

**WHY DO OR DO NOT NATIONS SETTLE THEIR DISPUTES
BILATERALLY? : A GAME-THEORETIC ANALYSIS OF GATT
ARTICLE XXII**

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The aim of this paper is to analyze why nations do or do not settle their disputes bilaterally. This paper provides a strategic bargaining model, based on the framework of Reinganum and Wilde (1986). According to this model, delay benefit, industry characteristics, and reputation loss turn out to be important in the bilateral stage. Empirical evidence regarding industry characteristics and reputation loss is dissatisfactory because of insufficient data. This paper, however, strongly indicates that delay benefit is the most important factor in that most nations prefer to transfer their disputes into the multilateral stage.

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I. INTRODUCTION

International trade disputes could be resolved within the dispute settlement procedures of GATT (hereafter, DSP), particularly within GATT Articles XXII and XXIII. According to these articles, when GATT was notified of a trade dispute, the disputing parties would engage in bilateral negotiations (Article XXII) and, if they failed to resolve the dispute, the parties would proceed to the multilateral stage (Article XXIII). According to Article XXIII, either country can ask GATT to establish a panel or working party. The panel or working party investigates and issues a report, which includes a legal decision and recommendations. The GATT Council then discusses whether or not to adopt this report. If this report is adopted and the offending nation does not follow

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the recommendations, the complainant can request that GATT authorize ratification. Within all these procedures, disputing countries have at least some responsibility to adhere to these procedures.

The purpose of this essay is, then, to investigate why nations sometimes settle their disputes in the bilateral stage (GATT Article XXII), and sometimes go to the multilateral stage (GATT Article XXIII) after failure to resolve them in the bilateral stage. For this analysis, the paper suggests a strategic bargaining model, where nations would decide how to resolve a dispute by comparing the payoffs from both bilateral and multilateral methods. For instance, when a nation expects that the payoffs from the multilateral stage are too small, it may prefer to resolve a dispute in the bilateral stage. In such a case, it would be important to understand how the payoffs from the multilateral stage are calculated and incorporated into the model. This paper incorporates the payoffs into the model by using a panel decision and introducing the concept of trial costs.

The remainder of this paper is comprised of four parts. Section II discusses the background of the bargaining model, which includes both the implications from the theory of domestic litigation and the meaning of parameters, particularly delay benefit and reputation loss. Section III builds a bargaining model where one party has private information regarding the possibility of winning. Section IV provides empirical evidence about the implications from section III. Section V concludes this paper and introduces implications for further research.

II. BACKGROUND OF THE BARGAINING MODEL

2.1. Implications from Domestic Litigation

The theory of domestic litigation is very useful in building a bargaining model since there are several similarities between domestic litigation and international trade disputes.¹ The first similarity is that both disputes have almost identical litigation structures. The plaintiff in domestic litigation faces a trial in the court (the multilateral stage in international litigation) if he cannot reach an agreement in pre-trial bargaining (bilateral negotiations). The second similarity is that in both cases the defendants experience bilateral negotiations (or consultations) under the shadow of law² (or the shadow of GATT), which means that bilateral consultations are held within the boundary of the court (or GATT).

The first implication is that the theoretical models used in domestic litigation can be applied to international litigation. The core of this implication is that

¹ The terms of 'international trade disputes' and 'international litigation' will be used interchangeably.

² This expression is used by Mnookin and Kornhauser (1979) and Cooter, Marks and Mnookin (1982).

uncertainty and information asymmetry is very important in analyzing bilateral consultations. In domestic litigation, the failure or success for pre-trial negotiations rests on trial costs (costs required for facing a trial) and uncertainty. Unless trial costs are large, pre-trial negotiations are doomed to fail: the only reason for settlement is to save on trial costs. Without uncertainty, the plaintiff can predict perfectly the defendant's reservation settlement, which is the offer that the defendant will not refuse in pre-trial negotiations. Hence, uncertainty is of key importance: the reason for the failure of pre-trial negotiations is uncertainty about the trial cost.³ According to recent papers⁴ regarding domestic litigation, this uncertainty is assumed to result from the information asymmetry of both parties.⁵

The model from domestic litigation, however, would not be used directly without some changes since there are also several differences. First, the components of trial costs are different. In domestic litigation they are mainly composed of legal fees such as fees paid to attorneys. Meanwhile, in international litigation they are mainly composed of benefits or costs from delaying the process of the multilateral stage, and the reputation loss that nations incur whenever they violate the rules of DSP.⁶ Second, while in domestic litigation trial costs are somewhat fixed, those in international litigation are not since they are influenced by the strategic behavior within the multilateral stage. In other words, trial costs in international litigation are dependent upon how nations behave in the multilateral stage. Third, retaliation by a disputant is not possible in domestic litigation, since the power of retaliation is reserved only for states. The possibility of retaliation is open to any disputing nation in international litigation, since it retains its own privilege to retaliate.

2.2. Meaning of the Core Parameters

2.2.1. Meaning of delay benefit

Delay benefit refers to the benefit that results from the defending nation delaying the discussion of a dispute. However, when the defending nation (hereafter, D) decides to transfer a dispute to the multilateral stage after a

³ For more detailed explanation, see Nalebuff (1987).

⁴ Among the papers, most important are: P'ng (1983, 1987), Nalebuff (1987), Reingaum (1988), Reingaum and Wilde (1986), and Schweizer (1989).

⁵ Cooter and Rubinfeld (1989), Kennan and Wilson (1993), and in particular Wilson (1994) survey this problem well. According to Wilson, a settlement negotiation resembles the used car market studied by Akerlof. That is, in litigation a trial judgment plays the same role as that played by unobserved quality in the used-car market. Thus, the reason for failure in pre-trial bargaining is informational differences about the trial judgment (the quality of the used car) between the parties.

⁶ For more detailed explanation about reputation loss, please see the following subsection.

failure in the bilateral stage, D can expect two kinds of delay benefits. The first benefit results from the transfer of disputes into the multilateral stage, and the second benefit results from the delay of the discussion within the multilateral stage, for example refusing to set up a panel or to accept a panel decision. By the same reason, C incurs delay loss whenever D expects delay benefit. However, this paper will not investigate this separation further because, in fact, the first kind of delay benefit (loss) is inseparable from the second one. Instead, this paper emphasizes that if a dispute is sent to the multilateral stage, D will eventually obtain delay benefit and the complaining nation (hereafter, C) will suffer delay loss.

Some evidence⁷ shows that when multilateral trade negotiations (MTN) are in progress, nations prefer to delay the discussion of disputes in question, arguing that this discussion should be postponed until new agreements and interpretations from the MTN in progress are available. This tendency is higher when agricultural products are in question. If this explanation is plausible, nations would expect more delay benefit by going to the multilateral stage when MTN is in progress. The variable DELY, a dummy variable which denotes whether MTN is in progress or not, will be used to capture this idea in the regression analysis. To show deeper evidence of delay benefit, the variables of REXP (ratio of exports to GDP in defending nation) and REXPC (ratio of export toward a complaining country to total export in a defending nation) will also be used in the regression.

2.2.2. Meaning of reputation loss: γ

When a dispute is sent to the multilateral stage after failure in the bilateral stage, nations are asked to follow the rules or procedures of the multilateral stage. However, member countries do not always keep these rules. Moreover, member countries might take retaliatory measures without authorization from GATT.⁸ In the model, it is assumed that whenever there is a violation of rules or procedures within the multilateral stage, the violator incurs reputation loss of γ . What follows is an explanation as to why reputation loss might exist.

As long as trade disputes are discussed in DSP, member countries have some obligation to keep its rules and procedures. Since DSP (and, generally, GATT) is created by member countries, it cannot be sustained without a minimum voluntary compliance to its rules and procedures. This minimum voluntary compliance is undertaken through some sense of national obligation.⁹ To rephrase

⁷ Some examples can be found in Hudec (1993). And, some diplomats in Geneve informed me of this fact.

⁸ GATT has, in principle, the authority to give a permission to retaliate unless any member country opposes it. However, this authority has been invalidated because any country can oppose it. For this reason, the retaliations that occurred for the last four decades were made without being authorized by GATT.

via the converse, the very existence of DSP (GATT) gives policymakers of member countries some obligation to comply with its rules, since their own countries agreed to set up DSP in the first place. Policymakers will pay special attention to whether or not their behavior (trade policy) is consistent with those rules, although they do not always comply with them. Sometimes the desire to breach rules might be greater than the obligation to comply with them. We regard this obligation imposed on policymakers as the foundation of reputation loss: A nation incurs reputation loss when its policymakers do not keep the rules. Given high level of obligation, reputation loss from breaching the rules is high.

Based on the above explanation that reputation loss is dependent on obligation, it can be induced that the size of a nation has no impact on the amount of reputation loss. However, the level of reputation loss is not fixed, but varies. Whenever there is a conclusion of multilateral trade negotiations within GATT, it is natural, we argue, that member countries feel international obligation more strongly than ever. Policymakers would feel obligations more in the year multilateral negotiations are successfully ended, than they do in other years. Thus, the level of reputation loss is strongest in a year when trade negotiations end successfully. The variable REP in the regression is devised to capture this idea.

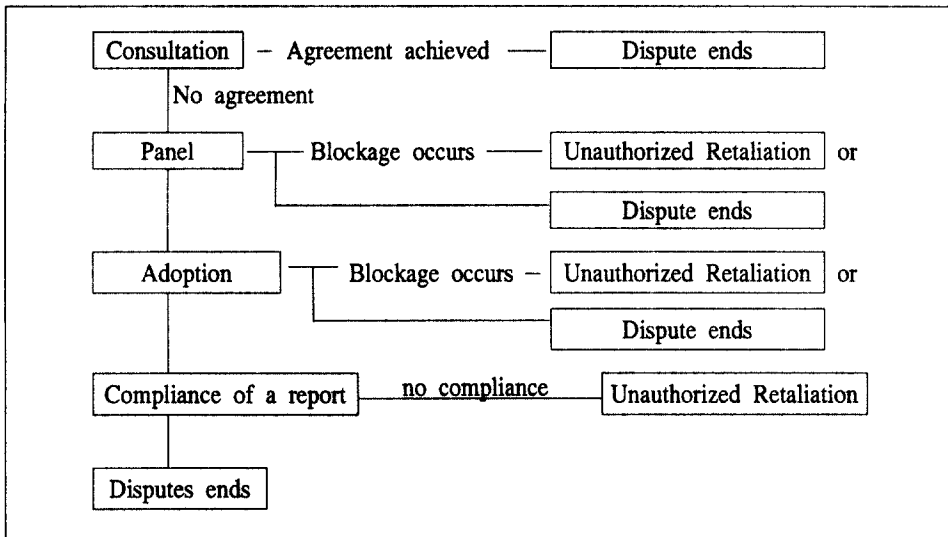
III. THE MODEL

A trade dispute between a risk-neutral complaining country (C) and a risk-neutral defending country (D) occurs. C argues that its welfare loss from D's behavior (violation of GATT's rules) is α . Both parties are assumed to know the value of α because it is related to the item or industry in question. C makes a legal claim to DSP. Before going to the multilateral stage, they can try to settle bilaterally. If they solve the dispute bilaterally, the game ends; if not, the multilateral stage will follow.

Both nations are assumed to understand the structure of the multilateral stage summarized in the following Figure 1. Figure 1 is the flow chart of GATT DSP, where the multilateral stage contains the procedures after consultations. In the multilateral stage, D may resort to three different kinds of actions, whether or not to block the set up of a panel, to refuse an adoption of a panel report, and/or to cross-retaliate. Meanwhile, C has only one option, whether or not to retaliate. As mentioned before, all retaliation from either C or D is unauthorized. And, each country knows how its payoff is determined and how it is affected by the other party's behavior in the multilateral stage. Each country also

⁹ From this perspective, this concept of responsibility is similar to that of international obligation suggested by Kovenock and Thursby (1992). They say, "To the extent that governments try to settle disputes through GATT-DSP (rather than unilaterally retaliating or bilateral negotiation outside GATT), it is clear that they take this international obligation seriously."

[Figure 1] The Flow Chart of GATT DSP



understands the importance of reputation loss and delay benefit.

However, each party does not correctly anticipate the strategy that the other party will take when a dispute in question is sent to and discussed in the multilateral stage. For this reason, while each party is engaged in the bargaining process, it does not know what its final payoff will be after the dispute is sent to the multilateral stage. Thus, the core of the bargaining model is how each party expects the outcome (payoff) of the multilateral stage while they stay in the bilateral stage. The explanation for this situation is described below.

If their disputes are discussed within the multilateral stage, there will be a panel decision, q . This paper assumes that in the bargaining model, D is responsible for C's loss, α , by at least a minimum amount. The main question of this model is, then, how much D owes C. Thus, q denotes the decision of a panel regarding D's responsibility or liability for α . Because of this decision, C will get $q\alpha$ and D, $-q\alpha$. If a panel decides that D is wholly responsible for α , q will be 1 and vice versa.

It is assumed that C has more information concerning its responsibility and liability.¹⁰ Thus, only C has some private information about q . Instead, D thinks that q lies in the interval a, b , where $0 < a < b < 1$.¹¹

¹⁰ The reason of not assuming that D has private information is as follows. First, a game with private information of both parties is too complicated to analyze successfully without giving more explanation than in the case of one party. Second, the assumption of D having private information does not change the conclusion of this paper. Third, our assumption is more reasonable for analyzing the bilateral consultations since C's belief about winning is critical to its decision to enter the multilateral stage.

¹¹ In this setting, the existence of C's private information and D's inference about C's types

Now it is the time to consider the trial costs that might occur in the multilateral stage, C_C (trial costs of the complainant) and C_D (trial costs to the defendant), respectively. Trial costs are composed of three parts: delay benefit and/or delay loss¹², reputation loss from the violation (block and retaliation), and the possibility of retaliation in the multilateral stage.

Unlike domestic litigation, lawyers' fees are not important in international litigation; rather, time is the most important factor that determines costs. Certainly, if disputes are transferred to the multilateral stage, more time is required to resolve them because, at the very least, the transfer to the multilateral stage means that the resolution is being delayed for the time being. Thus, delay benefit is denoted as δ_d , and delay loss as δ_c . δ_d and δ_c are not identical since there is a difference in subjective discount rates of both nations: C's discount rate is considered to be greater than that of D.

As is explained before, D can block some procedures and/or cross-retaliate whenever C retaliates. Since blocking is a violation of the rule of the multilateral stage and retaliation cannot be authorized by GATT, D will incur some reputation loss, γ , in all cases. Similarly, C will incur reputation loss when it retaliates. Whenever (cross) retaliation is initiated, it is assumed that retaliating country gains β and the country retaliated against loses β . However, since a small country may not have the actual power to retaliate, its β will be zero. The trial costs¹³ are summarized in Table 1.¹⁴

On the basis of this explanation, if a dispute goes to the multilateral stage, C obtains $q\alpha - C_C$ and D, $-q\alpha - C_D$. It is assumed that $q\alpha - C_C > 0$, which means that even if C's type is the lowest one, C's panel decision award ($q\alpha$) will always be greater than its costs (C_C). However, before going to the costly multilateral stage, C would have an alternative: making a settlement offer "S" to D. If D accepts this offer, the game ends, and the payoffs will be S to C and $-S$ to D. If D rejects this offer, the dispute goes to the costly multilateral stage.

C's offer has some signaling effect toward D's expectation about C's type since

are also common knowledge.

¹² For the meaning of these concepts, please refer to section 2.2.1.

¹³ For example, suppose that two parties are of equal size. In this case, $C_c = \delta_c - \beta + \beta + \gamma$ and $C_D = 2\gamma - \delta_d + \beta - \beta$. With combining both costs, then T (total costs) = $C_C + C_D = \delta_n (= \delta_c - \delta_d) + 3\gamma$, where δ_n is the net delay benefit (or cost). According to this table, the total benefit resulting from avoiding the costly multilateral stage is the same regardless of the size of a nation, i.e., δ_n and 3γ . This total cost can be reduced into δ_n and γ since 3γ and γ is, in essence, the same for our analysis. One thing to note is that β does not appear in the total cost even when countries are of unequal size.

¹⁴ In deriving this table, we implicitly assume that nations will consider every possible course of action within the multilateral stage. Thus, the possibility of blocking, retaliation, and cross-retaliation is explicitly included in the cost calculation. However, in reality some of these actions might not occur.

[Table 1] Trial Costs by the Size of a Nation

	Equal Size	Unequal Size	
		C(large) D(Small)	C(Small) D(large)
C_C	$\delta_c - \beta + \beta + \gamma$	$\delta_c - \beta + \gamma$	$\delta_c + \beta + \gamma$
C_D	$2\gamma^* - \delta d + \beta - \beta$	$2\gamma - \delta d + \beta$	$2\gamma - \delta d - \beta$
$T = C_C + C_D$	$\delta c - \delta d + 3\gamma$	$\delta c - \delta d + 3\gamma$	$\delta c - \delta d + 3\gamma$

* There are two reputation losses: One is from the block of setting up a panel or refusing to accept a panel report, and the other is from retaliation.

only C has private information. Thus, D should have a (posterior) belief about C's type after observing C's offer, $S = s(q)$. This probability is denoted by $\mu(S)$. In addition, the probability of rejection is denoted by $\rho = p(S)$. In this case, the probability of resorting to the multilateral stages is also ρ . To summarize these parameters:

C : the complainant

D : the defendant

q : the decision of a panel; D's level of responsibility for C's initial loss

a : the initial amount of injury to C; both C and D know its value

β : the amount that C or D get when it retaliates.

δ : delay benefit or loss; δ_c is that of C and δ_d , that of D; δ_n , net delay loss/benefit

γ : reputation loss

C_C, C_D : the trial costs of C and D; T (total costs) = $C_C + C_D$

S : the settlement offer by C: $S = s(q)$

ρ : the probability of D rejecting S , the probability of going to the multilateral stage; $\rho = p(S)$

$\mu(S)$: D's posterior belief about C's type after observing S .

The basic framework may be borrowed from that of Reinganum and Wilde (1986) that addresses domestic litigation problem, since the structure of international litigation of GATT is basically similar to that of domestic litigation.¹⁵ In what sense are they similar? International litigation has the characteristic of bargaining, which is also used in the case of domestic litigation. In the bargaining in both cases, complainant and defendant would like to get more. And, in both cases, disputes go to trial (multilateral stage in the case of

¹⁵ For this reason, I discussed in the second section how the theory of domestic litigation could be used in the analysis of international litigation. For detailed explanation, please see the section II.

international litigation) unless they are settled by bargaining. Moreover, the model of Reinganum and Wilde (1986) is not a unique one but a popular pattern in dealing with domestic litigation.¹⁶ Thus, our model should not be understood as one example of Reinganum and Wilde (1986), but be understood as its refinement and extension.

The assumptions, purpose, and implication of this paper are different from theirs. In the Reinganum and Wilde (1986) model, D's liability, q , is assumed to be given exogenously and instead, the initial loss, α , is not known to the defendant. Thus, information asymmetry occurs in the area of α , not in q . In other words, in their model, the parties share the same expectations about D's liability and different expectations about the initial loss or damage. In our model, the parties share the same expectations about the magnitude of the initial damage but different expectations about D's liability. Further, while their model focuses on the analysis of how the allocation system of the trial costs affects the equilibrium probability of going trial, our focus is on how the component of the trial costs affects this probability. For this reason, we specify the component of trial costs in a greater detail.

The concept of perfect Bayesian equilibrium is employed to solve this game. Given the belief $\mu(S)$, the expected payoff for D, when a demand S is made and D rejects it with probability ρ , is

$$V_D = \rho(-\mu(S)\alpha - C_D) + (1 - \rho)(-S). \quad (1)$$

The expected payoff for C, who demands S for settlement, given the strategy $p(S)$ of D, is

$$V_C = p(S)(q\alpha - C_C) + (1 - p(S))S \quad (2)$$

In this setting, there are three kinds of perfect Bayesian equilibria: pooling equilibrium, separating equilibrium, and hybrid equilibrium of two equilibria. However, Reinganum and Wilde (1986, Appendix) show that pooling equilibrium can be eliminated by using the concept of "universally divine equilibrium," which is a refinement of perfect Bayesian equilibrium suggested by Banks and Sobel (1987). Based on these analyses, this paper confines the analysis to the second type, separating equilibrium.

Separating equilibrium consists of a triple (S^*, p^*, μ^*) which satisfies the following conditions: 1) given the probability of rejection policy p^* , the settlement demand policy S^* maximizes C's expected payoff, V_C ; 2) given the

¹⁶ Many papers suggested in the reference have the similar structure to that of Reinganum and Wilde (1986). They also address the problems of how the decision of the court is made and how the trial costs are considered. The differences are, in which part private information prevails, who suggests settlement offer first, and how many times settlement offers are made.

belief μ^* , p^* maximizes D's expected payoff, V_D ; 3) $\mu^* \in [a, b]$ for all s with $\mu^*(S^*) = q$ for all $q \in [a, b]$. The third condition means that C should assign an existing C's type to C's entire demands, and this belief must be correct for the demands made in equilibrium. However, there can be multiple separating equilibria, as long as they satisfy the above conditions. It is easy to guess many separating equilibria simply by assigning arbitrary beliefs on the off-the-equilibrium-path. Here, this paper is not going to specify a unique separating equilibrium since p^* and s^* , in which this paper is interested, are all equivalent in varying separating equilibria. Instead, this paper will suggest only one type of separating equilibrium.

Since the equilibrium behavior or strategy cannot reach the off-the-equilibrium-path, any reasonable belief will suffice to constitute one of the separating equilibria. This paper simply suggest the following off-the-equilibrium-belief: $\mu(S) = b$ for $S > S''$ and $\mu(S) = a$ for $S < S'$, where $S'' = b\alpha + C_D$ and $S' = a\alpha + C_D$. Then, the following proposition follows:

Proposition 1 (Reinganum and Wilde (1986), Theorem 1)

The following triple (S^*, p^*, μ^*) is one of the separating equilibria. Let $S'' = b\alpha + C_D$ and $S' = a\alpha + C_D$. Then, 1) $S^* = \alpha q + C_D$ for $q \in [a, b]$ 2) $p^*(S) = 1$ for $S > S''$: $p^*(S) = 1 - \exp(-(S' - S)/T)$ for $S \in [S', S'']$: $p^*(S) = 0$ for $S < S'$, 3) $\mu^*(S) = b$ for $S > S''$, $\mu^*(S) = a$ for $S < S'$, and $\mu^*(S) = (S - C_D)/\alpha$ for $S \in [S', S'']$.

Proof

See Appendix of Reinganum and Walde (1986) or Appendix 1 of this paper.

Proposition 1 shows that, although there is some possibility of bilateral settlement before going to the multilateral stage (the existence of S^*), there is no guarantee that this settlement can always happen (p^* is not always 0). Thus, sometimes disputes are settled in the stage of bilateral consultations, and sometimes in the multilateral stage. According to our model, this varied method of resolution results from an information asymmetry about D's level of responsibility, q , or the uncertainty about a decision of a future panel.

Another finding is that the possibility of rejection (p^*) or the possibility of going to the multilateral stage (If D rejects S , the dispute automatically goes to the multilateral stage in the model) is dependent not only on the value of q but also on the structure of their trial costs. It should be recalled that $T = \delta n$ ($= \delta c - \delta d$) + γ . Then, proposition 2 follows.

Proposition 2 (Behavior between equal-sized nations)

When the probability of D's rejection, i.e., the probability of going to the multilateral stage, lies in the interval from zero to one, this probability increases

whenever 1) the amount of settlement demand, S , increases; 2) C's delay loss, δ_c , decreases; 3) D's delay benefit, δ_d , increases; 4) the reputation loss, γ , decreases; 5) α increases.

Proof

See Appendix 1

As shown previously, in disputes between equal-sized nations, β is not important for nations' decisions, since both countries can retaliate so that no nation wins. The value of α turns out to be very useful. If the economic impact of the particular dispute is high (α is high), the dispute in question is more likely to be solved in the multilateral stage. In this sense, industry characteristics, which are related to α ,¹⁷ would be useful in explaining nations' behaviors. Among the variables specified in proposition 2, two variables, delay benefit (loss) and reputation loss, could be controlled by GATT. For example, to set up time limits for the multilateral stage procedure would reduce the delay benefit, and in this case, nations are more likely to settle their disputes in the bilateral stage. In order to settle more disputes in the bilateral stage, GATT need to devise ways to increase reputation loss and/or to decrease D's delay benefit. The DSP of WTO can be understood as the revision of the DSP of GATT for this direction.

Proposition 3 (Behavior between unequal-sized nations)

When there is a dispute between unequal-sized nations, assuming the interior solution to be the same as proposition 2, the probability of going to the multilateral stage increases as follows: 1) proposition 2 holds; 2) when β decreases (when D is a small nation); 3) when β increases (when D is a large nation).

Proof

This finding can be directly confirmed by equations (1) and (2). In equation (1), the first term of RHS is the expected payoff when D goes to the multilateral stage. In this instance, if C_D increases, the expected payoff naturally decreases. Thus, the variables that decrease C_D will increase the expected payoff of "going to the multilateral stage." As a result, the variables will increase the probability of going to the multilateral stage. As is shown in Table 1, when β decreases, C_D will decrease and the probability will increase in the case where D is a small nation, and the similar explanation may be given when β increases.

¹⁷ Please remember that α means the welfare loss from the violation of GATT's rules. Since national welfare includes that of producers, it is related with industry characteristics.

For the interpretation of this proposition, it may be helpful to imagine that the value of β varies in proportion to the intention to retaliate. For instance, the fact that "the decrease of β " is interpreted as the reduced possibility of retaliation, all other things being equal. Thus, the above proposition indicates that in a dispute between a large nation (C) and a small nation (D), the possibility that the disputes will be transferred to the multilateral stage will be *higher* as the possibility of C's retaliation is *lower*. On the contrary, in a dispute where D is a large and C is a small nation, the possibility of going to the multilateral stage will be *higher* as the possibility of D's retaliation is *higher*. (See Table 1)

This strategic bargaining model has some explanatory power for our main question: Why do or do not nations settle their disputes bilaterally? According to the implications of this model, the reasons are as follows. First, C asked for more than D could accept, so that D rejected C's offer in the bilateral consultations (S was very high). Second, D's delay benefit was so high that D had a strong incentive to go to the multilateral stage. Third, C's delay loss was not high enough to avoid the multilateral stage. Fourth, the value of α was so high that it led to a higher S and as a result, D could not accept C's bilateral offer. Fifth, the amount of reputation loss in the multilateral stage was so low that the expected cost was not high enough to prevent nations from transferring their disputes to the multilateral stage.

IV. EMPIRICAL EVIDENCE

Among the five implications suggested above, only the second, fourth, and fifth implications will be considered. The first implication is omitted since it is almost impossible to observe S , while the third implication is omitted since delay loss is basically the same as delay benefit. The main data source is Hudec's (1993) work, especially the appendix, which summarizes all 207 relevant disputes in DSP from 1948 through 1989. In this paper, only disputes that have occurred since 1969, or 148 cases, are included in the empirical analysis due to limitations of the data.¹⁸

Tables 2 and 3 show that while only 21 cases were settled in the stage of bilateral consultations (21 %), 81 cases were not settled in this stage and were transferred to the multilateral stage. Nations therefore show a dominant preference for going to the multilateral stage. This evidence is clearly contrary to domestic litigation, where most disputes are settled in the bilateral stage. For example, in antitrust cases filed over the period 1973-1983 in the U.S., about 80 percent were settled before going to trial.¹⁹ Similar results were reported in medical

¹⁸ According to Hudec (1993), it is difficult to identify whether pre-1960 disputes were handled as legal GATT complaints, or merely as complaints in the plenary meeting. He states, "The 53 complaints identified before 1960 include many episodes that would not be included in compendia using modern GATT forms as their benchmarks." Moreover, there were no disputes within DSP in the years from 1964 through 1968.

[Table 2] Nations' Behaviors in DSP (1969-1989)

Process	Cases
The Bilateral Stage (Total)	(44)
Settled through Bilateral Consultations	21
Uncertain cases	23
1) Bilateral / no good result / no claim to the multilateral stage	11
2) Bilateral / result not known*	10
3) Bilateral / withdrawal**	2
The Multilateral Stage (Total)	(81)

* The result of negotiation was not known even though bilateral consultations had begun.

** Withdrawn because of inappropriate legal problems or other reasons unrelated to the disputes, and therefore not covered here.

[Table 3] Nations' Behaviors in DSP (1969-1989) by Groups

Complainant Defendant:	OECD OECD : 1	US, EC US, EC : 2	OECD Dev** : 3	US, EC Dev** : 4	Dev** OECD : 5
The Bilateral Stage	(30)	(11)	(3)	(3)	(20)
Settled through Bilateral Consultations	17	6	1	1	3
Uncertain cases	(13)	(5)	(2)	(2)	(17(8))
1) Bilateral/no good result /no claim to the multilateral stage	4	0	1	1	16(7)*
2) Bilateral/result not known	7	3	1	1	1
3) Bilateral/withdrawal	2	2	0	0	0
The Multilateral Stage	64	28	7	5	13

* One case includes 10 developing countries as C.

** developing countries

malpractice cases from 1974 and 1976 in the U.S.. According to Patricia Danzon and Lee Lilliard (1983), only 6.7 percent of the total cases were actually tried. Most cases were settled in the bilateral consultations.

In the disputes between equal-sized nations, 17 cases (21%) were settled in the bilateral stage and 64 cases were transferred to the multilateral stage. Meanwhile, in disputes between unequal-sized nations, 4 cases (17%) were settled in the bilateral stage and 20 cases were transferred to the multilateral stage. This indicates that regardless of their size, nations show a higher preference for transferring their disputes to the multilateral stage.²⁰ This tendency is strengthened when a small nation is a defendant. As column 3 of Table 3

¹⁹ This research was originally done by Salop and White. The summary is also included in the paper by Kennan and Wilson (1993).

²⁰ This paper does not suggest the exact definition of national size. Rather, this paper roughly classifies members of OECD as large nations and others as small nations.

shows, one case among eight was settled in the bilateral stage (13%).

This evidence clearly indicates that transferring disputes to the multilateral stages has been considered better than settling in the bilateral stage. What is the reason? The second implication regarding D's high delay benefit offers an explanation. Every defending country can expect delay benefit if it transfers its dispute to the multilateral stage.

The three implications suggested above will be discussed by using the probit analysis. The dependent variable for the probit model is "GODSP" and the independent variables are USEC, AGR, ITEM, REP, and DELY.

Dependent Variable

GODSP: Assign 1 to a dispute that is transferred to the multilateral stage

Assign 0 to a dispute that is settled in the bilateral stage

Independent Variables

USEC: Assign 1 to a dispute where the defendant is the US or the EC

Assign 0 to a dispute where the defendant is neither the US nor the EC

AGR: Assign 1 to a dispute where an item in the dispute is an agricultural product

Assign 0 to a dispute where an item in the dispute is not an agricultural product

ITEM: Assign 1 to a dispute where a particular item or industry is involved

Assign 0 to a dispute where a particular item or industry is not involved

REP: REP is derived to embody the idea of policymakers' sense of obligation. The highest number representing reputation loss, 7, is assigned to the year when each multilateral trade negotiation (MTN) ends. One point is then incrementally deducted from that base year. (Refer to subsection 2.2.2.)

DELY: Assign 1 to a dispute when it is filed in a year MTN has been in progress

Assign 0 to a dispute when it is filed in a year MTN has not been in progress

The size of a nation, which is represented by USEC, may not be useful because most nations prefer to transfer disputes to the multilateral stage regardless of their size.²¹ The fourth implication indicates that the amount of α , which is intimately related to industry characteristics, is useful in explaining reasons for going to the multilateral stage. AGR and ITEM, as proxies of industry characteristics, are used to test this reasoning. REP and DELY are used as proxies to represent reputation loss, delay benefit respectively.

²¹ This paper will not make regressions to test the implications of unequal-sized nations (Proposition 3), since the number of data for this purpose is too small.

[Table 4] Regression Result of the Probit Model: 1969 through 1989.

Dependent Variable: GODSP

	A	B	C	D	E	F
CONST	0.70* (1.76)	1.14* (1.76)	0.46^ (1.61:11)	1.02* (1.74)		
USEC	0.16 (0.53:60)	0.16 (0.56:58)	0.22 (0.74:46)	0.24 (0.81:42)	0.48* (1.87)	0.37^ (1.3)
AGR	-0.13 (-0.45:64)		-0.21 (-0.69:49)		-0.05 (-0.17:86)	
ITEM		-0.54 (-0.93:36)		-0.75 (-1.21:23)		0.16 (0.56:57)
REP	0.01 (0.08:93)	0.01 (0.07:94)				
DELY			0.47^ (1.56:12)	0.53* (1.71)	0.76** (3.11)	0.62** (1.71)
Log Likelihood	-49.18	-48.08	-47.96	-47.34	-49.3	-47.3
# of Obs	92	92	92	92	92	92

^ : significant at 20% * : significant at 10% ** : significant at 5% *** : significant at 1%.

The first term in parentheses is t-value and the second term, the probability to accept the hypothesis that relevant coefficient is zero.

The regression result is summarized in Table 4. The result is generally unsatisfactory mainly because of insufficient data. First, USEC turns out to be statistically insignificant. This result is expected because nations show a dominant preference for transferring disputes to the multilateral stage. Second, AGR and ITEM turn out to be statistically insignificant in spite of their implied significance. However, it seems to be hasty to conclude that industry characteristics are not important since AGR and ITEM might not be suitable proxies for them. Third, REP is completely insignificant. It indirectly indicates that reputation loss might not be an important factor in the bilateral stage. Fourth, DELY turns out to be significant. The significance of DELY indicates that when multilateral trade negotiations (MTN) are in progress, nations have a greater tendency to transfer their disputes to the multilateral stage than otherwise.

For a deeper analysis of delay benefit, this paper also considers the variables of REXP and REXPC, which are defined as follows.

REXP: The ratio of export to GDP in a defending nation

REXPC: The ratio of export toward a complaining country to total export in a defending nation

[Table 5] Regression Result of the Rrobit Model: 1969 through 1989
Dependent Variable: GODSP

	A	B	C	D	E	F
CONST	0.67** (1.87)	0.44^ (1.42:16)	1.09* (1.80)	0.82^ (1.32:19)		
USEC	0.17 (0.57:57)	0.29 (0.96:34)	0.18 (0.62:54)	0.29 (0.96:34)	0.43^ (1.52:13)	0.34 (1.24:22)
AGR	-0.13 (-0.47:64)	-0.06 (-0.19:85)				
ITEM			-0.55 (-0.95:34)	-0.42 (-0.73:47)	0.25 (1.04:30)	0.25 (0.81:42)
REXP	0.003 (0.22:83)		0.004 (0.30:77)			0.02 (1.20:23)
REXPC		0.01^ (1.37:18)		0.01^ (1.29:20)	0.02** (2.12)	
Log Likelihood	-49.16	-48.20	-48.77	-47.93	-48.93	-50.63
# of Obs	92	92	92	92	92	92

^ : significant at 20% * : significant at 10% ** : significant at 5% *** : significant at 1%

The first term in parentheses is t-value and the second term, the probability to accept the hypothesis that the relevant coefficient is zero.

The result of the regression is summarized in Table 5. This clearly shows that REXP is not a good variable for explaining nations' decisions whether or not to go to the multilateral stage. Rather, REXPC turns out to be significant. Nations prefer to go to the multilateral stage when the export ratio to the complaining country is great. In other words, when defending nation's exports are more dependent upon the complaining nation, the defending nation has a greater preference for going to the multilateral stage.

As is suggested before, D would expect more delay benefit by going to the multilateral stage, since at least some amount of time is necessary for setting up a panel and concluding a panel report. And, it is certain that the amount of delay benefit is proportional to that of α . Then, given propositions 2 and 3, it is also certain that the probability of going to the multilateral stage is greater, the higher is α . Thus, whenever exports of a defending nation are greatly dependent upon a particular nation, the value of α would tend to be greater in a relationship with a particular nation than in a relationship with other nations. Thus, the higher REXPC, the higher the probability of α , and accordingly, the higher delay benefit and the higher probability of going to the multilateral stage. Based on this, REXPC might be regarded as a proxy of delay benefit, though

not an excellent one.

V. CONCLUDING REMARKS

The aim of this paper is to analyze why nations do or do not settle their disputes bilaterally. This paper provides a strategic bargaining model where the implications of the multilateral stage and the analysis of Reinganum and Wilde (1986) are both considered.

The most important finding in this paper is that delay benefit is a very important factor in the bilateral stage. Most nations prefer to transfer their disputes into the multilateral stage because they obtain delay benefit by doing so. The significance of delay benefit is indicated from the model and is confirmed by a regression analysis, where the proxy variables of DELY and REXPC represent delay benefit. In addition, this paper indicates that the size of a nation is not important in the bilateral stage and this indication is confirmed by a regression analysis. However, although the model indicates that industry characteristics and reputation loss may be important, their importance is not fully confirmed because of insufficient data.

There is one caveat. The model and its implications are largely dependent on the assumption of information asymmetry about q . Although this seems reasonable, it is difficult to confirm that information asymmetry is the real reason for nations not settling disputes bilaterally. From this sense, this model should be regarded as an attempt to explain nations' behavior in choosing the bilateral or multilateral method in settling disputes.

This model does have an important practical implication regarding the function of DSP. If there is a good mechanism for providing sufficient information about q to the member countries, this mechanism will help them settle their problems in bilateral negotiations, and/or will help them prevent disputes. Although full and perfect information might not always be available, member countries can get mutual benefits if they can get any piece of information more easily and conveniently. The Trade Policy Review Mechanism (TPRM), which was introduced in the later period of GATT and activated fully in the WTO, is a good example. Thanks to TPRM, member countries can evaluate their own policies regularly and they can easily access the information about trading partners' trade policies.

Appendix 1

<Proof of proposition 1>²²

1) Given $p^*(S)$, S^* maximizes the expected payoff of the complainant,

$$V_C = p^*(S)(qa - C_C) + (1 - p^*(S))S.$$

<Proof>

First, $S > S''$ are dominated by S'' since,

$$\begin{aligned} V_C(S'') - V_C(S) &= p^*(S'')(qa - C_C) + (1 - p^*(S''))S \\ &\quad - p^*(S)(qa - C_C) - (1 - p^*(S))S \end{aligned}$$

Combining the fact that $S'' = ba + C_D$ and $p^*(S) = 1$ for $S > S''$, then

$$V_C(S'') - V_C(S) = (1 - p^*(S''))(a(b - q) + C_C + C_D) > 0.$$

Second, $S < S'$ are dominated by S' , since

$$\begin{aligned} V_C(S') - V_C(S) &= p^*(S')(qa - C_C) + (1 - p^*(S'))S \\ &\quad - p^*(S)(qa - C_C) - (1 - p^*(S))S \\ &= p^*(S')(qa - C_C) + (1 - p^*(S'))(aa + C_D) + S > 0 \end{aligned}$$

Thus, for any $q \in [a, b]$, it follows that $S^* = s(q) \in [S', S'']$

In this interval, we know that

$$\begin{aligned} p^*(S) &= 1 - \exp(-(S' - S)/T) \\ p^{*'}(S) &= 1/T(\exp(-(S' - S)/T)). \end{aligned} \tag{1}$$

However, we know

$$\partial V_C / \partial S = p^{*'}(S)(qa - C_C - S) + 1 - p^*(S) \tag{2}$$

Substituting (1) into (2), we get

$$= \exp(-(S' - S)/T)(qa + C_D - S) = 0$$

²² The proof of Proposition 1 is basically the same as Reinganum & Wilde (1986), Appendix.

Since $\exp((S' - S)/T) > 0$, $q\alpha + C_D - S$ should be zero. Thus, we get

$$S^* = q\alpha + C_D \quad (3)$$

By the way,

$$\partial^2 V_C / \partial S^2 = -\exp((S' - S)/T)(1/T)(q\alpha + C_D - S) - 1 \quad (4)$$

When $S^* = q\alpha + C_D$, (4) is less than zero.

Thus S^* is a local (here global) maximizer.

2) Given $\mu^*(S)$, $p^*(S)$ maximizes the expected payoff of the defendant

$$V_D = \rho(-\mu(S)\alpha + C_D) + (1 - \rho)(-S).$$

<Proof>

For $S > S''$, $\mu^*(S) = b$. Here,

$$V_D = \rho(-\alpha b - C_D) + (1 - \rho)(-S).$$

In this V_D , $\rho = p^*(S) = 1$ is optimal.

For $S < S'$, $\mu^* = a$. Here,

$$V_D = \rho(-\alpha a - C_D) + (1 - \rho)(-S).$$

In this V_D , $\rho = p^*(S) = 0$ is optimal, since $\alpha a + C_D < S$.

For $S^* \in [S', S'']$, $\mu^*(S) = (S - C_D)/\alpha$

Here, $V_D = -S$. In this V_D , V_D is independent of ρ .

Thus, $p^*(S) = -1 - \exp((S' - S)/T)$ is optimal.

3) $\mu^*(S) \in [a, b]$ for all S and $\mu^*(S^*(q)) = q$ for all $q \in [a, b]$.

<Proof>

It is certain through the former proofs 1) and 2).

<Proof of proposition 2 >

We know that if ρ is interior solution, $\rho \in [0, 1]$,

$$p^*(S) = 1 - \exp((S' - S)/T), \text{ where } T = \delta c - \delta d + \gamma.$$

$$dp^*(S)/dS = \exp(g(x))(1/T) > 0, \text{ where } g(x) = (S' - S)/T.$$

Similarly,

$$dp^*(S)/d\delta c = -\exp(g(x))((S - S')/(\delta c - \delta d + \gamma))^2 < 0$$

$$dp^*(S)/d\delta d = -\exp(g(x))((S' - S)/(\delta c - \delta d + \gamma))^2 > 0$$

$$dp^*(S)/d\gamma = -\exp(g(x))((S - S')/(\delta c - \delta d + \gamma))^2 < 0$$

If we replace S' and S in $p^*(S)$ with $S' = a\alpha + C_D$ and $S = q\alpha + C_D$, then we get

$$p^*(S) = 1 - \exp((a - q)\alpha/T). \text{ Thus,}$$

$$dp^*(S)/d\alpha = -\exp((a - q)\alpha/T)((a - q)/T) > 0.$$

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