

The Politics of WTO Enforcement Mechanism

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Abstract

This paper analyzes the influence of domestic political considerations by disputing governments on the WTO enforcement outcome, following a violation ruling against the defendant. Since a different mix of import or export sectors in the disputing countries will benefit from the alternative enforcement outcomes – compliance, compensation, retaliation, and the status quo, they become competing forces that steer the strategic interactions between the disputing governments. This paper first studies the complainant’s retaliation capacity and strategy in formulating the retaliation list, and then examines the scope of settlement possibilities between the disputing parties. The results of the paper provide a synopsis of the disputing governments’ political payoffs under the alternative enforcement scenarios and the conditions that determine the outcome of the implementation.

Keywords: trade sanction; enforcement failure; compliance; compensation; political economy

JEL classification: F13; K33; K42

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Consult before you legislate;/ Negotiate before you litigate;/ Compensate before you retaliate;/
And comply—at any rate. — *European Commissioner for Trade, Pascal Lamy*

1. INTRODUCTION

The World Trade Organization (WTO) dispute settlement procedure (DSP) has seen quite a successful track record of *compliance*, where a defendant government found in violation of a WTO rule implements the panel/appellate body’s recommendations within a reasonable period of time. Nonetheless, the record is overshadowed by a couple of noncompliance cases, where the defendant government does not correct the violations and the complainant responds by seeking authorization from the WTO to suspend application to the scofflaw government of concessions or other obligations. The cases where the complainant has actually carried out the *retaliation* are the famous disputes of beef hormones and bananas against the European Communities (EC).¹ Meanwhile, some cases with a “violation” ruling have been resolved through an intermediate enforcement scheme, *compensation*. In this arrangement, the losing defendant compensates the complainant by conceding at other sectors while maintains the WTO-illegal trade measure. Table 1 provides a breakdown of the WTO disputes in terms of their procedural and enforcement outcomes.

Although compliance is the preferred outcome in the WTO legal framework, and compensation and retaliation are deemed only temporary measures intended to induce compliance, compliance is not always easy and forthcoming. Some trade-related policies proved politically difficult to be dismantled, such as the EC regulation of beef hormones and the United States tax treatment for Foreign Sales Corporations (FSC).² This is in spite of the foreseeable retaliation from the complaining party, and its likely impacts on the defendant’s export sectors and the political costs that will be borne by the defendant government. On the other hand, since the complainant government enjoys wide latitude in determining the hit list of retaliation, this is likely to mobilize both the import and export interests at the complainant country and to work in conflicting directions to influence the making of the retaliation list.³ This paper attempts to develop an economic framework to analyze the political forces that propel or impede the possibility of compliance. In particular, the paper will address the following questions. Given the political and economic environments of the disputing parties, will we see the desired result of compliance in a particular dispute? If not, how likely relatively are the alternative arrangements of compensation and retaliation? If retaliation is called upon, what are the sectors that will be targeted?

¹WTO DS26, European Communities: Measures concerning meat and meat products (hormones) (brought by US): 31 January 1996; WTO DS27, European Communities: Regime for the importation, sale and distribution of bananas (brought by Ecuador, Guatemala, Honduras, Mexico, US): 12 February 1996; WTO DS48, European Communities: Measures affecting meat and meat products (hormones) (brought by Canada): 8 July 1996.

²WTO DS108, United States: Tax treatment for Foreign Sales Corporations (brought by EC): 28 November 1997.

³See Charnovitz (2001) for a similar comment.

This paper portrays the disputing parties as democratic governments which face domestic political constraints, as well as the rules of enforcement laid down by the WTO dispute procedure. They are mindful of the impacts of various enforcement outcomes – compliance, compensation, retaliation, and the status quo – on industry interests as well as on aggregate welfare, and choose strategies that best serve their political interests. The model of the paper characterizes the specific rules of enforcement stipulated by the WTO and carried out by countries in practice, in an attempt to reflect the realistic incentives and constraints countries face under the WTO enforcement mechanism. The paper also captures the asymmetric enforcement power problem common in bilateral trading relationships. This is done by constructing a three-country trading system with multiple sectors. Enforcement failures arise when the complainant has no retaliation capacity to induce compliance or some form of compensation from the defendant. As the WTO enforcement is carried out bilaterally, enforcement failure under the system is prone to happen when country sizes differ a lot and when trade flows among countries are very asymmetric.

Several implications follow from the analysis in this paper. First, the likelihood that compliance will emerge as a political equilibrium outcome depends on the relative political power of the defendant's sectors which have benefited from the existing illegal trade policy, versus that of his export sectors which will be the targets of retaliation. The determination of the hit list of retaliation by the complainant, in turn, depends on the complainant's retaliation capacity. The complainant will, within his retaliation capacity and the level authorized by the WTO, target the defendant's export sectors which has the greatest political clout, if compliance is foreseeable with the threat of this list. If not, the retaliation list will instead consist of the complainant's import sectors such that the list maximizes the complainant government's domestic political gain relative to the status quo. When compliance outcome is not likely, but the complainant has some retaliation capacity, it is possible to avoid retaliation by identifying some mutually agreeable compensation scheme which makes both governments better off. The possibility of such settlement depends on the relative political strength of the defendant's import sectors which will lose from the compensation scheme versus that of his export sectors which will lose from retaliation, and on the relative political strength of the complainant's export sectors which will benefit from the compensation scheme versus that of his import sectors which will benefit from retaliation.

By focusing on the strategic interaction of politically-motivated governments at the enforcement stage of the WTO dispute procedure, the paper has abstracted from the immediate question of countries' incentives to initiate the WTO dispute procedure in the first place and disputants' strategic interactions during the entire dispute process. These subjects are studied in Bütler and Hauser (2000) and Chang (2002). Another question that attracts a major proportion of research interests in the literature concerns the role of the WTO dispute procedure in strengthening or weakening the pace of multilateral trade liberalization. Contributions to this

literature include Hungerford (1991), Kovenoch and Thursby (1993), Ludema (2001), and Maggi (1999). An insightful review of this literature is given in Staiger (1995). This literature regards the international trade agreements as cooperative efforts by the world trading partners to simultaneously reduce unilateral trade restrictions so as to remove the externality that countries' trade policies may inflict on one another. The Pareto-superior equilibrium of trade policy cooperation is sustained by the threat of future trade wars following any country's deviation from the agreed-upon tariff and subsidy ceilings. In this literature, the dispute procedure usually plays a minimal role as a mechanism of information dissemination, a forum of communication, or an administrator of retaliation, with no inherent enforcement power.⁴ The enforcement power comes ultimately from the threat of countries' reverting to the state of multilateral trade wars. This view of the previous literature is useful in understanding the post Second World War experience of multilateral trade liberalization, whereby nations strive to cooperate in trade policies in order to avoid the vicious circle of trade wars in the 1920s–30s. However, it is less helpful in explaining the facts that nations still deviate from their tariff and subsidy commitments repeatedly, that retaliation is an infrequent incidence, and that the world trading system still operates quite smoothly without plunging into an overall trade war despite recurring deviations.⁵ To put the economic framework of the current paper into perspective, the author suggests an alternative view about the WTO dispute settlement procedure to what has been proposed by the previous literature. The WTO dispute settlement procedure may be considered as performing the role as a re-balancing mechanism of *bilateral* concessions and obligations between countries during the intervals between periodic multilateral trade negotiations. It provides a speedy bilateral re-alignment of trade concessions and obligations in response to frequent changes in the political and economic environments of trading nations, before the next round of multilateral negotiations take place. To prevent the re-balancing of trade concessions from developing into overall trade wars, withdrawals of concessions are carefully meted out by the WTO dispute procedure, and since the threatened retaliation or re-balancing of trade concession is carried out bilaterally, enforcement failures do occur. However, the order of the overall trading system is maintained with the threat of its complete breakdown, as is highlighted by the previous literature.

The rest of the paper is organized as follows. Section 2 first lays out the political and economic framework of the trading world. In Section 3, the paper then analyzes the complainant's retaliation capacity and strategy in formulating the retaliation list. Section 4 examines the settlement possibilities between the disputing parties and the Pareto optimal ones among them. Section 5 then examines the relationship between the equilibrium enforcement outcome and the structure of the disputing governments' political payoffs under

⁴Kovenoch and Thursby (1993) is an exception by proposing the notion that countries feel a sense of "international obligation" to conform to the multilateral trade agreements, which implies an extra cost to violate the agreements in addition to the threat of trade wars.

⁵See Ethier (2001) for similar comments.

alternative enforcement scenarios. The results are summarized in Propositions 1 to 4. Concluding remarks are collected in Section 6.

2. THE BASIC FRAMEWORK

I consider a world with three countries: the defendant, the complainant, and the rest of the world. The economies of the defendant and the complainant are potentially large such that trade policies of one country may affect the welfare of another country.⁶ The countries in the world are assumed to share similar economic and political structures à la Grossman and Helpman (1994, 1995a,b), whose basic framework is summarized in the appendix.

Let (τ^d, τ^c, τ^w) denote the trade policies that the defendant, the complainant, and the rest of the world use respectively. In particular, the trade policy vector τ^j of country j contains the trade taxes or subsidies in all sectors $(\tau_1^j, \dots, \tau_n^j)$ for $j = \{d, c, w\}$. If sector i in country j is an import sector, τ_i^j corresponds to one plus the ad valorem tariff rate; if it is an export sector, τ_i^j corresponds to one plus the export subsidy rate. Suppose p_i^* is the prevailing international price of good i . Then the domestic price of good i in country j is $p_i^j = \tau_i^j p_i^*$. Let $M_i^j(p_i^j)$ denote the import demand for good i by country j given the domestic price p_i^j . A negative M_i^j indicates that country j is an export supplier of good i . In some sectors, one or both of the defendant and complainant countries may be importing from the other countries, while in some other sectors, both countries may be exporting to the rest of world. Since the world trade must balance in every sector given the trade policies used by the countries, the international price of good i at the equilibrium satisfies:

$$M_i^d(\tau_i^d \cdot p_i^*) + M_i^c(\tau_i^c \cdot p_i^*) + M_i^w(\tau_i^w \cdot p_i^*) = 0 \quad (1)$$

for $i = 1, \dots, n$. Therefore, equation (1) defines the equilibrium international price of good i as a function of countries' trade policies in sector i : $p_i^* = p_i^*(\tau_i^d, \tau_i^c, \tau_i^w)$ for $i = 1, \dots, n$. It is straightforward to verify that

$$\frac{dp_i^*}{d\tau_i^j} = \frac{-\frac{dM_i^j}{dp_i^j} p_i^*}{\frac{dM_i^d}{dp_i^d} \tau_i^d + \frac{dM_i^c}{dp_i^c} \tau_i^c + \frac{dM_i^w}{dp_i^w} \tau_i^w} < 0, \quad (2)$$

for $j = \{d, c, w\}$ and $i = 1, \dots, n$, where I have used the regularity assumption that $\frac{dM_i^j}{dp_i^j} < 0$ and the positive constraint that $\tau_i^j > 0$ for $j = \{d, c, w\}$ and $i = 1, \dots, n$. Equation (2) states that other things being equal, an increase in the import tariff (or export subsidy) for a sector by any of the countries will depress the

⁶If the defendant is a small country, its trade policies has no effect on the world prices and on the complainant's welfare. This can not explain the complainant's action to file the dispute in the first place.

equilibrium international price in the sector. Furthermore, it can be shown that

$$\begin{aligned} \frac{dp_i^j}{d\tau_i^k} &= \tau_i^j \frac{dp_i^*}{d\tau_i^k} + p_i^* \frac{d\tau_i^j}{d\tau_i^k} \\ &= \begin{cases} \frac{-\frac{dM_i^k}{dp_i^k} \tau_i^j}{\frac{dM_i^d}{dp_i^d} \tau_i^d + \frac{dM_i^c}{dp_i^c} \tau_i^c + \frac{dM_i^w}{dp_i^w} \tau_i^w} p_i^* + p_i^* > 0 & \text{if } j = k \\ \frac{-\frac{dM_i^k}{dp_i^k} \tau_i^j}{\frac{dM_i^d}{dp_i^d} \tau_i^d + \frac{dM_i^c}{dp_i^c} \tau_i^c + \frac{dM_i^w}{dp_i^w} \tau_i^w} p_i^* < 0 & \text{if } j \neq k \end{cases} \end{aligned} \quad (3)$$

for $j, k = \{d, c, w\}$, and $i = 1, \dots, n$. Hence, other things being equal, a country, by increasing the import protection (or export subsidy) for a sector, will raise the domestic price of the good at home but will lower the domestic price of the good in other countries through the decrease in the equilibrium international price.

As described in the appendix, the profit Π_i^j of sector i in country j increases with the domestic price of the same sector p_i^j . Therefore,

$$\frac{d\Pi_i^j}{d\tau_i^k} = \frac{d\Pi_i^j}{dp_i^j} \frac{dp_i^j}{d\tau_i^k} \begin{cases} > 0 & \text{if } j = k \\ < 0 & \text{if } j \neq k, \end{cases} \quad (4)$$

i.e. the profit in sector i increases with the domestic protection in the same sector, but decreases with the protection overseas in the same sector. Thus, the objective of interest groups is to influence the local government to increase protection for the sector they represent, while at the same time to influence the local government to pressure his trading partners to lower their protection in the same sector.

On the other hand, the effect of protection on the aggregate welfare of the local country or its trading partners is less clear cut. A country's aggregate welfare depends on the equilibrium international prices, as well as the domestic prices. Given the economic structure described in the appendix, it can be shown that

$$\frac{dW^j}{d\tau_i^k} = -M_i^j \frac{dp_i^*}{d\tau_i^k} + (p_i^j - p_i^*) \frac{dM_i^j}{d\tau_i^k}, \quad (5)$$

where W^j is the aggregate welfare of country j , which includes total labor income, total profits, total trade tax revenues net of subsidy expenditures, and aggregate consumer surplus.⁷ The first term in equation (5) can be interpreted as the terms of trade (TOT) effect on country j of the trade policy change in country k , and the second term the effect of this change on the magnitude of deadweight loss (DWL) incurred by country j due to its own existing trade policy. A positive (negative) first term indicates a TOT gain (loss), while a

⁷ $M_i^j > 0$ if country j is an importer of good i , and $M_i^j < 0$ if country j is an exporter of good i ; $\frac{dp_i^*}{d\tau_i^k} < 0$ as shown in equation (2); $(p_i^j - p_i^*) > 0$ if there is an import tariff (export subsidy), and $(p_i^j - p_i^*) < 0$ if there is an import subsidy (export tax); $\frac{dM_i^j}{d\tau_i^k} = \frac{dM_i^j}{dp_i^j} \frac{dp_i^j}{d\tau_i^k} < 0$ if $j = k$, and $\frac{dM_i^j}{d\tau_i^k} > 0$ if $j \neq k$.

positive (negative) second term indicates an improvement (worsening) in the country's deadweight loss. For example, an increase in import tariff by country k on good i has a negative TOT effect on a country that exports the good, but has a positive effect on the exporting country's deadweight loss if an export subsidy is originally in place. The original export subsidy expands the exporting country's trade artificially, so the decrease in the TOT, which brings about lower exports, actually works to reduce the exporting country's deadweight loss due to excess trade. Thus, an increase in the import tariff by an importing country has a possibly positive or negative welfare effect on a country that exports the good, depending on the relative strength of TOT loss and the improvement in DWL.

Overall, depending on the initial protection structure of the countries, the effects of one country's trade policy change can have different implications on the other countries' aggregate welfare. We can study the effects under all possible scenarios, given equation (5). However, since import subsidy or export tax is rarely in use, I choose to focus on the case where import tariff and export subsidy are the only instruments used by countries. In this case, other things being equal, a country, by increasing the import tariff of one sector, has a possibly positive or negative welfare effect on the country itself and on the countries that export the good, but will benefit any other country that imports the good. On the other hand, an increase in export subsidy will have a negative welfare effect on the local country, a positive welfare effect on the countries that import the good, and a possibly positive or negative welfare effect on any other country that exports the good.

Let W_i^j denote the proportion of aggregate welfare in country j that is attributable to sector i (the profit of sector i , the tariff revenue or subsidy expenditure of sector i , and the consumer surplus derived from good i). Then given the political objective function of the government described in the appendix, the political clout of sector i in country j is $\Pi_i^j + a^j W_i^j$, which includes government j 's concern for the welfare of the domestic interest group representing sector i and the aggregate welfare attributable to sector i . The parameter a^j captures government j 's relative attention to aggregate welfare versus special interests. Governments each choose actions that maximize their political welfare $G^j = \sum_{i=1}^n \Pi_i^j + a^j \sum_{i=1}^n W_i^j$, for $j = \{d, c, w\}$, subject to any international rules and constraints.

I now examine the political incentives the governments face under the WTO enforcement mechanism. The mechanism can be characterized as follows. Initially, countries agree to a set of tariff/subsidy commitments after the latest round of trade negotiation. The defendant later deviates and exceeds the tariff/subsidy bindings in some sector. The breach is challenged by the complainant and later ruled by the WTO to be in violation of the WTO agreements. The complainant may retaliate against the defendant if the latter fails to comply or compensate. The retaliatory action if taken by the complainant is discriminatory in nature and is usually carried out in practice by imposing 100% import tariffs on selected products from the defendant. To simplify analysis, I will focus on the case where the defendant's violation is non-discriminatory in nature

and does not target a particular trading partner. However, for some reason not investigated in this paper, this violation is challenged by the complainant alone. I will also assume that the effect of imposing a 100% retaliatory tariff by the complainant is equivalent to that of a prohibitive tariff. Therefore, the defendant's exports affected by the tariff are excluded from the complainant's market. This approximation is close to what countries have in mind in practice when they undertake such retaliatory action. As documented by Charnovitz (2001), both the United States and Canada in the *Hormone* case retaliated against the EC using 100% ad valorem tariffs, with an intention for them to be prohibitive.

Suppose under some initial political and economic structure, the countries negotiate and agree to implement the MFN trade policies $(\tau_{i,l}^d, \tau_{i,l}^c, \tau_{i,l}^w)$ for $i = 1, \dots, n$. Suppose some changes occur later to the world's political and economic structure which prompt the defendant government to defy the agreement and raise protection for some sector(s). Let $(\tau_{i,q}^d, \tau_{i,q}^c, \tau_{i,q}^w)$ for $i = 1, \dots, n$ denote the new MFN protection structure after the defendant breaks the rules, and before the other countries take any action in response to the defendant's violation. Let the current political and economic structure of the world be summarized by $(a^j, \Pi_i^j(\cdot), M_i^j(\cdot), W_i^j(\cdot))$ for $j = \{d, c, w\}$. Along with the trade policies in use, this determines the prevailing world and domestic prices: $p_{i,q}^*$ and $p_{i,q}^j$ for $j = \{d, c, w\}$ and $i = 1, \dots, n$. The prevailing world price $p_{i,q}^*$ satisfies: $M_i^d(p_{i,q}^d) + M_i^c(p_{i,q}^c) + M_i^w(p_{i,q}^w) = 0$ for $i = 1, \dots, n$, where $p_{i,q}^d = \tau_{i,q}^d p_{i,q}^*$, $p_{i,q}^c = \tau_{i,q}^c p_{i,q}^*$ and $p_{i,q}^w = \tau_{i,q}^w p_{i,q}^*$. The government's political welfare under this state is (G_q^d, G_q^c, G_q^w) , where $G_q^j = \sum_{i=1}^n \Pi_i^j(p_{i,q}^j) + \sum_{i=1}^n W_i^j(p_{i,q}^j, p_{i,q}^*)$. I will refer to this state as the status quo.

Afterwards, suppose the complainant successfully challenges the defendant's new trade policy and the WTO recommends the latter to bring his policy into conformity with the agreement. The defendant may comply, try to settle with the complainant, or else face the likelihood of retaliation from the complainant. If the defendant complies, the old protection structure of the world $(\tau_{i,l}^d, \tau_{i,l}^c, \tau_{i,l}^w)$ reapplies. Let $p_{i,l}^*$ and $p_{i,l}^j$, for $j = \{d, c, w\}$ and $i = 1, \dots, n$, denote the would-be prevailing world and domestic prices if the defendant complies under the current political and economic structure $(a^j, \Pi_i^j(\cdot), M_i^j(\cdot), W_i^j(\cdot))$. Then, the world price $p_{i,l}^*$ satisfies: $M_i^d(p_{i,l}^d) + M_i^c(p_{i,l}^c) + M_i^w(p_{i,l}^w) = 0$ for $i = 1, \dots, n$, where $p_{i,l}^d = \tau_{i,l}^d p_{i,l}^*$, $p_{i,l}^c = \tau_{i,l}^c p_{i,l}^*$ and $p_{i,l}^w = \tau_{i,l}^w p_{i,l}^*$. The government's political welfare under this state, if the defendant complies, is (G_l^d, G_l^c, G_l^w) , where $G_l^j = \sum_{i=1}^n \Pi_i^j(p_{i,l}^j) + \sum_{i=1}^n W_i^j(p_{i,l}^j, p_{i,l}^*)$.

On the other hand, if the defendant fails to comply or to settle with the complainant, the complainant may retaliate with the WTO's authorization up to the level determined as appropriate by the WTO. I will investigate the complainant's decision in choosing the list of sectors to retaliate in a moment in Section 3. But first of all, I characterize the equilibrium world and domestic price that will emerge in a sector if the sector is on the list, and the impact of this on the government's political welfare. Suppose sector i is on the retaliation list, and the complainant levies a 100% import tariff (in lieu of any existing tariff) on the

defendant's exports in sector i . Assume this rate of tariff is close to a prohibitive tariff. The equilibrium price that will arise depends on the structure of bilateral trade flows. First of all, if the complainant imports nothing from the defendant in sector i , the complainant can not retaliate against the defendant in this sector. By default, such sectors will not be on the list. Secondly, if the defendant is the sole exporter of good i , the complainant's retaliation will divert the defendant's exports toward the rest of the world, and the complainant has to satisfy his domestic demand by his available domestic supply. The equilibrium world price $p_{i,r}^*$ of good i if it is on the retaliation list is determined by:

$$M_i^d(p_{i,r}^d) + M_i^w(p_{i,r}^w) = 0,$$

where $p_{i,r}^d = \tau_{i,q}^d p_{i,r}^*$ and $p_{i,r}^w = \tau_{i,l}^w p_{i,r}^*$. The domestic price of good i in the complainant country is determined by: $M_i^c(p_{i,r}^c) = 0$. Thirdly, if the complainant is the sole importer of good i , the complainant will now import exclusively from the rest of the world and the defendant has to absorb all of his excess supply at home. In this case, the equilibrium world price $p_{i,r}^*$ of good i if it is on the retaliation list is determined by:

$$M_i^c(p_{i,r}^c) + M_i^w(p_{i,r}^w) = 0,$$

where $p_{i,r}^c = \tau_{i,l}^c p_{i,r}^*$ and $p_{i,r}^w = \tau_{i,q}^w p_{i,r}^*$. The domestic price of good i in the defendant country is determined by: $M_i^d(p_{i,r}^d) = 0$. In either case whether the defendant is the sole exporter or the complainant is the sole importer, if sector i is on the retaliation list, the domestic price of good i will increase in the complainant country and decrease in the defendant country, compared to the status quo, i.e. $p_{i,r}^c > p_{i,q}^c$ and $p_{i,r}^d < p_{i,q}^d$.

Given the effects on domestic prices, it follows that if good i is on the retaliation list, the impacts on the profits of sector i in the disputing countries are:

$$\Delta \Pi_i^c \equiv \Pi_{i,r}^c - \Pi_{i,q}^c > 0,$$

$$\Delta \Pi_i^d \equiv \Pi_{i,r}^d - \Pi_{i,q}^d < 0.$$

Thus, the interest group representing sector i in the complainant country will benefit from the retaliation act, while the interest group of the corresponding sector in the defendant country will suffer. Next, I turn to the effects of retaliation on the disputing countries' aggregate welfare. Given the same import tariff against the rest of the world as before, a rise in the domestic price at the complainant country as a result of the retaliation will lower its tariff revenue and increase its deadweight loss. Thus, the retaliation has a negative impact on the aggregate welfare of the complainant country. Furthermore, the retaliation will in general have

a negative impact on the aggregate welfare of the defendant country, unless the defendant's original export subsidy in sector i is highly distorting such that trade with the current subsidy is worse than without trade. In this case, restricting its exports by the complainant's retaliation actually lessens its aggregate welfare loss. Therefore,

$$\begin{aligned}\Delta W_i^c &\equiv W_{i,r}^c - W_{i,q}^c < 0, \\ \Delta W_i^d &\equiv W_{i,r}^d - W_{i,q}^d \lesseqgtr 0.\end{aligned}$$

Despite the possibly beneficial effect of retaliation on the aggregate welfare of the defendant country, I will argue that the retaliation in any given sector can not make the defendant government better off compared to the status quo, in terms of its political welfare $\Pi_i^d + a^d W_i^d$. This is because it is always possible for the defendant government to replicate the would-be domestic price under retaliation $p_{i,r}^d$ by *reducing* its existing export policy $\tau_{i,q}^d$. The act would be WTO-consistent and would render the interest group i as well off as under retaliation, while it would replicate or improve on the aggregate welfare under retaliation. The fact that the defendant government does not do so implies that the existing trade policy makes him better off than under retaliation. In summary, the retaliation in sector i will have a negative impact on the defendant government in terms of its political welfare. On the other hand, retaliation in sector i has a possibly positive or negative impact on the complainant government's political welfare, depending on the relative strength of the resulting welfare loss and the profit gain. Therefore,

$$\begin{aligned}\Delta \Pi_i^c + a^c \Delta W_i^c &\gtrless 0, \\ \Delta \Pi_i^d + a^d \Delta W_i^d &< 0.\end{aligned}$$

3. THE RETALIATION LIST

In the event that the defendant country fails to comply within the determined reasonable period of time or to reach a mutually satisfactory arrangement with the complainant, the complainant country may seek authorization from the WTO to retaliate. The Dispute Settlement Understanding (DSU) of the WTO stipulates that the level of retaliation be equivalent to the level of nullification or impairment suffered by the complainant. It is however somewhat hazy what the exact economic criterion should be used to measure the level of nullification or impairment and the level of retaliation. In practice, the determination of such level has been based on the amount of trade values restricted by an import-restricting measure,⁸ or the total

⁸The EC hormone case (WT/DS26/ARB; WT/DS48/ARB) and banana case (WT/DS27/ARB; WT/DS27/ARB/ECU).

amount of subsidy granted by an export-assisting policy.⁹ Once the level of nullification or impairment is determined by arbitration, the retaliation by the complainant country usually takes the form of imposing a 100% ad valorem tariff, in lieu of any existing tariffs, on selected imports from the defendant country with a total trade value equal to the determined level of nullification. It is far from clear that these operational methodologies will result in a balancing welfare effect on the disputing parties; in fact, most likely they will not, as discussed in Anderson (2002). However, I will take these practiced methodologies as given, and investigate the complainant's strategy in selecting the retaliation list and the ensuing strategic interactions between the parties.

Suppose the level of nullification or impairment is determined by WTO arbitration to be T . The complainant may select imports from the defendant that sum up to T and impose a 100% ad valorem tariff on them. Therefore, T is the maximum trade value authorized for retaliation. Let R represent the list of sectors or goods selected for retaliation by the complainant. Then the complainant's constraint of retaliation is $\int_{i \in R} T_i di \leq T$, where T_i is the trade value of imports from the defendant in sector i .

Given the authorized level T , the complainant has two potential strategies in selecting the retaliation list. The first strategy is to select the list such that the list maximizes his domestic political gain, through granting new protection to the selected industries. I call this list the *politically optimal retaliation list A* or $R^A(T)$. The second strategy is to select the list such that the list maximizes the political cost of the defendant government, which incurs loss of political support from the interest groups (as well as likely loss of aggregate welfare) in the selected sectors facing increased restrictions on their exports. I call this second list the *politically optimal retaliation list B* or $R^B(T)$.

To maximize domestic political gain given the authorized retaliation level T , it proves convenient to order the sectors such that $i \in [0, n]$ and $g_i = (\Delta\Pi_i^c + a^c \Delta W_i^c)/T_i$ decreases with i , where $\Delta\Pi_i^c = \Pi_{i,r}^c - \Pi_{i,q}^c$ and $\Delta W_i^c = W_{i,r}^c - W_{i,q}^c$. Note that in sectors where the complainant imports nothing from the defendant, retaliation in terms of import restriction is not possible. It follows that in these sectors, $\Pi_{i,r}^c = \Pi_{i,q}^c$, $W_{i,r}^c = W_{i,q}^c$, and $g_i = 0$. Let i_0 denote the lowest index such that $g_i = 0$. Thus, $g_i > 0$ for $i \in [0, i_0]$ and $g_i \leq 0$ for $i \in [i_0, n]$. In addition, define \hat{i} such that $\int_0^{\hat{i}} T_i di = T$.

Definition 1 *The politically optimal retaliation list $R^A(T)$, which maximizes the complainant government's political gain of retaliation given the WTO-authorized level T , is the set of sectors i such that $i \in [0, \min(i_0, \hat{i})]$.*

Note that the country's retaliation capacity is $T^0 \equiv \int_0^{i_0} T_i di$, the total trade value of imports from the defendant in the set of sectors i such that $g_i > 0$. If it so happens that $i_0 < \hat{i}$, then the country's retaliation capacity falls short of the full authorized level T . A complainant country that imports a lot

⁹The US FSC case (WT/DS108/ARB) and the Brazil aircraft case (WT/DS46/ARB).

from the defendant country has potentially higher retaliation capacity. However, an import sector does not automatically qualify as a potential sector to impose retaliation. Only the import sectors where the complainant government gains from the retaliation ($g_i > 0$) will be the candidates for the retaliation list. Therefore, if a complainant country can impose the discriminatory retaliatory tariffs on more of the imports from the defendant without suffering large aggregate welfare loss, the larger is the country's retaliation capacity. In the case that $i_0 > \hat{i}$, the complainant country has larger retaliation capacity than is authorized to exercise by the WTO; then sector $i \in [0, \hat{i}]$ are the sectors that maximize the complainant's domestic political gain of retaliation given the authorized level T .¹⁰

Alternatively, the complainant country may, within his retaliation capacity, select the retaliation list that maximizes the negative political impact on the defendant government. To facilitate exposition, let \mathcal{R} denote the set of sectors i such that $i \in [0, i_0]$, and \mathcal{N} the set of sectors i such that $i \in [i_0, n]$. Re-order the sectors in \mathcal{R} so that for $j \in [0, i_0]$, $h_j = (\Delta\Pi_j^d + a^d\Delta W_j^d)/T_j$ increases with j , where $\Delta\Pi_j^d = \Pi_{j,r}^d - \Pi_{j,q}^d$ and $\Delta W_j^d = W_{j,r}^d - W_{j,q}^d$. For notational convenience, also re-index the sectors in \mathcal{N} so that for $j \in [i_0, n]$, $j = i$. In sectors where the complainant does not import from the defendant, retaliation in terms of import restrictions is not possible. Therefore, in these sectors, $\Pi_{j,r}^d = \Pi_{j,q}^d$, $W_{j,r}^d = W_{j,q}^d$, and $h_j = 0$. As argued earlier, retaliation will render the defendant government worse off than in the status quo. It follows that $h_j \leq 0$ for all j , and $h_j < 0$ for $j \in [0, i_0]$. Finally, define \hat{j} such that $\int_0^{\hat{j}} T_j dj = T$.

Definition 2 *The politically optimal retaliation list $R^B(T)$, which maximizes the defendant government's political loss from the retaliation given the complainant's retaliation capacity and the WTO-authorized level T , is the set of industries j such that $j \in [0, \min(i_0, \hat{j})]$.*

Given the definition of $R^A(T)$ and $R^B(T)$, it is straightforward to see that for the complainant

$$\begin{aligned} G_{rA}^c &\equiv \int_{i \in R^A(T)} (\Pi_{i,r}^c + a^c W_{i,r}^c) di + \int_{i \notin R^A(T)} (\Pi_{i,q}^c + a^c W_{i,q}^c) di \\ &\geq \int_{j \in R^B(T)} (\Pi_{j,r}^c + a^c W_{j,r}^c) dj + \int_{j \notin R^B(T)} (\Pi_{j,q}^c + a^c W_{j,q}^c) dj \equiv G_{rB}^c \geq G^c, \end{aligned} \quad (6)$$

and for the defendant

$$\begin{aligned} G_q^d &\geq G_{rA}^d \equiv \int_{i \in R^A(T)} (\Pi_{i,r}^d + a^d W_{i,r}^d) di + \int_{i \notin R^A(T)} (\Pi_{i,q}^d + a^d W_{i,q}^d) di \\ &\geq \int_{j \in R^B(T)} (\Pi_{j,r}^d + a^d W_{j,r}^d) dj + \int_{j \notin R^B(T)} (\Pi_{j,q}^d + a^d W_{j,q}^d) dj \equiv G_{rB}^d. \end{aligned} \quad (7)$$

Therefore, between retaliation proposals $R^A(T)$ and $R^B(T)$, both parties prefer the former to the latter.

¹⁰See Evenett (2002) for an empirical study on the potential retaliation capacity of major trading countries.

There is no reason for the complainant to propose $R^B(T)$ unless it can induce a better outcome for the complainant than to propose $R^A(T)$. This point will become clear in Section 5.

4. THE SETTLEMENT POSSIBILITIES

Although the DSU states preference for full compliance with the panel/appellate body's recommendations within the determined reasonable period of time, it also allows the disputing parties to work out some compensation schemes as temporary solutions if immediate full compliance by the defendant government is not feasible. Compensation is supposed to be carried out through additional openness of the defendant's domestic market in some sectors and at a magnitude agreeable to both parties. However, in practice, a dispute can also be resolved at this stage through other alternative mutually agreed solutions. They may take the form of (i) partial removal of the contentious policy and (ii) restructuring of the original contentious policy to some kind of rent-sharing agreement, as pointed out in Bown (2002). I will pool all these intermediate enforcement outcomes in one category and label it "settlement." This category includes compensation schemes and other forms of mutually agreeable solutions. One task that might pose challenges to both disputing parties is to identify the set of settlement possibilities, and to locate the Pareto optimal ones among the available options. I investigate this issue below.

Before investigating the settlement possibilities, it is necessary to identify the ranking of the payoffs of compliance and the status quo for both parties, as these set the background for meaningful negotiations. Relative to the status quo, compliance by the defendant through removal of the contentious policy will raise the international price and domestic prices of other countries in the affected industries. This makes the complainant's interest groups in the affected sectors better off, but has a possibly positive or negative effect on the complainant's aggregate welfare. The latter effect depends on whether the complainant is an exporter or importer of the goods and on the complainant's original trade policy in these sectors.¹¹ However, I will argue that compliance by the defendant must render the complainant government politically better off in terms of its political objective: $G^c = \sum_{i=1}^n \Pi_i^c + a^c \sum_{i=1}^n W_i^c$, since otherwise, the government would not have filed the dispute in the first place. Therefore, $G_l^c = \sum_{i=1}^n \Pi_{i,l}^c + a^c W_{i,l}^c > G_q^c = \sum_{i=1}^n \Pi_{i,q}^c + a^c \sum_{i=1}^n W_{i,q}^c$. On the other hand, the defendant's compliance will hurt its local interest groups in the affected sectors, but will have a possibly positive or negative effect on its aggregate welfare, depending on the affected sectors' original trade structure and policies. Nevertheless, the fact that the defendant government adopted the contentious policy in the first place implies that revoking the policy, so as to conform to the WTO ruling, will render the defendant government politically worse off. Therefore, $G_l^d = \sum_{i=1}^n \Pi_{i,l}^d + a^d W_{i,l}^d < G_q^d = \sum_{i=1}^n \Pi_{i,q}^d + a^d \sum_{i=1}^n W_{i,q}^d$.

¹¹See equations (4) and (5).

The ranking of the two outcomes for the two disputing parties is illustrated in Figure 1, where the political welfare of the defendant government $G^d = \sum_{i=1}^n \Pi_i^d + a^d \sum_{i=1}^n W_i^d$ is indicated on the horizontal axis, and the political welfare of the complainant government $G^c = \sum_{i=1}^n \Pi_i^c + a^c \sum_{i=1}^n W_i^c$ on the vertical axis. The point representing the compliance outcome (L) thus lies above and to the left of the point representing the status quo (Q).

Given the basic ranking of compliance and the status quo, I now explore possible settlement schemes. First of all, whatever the settlement arrangements might be, they should not render the complainant worse off than the status quo, for such arrangements can not be agreeable to the complainant. Therefore, it must be the case that $G_s^c \geq G_q^c$. By the same token, any potential settlement arrangements can not render the defendant worse off than simply complying with the ruling and removing the policy. This implies that $G_s^d \geq G_l^d$.

Next, it is straightforward to see that if a settlement specifies a less than full removal of the original contentious policy, it will render the complainant not as well off as in the case of full compliance. A more interesting question is that whether it is possible that some compensation scheme might make the complainant better off than the defendant's full compliance. Would the complainant rather see some other sectors of the defendant's liberalized and allow the defendant to keep the contentious policy in place? I will argue that this is not likely. If the defendant offers a compensation scheme which allows him to keep the contentious policy violating previous commitment but at the same time adjusts downward trade restrictions in other sectors as rewards to the complainant, and this compensation scheme also makes the complainant government better off than the defendant's compliance, then this alternative scheme of trade policies should have been negotiated successfully between the two parties through the WTO safeguard clause. The fact that the complainant is challenging the defendant's contentious policy indicates that no such mutually beneficial compensation scheme, compared to the defendant's full compliance, is available. Therefore, I postulate that any compensation scheme that the defendant is willing to propose (i.e. which renders himself no worse off than complying) can not make the complainant better off than the state of compliance. It follows that $G_s^c \leq G_l^c$.

On the other hand, for the defendant, any partial compliance will render himself worse off than in the status quo, if full compliance does, which was argued to be true earlier in this section. Likewise, any compensation scheme where the defendant concedes at some other import sectors by reducing restrictions, will also render the defendant worse off than in the status quo. The argument is similar to that given earlier for $G_l^d < G_q^d$. The fact that some trade restrictions exist in these *scapegoat* sectors implies that the political clout ($\Pi_i^d + a^d W_i^d$) is maximized at the existing tariff/subsidy level in these sectors. Any cutback of tariffs/subsidies in these sectors implies a loss for the defendant government, relative to the status quo.

Therefore, it must be the case that $G_s^d \leq G_q^d$. Overall, therefore, the settlement possibilities are restricted to the rectangular area between “compliance” and the “status quo” as shown in Figure 1.

The set of settlement possibilities can be further pinpointed. First of all, all of the settlement schemes that involve partial compliance will yield payoffs that are weighted averages of the two polar outcomes, “compliance” and the “status quo”. This is represented by the line segment \overline{LQ} in Figure 1. Furthermore, as argued earlier, all potential compensation schemes will yield payoffs that lie within the rectangular box. To illustrate, assume for now that the parties can identify four such compensation schemes, whose payoffs are indicated respectively by S_1 , S_2 , S_3 , and S_4 . Then all convex combinations of the four compensation schemes and the two polar outcomes (compliance and the status quo) are also possible settlement arrangements. It is straightforward to see that the compensation scheme S_4 is inferior to a proper partial compliance scheme such as P , and the compensation scheme S_3 is inferior to some weighted average of the two other schemes S_1 and S_2 . Given the identified compensation options, the Pareto-optimal *settlement possibilities frontier*, which yields the highest payoff for one party given the payoff attained by another party, is the line segment connecting the four points L , S_1 , S_2 , and Q . The argument above can be generalized to other scenarios with different compensation options available to the two parties. The dashed curve LS_1S_2Q represents a limiting scenario where parties can identify a continuous stream of compensation possibilities. On the other hand, it is possible that in some case, there exist no feasible compensation schemes that lie to the northeast of \overline{LQ} . In this case, the settlement possibilities frontier reduces to the simple line segment \overline{LQ} .

5. EQUILIBRIUM OUTCOMES

The sequence of interactions between the disputing parties at the enforcement stage of the WTO dispute settlement procedure can be illustrated with the game tree in Figure 2. To simplify the analysis, I assume that the continuous flow payoffs attached to the final equilibrium outcome are countries’ major concerns and that the transition payoffs during the process can be safely ignored.

If the panel/appellate body’s final decision finds the contentious policy to be inconsistent with the WTO agreement, the defendant government has up to a reasonable period of time, usually determined by arbitration, to implement the panel/appellate body’s recommendations and comply with the rulings. If the defendant fails to do so, the defendant is recommended to enter into negotiations with the complainant with a view to reach a mutually acceptable compensation within 20 days following the expiry of the reasonable period of time. If no compensation schemes can be agreed between the parties within the time period, the complainant may request authorization from the WTO to retaliate against the defendant (DSU 22.2). Thus in Figure 2, the defendant at the first decision node is characterized as choosing between two alternative

actions, to “comply” or to “take no action” within the reasonable period of time, and at the second decision node following the expiry of the period, to propose to “settle” with the complainant or still to “take no action” and wait for the complainant’s response. The dispute ends with the WTO’s preferred outcome, if the defendant complies. The payoff for the two governments in this scenario is (G_l^d, G_l^c) .

If the defendant fails to take any action, the complainant may request authorization from the WTO to retaliate at a proposed level, which is subject to the defendant’s challenge and arbitrators’ modification (DSU 22.6 and 22.7). Once the level of retaliation equivalent to nullification or impairment is determined by arbitration, the complainant has the discretion to select sectors to carry out retaliation. Although the DSU sets out certain rules in the sector-selection process (DSU 22.3), the restriction is minimal. For example, the rule says that retaliation should be carried out in the same “sector” where the violation or other nullification or impairment is found. The “sector” in the DSU carries a different meaning from the usual economic definition. With respect to goods trade, all goods are considered by the DSU as in the same sector.¹² As a result, in our current context, where goods trade is the main concern, the rule virtually imposes no restriction on the complainant’s choice of sectors for retaliation. As discussed in Section 3, given his retaliation capacity, the complainant has two potential strategies in setting the retaliation list: one to maximize his domestic political gain and the other to maximize the negative political impact on the defendant. Therefore in Figure 2, following the defendant’s failure to take any action, the complainant’s strategy is indicated as choosing among “retaliation list *A*”, “retaliation list *B*”, or “taking no action.” The dispute ends with the status quo if the complainant does not take any retaliatory action. The payoff for the two governments is (G_q^d, G_q^c) .

Following the complainant’s proposal of either retaliation list, the defendant may decide whether to “comply”, to “settle”, or still to “take no action”. The dispute ends if the defendant complies, with a payoff of (G_l^d, G_l^c) . On the other hand, if the defendant does not take any action in response to the complainant’s retaliation threat, the complainant may then decide whether or not to carry out the retaliation as proposed. The payoff for the two governments is (G_{rA}^d, G_{rA}^c) if the retaliation list *A* is carried out, is (G_{rB}^d, G_{rB}^c) if the retaliation list *B* is carried out, and is (G_q^d, G_q^c) if the complainant does not carry out the retaliation. Finally, if the defendant proposes to settle following the complainant’s threat of retaliation, the complainant then has the option to accept, with a payoff of (G_s^d, G_s^c) , or to reject the proposal. If the complainant rejects the proposal, the defendant then decides whether or not to comply. If he complies, the payoff (G_l^d, G_l^c) accrues to the governments; if not, the complainant then either carries out the retaliation as proposed earlier, with a payoff of (G_{rA}^d, G_{rA}^c) in the case of proposal *A*, and a payoff of (G_{rB}^d, G_{rB}^c) in the case of proposal *B*, or takes no action with the status quo payoff (G_q^d, G_q^c) maintained.

Alternatively, the defendant may propose to settle in the very beginning, which the complainant may

¹²Service trade and intellectual property rights, on the other hand, have more detailed sector classifications.

accept, with a payoff of (G_s^d, G_s^c) , or reject. If no settlement is accomplished, the defendant then decides whether to comply or not. In the first case, the payoff (G_l^d, G_l^c) applies. In the second case, the complainant may propose to retaliate. The subsequent subgame is the same as the one discussed earlier that follows the defendant's inaction after the expiry of the reasonable period of time.

In what follows, I characterize the equilibrium outcome that will emerge under alternative conditions. The analysis is presented in a concise, intuitive way, but can be verified in a rigorous manner, by applying backward induction to the game tree as described in Figure 2.

5.1 The Enforcement Failure Scenario - Status Quo

If the complainant imports nothing from the defendant, or for all the sectors where the complainant imports from the defendant, retaliation renders the complainant government worse off – the loss in general welfare from retaliation dominates the gain in profits, then the complainant has no retaliation capacity ($g_i \leq 0$ for all i), and the status quo will remain.

To see this, note that when the complainant does not have retaliation capacity ($g_i \leq 0$ for all i), the *politically optimal retaliation lists* $R^A(T)$ and $R^B(T)$ are both empty ($i_0 = 0$). Therefore, the political welfare of the parties under either retaliation proposal is identical to the status quo. This scenario is indicated in Figure 3, where the point specifying the political welfare of the parties when the complainant follows the retaliation list $R^A(T)$ or $R^B(T)$ coincides with the point representing the status quo. In this case, if the defendant fails to comply or reach a settlement with the complainant, it is not credible for the complainant to carry out retaliation. Knowing this, the defendant will then choose to take no action. As a result, the status quo remains.

Proposition 1 (Status Quo) *The enforcement failure outcome arises if the complainant has no retaliation capacity ($i_0 = 0$, i.e. $G_{rA}^c = G_{rB}^c = G_q^c$). In this case, the defendant's illegal trade policy remains and the complainant does not retaliate. The political welfare of the disputing governments is (G_q^d, G_q^c) .*

This enforcement failure problem, prone to happen when country sizes differ a lot and when trade flows among countries are very asymmetric, is inherent in the current WTO enforcement mechanism where enforcement is carried out on a bilateral basis. Although this scenario does not occur very often in practice as shown in Table 1, it might be the case that the affected small countries simply do not attempt to bring such disputes to the WTO, anticipating the lack of enforcement power. The WTO has attempted to remedy this asymmetric enforcement power problem by authorizing, in the *Banana* case, the small complainant country, Ecuador, to retaliate with respect to obligations under the TRIPS agreements, beyond the conventional

enforcement instrument of 100% tariffs on goods trade. This extra enforcement power worked to propel the EU to reach a settlement deal with Ecuador.

5.2 The Partial Enforcement Scenario - Settlement

As discussed in Section 3, when the complainant becomes more powerful such that he has some retaliation capacity ($i_0 > 0$), imposing retaliation according to $R^A(T)$ or $R^B(T)$ will render the complainant government politically better off and the defendant government worse off than the status quo. In addition, the political payoffs for both parties, when the complainant carries out the alternative retaliation list $R^B(T)$, will be lower than those of $R^A(T)$. This is indicated in Figure 4, where the point corresponding to the retaliation list $R^B(T)$ lies to the southwest of the point corresponding to the retaliation list $R^A(T)$ and both points are located to the northwest of the point representing the status quo.

Suppose that the settlement possibilities frontier identified by the parties to the dispute is the dotted curve connecting the two polar scenarios, “compliance” and “status quo,” in Figure 4. In this scenario, both $R^A(T)$ and $R^B(T)$ are credible retaliation proposals. If the complainant publishes retaliation proposal $R^B(T)$ and the defendant does not comply or offer to settle, it is credible for the complainant to carry out $R^B(T)$, as it renders him better off than the status quo. Given that the biggest harm the complainant can inflict on the defendant with $R^B(T)$ is smaller than if the defendant complies, the defendant will not comply. However, the defendant can improve on $R^B(T)$ by offering to settle along the curve $\overline{s_1s_4}$, which the complainant will accept. Similarly, if the complainant publishes retaliation proposal $R^A(T)$, settlement along the curve $\overline{s_2s_3}$ is optimal for both. However, since the complainant can choose between $R^A(T)$ and $R^B(T)$, it will not take settlement offer that is less than his payoff at $R^A(T)$. Therefore, the settlement offer has to lie somewhere along the curve $\overline{s_1s_3}$. On the other hand, the defendant has no incentive to offer any settlement along the curve $\overline{s_1s_2}$, as any offer along $\overline{s_2s_3}$ will be accepted by the complainant regardless of whether $R^A(T)$ or $R^B(T)$ is threatened to be used. Therefore, the equilibrium outcome is some form of settlement along the curve $\overline{s_2s_3}$.

Proposition 2 (Settlement) *The partial enforcement outcome arises, and the disputing parties settle through some compensation scheme or through the defendant’s partial removal of the WTO-illegal trade policy, if $G_{rB}^c > G_q^c$, $G_{rB}^d > G_1^d$, and there exists a settlement arrangement (G_s^d, G_s^c) such that $G_s^d > G_{rA}^d$ and $G_s^c > G_{rA}^c$. In this case, the political welfare of the disputing governments is (G_s^d, G_s^c) .*

In this scenario, the defendant’s political loss from his import sectors in the compensation scheme is smaller than that from his export sectors under retaliation $R^A(T)$. On the other hand, the complainant’s political benefit from his export sectors in the compensation scheme is larger than that from his import

sectors under retaliation $R^A(T)$. This mutual improvement in the political payoff for both governments compared to retaliation allows the possibility of settlement. Although such arrangements fall short of full compliance, the complainant is compensated partially in terms of his political welfare. As indicated in Table 1, a small proportion of WTO violations are resolved in this manner.

5.3 The Political Escape Scenario - Retaliation

In this scenario, the worst damage the complainant can inflict upon the defendant through imposing $R^B(T)$ is still not enough to induce compliance as in previous scenarios. However, settlement between the parties now becomes impossible, and the defendant would rather let retaliation taking place than to settle. Figure 5 illustrates three representative cases.

In all of the three cases, the defendant will not comply even if the complainant threatens to retaliate with $R^B(T)$. In case (1), the defendant can potentially settle with the complainant along the curve $\overline{s_1s_2}$ indicated in the figure, which will make himself better off than if retaliated with $R^B(T)$ and at the same time make the complainant better off than retaliating with $R^A(T)$. However, comparing the payoffs under possible settlements along $\overline{s_1s_2}$ and under $R^A(T)$, the defendant is in fact better off under $R^A(T)$. Therefore, the defendant will take no action under retaliation proposal $R^A(T)$ and will offer to settle along $\overline{s_2s_3}$ under retaliation proposal $R^B(T)$, and in response, the complainant will choose to retaliate according to $R^A(T)$.

In case (2), the defendant can not find any settlement that will improve upon the state of $R^B(T)$ for himself and at the same time make the complainant better off than under $R^A(T)$. Therefore, settlement is not possible and the complainant will retaliate according to $R^A(T)$ at the equilibrium. In case (3), under either retaliation proposals, no settlement is possible and retaliation is inevitable. However, since $R^A(T)$ renders the complainant higher payoff than $R^B(T)$, the complainant will carry out the former at the equilibrium. In all cases, therefore, if retaliation is indeed carried out, the complainant government will adopt the retaliation list $R^A(T)$, which maximizes its domestic political gain.

Proposition 3 (Retaliation) *The defendant will maintain the WTO-illegal trade policy, and in response, the complainant will retaliate, if $G_{rB}^c > G_q^c$, $G_{rB}^d > G_l^d$, and there exists no settlement arrangement (G_s^d, G_s^c) such that $G_s^d > G_{rA}^d$ and $G_s^c > G_{rA}^c$. In this case, the complainant government will retaliate according to the list $R^A(T)$, which maximizes its domestic political gain. The political welfare of the disputing governments is (G_{rA}^d, G_{rA}^c) .*

In this scenario, the political cost to the defendant government if he complies is much larger than any potential harm the complainant's retaliation can inflict on his export sectors. Furthermore, there exist no mutually beneficial settlement arrangements, which will make him better off than under retaliation and at

the same time be acceptable to the complainant. As a result, retaliation emerges as the equilibrium outcome. As can be seen from Table 1, there have been six cases where retaliation is authorized. However, some of these authorizations of retaliation have prompted settlement between the parties or compliance from the defendant. Only in one case, the *Hormone* case against the EU, has the retaliation been carried out and remained so far. In spite of the negative opinions some WTO observers expressed toward the use of retaliation and the non-compliance of the defendant, the fact that the defendant is willing to accept retaliation without further counter-retaliation speaks volumes for the political difficulty that the defendant as a democratic government will face domestically to comply with the ruling. In this sense, the retaliation outcome can be viewed as a political escape from the WTO system, if compliance indeed will result in great political cost for the defendant government.¹³

5.4 The Full Enforcement Scenario - Compliance

If it is credible for the complainant to carry out the retaliation proposal $R^B(T)$ and the defendant is worse off under the retaliation proposal $R^B(T)$ than under compliance, then compliance will emerge as the equilibrium outcome. Figure 6 illustrates this scenario. In case (1), note that if the defendant does not comply or settle, it is credible for the complainant to carry out $R^B(T)$ as retaliation renders him better off than the status quo. The defendant will comply if $R^B(T)$ is proposed by the complainant. On the other hand, under proposal $R^A(T)$, the two parties will settle along the solid curve $\bar{s}\bar{s}$ indicated in the figure. Since the complainant is better off proposing $R^B(T)$, which induces compliance, than proposing $R^A(T)$, which induces settlement offers less than full compliance, he will propose $R^B(T)$. Therefore, the equilibrium outcome is “compliance.” In case (2), the complainant can induce the defendant to comply using either proposal $R^A(T)$ or $R^B(T)$, and there is no feasible settlement that will make both parties better off than the defendant’s compliance. Therefore, the desired enforcement outcome of the WTO procedure successfully emerges in the equilibrium.

Proposition 4 (Compliance) *The defendant will comply with the WTO ruling and remove the illegal trade policy, if $G_{rB}^c > G_q^c$ and $G_{rB}^d < G_l^d$. In this case, the political welfare of the disputing governments is (G_l^d, G_l^c) .*

In this scenario, the defendant government’s political loss from his export sectors that will be affected by the complainant’s retaliatory tariffs is larger than the political gain from his domestic sectors that have benefited from the existing illegal trade policy. Therefore, the defendant government will choose to comply. From Table 1, we see that most of the violations are resolved successfully through the defendant’s withdrawal

¹³See Charnovitz (2001, pp. 820) for a similar opinion.

of the contentious policy. In general, the larger is the complainant's retaliation capacity and the stronger politically are the defendant's export sectors, the more likely is the compliance outcome.

6. CONCLUSION

This paper analyzes the strategic interactions of disputing governments at the WTO enforcement stage, following a violation ruling against the defendant. The disputing parties are portrayed as democratic governments which face domestic political constraints, as well as the rules of enforcement laid down by the WTO dispute procedure. They are mindful of the impacts of various enforcement outcomes on industry interests as well as on aggregate welfare, and choose strategies that best serve their political interests. The paper first examines the complainant's retaliation capacity and strategy in formulating the retaliation list, and then explores the scope of settlement possibilities between the parties. The results of the paper provide a synopsis of the disputing governments' political payoffs under alternative enforcement scenarios and the conditions that determine the outcome of the implementation.

In particular, the compliance outcome will arise if the defendant government's political loss from his export sectors that will be affected by the complainant's retaliatory tariffs is larger than the political gain from his domestic sectors that have benefited from the existing illegal trade policy. Thus, the complainant government will choose the retaliation list with sectors that maximizes the negative political impact on the defendant government, subject to his retaliation capacity and the level authorized by the WTO. If compliance is not foreseeable with the threat of this list, however, the complainant government will instead target the sectors that maximize his domestic political gain, through granting new protection to the selected industries. The retaliation outcome may be avoided if the disputing parties can identify compensation arrangements that are mutually beneficial compared to the retaliation outcome. In this case, the defendant government's political loss from his import sectors in the compensation scheme is smaller than that from his export sectors under retaliation. On the other hand, the complainant government's political benefit from his export sectors in the compensation scheme is larger than that from his import sectors under retaliation. This mutual improvement in the political payoffs for both governments compared to retaliation allows the possibility of settlement. Finally, the WTO enforcement mechanism will fail if the complainant has no retaliation capacity. In this case, the complainant can not retaliate if the defendant does not comply or compensate, and as a result, the status quo will remain. Overall, the enforcement outcome that emerges under the WTO procedure reflects the calculations of domestic political interests by the disputing governments and the tradeoffs of political benefits and costs between the disputing parties. The smaller is the complainant's retaliation capacity, the more biased is the outcome against the complainant.

APPENDIX: THE ECONOMIC AND POLITICAL STRUCTURES OF INDIVIDUAL COUNTRIES

This appendix establishes notation and summarizes the basic framework of Grossman and Helpman (1994, 1995a,b). The description is given for a representative country, with the country superscript suppressed for now.

The country is populated with N individuals who have identical preferences $u(c) = c_0 + \sum_{i=1}^n u_i(c_i)$, where c_i is the consumption of good i and $u_i(\cdot)$ is an increasing and concave function. Good 0 is normalized to have a price of one and is freely traded among countries. Given the utility function and the goods prices p_i for $i = 1, \dots, n$, an individual with income y demands $D_i(p_i)$ of good i for $i = 1, \dots, n$ and $y - \sum_{i=1}^n p_i D_i(p_i)$ of good 0. It follows that the individual's indirect utility function is $V(y, p) = y + \sum_{i=1}^n s_i(p_i)$, where $p = (p_1, \dots, p_n)$ and $s_i(p_i) = u_i(D_i(p_i)) - p_i D_i(p_i)$ is the consumer surplus derived from consumption of good i for $i = 1, \dots, n$.

The production of good 0 uses only labor with a unit labor requirement equal to one. The production of all other goods uses labor and a sector-specific factor with constant returns to scale. The labor force is taken to be large enough that good 0 is always produced. Since good 0 is freely traded among countries with a world price of one, the wage rate must equal one. Therefore, the owners of the specific factor used in sector i receive profits of $\Pi_i(p_i)$, which increases with p_i . The supply of good i equals $X_i(p_i) = \Pi'_i(p_i)$ for $i = 1, \dots, n$.

The ownership of sector-specific factors is assumed to be highly concentrated and constitutes only a negligible fraction of the voting population N . The owners of the specific factor used in each sector have a common interest in seeing a higher domestic price for their own sector. The common interest and small number of specific-factor owners in each sector facilitate the formation of interest groups. The interest groups compete noncooperatively with one another to induce favorable actions from the government that will improve their group's joint welfare. They do so by presenting the government a campaign contribution schedule $C_i(\cdot)$, which is tied to the actions taken by the government (and possibly those of foreign governments which the lobbies hope to influence through the local government). Since the interest groups constitute a negligible fraction of the total population, they receive negligible amount of tariff revenue rebates and gain a negligible fraction of consumer surplus. Therefore, the joint welfare of the interest group in sector i can be approximated by $\Pi_i(p_i) - C_i$ for $i = 1, \dots, n$.

The incumbent government values the campaign contributions as well as the general welfare, both of which help to promote its likelihood of being re-elected. Its politically motivated objective function takes the linear form $\tilde{G} = \sum_{i=1}^n C_i + aW$, where W is aggregate welfare and a is the weight the government places

on aggregate welfare relative to campaign contributions. The aggregate welfare includes total labor income, total profits, total trade tax revenues net of subsidy expenditures, and aggregate consumer surplus. That is

$$W(p, p^*) = L + \sum_{i=1}^n \Pi_i(p_i) + \sum_{i=1}^n (p_i - p_i^*) M_i(p_i) + Ns(p),$$

where $p^* = (p_1^*, \dots, p_n^*)$, p_i^* is the equilibrium world price of good i given the trade policies of all countries, and $M_i = ND_i(p_i) - X_i(p_i)$ is the net import demand for good i given p_i . In the case of an export subsidy, $p_i > p_i^*$ and $M_i < 0$; on the other hand, an import tariff corresponds to $p_i < p_i^*$ and $M_i > 0$. The trade tax revenues net of subsidy expenditures are assumed to be rebated evenly to all individuals.

At the equilibrium, the contribution schedule of each interest group maximizes the joint welfare of its members, given the contribution schedules set by other groups and the government's optimization of its political objective; and the action taken by the government maximizes its political objective given the contribution schedules offered by the interest groups. It is shown in Grossman and Helpman (1994) that if the contribution schedules are globally truthful, i.e. the contribution schedules everywhere reflect the true preferences of the lobbies, the government's political objective function is equivalent to $G = \sum_{i=1}^n \Pi_i + aW$.

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Table 1: The Outcomes of WTO Disputes as of 9/17/2003

Procedural Outcome ^a		Enforcement Outcome ^b	
Total Complaints	301	Panel/Appellate Reports Adopted	88
withdrawn	24	no violation ^c	14
settled	41	violation	74
report adopted	88	compliance ^d	43
in progress	148	mutually agreed solution ^e	9
		authorization of retaliation ^f	6
		outcome unknown ^g	8
		in progress ^h	8

^aThe statistics are compiled from WTO (2003).

^bThe statistics are author's tabulation based on the profiles of disputes provided in WTO (2003).

^cThese are Disputes No. 22, 44, 60, 62, 67, 68, 135, 152, 163, 165, 194, 213, 221, 243.

^dThese are Disputes No. 2, 4, 8, 10, 11, 18, 24, 31, 33, 50, 54, 55, 59, 63, 56, 58, 70, 75, 84, 76, 79, 87, 110, 90, 98, 114, 121, 138, 139, 142, 146, 175, 156, 161, 169, 170, 177, 178, 179, 189, 192, 202, 236.

^eThese are Disputes No. 34, 99, 103, 113, 122, 126, 155, 160, 231.

^fThese are Disputes No. 26, 48, 27, 46, 108, 222.

^gThese include the disputes where their enforcement outcomes can not be inferred from the information provided by WTO (2003) or other documents available on WTO web site. The disputes may be unresolved with the contentious policy still in place, or they may have been resolved between disputing parties without being notified to or recorded by the WTO. They are Disputes No. 69, 132, 136, 162, 141, 166, 206, 211.

^hThese include the disputes where, as of 9/17/2003, the reasonable period of time to comply had not yet expired, and no compliance or settlement had resulted. They are Disputes No. 176, 184, 207, 212, 217, 234, 238, 241.

Figure 1: Settlement Possibilities Frontier

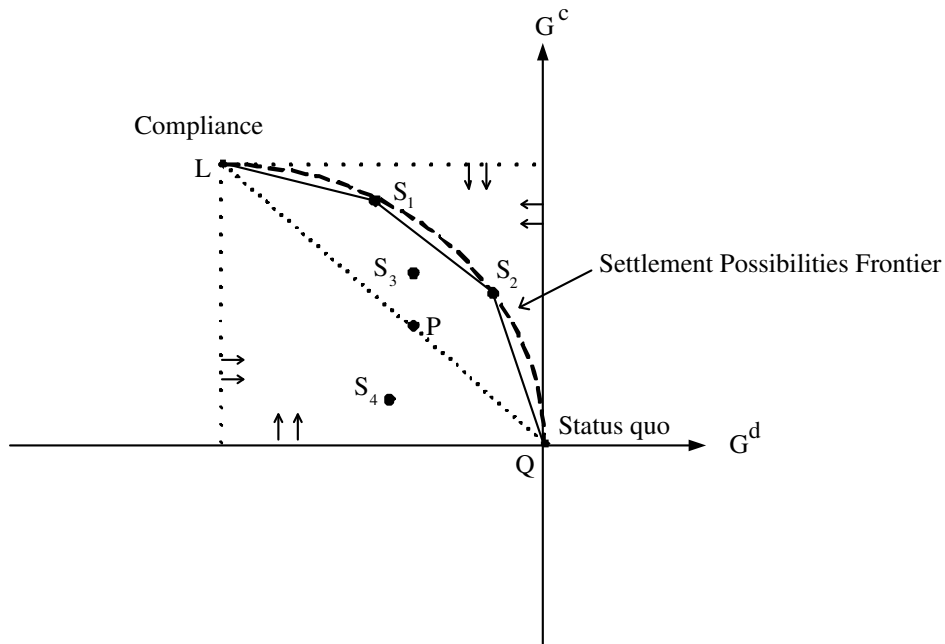


Figure 2: Game Tree of the WTO Enforcement Mechanism

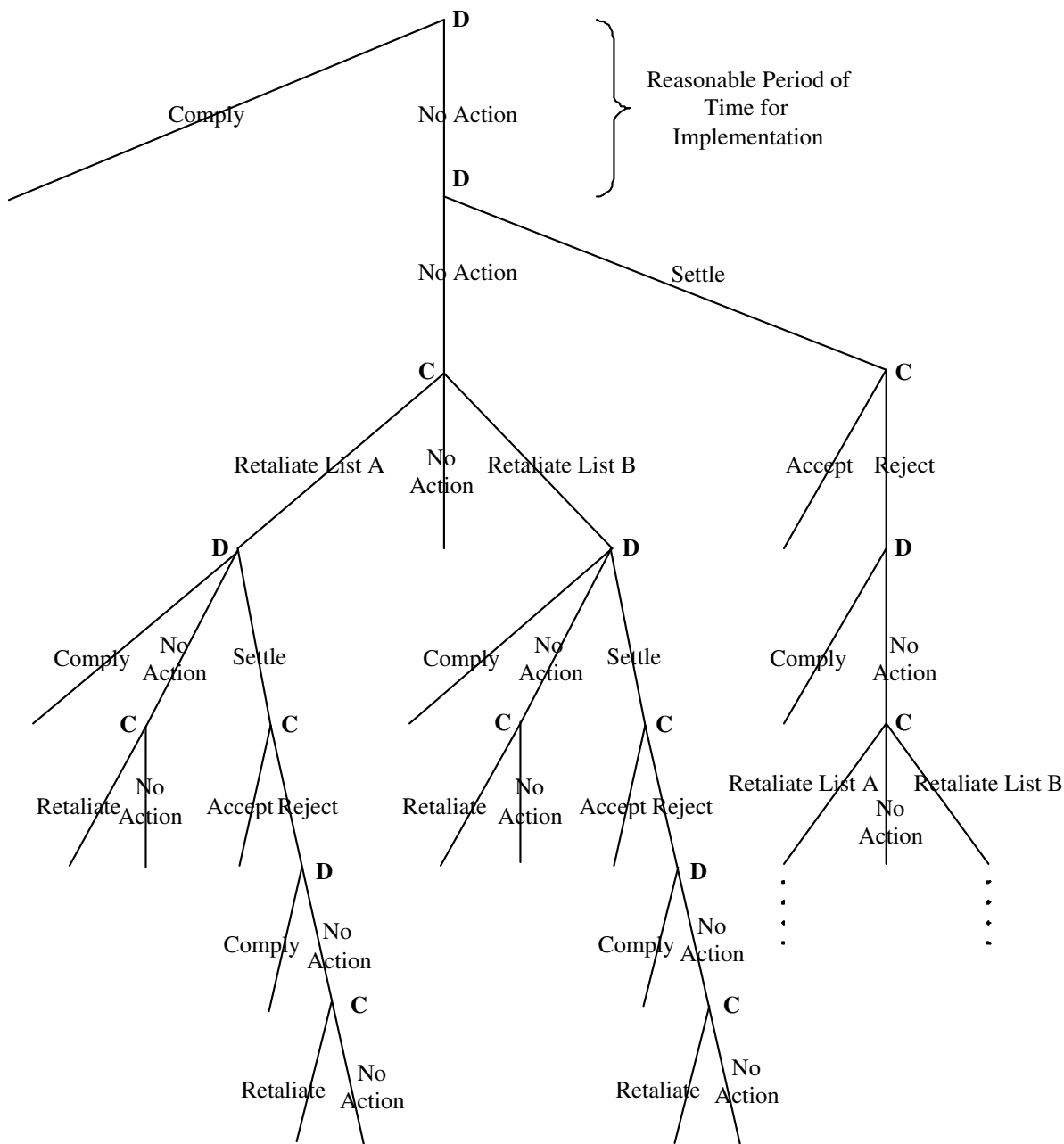


Figure 3: The Enforcement Failure Scenario - Status Quo

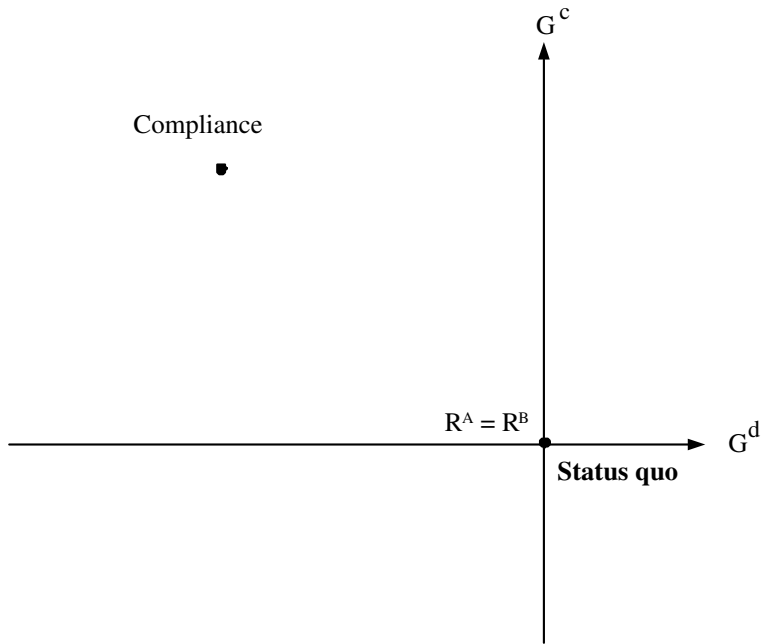


Figure 4: The Partial Enforcement Scenario - Settlement

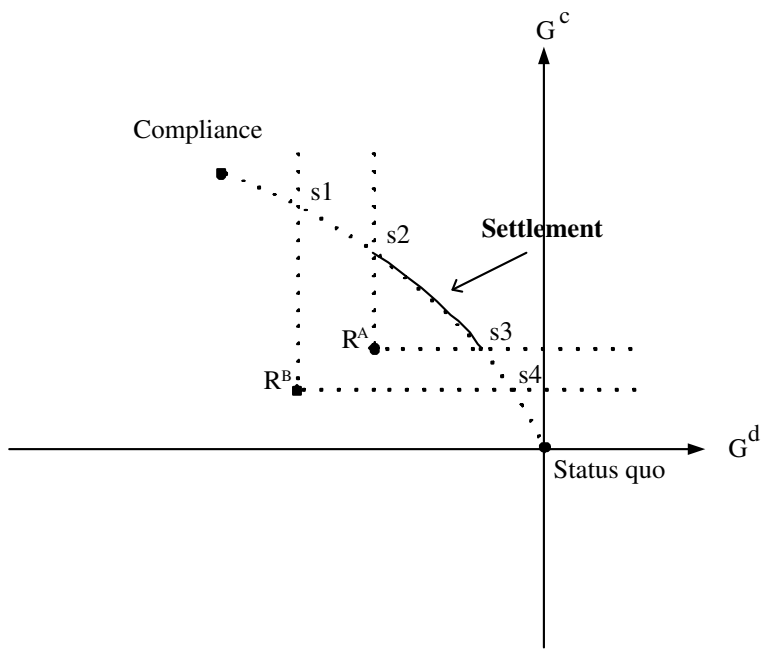
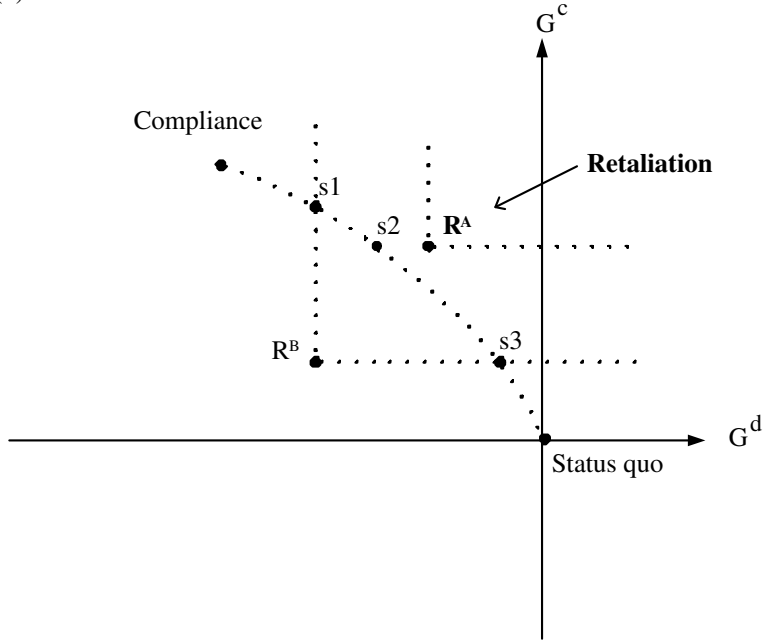
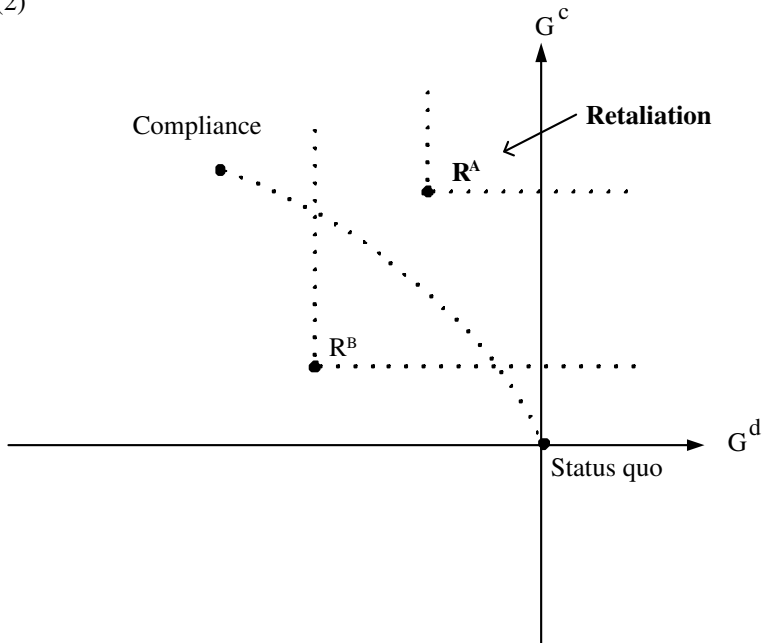


Figure 5: The Political Escape Scenario - Retaliation

(1)



(2)



(3)

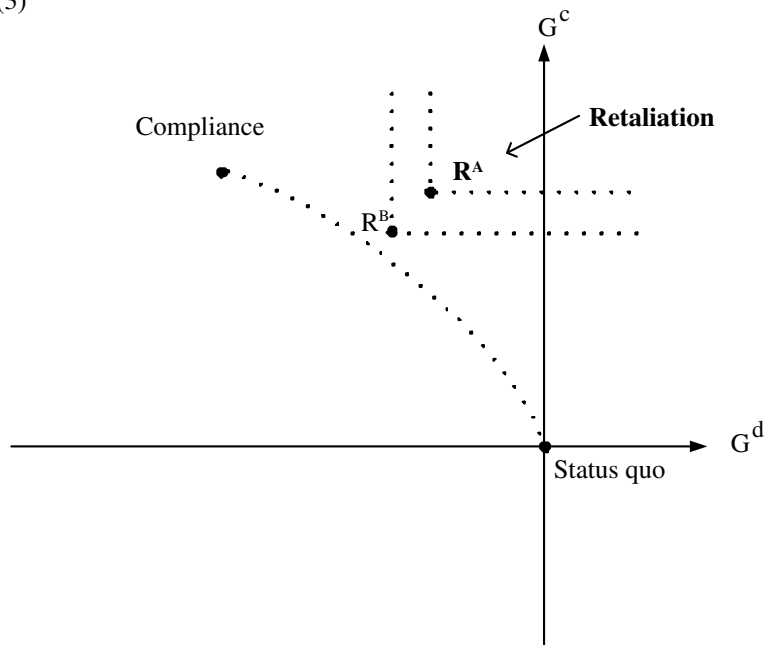
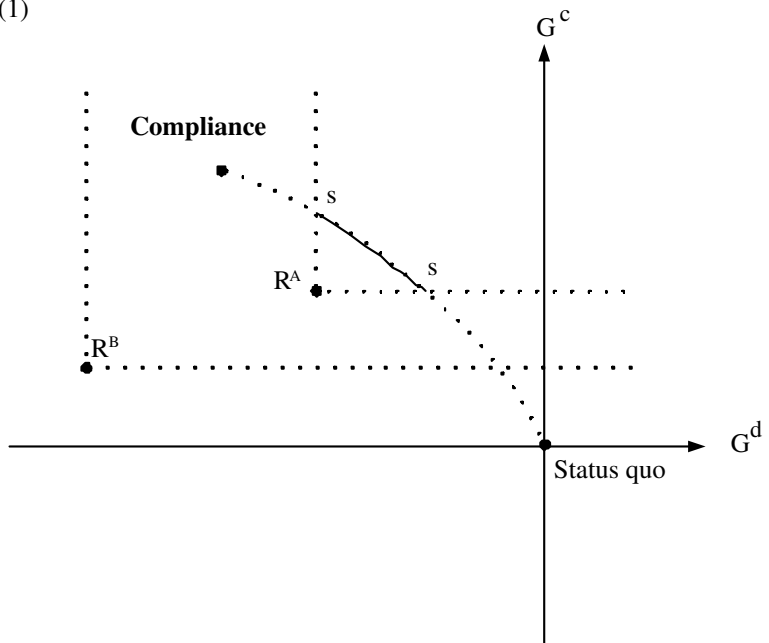


Figure 6: The Full Enforcement Scenario - Compliance

(1)



(2)

