.html>, 2010-11-17.

³⁰ However, they also report a change over time. Over the period 1995-1998 82% of the variation in disputes is reflected in the variation in trade, this changes to 67% for the period 1999-2002. Additionally, the high correlation between dispute and trade share is dominated by the EC and the US, both Members that do not face capacity constraints or potential other impediments that are discussed under the following paragraphs.

³¹ BOWN (2005b): Both the size of export value lost through a U.S. trade remedy as well as the size of the trade remedy itself is identified as relevant determinant of Members' likelihood to challenge the respective policy measure.

From the perspective of litigation costs the selection of trade flows in the application of the model used by HORN ET AL. (1999) and GÖTZ ET AL. (2010) reflects the thought that only those trade flows come into consideration to dispute that are worth enough to bring to trial. The imposition of thresholds for the compilation of Members' total number of bilateral export flows accounts for the idea of fixed costs of litigation. The application of parameterized thresholds of \$1k, \$1m, and \$10m in HORN ET AL. (1999) results in an increased fit of their model related to the threshold level, whereas GÖTZ ET AL. (2010) could confirm an increased fit only for the lowest empirical threshold of \$300K, suggesting the above mentioned condition of a minimum value of export flows for the initiation decision.

Litigation costs under the DSU are discussed in several studies focusing on developing countries' access to the system. DELICH (2002) points out that there is a common concern among developing countries regarding "the costs associated with submitting, pursuing, and defending cases developing countries regarding "the costs associated with submitting, pursuing, and defending cases and the scarcity of human resources for dealing with increasingly complex issues". BUSCH AND REINHARDT (2000) state that the increase in legalization brought by the WTO DSU considerably raised transaction costs and BUSCH AND REINHARDT (2003) argue that this increases the burden to use the system especially for poor countries. Developing and least developed countries (LDC) typically export commodities with low profit margins and their export sector is characterized by small and medium size enterprises. This presumably causes their gains from expanding exports through a trade dispute to be too low to make them worth enough to fight for, i.e. inequality 4.1 might not be fulfilled for most of their potentially disputable trade issues.

Contrary to that DAVIS AND BERMEO (2009) find that in many potential WTO disputes, the trade stakes for developing countries are large enough to engage in a dispute which is on the same line like the finding on the financial aspect of disputes in a paper submitted by the Mexican delegation to the WTO. According to WORLD TRADE ORGANIZATION – MEXICAN MISSION TO THE WTO

(2007) the value of disputed trade is likely to outweigh the involved litigation costs for developing Members' major trade issues.³²

However, from the fact that the trade stakes are large enough it does not follow the conclusion that capacity constraints do not play a role. First, gains through expanded trade lie ahead in the future, are uncertain with respect to a successful ruling and compliance but resources to process the dispute are needed at present. Second, governments cannot delegate all tasks to private law firms. Identifying the violation and assessing whether the expected benefits justify the involved costs of the dispute has to be accomplished by the government. Hence, even if the trade stakes are high enough implying that inequality 4.1 is fulfilled the uncertain expected gains cannot be used to pay for the expenses that are currently associated with effectively processing the case. GUZMAN AND SIMMONS (2005) demonstrate that developing countries focus on large markets in choosing defendants and argue that Members thereby pursue the strategy to allocate their scarce domestic financial and personnel resources to the highest valued trade issues.³³ A country with less capacity faces higher opportunity costs when it files a complaint. Put differently, focusing on large markets means minimizing the opportunity costs of disputes in the presence of scarce resources. This strategy reflects a prioritization of potential disputable trade issues according to the underlying rationale formally described in inequality 4.1 and associated with a ranking of trade issues by their opportunity costs.

³² WORLD TRADE ORGANIZATION – MEXICAN MISSION TO THE WTO (2007): Based on calculations of legal expenses for legal services on an hourly basis provided by the Advisory Centre on WTO Law (ACWL) and comparing them with the trade stakes for Ecuador in the Bananas Case raised by Ecuador, Guatemala, Honduras, Mexico, and the US against the EU in 1996 they infer that "financial aspects of engaging in a WTO dispute do not seem to be at the core of the problem.". According to their calculations the maximal expenses for ACWL services required for pursuing the cases equal half-a-day of Ecuador's losses stemming from the EU trade infringement in its banana import regime.

³³ GUZMAN AND SIMMONS (2005) investigate the question if disputes under the WTO are driven by power considerations or by capacity constraints and find their empirical results to be consistent with the capacity hypothesis, namely that potential complainants choose their defendants in accordance with their resources. According to their results Members are the more attractive as defendants the higher the prospective market access gains and thereby the lower the opportunity costs of the disputes, i.e. the larger the defendant's markets. As market size in their theory is correlated with political and economic power the power hypothesis, i.e. that complainants are selecting weaker defendants, is not supported. They model capacity costs C as a function of the resource costs Q including monitoring and investigation of policy measures, negotiating, filing and litigating a case and Members' available resources R , such that $C=Q/R$ and assume Q to be constant across all disputes.

Operating experience with the system is likely to decrease direct costs of disputes. Governmental officials learn by going through the process of working with lawyers³⁴, information stemming from cases might be of help in the interpretation of other cases, and an increased attentiveness to trade issues and understanding of the process among industries might help in the upstream process of gathering and disclosure of information and the transfer and mediation of the private sector's trade interests.

According to DAVIS AND BERMEO (2009) this experience shows a strong effect on Members' cost structure when using the DSM. They hypothesize that most developing countries face high startup costs when they use the DSM to adjudicate their trade issues because of their weak trade policy infrastructure. This suggests that direct costs may be differentiated with respect to fixed and variable costs of the process, where fixed costs comprise the expenditures for WTO-related capacities in terms of building efficient domestic bureaucratic structures, official procedures and personnel. Once established, those structures provide the basis for an effective and automatic processing of trade disputes. The costs that are related to the 'birth' of trade issues, e.g. monitoring, gathering information, identifying violations, dealing with private sector petitions and preparing the arguments for negotiations are likely to be case-independent and may be absorbed in the trade agency's operating budget. Additional expenditures as case-dependent variable costs may then arise when legal expertise is employed, e.g. by engagement of international trade law firms.

From this differentiated cost perspective developing countries with a weakly developed trade-policy infrastructure may be dependent on hiring private counsel for their cases whereas well-endowed Members may rely on their domestic lawyers. This may be an additional burden for them to engage in cases. Confirming their argument on the relevance of startup costs and the influence of experience in this context DAVIS AND BERMEO (2009) demonstrate how learning through prior disputes either as complainant or as defendant increases developing countries' probability to initiate disputes.³⁵ GÖTZ ET AL. (2010) find empirical

³⁴ DUPONT ET AL. (2006) show in simulation experiments how the negotiation ability of developing country diplomats is positively influenced through experience.

³⁵ Additionally, DAVIS AND BERMEO (2009) demonstrate the experience shows diminishing returns, i.e. that its impact on the initiation probability decreases after several filed cases. For developed

support for the positive impact of Members' operating experience on their number of filed disputes, measured as their membership time.

Additionally, costs are assumed to be dependent on the organizational effectiveness of administrative structures. Highly integrated and developed trade administrations having special agencies for WTO adjudication as realized in the U.S. and the EC are more efficient. Hence, fixed cost-related institutional capacities generate economies of scale for processing trade issues. As countries' governmental system is intertwined with their administrative structures and statutory framework of their domestic political process it might show an influence on Members' predisposition and ability to use the WTO dispute settlement system.

Democratic governance is likely to offer an advantageous starting position in this respect. First, democratic states might show a higher commitment to judicial processes of dispute resolution and thereby also to their engagement in adjudicative practices on the international level, second, may have a better understanding of adjudication and negotiation processes, and third, might be better equipped with capable lawyers and administrative personnel (DAVIS AND BERMEO 2009). This familiarity with democratic governance and judicial processes may decrease fixed costs of litigation. REINHARDT (2000) examining this determinant both for the GATT and the beginning of the WTO period provides empirical evidence that democracies had a higher likelihood to initiate disputes over the period 1948 to 1998. BUSCH (2000) shows empirically that highly democratic dyads in the WTO context have a higher probability to achieve concessions at the consultation stage and DAVIS AND BERMEO (2009) in their study focused on developing countries demonstrate that democracies are more likely to initiate disputes.

4.2.2. Potential indirect costs of dispute initiation

On the costs side direct litigation and pre-trial costs C_{ijk}^D are complemented by indirect costs of a dispute. Indirect costs may be associated with filing a

countries experience does not yield any impact and they argue that startup costs are a relatively minor obstacle for them as they have greater resources to substitute for this. Another explanation for this may be that they are equipped with a better trade policy infrastructure thereby facing lower start-up costs.

complaint as a consequence of close economic, political or military interdependencies between the complainant's and the respondent's economy that potentially add to the dynamic of the procedure. There may result economic damages caused by the dispute, if the defendant seeks for outer-WTO retribution, e.g. by cutting bilateral economic aid, military defense cooperation or preferential market access for the complainant granted under the general system of preferences. The complainant may have to fear a counter-complaint. Additionally, the political relationship with the respondent may be harmed in general as a dispute might be interpreted as a hostile and contentious act.³⁶

In the broader sense all influences that are connected to strategic considerations and that may take influence on Members' behavior in negotiating disputes can be subsumed under the potential indirect costs of disputes. Formally, those potential indirect costs of a dispute are gathered in term C_{ij}^I and are independent of the affected market (denoted by k) and dependent on the political and economic relationship between complainant and respondent, resulting in a new version of inequality 4.1,

$$\sum_{t=1}^T \delta_t^I \left[\prod_{ijk}^t (0) - \prod_{ijk}^t (\tau) \right] - (C_{ijk}^D + C_{ij}^I) > 0. \quad (3.2)$$

The literature provides evidence on the relevance of the aforementioned indirect costs of disputes. There are examples for countersuits and REINHARDT (2000) provides empirical support for their occurrence.³⁷ Members' probability of initiating a dispute against their trade partner is significantly increased if they were targeted by that trade partner in the previous year. From this follows that disputes are also used as a retribution measure or within a tit-for-tat strategy. GÖTZ ET AL. (2010) demonstrate how Members exert self-constraint in using the DSM in order to not provoke to be challenged themselves when their trade policies are more protective. This reveals a strategy not to put certain political

³⁶ BRECKENRIDGE (2005) in his case study on Costa Rica's challenge of US restrictions on imports of underwear (WT/DS24) shows how anticipated political costs may influence the initiation decision. He reports that in the beginning Costa Rican foreign affair officials were hesitant to file a complaint for fear of damages to the political relationship with the US.

³⁷ GUZMAN and SIMMONS (2005) provides an example for a countersuit: Brazil's request for consultation (WT/DS/70 and 71) about Canadian aircraft subsidies followed Canadian's complaint against Brazil made 9 months earlier on the same issue (WT/DS/46).

objectives at risk that are achieved through protectionism and may also be motivated by political economy drivers discussed further below.

Concerning potential economic losses that might occur as a means of retribution, BOWN (2004a) argues that small developing countries might not initiate disputes because they fear of losing bilateral aid and unilateral trade privileges granted under the generalized system of preferences. BOWN (2005a) demonstrates a negative impact of Members' dependency on bilateral aid on their probability to join disputes as co-complainant or interested third party. BOWN (2004b) shows that developing countries as defendants were more likely to yield compliance when they received bilateral economic aid from the complainant Member.³⁸

BESSON AND MEHDI (2004) focusing on the matter of success in disputes suggest that international economic obligations show influence on Members' chances to win disputes and find empirical evidence that the reliance on bilateral economic aid significantly decreases their probability of success. This suggests that developing countries constrain themselves in order not to put their privileges at risk. Taking recourse to the dispute settlement mechanism is thus a less favorable option for them as the successful resolution of the concerned trade issues crucially depends on complainants' performance in the procedure. In addition, the results of BESSON AND MEHDI (2004) support that defendants' military power in terms of the military expenditure gap between complainant and defendant shows a negative impact on developing countries' likelihood to win disputes. According to their interpretation, trade disputes are dependent on the political relationship and thereby the result of power and conflicts between countries. The interpretation also includes that political powerful states are able to 'seize' legalized procedures like the DSM.

Taking power imbalances and dependencies into account in the bilateral political relationship between complainant and respondent is based on the rationale that power is defined by its means, i.e. Members' resources that allow them to impose their interests on others. According to IIDA (2002) power

³⁸ This finding is based on descriptive statistics: He shows for a set of 23 developing countries over the period 1978-1998 that the mean share of aid received from the complaining Member in case of liberalization is nearly twice the share (9.61%) when no liberalization occurred (5.68%). Of the aid-receivers 43% complied whereas of the non-aid-receivers only 33% complied.

considerations are likely to influence the dispute settlement procedures through bilateral arrangements between the parties to the dispute and also to facilitate favorable decisions despite of agreement violations. From the viewpoint of international organization and political science literature, Members' capacity in terms of financial, administrative and personnel resources is seen as a means of power, giving them an advantage in legalized systems (ABBOTT AND SNIDAL, 2000). This runs contrary to the findings of GUZMAN AND SIMMONS (2005) that power considerations are playing a minor role in the calculations of developing countries as they focus on the large markets to overcome their capacity constraints.

However, an issue that is difficult to account for in the empirical analysis on drivers of the DSM is the high share of cases that are settled 'out-of-court', i.e. before a panel ruling and even before the request for a panel.³⁹ The problem related to this is that the influences behind the largest share of negotiated trade issues are difficult to account for in empirical analysis. As BUSCH AND REINHARDT (2003) argue, 'negotiations are still the driving force behind WTO dispute settlement, notwithstanding the more legal architecture of the DSU'. Hence, it is at this stage where unobserved negotiation strategies and bargaining power come into play that are not accounted for so far in econometric analyses of initiation behavior. As BUSCH AND REINHARDT (2000) report, most cases settle at an early stage, and most of the fullest concessions are reached in early settlement. From a strategic viewpoint, this success of early settlement might depend on the ability to credibly threaten to proceed through all stages of a dispute. Besides Members' ability to threaten retaliation – e.g. through retaliatory tariffs, as described under the next paragraph referring to uncertainty issues – the abovementioned power and political cost considerations may influence their bargaining power in consultations.

³⁹ Early settlement and mutually agreed solutions are encouraged by the legal framework of the DSM. BUSCH and REINHARDT (2000) report that about 80% of all disputes end prior to a panel ruling and most of them without request for a panel.

4.2.3. Uncertainty of panel decision and compliance

The outcome of a WTO dispute is uncertain with respect to (1) a favorable ruling of the panel process and (2) an economic successful outcome, i.e. if compliance is satisfactory from the complainant's perspective. A defendant might be unwilling to bring its trade regime into account with the agreement even after a positive ruling for the complainant. The rationales for non-compliance are the same as those for the implementation of protectionism.⁴⁰

First, countries can benefit from introducing import duties provided that the rate of the duties are below a certain critical level and that trade partners do not retaliate by imposing higher duties on their own (BICKERDIKE 1906 and JOHNSON 1953). Large Members in terms of market size can manipulate the terms-of-trade to their advantage by imposing import tariffs and JOHNSON (1953) and KENNAN AND RIEZMAN (1988) demonstrate that countries gain by starting a tariff war if their market is substantially larger than that of their trade partner even if retaliation occurs. BOWN (2002) demonstrates with a theoretical model applied to the WTO dispute settlement mechanism how Members with the capacity to take advantage of their terms-of-trade gains implement WTO illegal protection when their trade partners do not have the potential to impose terms-of-trade losses through retaliation.

Second, drawing on the concept of social welfare maximizing governments and by applying the findings of BALDWIN (1987) on the correspondence between the concept of social welfare maximization and political economy drivers in the context of tariff-setting⁴¹, a defendant would maintain the trade barrier if it gives too much weight to export profits. However, as argued by STIGLER (1971) and PELTZMAN (1976) governments seldom aim at policies to maximize social welfare. Their motivators for implementing and maintaining protectionist policies might more likely stem from the driving forces in the political process as analyzed

⁴⁰ See e.g. BALDWIN (1982) and HILLMAN (1990) for an overview on Political economy approaches to the implementation of protectionism. BOWN (2002) provides the theoretical grounds why WTO Members choose to implement WTO inconsistent protection. xxx

⁴¹ BALDWIN (1987): Baldwin starts from a social welfare maximizing model referring to it as the "deus ex machina" process of tariff formation, where a government maximizes weighted consumer surplus, firms' profits and tariff revenue. He then compares it with a standard model of political economy driven tariff formation and analytically shows that both models yield the same optimization result.

by BROCK AND MAGEE (1978), FEENSTRA AND BHAGWATI (1982), FINDLAY AND WELLISZ (1982), MAYER (1984) and GROSSMAN AND HELPMAN (1994 and 1995).

Third, from this political economy perspective the decision about compliance in response to the retaliation threat is determined by the relative influence of competing interests in the economy (see GOULD AND WOODBRIDGE 1998). Concerning non-compliance, it might be rational for the defendant to keep the trade barrier in place if the political support received from its profiting export sector exceeds the loss of political support from competing free-trade interests. Finally, the compliance process might involve considerable adjustment costs for the infringer through the reorganization of the implemented trade regime. Those costs might differ among Members, markets, political systems and type of policy measure.

Both aspects of uncertainty can formally be introduced as probabilities, (1) the probability of a successful ruling and (2) the probability of satisfactory compliance modifying the first summand in inequality 4.1 to the expected gains from expanding trade,

$$\pi_{ij}^S(\cdot)\pi_{ij}^C(\cdot)\sum_{t=1}^T\delta^t\left[\prod_{ijk}^t(0)-\prod_{ijk}^t(\tau)\right]-\left(C_{ijk}^D+C_{ij}^I\right)>0, \quad (3.3)$$

where $\pi_{ij}^S(\cdot)$ denotes the complainant's probability to win the dispute, depending on the complainant's capacity to effectively make the case and may be also related on the respondent's defending capacity, and $\pi_{ij}^C(\cdot)$ denotes the probability of compliance, depending on the complainant's retaliation capacity with respect to the defendant's market.

The probability of a successful ruling is assumed to depend on the complainant's endowment with resources that are critical for effectively preparing and processing negotiations, and the dispute and might also depend on the defending capacity of the respondent. The required resources on the complainant's side may be its endowment with skilled legal personnel and its administrative capacities. The complexity of WTO law requires legal and negotiating expertise to identify violations, to work out the arguments and evidence, to develop a strategy and prepare the submissions during the panel process.

Scientific expertise is seen to play a major role in SPS⁴² issues (HENSON ET AL., 1999). ABBOTT AND SNIDAL (2000) emphasize the importance of skilled personnel to effectively use legalized systems in general and BESSON AND MEHDI (2004) provide empirical evidence on the positive influence of legal capacity on dispute outcome at the panel stage. The relevance of capacity constraints on the side of developing and least developed countries – especially in terms of legal expertise – is stated by several authors (see e.g. DELICH, 2002, GUZMAN AND SIMMONS, 2005, and HOEKMAN AND KOSTECKI, 2001). GUZMAN AND SIMMONS (2005) argue that developing countries' capacity deficits are even more constraining with increasing complexity of WTO law and provide empirical evidence that capacity constraints result in a strategy of targeting the largest markets. This suggests that they have to carefully select their defendants to allocate their resources to the highest valued targets as described above under the section on trade objective and related direct costs.⁴³

As legal expertise may be hired to make the case, deficient domestic legal staff can be substituted by domestic financial resources for hiring lawyers. Concerning this impact of financial resources, BUSCH and REINHARDT (2003) identify Members' income as relevant influence on their ability to negotiate early concessions at the consultation stage under the WTO, however not for their successful resolution at the panel stage.

Enlarging the perspective to this issue of Members' negotiation performance, the probabilities introduced in inequality 4.3 may be also interpreted as Members' ability to successfully negotiate their trade issues at the consultation stage and to bargain concessions 'in the shadow of the law'. However, variation in legal capacity – in most studies measured as Members' delegation size at Geneva – does not seem to show a major impact on the variation in disputes when other important factors like complainants' export diversity, their trade stakes in

⁴² The Agreement on Sanitary and Phytosanitary Regulations covers government standards to protect human, animal and plant life and health. It is aimed at ensuring food safety (GOODE 2004).

⁴³ GUZMAN AND SIMMONS (2005): Their study incorporates 352 complainant-defendant pairs with 324 requests for consultations under all agreements over the period 1995-01-01 to 2004-31-12. Addressing resource constraints they control for GDP, GDP per capita, WTO staff, general diplomatic resources, domestic financial resources and past participation in WTO disputes and demonstrate that all measures show a significant impact on the selection on the largest markets in selecting their defendants.

the issue, the extent of protectionism in the complainant's and the defendant's market, their governmental system and retaliatory capacity is controlled for (see e.g. DAVIS AND BERMEO 2009 and GÖTZ ET AL. 2010). Least developed countries in particular are seen to be disadvantaged with respect to their ability to use the DSM because they are lacking personnel representation at Geneva, financial capacities and the required expertise (SOUTH CENTRE 1999). Most LDC Members do not have special staff allocated to WTO matters but have to split their personnel resources between different international agreements (HOEKMAN AND KOSTECKI 2001). MICHALOPOULOS (2001) reports that in the year 2000 70% of developing country Members of the WTO did not have the minimum of four staff based in Geneva that is considered necessary for effective representation in WTO meetings across the different areas of WTO policy. This suggests that Members' representation at Geneva might show a bottleneck effect on their ability to effectively engage in their trade interests.

The structure, organization and integration level of Members' trade agencies is also likely to influence their capability to process cases under the WTO. SHAFFER (2003) and SHAFFER ET AL. (2003) describe how the highly developed and integrated trade agencies of the U.S. and the EC provide the foundation for an institutionalized linkage between private and public sector. This integrated framework is an important advantage with respect to gathering case-relevant information especially at the pre-litigation stage and what is described by HOEKMAN AND KOSTECKI (2001) as the 'upstream process' of WTO disputes. HOEKMAN AND MAVROIDIS (2000) emphasize developing countries' weak trade-policy infrastructures as one impediment to their access to the DSM. DAVIS AND BERMEO (2009) and GÖTZ ET AL. (2010) argue that Members' administrative efficiency may show an impact on their initiation probability, but cannot find a significant impact.⁴⁴ However, HUSSAIN (2005) in his case study on Pakistan reports how the development of WTO-related administrative structures provides the foundation for effective participation in WTO dispute settlement which is described in more detail under the chapter on monitoring issues below.

⁴⁴ Both studies use the World Bank's measure of governmental effectiveness; see e.g. KAUFMANN (2004). World Bank governance indicators are available online at: www.worldbank.org/wbi/governance/govdata/, 2011-09-20.

In addition to its moderating influence on the direct costs of disputes, operating experience with the system or with related legalized systems of conflict resolution may contribute to the administrative DSM-related efficiency and thereby increase Members' likelihood of effective litigation. This point is stressed by HOEKMAN AND MAVROIDIS (2000). DAVIS AND BERMEO (2009) focus their empirical investigation on operating experience and find support for the significant impact of Members' experience from dispute participation both as complainants and as defendants. GÖTZ ET AL. (2010) find evidence on Members' overall experience with the system in terms of their membership time. As demonstrated under the aspect of decreasing fixed costs of litigation through institutional capacity above, Members' experience with democratic governance is also likely to show a positive influence on their ability to successfully adjudicate cases. This experience is likely to be connected to a better understanding of legalized negotiation and adjudication processes and more democratic Members might be better equipped with legal and administrative personnel.

It might be possible that a successful complaint is negatively related to the defendant's capacities, i.e. that economically advanced and better endowed defendants are better equipped with skilled legal personnel and financial resources so that they can afford the best possible defense and may as a result win the case that a less equipped Member would lose. However, complainants win the vast majority of cases that are decided by a panel (HOLMES ET AL. 2003)⁴⁵ and according to GUZMAN AND SIMMONS (2005) there is no considerable difference in panel settling rates between developed and developing countries. Based on this, GUZMAN AND SIMMONS (2005) are skeptical with respect to the influence of respondents' defending ability on the dispute outcome. Although possibly showing a minor influence, the respondent's ability to justify its trade policy on grounds of WTO agreements may be of relevance.

However, as most disputes do not reach the panel stage, interpreting the calculated winning probability related to panel decisions as a winning probability

⁴⁵ HOLMES ET AL. (2003): They report that complainants won disputes 88% of the times where the dispute was decided by a panel ruling. Their study comprises 276 WTO disputes under all agreements that occurred over the period from 1995-01-01 to 2002-31-12. Their finding on the rate of success in disputes is based on a simplified approach. Cases are denoted as won by the complainant if at least one of the issues raised is scored for him.

in general might be too much of a simplification. The number of cases that do not reach the panel stage and thereby are not included in this probability calculation may lead to a distorted interpretation. They might not reach the panel stage because complainants are lacking the resources to proceed to the panel phase. BUSCH AND REINHARDT (2002) state on this issue “Identifying winners is complicated by the high number of disputes that never reach the DSU, and a high proportion of those that do, do not result in a panel report”. According to HOLMES ET AL. (2003) the high proportion of complainant victories may also suggest that complainants select very carefully their respondents with respect to their chances of winning the case.

Formally, the probability of a successful ruling may be interpreted as a function dependent on different characteristics that are related to Members’ economy, governmental traits and endowments,

$$\pi_{ij}^S = f(l_i, \eta_i, Y_i, e_i, d_j), \quad (3.4)$$

where l_i denotes the complainant’s endowment with skilled personnel, η_i stands for the effectiveness of its WTO-related administrative structures, Y_i indicates its domestic financial resources, and e_i assigns its operating experience with the system. The corresponding defendant’s characteristics are gathered in term d_j denoting its overall defending capacity and is supposed to show a negative minor impact.

The probability of compliance may be seen as dependent on the defendant’s motivators as described above and on the complainant’s ability to enforce compliance, namely its retaliation capacity. If the defendant does not comply with the panel or appellate body ruling the complainant may be authorized to impose penalty tariffs on its imports from the defendant’s market. However, a credible retaliation threat depends both on the complainant’s as well as on the defendant’s characteristics.

According to BAGWELL AND STAIGER (2000) and DAM (1970) the threat of retaliation has been the major component of enforcing compliance under the

GATT system.⁴⁶ Although the systemic change in dispute settlement from GATT to the WTO is often described by economists as the replacement of a ‘power-based’ by a more ‘rules-based’ system (see e.g. JACKSON 1997 and TREBILCOCK AND HOWSE 1999), trade retaliation by the complainant remains the central component for the enforcement of compliance. The success of this power is linked to countries’ relevance as trade partner. There is theoretical and empirical support that retaliatory power is not uniformly distributed over Members and that imbalances relating to trade value and market size influence their ability to enforce compliance.

BOWN (2002) demonstrates that a country’s capacity to influence its terms-of-trade determines the credibility of its retaliation threat which is theoretically confirmed as well by KENNAN AND RIEZMAN (1988).⁴⁷ BOWN (2004b) argues that small developing countries might anticipate that they will not be able to gain concessions from larger trade partners. They show that the complainant’s retaliatory capacity, measured as the share of the defendant’s total exports or as the real dollar value of exports from the defendant sent to the complainant shows a significant influence on the successful resolution of the dispute, measured as increased trade value three years after dispute initiation.

Concerning developing countries’ success in disputes in terms of a positive ruling, BESSON AND MEHDI (2004) discover empirical support for the positive impact of their trade retaliation power. The positive impact of retaliatory capacity on the probability to join initiated disputes as co-complainant or interested third party is substantiated by BOWN (2005a), and BOWN (2004c) shows a significant influence of the threat of retaliation of trade partners on countries’ decision to abide by their international obligations in agreements. BOWN (2005b) demonstrates the positive impact of Members’ retaliation capacity on their likelihood to challenge trade remedies imposed by the U.S..

⁴⁶ DAM (1970) states for the GATT system: “(...) retaliation itself may prove to be a relatively weak sanction when the injured contracting party is not a major customer for a major product of the offending contracting party. Many less-developed countries have felt powerless to influence the restrictive commercial policies of developed countries because they did not consume enough of any of the latter’s’ exports.”

⁴⁷ The analysis of BOWN (2002) is based on an economic model with two countries and two traded goods and demonstrates that a country’s capacity to retaliate is dependent on its ability to affect its terms-of-trade. The compensation amount is also shown to be positively affected by a country’s retaliation capacity.

BUSCH AND REINHARDT (2003) show that poor countries gained less concessions through WTO adjudication than rich countries and conclude that this is – besides their limited legal capacity – due to their lack of retaliatory power. HOEKMAN AND KOSTECKI (2001) and HUDEC (2002) state that developing countries challenging industrial countries might face the problem that they cannot credibly threaten retaliatory measures. Imposing retaliatory tariffs is likely to be more costly to them in welfare terms than it is punishing the industrial defendant and raising import barriers of a small market has little impact on the large target market.

There might also be the impediment for retaliation that complainants cannot afford to cut imports from the defendant because they are dependent on them for their industry or consumption.⁴⁸ BESSON AND MEHDI (2004) empirically demonstrate that developing country complainants' performance in disputes is negatively influenced by their dependency on imports from the respondent. From this follows that Members' trade retaliatory capacity is determined by several factors.

First, the complainant's capacity to retaliate is directly related to the total amount or the share of the defendant's exports going to the complainant's market. This determinant is likely to be positively related to the complainant's market size. Second, the defendant's potential to deflect trade losses imposed through retaliatory measures to third country markets may show an influence. BOWN (2005a) argues that countries might face a market-specific fixed cost of exporting that lowers their ability to easily deflect trade to new markets. Additionally, countries that are less diversified in their exports are likely to be harmed by retaliation measures more than countries that have a more diversified export structure with respect to trade partners. The opportunities to deflect trade may vary other Members which is demonstrated by BOWN AND CROWLEY (2007). Both aspects, the defendant's share of exports sent to the complainant's market and its ability to deflect trade losses can be described as the defendant's export dependency from the complainant. Third, the complainant's dependency from

⁴⁸ In the Bananas case Ecuador was for the first time in WTO adjudication entitled to cross retaliation because it was not able to retaliate against the EU in the sector of merchandise imports and the panel concluded that retaliation against imports of intermediates and machinery would be ineffective – that is, too costly for the economy (see e.g. HOEKMAN AND KOSTECKI (2001), p.83).

imports coming from the defendant's market – related to its industry as well as for domestic consumption – may be negatively related to its trade retaliation capacity. Both the defendant's export and the complainant's import dependency might be positively related to the degree of conformity of the trade partners' market and trade structures. Finally, the complainant's opportunities to purchase relevant imports from third country markets may show a negative impact on its import dependency from the defendant and thereby a positive effect on its retaliatory ability.

Hence, the complainant's minor relevance as trade partner to the defendant and the complainant economy's dependency on imports of intermediates, intra-industry trade, or consumer goods from the defendant's market are the grounds for unlikely or ineffective trade retaliation.⁴⁹ As a consequence of the complainant's inability of enforcement, the defendant is in the position to exploit the maximum potential gains from the WTO-inconsistent policies as theoretically demonstrated by BICKERDIKE (1906), JOHNSON (1953) and KENNAN AND RIEZMAN (1988).

Members' governmental system might show an influence on their success in bilateral negotiations as their experience with democratic processes on the domestic level may also be transferred to the international level. As quoted under the article of direct litigation costs above BUSCH (2000) shows empirically that highly democratic dyads in the WTO context are more likely to achieve concessions at the consultation stage than non-democratic dyads.

In addition to Members' trade retaliation capacity they may threaten to withdraw bilateral economic aid or preferential trade access from an economically dependent respondent in order to enforce concessions. This is just the mirror image of the empirically supported indirect cost issue described under the section on potential indirect costs of dispute initiation. The probability of a successful compliance can formally be interpreted as a function of the complainant's trade

⁴⁹ The withdrawal of concessions under the TRIPS agreement might be an alternative for some developing countries when their markets are too small to impose a significant retaliation threat. This means has been considered by Ecuador in its dispute against the EC: On 8 November 1999, Ecuador requested authorization from the DSB to suspend the application to the EC of concessions or other related obligations under the TRIPS Agreement, GATS and GATT 1994, pursuant to Article 22.2 of the DSU, in an amount of US\$450 million. WORLD TRADE ORGANIZATION, online available under http://www.wto.org/english/tratop_e/dispu_e/stplay_e.doc, 2011-04-01.

and economic retaliation capacity, dependent on the complainant's and respondent's characteristics as described above,

$$\pi_{ij}^C = f(R_{ij}^X, R_{ij}^E), \quad (3.5)$$

where R_{ij}^X is the trade related retaliatory capacity of complainant i with respect to defendant j 's market and R_{ij}^E denotes economic and other outer-WTO related redistribution opportunities of complainant i with respect to the economy of respondent j .

4.3 Monitoring issues, upstream process, and political economy drivers

This chapter complements the cost benefit analysis for the decision of filing a dispute by the discussion of (1) official monitoring issues which are partly related to the cost benefit aspects as discussed above, (2) the upstream process during the pre-litigation phase, i.e. identification of WTO violations, collective action and petitioning issues on the private sector level and (3) political economy drivers which are likely to play a role for the selection of trade issues on the governmental level.

Identification of infringements is the precondition for adjudicating trade issues under the DSM. Information and its transmission to the government are critical factors of this process that is characterized by HOEKMAN AND MAVROIDIS (2000) as the upstream process of the multilateral enforcement mechanism. Information may stem from two different sources: official monitoring of trade policies abroad and the domestic private sector.

First, governments may have developed official institutions to gather information on potential WTO infringements of their trade partners that negatively affect domestic export- or import-competing firms, e.g. national agencies maintaining monitoring functions like trade agencies and also embassies abroad. The Trade Barriers Report of the U.S. is an example for an official instrument dedicated to gather, exploit and provide trade-policy related information. Countries' capability to create such official structures largely depends on their resources. Members with limited capacities are unlikely to invest much in monitoring trade policies abroad and to investigate alleged violations by

trade partners. Less detection of infringements is then a probable result of lower monitoring activity. GUZMAN AND SIMMONS (2005) argue that “especially at the monitoring stage, countries with more extensive official economic contacts will be in a better position to assess trade policies that run counter to WTO rules and national interests”. They show how developing Members’ ability to field skilled official diplomatic and economic personnel to gather information on trade partners’ policies is positively related to the variation of disputes against developed Members.⁵⁰

The establishment of WTO relevant institutional capacity for monitoring is likely to be promoted by Members’ experience with and their commitment to the system. DAVIS AND BERMEO (2009) substantiate the importance of experience for the participation in the DSM and argue that it promotes learning by doing and decreases start-up costs for subsequent disputes. HUSSAIN (2005) in his case study on Pakistan provides an example for the influence of experience on the organization of WTO-related trade infrastructure. Pakistan’s experience with its first filed case as sole complainant resulted in the establishment of an effective institutional framework both at the domestic level and in Geneva to deal with WTO matters. Pakistan challenged a U.S. safeguard measure on combed cotton yarn in 2000.⁵¹ According to HUSSAIN (2005), at the time of Pakistan’s request for bilateral consultations on April 3, 2000, “there was no effective institutional framework within the Ministry of Commerce which could deal with WTO-related dispute settlement cases”. During the process of the dispute Pakistan built up a WTO cell at the permanent mission office in Geneva, a section in its Ministry of Commerce dedicated to WTO issues, and a WTO Council chaired by the Minister of commerce. The WTO cell has three major functions: Besides (1) communication of the WTO system’s rules to the relevant authorities in Pakistan, it (2) shall supply guidelines on trade- and dispute settlement-related issues to affected domestic firms, and (3) maintain an archive of and conduct research on past cases and rulings in order to support the private and the public sector to develop the right strategy for future cases (HUSSAIN 2005). Hussain also states that one major conclusion from the dispute was that the government should play a

⁵⁰ In their model Members’ overall diplomatic force is measured as their number of embassies abroad.

⁵¹ Dispute settlement case 192 (see WTO 2010).

more proactive role in future trade issues. Hence, the commitment to the enforcement mechanism of the multilateral trading system is related to Members' experience with the system itself as a means to successfully defend their trade interests.

In general, countries' deeper integration into world trade is likely to stimulate commitment and required investments to increase their participation in the system. Integration into international trade, commitment to the principles of the multilateral trading system and legalized procedures of conflict resolution, and the development of required institutional capacities all go hand in hand.

The second source of information is the private sector. Private firms facing obstacles in their exports to foreign markets or import-competing firms whose prospects are impaired through market-distorting foreign subsidies have several options: they can petition the foreign government to abandon their trade-distorting policies; they may take recourse to ways of private arbitration or adjudication in the foreign economy; they can petition their own government to pursue the case under the DSM, or they can drop the issue. Petitioning their own government to take up the issue with the foreign government may not be an attractive option for private firms as this involves costs of gathering information and identifying the violation, preparing arguments with assistance of attorneys and contacting and lobbying governmental officials. Additionally, the success of lobbying activities and the final outcome of a WTO dispute are uncertain. This suggests a cost-benefit analysis quite similar to the governmental economic initiation condition described above. Private actors have to assess if the anticipated benefits justify the allocation of their resources to lobbying activities.

A collective action problem may arise as enough private actors have to be mobilized to increase the success of lobbying. A likely outcome is that only major cases in terms of trade stakes are brought forward for petitioning (HOEKMAN AND KOSTECKI 2001). For the example of the U.S. this is reflected in the large difference between the quantity of identified violations in the official Trade Barriers Report and the relative small number of U.S. trade disputes that are pursued under the Section 301 and have been brought forward by private sector

interests, as reported by SEVILLA (1998).⁵² As only governments have legal standing at the WTO, they act as filters in respect of selecting and pursuing the cases that they assess as being relevant according to their policy objectives (HOEKMAN AND MAVROIDIS 2000). However, governments may only take action on the set of violations that they are cognizant of. An under-provision of information may result in an inefficient outcome both for individual firms and for the multilateral system as a whole (HOEKMAN AND KOSTECKI 2001).

The effectiveness of the upstream process in Members' economies is dependent both on characteristics of their trade sector as well as on their institutional capacity. First, Members' domestic business community may not consider WTO adjudication as a solution to their problem as suspected by DAVIS AND BERMEO (2009) for the case of developing countries. As a consequence, there would be no transfer of information on infringements to the responsible administrative agencies. Second, even if the business community is aware of and attentive to WTO relevant issues in its export relations, the domestic industrial structure may influence the cost-benefit assessment and its ability to mobilize private interests and political pressure. The export sector of developing countries is typically characterized by small and medium size enterprises thereby limiting their available resources for lobbying activities. This also implicates a lower concentration of their industrial structures which makes it more difficult to organize interests, as emphasized by political economy models and causes their affected industries more likely to suffer from the free-rider problem. Third, the effectiveness of the domestic infrastructure for information transfer from the private to the public sector may vary over Members.

The U.S. with its Section 301 and the EC by its Trade Directorate-General of the European Commission have established integrated devices to gather information from private firms and to facilitate coordination between the public and the private sector. The U.S. and the EU also stand out concerning the international network established to gather information on trade issues. Those mechanisms ensure that information stemming from the private sector is efficiently exploited to get aware of potential WTO issues as well as to support

⁵² By Section 301 of Trade Act 1974 firms, associations, or interested persons may petition the U.S. Trade Representative to investigate trade infringements by foreign countries that negatively affect U.S. exports.

negotiations and litigation of U.S. and European trade claims (see SHAFFER 2003). SHAFFER (2003) further shows that WTO litigation in the U.S. and the EU is heavily influenced by private interests lobbying the government to represent their case through adjudication. GÖTZ AND HECKELEI (2011) focusing on the agro-food sector find empirical support for the impact of the national environment for organizing lobbying activities and their influencing power on the domestic political decision process.

The diminishing influence of experience on fixed costs in the upstream process of disputes may as well apply to the industry. Industries may develop efficient structures to gather information, to organize and to use channels to inform and petition their government. Additionally, information about one case is likely to increase awareness in the business community and to generate demand for additional cases thereby initiating the required investments into the establishment of structures and procedures for gathering information, cooperation among firms and channels to communicate their interests with governmental officials. HUSSAIN (2005) reports that the affected domestic industry (All Pakistan Textile Mills Association) has formed a WTO committee in the course of Pakistan's dispute against the U.S.. Its main purposes are to coordinate with Pakistan's Ministry of Commerce for an efficient processing of disputes and to advise the affected firms on relevant trade issues and WTO law. According to HUSSAIN (2005) the effective settlement by means of the DSM strengthened the confidence of the domestic firms in the multilateral trading system.

As argued by SEVILLA (1997), the selection of complaints for litigation is subject to a complex political process of demand by private producers and supply by governments. This political economy approach offers additional explanations for governments' decision to file disputes. From this perspective, governments act in response to political pressure and try to maximize political support offered by different sources in their decision to litigate a case or not. The preferences of domestic lobbies for policies come from the expected effect on their economic return and their lobbying effort is related to their anticipated benefit.

In the context of DSM, the potential sources of interest groups are competitive export- and import-competing firms benefitting from adjudication of their trade issues under the DSM. Competitive exporting firms, or industries with relatively abundant factors, benefit from removing trade barriers or reducing subsidies in the defendant's market. They thereby expand their opportunities

through their increased market access and their increased competition both in the defendant's as well as in third country markets. Import-competing firms or industries with relatively scarce factors, benefit from removing trade barriers or reducing subsidies in the defendant's market, thereby attenuating the politically distorted competitive advantage of firms in the defendant's market. Even if the defendant failed with compliance, import-competing firms could still benefit from the complainant's retaliation measures. Hence, their lobbying activity is supposed to be positively related to initiating disputes for the removal of trade barriers and competition-distorting subsidies of trade partners.

Since protectionism may be influenced by private sector interests, which in particular applies to the agro-food sector, a third influence from the political economy perspective may play a role. Less-competitive firms benefitting from protectionism may exert their influence on governments' decision in the opposite direction. As shown by REINHARDT (2000), countersuits do play a role under the DSM providing empirical evidence on this potential threat. The finding of GÖTZ ET AL. (2010) on the negative influence of Members' protectionist tendency on their likelihood of dispute initiation can as well be rationalized based on this theoretical approach, specifically that protected private sector interests exert their influence on governments to abstain from a complaint. A forth and negatively related influence may come from exporting firms that benefit from preferential market access. Their support for the government may be jeopardized by 'risky' disputes against trade partners that the economy is dependent on.

In the WTO context of dispute settlement the view of governments as welfare maximizing agents acting in accordance with a cost benefit consideration and the political economy interpretation on the formation of trade policy are complementary approaches. On the one hand, the demand for complaints by the private sector and their supply by governments suggest the political economy view. On the other hand, the capacity related and political cost-benefit analysis demonstrates the perspective of governments as welfare maximizing agents who act in view of various objectives, encompassing responsiveness to the welfare of the society and political obligations in the international context. This is on the same line like the interpretation by HOEKMAN AND MAVROIDIS (2000) of governments acting as filters by selecting trade issues for adjudication both from the private sector sample and their own agenda depending on diverse national objectives and constraints.

Table 4.1: Survey on investigation period, dispute coverage, main issue, used model and incorporated determinants

Empirical study	Investigation period and dispute coverage	Main issue of analysis	Used model	Incorporated determinants
Besson and Mehdi (2004)	WTO disputes; 1995-2002; 40 complaints of developing against developed countries; all agreements	Determinants for a successful ruling; Developing against developed countries	Probit model	Retaliatory capacity, Legal capacity, Economic dependency, Capacity to absorb litigation costs, Dispute duration, Political power
Bown (2004a)	GATT & WTO disputes; 64 complaints of developing countries against developing and developed countries; all agreements	Determinants for compliance; Focus on developing countries	(1) Multivariate linear regression (2) Probit model	Retaliatory capacity, Received bilateral economic aid, Guilty determination by panel ^F , Type of protective policy measure (tariff or NTM)
Bown (2004b)	GATT & WTO disputes; 1973-1998; 174 complaints; all agreements	Determinants for compliance	Multivariate linear regression	Retaliatory capacity, Cost of international obligation for defendant: Guilty determination by panel ^F and Small Plaintiff ^F , Involvement of Appellate Body ^F ; Contested policy measure ^F , Disputed sector ^F
Bown (2005a)	GATT & WTO disputes; 1992-2003; complaints against U.S. trade remedies	Determinants for the initiation of complaints against U.S. trade remedies	Probit model	Size of market access benefits, Capacity to absorb litigation costs, Legal capacity, Export dependency from U.S. market, Size of U.S. trade remedy ^F , Trade retaliatory capacity
Bown (2005b)	WTO disputes; 1995-2000; 54 complaints; complaints against import protection on MFN-basis	Engagement as Co-Complainant or Interested third party in initiated disputes; Focus on developing countries	Ordered multinomial logit model	Market access value ^F , Export dependency from defendant ^F , Trade retaliation capacity ^F , Bilateral aid retaliation capacity ^F , Capacity to absorb legal costs, Legal capacity, Bilateral aid dependency from defendant ^F , Preferential trade agreement with defendant ^F
Davis and Bermeo (2009)	WTO disputes; 1995-2002; 102 disputes; all agreements, 72 developing countries, 510 observations	Determinants for the initiation of complaints	Negative binomial model	Operational experience, Membership in ACWL, Democracy, Market size, Wealth, Governmental effectiveness, Number of high-valued exports, Share of exports to high-income countries, Share of agriculture in total exports, Concentration of trade, Government effectiveness

Götz et al. (2010)	WTO disputes of the agro-food sector; 1995-2006; 131 disputes of agro-food sector; 9 agreements; 53 Members in sample	Determinants for the initiation of complaints	Binomial dispute distribution model	Export diversity*, Induced costs of litigation, Endured protectionism by trade partner, Own protectionist behaviour, Relevance of the agricultural sector, Importance of the agro-food export sector, Capacity to absorb legal costs, Legal capacity, Influence of private actors, Governmental efficiency, Membership time
Götz and Heckelei (2011)	WTO disputes of the agro-food sector; 1995-2005; 91 disputes of agro-food sector; 9 agreements; 53 Members in sample	Determinants for the initiation of complaints	Logit model	Endured protectionism, Imposed protectionism, Legal capacity, Capacity to absorb legal costs, Influence of private actors, Importance of agro-food export sector, Operating experience, Total import value from defendant ² , Export dependency from defendant ³ , Import dependency from defendant ³
Guzman and Simmons (2005)	WTO disputes; 1995-2004; 324 requests for consultation; all agreements; 352 complainant-defendant pairings	Determinants for the selection of defendants	Ordinary least squares regression with robust standard errors	Market size, Wealth, Legal capacity, Number of embassies, Non-military expenditures, Bureaucratic quality, Operating experience, Retaliation capacity, Export dependency from defendant, Countersuit ² , Preferential trade agreement with defendant, Co-complainants, Bandwagon
Holmes et al. (2003)	WTO disputes; 1995-2002; 279 complaints; all agreements	Involvement and success in disputes; Impact of type of policy measure	Descriptive statistics	No indicators included - the analysis is completely based on the evaluation of the relationship between trade volume and the occurrence of disputes, their ratio of success linked to types of countries and type of trade issue
Horn et al. (1999)	WTO disputes; 1995-1998; 155 complaints; all agreements	Determinants for the initiation of complaints	Binomial dispute distribution model	Export diversity*, Legal capacity
Reinhard (2000)	GATT & WTO disputes; 1948-1998; 604 disputes; all agreements; 332728 potential complainant-defendant combinations over investigation period	Determinants for the initiation of complaints	(1) Probit generalized estimating equation with first-order autocorrelation (2) Auxiliary ordered probit model of dispute outcomes	Democracy, Joint democracy, Countersuit, Bandwagon, Alliance, Militarized dyadic dispute, LDC status, Market size, Dyadic trade dependence, Trade surplus, Preferential trade agreement, Past concessions

* No control variable but intrinsic component of the used probabilistic model. 0: Indicator on type of trade issue or on trait of the process. 2: Unilateral indicator on defendant characteristic in estimation. 3: Bilateral indicator dependent on complainant-defendant-relationship. All indicators without superscript denote unilateral characteristics of the complainant. Source: Own compilation.

Table 4.2: Survey on findings from empirical studies

Scope	Determinant	Empirical study	Influence on the likelihood to				
			Initiate disputes	Partake in initiated disputes	Win a dispute	Reach compliance after ruling	Be targeted as respondent
Trade objective and related direct costs	Export diversity	Horn et al. (1999)	+				
		Götz et al. (2010)	+				
	Export volume	Holmes et al. (2003)	+				+
		Dependence on foreign trade and trade openness	Reinhardt (2000)	+			
	Bown (2005b)			+			
	Size of affected exports	Bown (2005a)	+				
	Size of imposed trade remedy	Bown (2005a)	+				
	Export dependency on defendant's market	Bown (2005a)	+				
		Götz and Heckelei (2011)	+				
	Market size (in terms of GDP)	Bown (2005b)			+		
Davis and Bermeo (2009)		+					
Indirect political costs of disputes	Political economy relationship with respondent	Bown (2005b)		+			
		Besson and Mehdi (2004)			-		
	Reliance on bilateral assistance	Besson and Mehdi (2004)			-		
		Bown (2005b)			-		
	Military power	Bown (2004b)				+	
		Besson and Mehdi (2004)			+		
	Previous complaint against trade partner	Guzman and Simmons (2005)					+

Uncertainty of dispute outcome and compliance	Legal capacity	Horn et al. (1999)	+/0		
		Besson and Mehdi (2004)		+	
	Operational experience with the system	Davis and Bermeo (2009)	+		
		Götz et al. (2010)	+		
		Götz and Heckelei (2011)	+		
	Trade retaliatory power	Bown (2004b)			+
		Bown (2005a)	+		+
		Bown (2005b)		+	
		Besson and Mehdi (2004)			+
		Götz and Heckelei (2011)	+		
Monitoring issues, upstream process and political economy drivers	Experience with democratic governance	Busch (2000)	+		
		Davis and Bermeo (2009)	+		
		Reinhardt (2000)	+		
	Administrative/Governmental efficiency	Davis and Bermeo (2009)	0		
		Götz et al. (2010)	0		
		Götz and Heckelei (2011)	0		
	Influence of private actors	Götz et al. (2010)	0		
		Götz and Heckelei (2011)	+		

For the sake of clarity empirical studies without significant influence are only reported to supplement positive or negative evidence of other studies or when they stem from the only empirical investigation taking into account the respective determinant.

To get an exhaustive overview and condensed information on studies and their incorporated determinants please compare with table 1.

+: Determinant is substantiated with positive influence on the probability linked to the issue given in the column heading. -: Determinant is substantiated with negative influence on the probability linked to the issue given in the column heading. 0: No significant influence supported by empirical study.

Source: Own compilation.

4.4 Conclusions

This chapter is a first attempt to subsume the findings of empirical papers up to date in a comprehensive framework to consider for the different economic incentives of the World Trade Organization's Dispute Settlement Mechanism. The first part was along the line of a cost benefit analysis for the initiation of disputes under the system and structured with respect to (1) complainant's trade objective and related direct costs, (2) the potential indirect costs of dispute initiation that might occur due to political and economic linkages with trade partners, and (3) the problem of uncertainty of a successful resolution of the issue. The discussion of influencing factors in the context of this cost-benefit consideration was complemented by official monitoring issues, the informational problems that Members may face during the upstream process of disputes and a condensed description of the political economy process behind governments' selection of trade issues for adjudication.

The findings from the literature reveal that certain elements of the entire procedure starting from monitoring via litigation through to enforcement are critical with respect to Members' accessibility to the system. At the pre-litigation stage, Members' domestic institutional capital is relevant as it provides the basis for collecting information on infringements both through official monitoring as well as by exploiting information from the private sector. This endowment with effective official structures is also important for communication and co-ordination with affected private firms and offering channels for their petitions. The effective cooperation between official and private sector is described by SHAFER (2003) as 'public-private partnership' and its relevance is demonstrated both theoretically and empirically. Additionally, Members' domestic environment for the effectiveness of lobbying activity is positively related to their use of the DSM. The average firm size and concentration of their export sector is likely to show an impact in this context, as WTO disputes have public good characteristics, and lobbying activity requires coordination between industries and is costly. This may involve a collective action problem that is especially relevant for Members with lower concentration in their export sector.

At the litigation stage, Members' administrative and litigation power is important. The first feature is linked to their mentioned domestic institutional

capacity for gathering and exploitation of information coming from the private sector or centralized surveillance institutions, and second, to their allocated resources at Geneva. As shown by the importance of operating experience for the development of effective DSM-relevant official structures and skilled personnel, the system may involve high startup costs for developing country Members. Besides their scarce financial capacities to substitute lacking legal capacity, deficient trade-related administrative power and also expertise with adjudicative processes in their domestic environment may be an impediment for them to enter the system. As empirically demonstrated, their focus on large markets is likely to account for their high opportunity costs of litigation and reveals a strategy to overcome capacity constraints.

At the enforcement stage, the relevance of Members' retaliation capacity is theoretically underpinned and empirically substantiated. Retaliation power is both linked to complainants' relevance as trade partner and to their dependency on imports from the defendant Member. Strategic considerations as discussed under the chapter of potential indirect costs play a role in WTO disputes. The fear of a countersuit, of losing bilateral economic aid or preferential trade access may cause governments to refrain from a complaint.

Policy implications of the findings are both related to the multilateral as well as to the domestic level. In view of the complexity of negotiated issues and variety of proposals, the drawn conclusions are limited to the most critical factors and are focused on general principles. The findings demonstrate the importance of institutional capacity both at the WTO and the domestic level and effective enforcement of compliance and related constraints especially for smaller Members. Several proposals in this context are discussed in the ongoing reform negotiations or have been brought forward by political bodies or economists.

Regarding capacity constraints, changes aiming at more financial and technical assistance might be of help for affected Members. Two proposals that are negotiated are to award monetary compensation for litigation costs of developing country complainants when they prevail in disputes, and, having a broader scope, to set up a dispute settlement fund for developing countries in order to provide them with financial means during the course of disputes. The definition of the beneficiaries, operational details and the relationship with existing solutions, i.e. technical assistance, dispute settlement assistance by the WTO Secretariat and by the ACWL are still not clarified.

NORDSTRÖM (2005) discusses three options of addressing capacity constraints by alternative ways of settlement available under the current DSU. First, solving issues in a cooperative way through good offices, conciliation and mediation offered by the WTO Secretariat and the Director General (Article 5 of DSU). Second, Article 25 of the DSU provides for arbitration at the will of the parties, which may be a faster and less costly option than the normal panel process. A third option that is available to developing countries are the accelerated procedures with assistance of the Director General. However, NORDSTRÖM 2005 reports that except for one case where mediation has been requested, those alternative options have not been used at all under the WTO. They require that both sides concur with those alternative solutions, and this is not the normal situation. Accelerated procedures may even involve additional difficulties for capacity constrained Members as the time frames for providing required evidences are tighter.

Another proposal discussed by NORDSTRÖM 2005 aims at a simplified dispute settlement procedure for developing country Members. It is intended to serve as a device for the adjudication of small claims, i.e. issues about small trade stakes with less procedural requirements and legalized complexity. However, the practicability of such a reduced procedure depends on the legal proficiency of panelists. Lowering the demand for legal evidence from the parties to the dispute implies that the panelists know the law and that the factual account of the trade issue's circumstances is sufficient for their ruling on the case (NORDSTRÖM 2005). Hence, this issue is related to negotiations on the requirements for the composition of panels. Also, it remains to be defined what is considered as a small claim, if the rulings have precedential value, are appealable and how they are to be enforced.

The findings on the influence of experience, which are related to investments in institutional capacity and the development of dedicated official structures, support the idea of establishing a joint service for legal expertise as proposed in the report of the SOUTH CENTRE (1999). The idea of this 'South network' is based on the principle of cooperation between developing countries in order to share information and provide legal expertise at minimal cost. This may be facilitated by the regular exchange of information and experience between its members, by regular group consultations and reviews of the functioning of the

DSM. It may be worth to consider extending the scope of developing country cooperation by an institutionalized cooperation between them.

Countries facing capacity constraints could bundle their personnel and administrative resources to save costs. A monitoring and administrative assistance body could serve its members by monitoring their trade agreements, gathering information from the private sector, providing channels for the communication of the private sector's interests and supplying governments with relevant information on trade issues in the course of disputes. Further on, it could foster coordination of developing countries' engagement in common trade issues to pool their negotiation and retaliation power. Such coordination could help to overcome the free-rider problem that has been identified by (BOWN 2005a). Also, it could promote transparency on trade issues in order to mitigate the threat of outer-WTO retribution, i.e. decrease the likelihood of indirect costs of disputes. By the provision of such functions, it could complement the legal assistance provided by the ACWL and the technical assistance offered in terms of the WTO's capacity building initiative.⁵³

An objection to this may be that Members would have to coordinate surveillance efforts to increase transparency in their trade regimes, which might raise issues on WTO inconsistent policies between them. However, increased transparency is, first, consistent with the major objectives of the WTO technical assistance and, second; Members' commitment to the WTO principles is the precondition to their effective participation in the multilateral trading system. Hence, efforts to decrease foreign barriers to trade should be accompanied by the willingness to liberalizing domestic trade policies. In addition, as shown by a number of disputes of developing against developed Members⁵⁴ and the findings of GUZMAN AND SIMMONS (2005) on the tendency to select larger markets by developing country complainants, Members facing capacity constraints are likely to share common interests concerning their export interests.

⁵³ The capacity-building programme refers to technical support for developing countries to improve their ability to implement and observe their WTO related treaty obligations (GOODE 2004). The support is aimed at building up human and institutional capacity and also trade related infrastructure that are the precondition to effective engagement in various WTO matters and negotiations and also for reaping the benefits from the trade agreements.

See http://www.wto.org/english/tratop_e/devel_e/build_tr_capa_e.htm, 2011-10-10.

⁵⁴ A prominent example for a coordinated effort of developing countries is the Bananas case.

BOWN AND HOEKMAN (2005) suggest encouraging the private sector to provide legal assistance to developing countries, both at the domestic and the international level. They investigate how different players of the private sector could offer their support that capacity constrained Members need at critical stages in the course of disputes, specifically legal service centers, non-governmental, development and consumer organizations, economists, and law schools. Such private sector involvement could also be pooled under the framework of cooperative bodies described above and be facilitated at the WTO level.

Concerning strengthening the enforcement opportunities, cross-retaliation could be made available for developing country Members without the general requirement to justify why same-sector or same-agreement retaliation is not practicable or effective. A more contentious proposal brought by the Member Mexico⁵⁵ is to auction off retaliation rights among WTO Members. For a detailed discussion and analysis of its implications see BAGWELL ET AL. (2003 and 2006). The problem is that such a mechanism might run counter to the WTO's general objectives of liberalizing trade because it implies that Members impose protectionist policies against other Members without having unresolved trade issues with them. It is also likely to imply additional political costs that may outweigh the benefits from enforcement. On the other hand, it may provide an option to make enforcement of the DSM more effective by multilateralizing the procedure (BAGWELL ET AL. 2003).

HOEKMAN AND MAVROIDIS (2000) propose to encourage the use of the WTO provisions for renegotiating concessions instead of retaliation. Retaliation involves raising barriers to trade by the complainant and is likely to show a negative impact on its own welfare. In contrast to that, the net-impact of renegotiation could lead towards more liberal trade as it involves compensation of negatively affected Members by reducing other trade barriers. However, renegotiation of concession may impose an additional burden on the complainant, and provide opportunities for the defendant to evade compliance in sectors that are important to the complainant party.

⁵⁵ See document TN/DS/W/23 on the special session of the Dispute Settlement Body (2002-11-02). Available online at: http://www.jmcti.org/2000round/com/doha/tn/tn_ds_w_023.pdf, 2011-10-13.

A further proposal subject to negotiations and aiming at mitigating the problem of retaliation is to introduce monetary compensation. The amount of nullification or impairment determined for retaliation measures could be awarded as monetary compensation to developing country complainants. This may involve the problem that some defendants might use this as an opportunity to buy themselves out of their commitments. To account for this, it would require further provisions in terms of increasing compensation after a defined period of non-compliance.

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