

## POLITICAL ACCOUNTABILITY AND ITS INFLUENCE ON TRADE LIBERALIZATION\*

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*A country's trade policy is determined through the process of political competition among various domestic interest groups. This in turn is influenced by the polity. Insufficient attention to the role of the polity in determining trade policy is a motive for this work. This paper investigates the impacts of the political accountability as an important aspect of democracy on the level of tariffs and on the international cooperation associated with trade liberalization. It is shown that an increase in the political accountability in a democracy lowers the level of tariff determined through the political process. Furthermore, the paper shows that the policy-maker's responsiveness to the will of the society at large facilitates more cooperative equilibrium outcome in the international negotiating environment.*

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### I. INTRODUCTION

Does the political accountability in a democracy affect a country's choice about trade liberalization? This is the focus of the paper. As is well known, when governments meet in the international arena, their actions tend to reflect the political situations at home. Such conditions as the magnitude of political support for the national government, in particular, its chief executives, the economic effects of a policy, and the political power of the country relative to others influence the nature of the policy determination process.

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Previous studies of trade relations or trade policies have focused on governments that are immune from politics and that act as benevolent servants of the public interests. For example, when the issue arises of how tariffs are chosen, a frequent solution is to assume that governments choose the tariff to maximize a social welfare criterion.<sup>1</sup> As in a representative democracy, however, government is not viewed as a benevolent social welfare maximizer; it is rather composed of politicians pursuing political interests: reelection perhaps. Alternatively the trade-policy formation process is sometimes modelled more explicitly by the political economy approach.<sup>2</sup> In political economy models policy makers choose tariffs to get and/or stay elected. Industry groups lobby to influence the tariff rate in order to maximize their profits. In choosing the tariff, policy makers weigh the loss of votes due to the negative welfare impact of the tariffs against the votes gained through lobbying from industry special interest groups.

Therefore, since a country's trade policies are determined through the process of political competition among various domestic interest groups, which in turn is influenced by the polity, it is useful to consider the regime type explicitly in analyzing particular international economic policies in political economy terms. For the reason that the polity is taken as exogenously given, it has been confined to the assumption of *ceteris paribus* in economic analysis. Insufficient attention to the role of the polity in determining trade policy is drawback of economists' approaches to international political economy. This paper examines whether the regime type, in particular, democracy can facilitate the international cooperation associated with trade liberalization.

The main definition of democracy in this paper is a narrow one that focuses on the role of elections. That is, the accountability of a country's chief executive<sup>3</sup> to the public interests is defined as the measure of democracy.<sup>4</sup> Key features of the role of a country's chief executive are his/her responsibilities to represent voters on a national level and to direct the nation's foreign policies. Both of these responsibilities tend to make heads of state less receptive to requests for industry-specific protection than legislators representing a particular geographic area within a country. Nevertheless, they don't act as a benevolent social welfare maximizers, but rather maximize their political objective functions. In a democracy, elections would play a major role in constraining leaders to be more responsive to the will of the electorate at large. Therefore elections are

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<sup>1</sup> Baldwin(1987) calls it the *deus ex machina* approach.

<sup>2</sup> For an excellent survey of the political economy models, see Rodrik(1995), Magee(1995). A textbook treatment is provided by Vousden(1990).

<sup>3</sup> A country's chief executive here has the same meaning as the policy maker. To avoid repetition we also use hereafter policy-making authority, leader/head of state, incumbent government interchangeably.

<sup>4</sup> This concept accords with the one adopted by Huntington(1991, p.6): "The central procedure of democracy is the selection of leaders through competitive elections by people they govern".

important as checks on centralized government power. We here view this as an important aspect of democracy.<sup>5</sup> Formally, this view will be reflected in the government's objective function, which depends on the level of political pressure that is brought to bear on the policy-making authority.<sup>6</sup> As in all political economy models, if policy makers choose trade policy to stay elected, they are concerned with providing a high standard of living to the general electorate (numbers of individual consumers) relative to industry special-interest groups (a small number of people).<sup>7</sup> Therefore, we weight the consumer welfare term by a factor that indicates the political pressure that consumers can bring to bear (relative to the pressure of industry).

In most of the political economy approaches concerning the trade-policy formation, consumers(or sometimes workers) are assumed to be unorganized and thus inactive politically, while firms/industries are assumed to be organized in order to influence trade policies. Thus unorganized consumer interests have not been overemphasized to the extent that their interests receive a smaller weight relative to organized interests in the government's objective function. However, in modern times, consumers or workers are not passive politically any more. Although they are unorganized, it can be assumed that some consumers understand the economic consequences of a protective trade policy and are also aware of the organized lobbying activities of firms/industries. Since the presence of these 'informed consumers' may have a negative impact on its overall political support, the incumbent government must find a balance between organized special interests and unorganized consumer interests.

The essential question here is not whether firms/industries or consumers have strong impact on government trade policies, but whether the presence of informed consumers is taken into account by incumbent governments. Given that consumers are the general electorate that delivers political support to incumbent governments, it is quite reasonable to expect that these unorganized interests would be accounted for.

The remainder of the paper is organized as follows. Section II lays out the underlying economic model. In section III the welfare maximizing tariff is derived and the gainers and losers resulted from protection are also identified. Section IV discusses the relationship between the accountability of the executive in a democracy and trade liberalization. Concluding remarks are provided in the last section.

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<sup>5</sup> In the empirical study of determinants of democracy, Barro(1999) uses electoral rights or civil liberties as the indicator for democracy.

<sup>6</sup> Baldwin(1987) refers to such a objective function as a politically realistic objective function(PROF).

<sup>7</sup> This is equivalent to the interpretation that policy makers choose policy in order to maximize the number of votes they receive.

## II. THE ECONOMY

Consider a small open economy with two sectors, which could be labelled as manufacturing and agriculture(numeraire). Total population is normalized to one. A fraction  $\alpha$  of the population owns the capital used in the manufacturing sector and do not need to work as wage earners to make a living.<sup>8</sup> The remaining  $1-\alpha$  (hereafter  $\beta$ ) individuals are the owners of the mobile factor, which are used in both manufacturing and agriculture sectors, and earn a fixed return which is normalized to one. Like Brander and Spencer(1984), we assume that the manufacturing sector consists of one domestic and one foreign firm. A domestic firm(DF) and foreign firm(FF) produce a homogeneous good,  $x$  and  $y$ , respectively, for sale in the domestic market under Cournot competition. The domestic government(DG) imposes the specific import tariff to the FF.

On the demand side, we assume that all individuals in the domestic country have the same preferences over consumption goods, represented by the following general quasi-linear utility function:

$$U = m + u(X) \quad (1)$$

where  $m$  represents consumption of a competitively produced numeraire good, and  $X$  is consumption of the duopoly good;  $X = x + y$ . The subutility function  $u(\cdot)$  is differentiable, increasing, and concave. The inverse demand function can be written as  $p = p(X) (= u'(X))$ .<sup>9</sup> Therefore, the profit functions of the domestic and foreign firms are, respectively,

$$\begin{aligned} \pi^d &= p(x+y)x - cx \\ \pi^f &= p(x+y)y - c^f y - ty \end{aligned} \quad (2)$$

where  $c$  and  $c^f$  denote (constant) marginal cost of the DF and FF producing  $x$  and  $y$ , respectively, and  $t$  is the domestic tariff.

To derive an expression for social welfare, we need to know the indirect utility for this economy. From the domestic utility maximization, the indirect utility function of each group takes the form:

$$V^i = I^i + u(X) - pX = I^i + CS(p), \quad i = k, l \quad (3)$$

where  $I^i$  is the net income of individual  $i$ , and  $CS$  is the consumer surplus derived from consuming duopoly good.

<sup>8</sup> These individuals can be organized in interest group(a producer's association) for more protection whenever possible. This argument is verified below.

<sup>9</sup> Strictly speaking,  $p$  is the domestic relative price of the manufactured good in terms of the price of the numeraire good which is normalized to unity.

Individuals belonging to different groups differ in their net income. For simplicity, we assume that tariff revenues are redistributed uniformly only to the members of interest group, capital owners. Thus each capital owner in the manufacturing sector receives a proportion  $1/\alpha > 1$  of per capita tariff revenue. Now the net income of capital owners consists of the government transfer and profits.

$$I^k = \frac{\pi^d}{\alpha} + \frac{ty}{\alpha} \quad (4)$$

By assumption, the workers belonging to the manufacturing and the numeraire sectors only receive wage income. Therefore, the net individual income of workers is

$$I^l = \frac{M}{\beta} \quad (5)$$

where  $M$  is the total wage income.

Substituting (4) and (5) into (3), the gross indirect utility functions for each individual in each group are given by

$$\begin{aligned} V^k &= \frac{\pi^d}{\alpha} + \frac{ty}{\alpha} + CS(p) \\ V^l &= \frac{M}{\beta} + CS(p) \end{aligned} \quad (6)$$

Taking the import tariff set by the DG as given, indirect utility function identifies the utility level that an individual in group  $i$  can attain.

On the other hand, two first-conditions for  $x$  and  $y$  in (2) characterize the reaction functions of the DF and FF to each other's output in the domestic market. If the second-order and stability conditions for the Cournot-Nash equilibrium levels of output are satisfied, then these two equations implicitly yield output levels as functions of the domestic tariff  $x = x(y(t), t) \equiv x(t)$  and  $y = y(x(t), t) \equiv y(t)$ .<sup>10</sup> Moreover, equilibrium profits are  $\pi^d(t) = \pi^d(x(t), y(t))$  and  $\pi^f(t) = \pi^f(x(t), y(t), t)$ , and the equilibrium domestic price is  $p(t) = P(x(t) + y(t))$ . If the tariff is of non-prohibitive level, (7) and (8) are derived

<sup>10</sup> Stability conditions for the Cournot-Nash equilibrium is ensured by requiring that each firm's marginal revenue declines when the output of its rival rises. That is,  $\pi_{xy}^d < 0$  and  $\pi_{yx}^f < 0$ . Notice that  $\pi_{xx}^d < \pi_{xy}^d$  and  $\pi_{yy}^f < \pi_{yx}^f$ . Then  $\Delta = \pi_{xx}^d \pi_{yy}^f - \pi_{xy}^d \pi_{yx}^f > 0$ . Together these imply that  $x_t = -\pi_{xy}^d / \Delta > 0$ ,  $y_t = \pi_{xx}^d / \Delta < 0$ ,  $x_t + y_t = (\pi_{xx}^d - \pi_{xy}^d) / \Delta = p' / \Delta < 0$  (a tariff reduces domestic consumption relative to free trade). For more details, see Tirole (1988) or Brander and Spencer (1984).

$$\begin{aligned}\frac{d\pi^d(t)}{dt} &= \pi_x^d x_t + \pi_y^d y_t \\ &= p' \cdot x \cdot y_t > 0\end{aligned}\quad (7)$$

since  $\pi_x^d = 0$  by the first-order condition,  $p' < 0$  and  $y_t < 0$ .

$$\begin{aligned}\frac{d\pi^f(t)}{dt} &= \pi_x^f x_t + \pi_y^f y_t + \pi_t^f \\ &= p' \cdot y \cdot x_t - y < 0\end{aligned}\quad (8)$$

All subscripts denote derivatives. As expected, higher domestic import tariff increases the profit of the DF and reduces the profit of the FF. Also, with the stability conditions it follows that  $p_t = p'(x_t + y_t) > 0$ . With the stability conditions for the Nash equilibrium, let's put the comparative-statics effects together; as the tariff rises, the FF's reaction function shifts inward, raising local production and shrinking the level of exports by the FF to the domestic market. Moreover, as the FF withdraws from the market, only some of the slack is taken up by the DF. The DF produces more but does not raise production by as much as the imports have fallen. Hence the domestic consumption falls with a rise in the tariff, domestic prices rise, and DF's profits increase.

### III. OPTIMAL TARIFF AND WELFARE EFFECTS

Before discussing the political game of the model, it is useful to derive a benchmark for comparison. Assume for now that the DG is a benevolent social welfare maximizer. In this case the DG would never deviated from the optimum tariff that maximizes social welfare. We assume that the DG initiates a tariff program by announcing an initial tariff. The DG's objective function will be given by:

$$\begin{aligned}Max_t G &= \alpha V^k + \beta V^l \\ &= \pi^d + M + ty + CS\end{aligned}\quad (9)$$

where  $G$  is the (utilitarian) social welfare level. Domestic welfare is maximized when  $G_t$  is equal to zero.

$$\begin{aligned}G_t &= \alpha V_t^k + \beta V_t^l \\ &= \pi_t^d + y + ty_t + CS_t = 0\end{aligned}$$

A useful rearrangement yields the optimum tariff (i.e., the 'optimal profit-

shifting tariff')  $t^*$  that maximizes social welfare:

$$t^* = \frac{\pi_t^d + y + CS_t}{-y_t} \quad (10)$$

where  $CS_t = -p_t \cdot X < 0$

Since  $\pi_t^d = p_t x + p x_t - c x_t$ , we can also write (10) as

$$t^* = \frac{(1 - p_t)y + (p - c)x_t}{-y_t} \quad (10a)$$

This (10a) is of the same form as the optimal tariff derived in Brander-Spencer(1984). The sign of  $t^*$  depends on  $p_t \leq 1$ , since the second term in numerator is positive and  $y_t < 0$ . As noted in the Brander and Spencer (1984), the optimal tariff can be positive, zero or negative depending on the relative convexity of demand. We do not go into details here because it is not the focus of this paper.

Let's turn next to the welfare effects of tariff on individuals belonging to each group. By evaluating the welfare at the optimal tariff level, we can determine the positions that individuals will take regarding the implementation of the tariff policy. Setting  $V_t^i = 0$  ( $i = k, l$ ) in (6) and substituting (10) into that equation yields individuals' welfare in each group at the optimal tariff level as follows.

$$V_t^k |_{t=t^*} = \frac{\alpha-1}{\alpha} CS_t > 0; \quad V_t^l |_{t=t^*} = CS_t < 0 \quad (11)$$

Eq.(11) helps us identify the gainers and the losers from higher level of import tariff. As expected, an increase in the import tariff at the optimal tariff level increases the capital owners' welfare, but decreases the workers' welfare. That is, capitalists in manufacturing are gainers from more import protection. This is why they organize as interest group and participate in lobbying in order to influence a government's choice of policy. Since capital owners in the DF always benefit from a higher tariff, they may solicit the government for the further trade protection. Since an incumbent government has also the political objective on its own way, it may solicit them for political supports. In a representative democracy, the DF and the DG therefore have the incentive to collaborate.

#### IV. POLITICAL ACCOUNTABILITY AND ITS INFLUENCE ON TRADE POLICY

In this section, under the assumption that the DG is not a benevolent social welfare maximizer, we first derive the political economy tariff and investigate its dependence upon the indicator for democracy. And then we discuss preponderatingly the impacts of the political accountability in a democracy on international cooperation associated with trade liberalization.

##### 4.1 The measure of democracy and the political economy tariff

The DG (in any regime type) is assumed to experience benefits associated with increasing aggregate well-being of the average voters, but also obtain a fraction of the rents that accrue to the importing-competing sector (Bhagwati's (1998) "takings", government's "grasping hand" of Olsen(1993)). These rents could take the form of political contributions to the government (as in democracies where lobbies organize and collectively contribute to the political candidate's electoral campaign fund) or they can take the form of extraction or appropriation as might be the case in an autocratic society where individual property rights are not perfectly secure. The DG may value profits of the DF in its reelection calculus. A concern for average welfare will arise if the prospects for reelection depend on the average voters' prosperity. We posit an additive form for the political-support function  $\Omega$  as follows:

$$\Omega(t, \theta, \Phi) = \theta\pi^d(t) + \Phi G(t) \quad (12)$$

where  $\theta \in (0, 1)$  denotes the weight that the DG attaches to DF's profits, and  $\Phi$  measures the responsiveness of the policy-maker to the concerns of the average voters at large, which we refer to as the political accountability. The larger is  $\Phi$ , the more responsive is the policy maker to the interests of the electorate at large and the better is the 'quality of democracy' (Bhagwati, 1998). The smaller is  $\Phi$ , the more the policy maker is captured by special interests represented by the DF, and the less representative of broad societal interests the policy maker is. The measure of democracy that is the focus here is therefore related to  $\Phi$ , an institutional parameter.<sup>11</sup>

The policy maker of type  $\Phi$  at home solves for  $\arg \max_t \Omega(t, \theta, \Phi)$ . This yields

<sup>11</sup> According to the procedural definition of democracy, variation across representatives depends on elections. Among various aspects of democracy, elections play a major role in maintaining accountability of the policy maker to the society at large. Accountability lessens the policy maker's incentive to divert wealth to special interests and to lower the deadweight costs of such redistribution.



$$\hat{t} = \frac{\theta \pi_t^d}{-\Phi y_t} + \frac{\pi_t^d + y + CS_t}{-y_t} \quad (13)$$

Eq.(13) denotes the level of protection determined by the political process. We call it the political economy tariff.<sup>12</sup> If the DG were a benevolent social planner and thus cares only about aggregate social welfare (then  $\theta = 0$  in (12)), the political economy tariff  $\hat{t}$  reduces to the optimum tariff  $t^*$  before. Comparing (13) with (10) leads to the following proposition:

**Proposition 1:** *With lobbying, the political economy tariff is higher than the optimum level:  $t^* < \hat{t}$ .*

The proposition 1 implies that the DF provides a political contribution that can sufficiently compensate the DG for its loss of workers.

We can get immediately some intuitive comparative-static results from (13). Unlike the optimum tariff, the political economy tariff responds to changes in domestic political conditions, as summarized in the following proposition:

**Proposition 2:** *The political economy tariff rises as the government's valuation of political contributions increases; The more responsive is the DG to the interests of the electorate at large, the lower is the political economy tariff. That is  $\partial \hat{t} / \partial \theta > 0$  and  $\partial \hat{t} / \partial \Phi < 0$ .*

The proofs are in the appendix. Within the non-cooperative tariff setting game, since the optimal strategy is a dominant strategy, the DG will always adopt a lower tariff as it becomes more sensitive to social welfare relative to the special interests of the import-competing sector. This implies that the accountability of the executive to the will of the society at large in a democracy provides an incentive to unilaterally liberalize.

## 4.2 International cooperation in tariff setting

Now let's go forth into the problem of international cooperation in tariff setting game. In fact, a country's trade policy is determined based on the outcome of negotiations between countries. Our interest here is the effect of regime type on the prospects for international cooperation; in particular, when will the politically motivated governments agree to forgo beggar-thy-neighbor tariffs and cooperate within a liberalized trading regime?

Consider the symmetric non-cooperative setting with tariff policies available to governments in a two country world, in which the domestic country and the

<sup>12</sup> To my knowledge, Baldwin(1987) coined the phrase "the political economy tariff" to describe tariff chosen in the political process.

foreign country are identical in all respects except for their supply conditions. Then the foreign economy can be described likewise as the domestic economy was presented above. Let  $\tau$  be the specific tariff imposed by the foreign government on imports of the good (i.e. exports of the DF).

Under the Nash equilibrium, each government chooses a level of home tariffs as the best response against the behavior of the opponent. We can solve for the Nash equilibrium in tariffs. Let  $t(\tau) = \arg \max_t \Omega(t, \tau; \Phi, \theta)$ , and  $\tau(t) = \arg \max_\tau \Omega^f(t, \tau; \Phi^f, \theta^f)$ , and solving simultaneously, leads to the Nash pair  $(\hat{t}(\Phi), \hat{\tau}(\Phi^f))$  for regime type.  $\hat{t}(\Phi)$  is given by (13). The welfare of each of the governments is  $N(\Phi, \Phi^f) = \Omega(\hat{t}(\Phi), \hat{\tau}(\Phi^f))$  and  $N^f(\Phi, \Phi^f) = \Omega^f(\hat{t}(\Phi), \hat{\tau}(\Phi^f))$ .<sup>13</sup>

Let a pair of cooperative tariffs be  $(t^c, \tau^c)$ , with  $t^c < \hat{t}(\Phi)$  and  $\tau^c < \hat{\tau}(\Phi^f)$  for all  $(\Phi, \Phi^f)$ . Denote the DG's welfare under the cooperation as  $C(\Phi) = \Omega(t^c, \tau^c; \Phi)$ . What are the payoffs when, say, the domestic country defects and the foreign country cooperates? The optimal defection is  $t^D = \arg \max_t \Omega(t, \tau^c; \Phi)$ . This is, in fact, the same as  $\hat{t}(\Phi)$ , because, within the non-cooperative tariff setting game, the optimal strategy is a dominant strategy. The domestic welfare under the optimal defection is  $D(\Phi) = \Omega(\hat{t}(\Phi), \tau^c; \Phi)$ . If instead, the foreign country defects and the domestic country cooperates, the domestic country receives the sucker's utility  $S(\Phi, \Phi^f) = \Omega(t^c, \hat{\tau}(\Phi^f); \Phi)$ .

From the definitions above, we derive the following ordering

$$D(\Phi) > C(\Phi) > N(\Phi, \Phi^f) > S(\Phi, \Phi^f) \text{ for any pair } (\Phi, \Phi^f).$$

Therefore, the prisoner's dilemma structure is shown in [Table 1], in which the first elements in each pair representing the welfare of the domestic country.

[Table 1] The Prisoner's Dilemma Situation

	$C^f$	$D^f$
$C$	$C(\Phi), C(\Phi^f)$	$S(\Phi, \Phi^f), D^f(\Phi^f)$
$D$	$D(\Phi), S^f(\Phi, \Phi^f)$	$N(\Phi, \Phi^f), N^f(\Phi, \Phi^f)$

Regardless of what an agent thinks his/her rival will do, he/she rationally plays “defection”; “defection” is the dominant strategy. Thus the outcome of this game is  $(D, D^f)$ . But there is an alternative outcome in which each receives higher payoff. That outcome can be realized when two agents cooperate.

The question of whether a particular economic situation should be modelled as

<sup>13</sup> Our discussion will deal with the domestic country welfare, although it applies equally to the welfare of the foreign country because of the assumed symmetry.

a cooperative game or as a non-cooperative game depends on the institutional context; on whether it can be ensured that any agreements made are enforced; on whether, that is, there is a law of contract backed by some enforcement mechanism. By the way, since there is little international law, and no international police force to enforce contracts, many questions of international economics are probably best modelled as non-cooperative games.

But we can here consider the possibility of international cooperation. In this tariff-setting game there is a unique non-cooperative Nash equilibrium. In this non-cooperative equilibrium each country adopts a positive tariff as described by (13). However, if countries engage in repeated play, the possibility arises that some cooperation can be sustained.<sup>14</sup> Now suppose that cooperation is supported through the use of a trigger strategy. If either government defected in the previous period, then other country reverts to the one-shot Nash equilibrium forever - the grim trigger punishment. Assume that two governments know this grim strategy. In this case any cooperative agreement must be self-enforcing. Whether such an agreement would be self-enforcing would depend on the government's discount factors and punishment strategies.

Let's define the payoff for the DG in an infinitely repeated game as the concept of the discounted average payoff

$$\begin{aligned} E(\Omega^1, \Omega^2, \Omega^3 \dots) &= (1 - \delta) \sum_{i=0}^{\infty} \delta^{i-1} \Omega^i \\ &= (1 - \delta) \Omega^1 + \delta E(\Omega^2, \Omega^3, \dots) \end{aligned}$$

where  $\delta$  represents the government's discount factor, and the superscript  $i$  denotes the period going from 1(now) to infinity (the distant future).<sup>15</sup>

Recognizing the grim trigger strategy, each government chooses its strategy now. If the DG chooses the "cooperation" strategy, its discounted average payoff is

$$\begin{aligned} E^C &= (1 - \delta)C(\Phi) + \delta E^C \\ \Rightarrow E^C &= C(\Phi) \end{aligned}$$

<sup>14</sup> The difficulty with a finitely repeated game is that cooperation will be untenable in the last period, so there will be no punishment for defection in the next-to-last period and cooperation will be untenable. If there were multiple Nash equilibria (e.g., if autarky were a Nash equilibrium) then cooperation may be sustainable in a finitely repeated game [see Dixit(1987), and Benoit and Krishna(1985)], but that is not the case here.

<sup>15</sup> We assume  $0 \leq \delta < 1$ ; otherwise, infinitely long streams of payoffs would not converge. Note that since this is a government's discount factor, it needs bear no relation to any interest rate. To the extent one believes that governments are more concerned with the short run than the average economic agent, one would expect to be lower than the standard discount factor. Dixit(1987), (p.340) writes: "There is much evidence that governments, especially democratic ones, have very short time horizons and correspondingly high discount rates."

Defecting pays a premium now, but pays low forever after. Hence the discounted average payoff is

$$\begin{aligned}\bar{E}^D &= (1-\delta)D(\Phi) + \delta[(1-\delta)\{N(\Phi, \Phi') + \delta N(\Phi, \Phi') + \delta^2 N(\Phi, \Phi') + \dots\}] \\ &= (1-\delta)D(\Phi) + \delta N(\Phi, \Phi')\end{aligned}$$

When the discount factor satisfies  $\bar{E}^C \geq \bar{E}^D$ , then there is no incentive to deviate from cooperation. Solving this inequality, we have the following corollary.

**Corollary 1:** Any discount factor over  $\frac{D(\Phi) - C(\Phi)}{D(\Phi) - N(\Phi, \Phi')}$  for any pair  $(\Phi, \Phi')$  is enough to make the DG stick to the “cooperation” and not try to defect.

This inequality captures precisely what is meant by “if the players’ discount factors are sufficiently close to 1” and is very likely to be met in the real world. As in the standard prisoner’s dilemma, a cooperative equilibrium in trigger strategies can be supported by Corollary 1. We consider any equilibrium in which cooperation is sustained along the equilibrium path as “stable”,

**Lemma 1:** A pair of grim trigger strategies (cooperate until a defection is observed, then punished forever) is an equilibrium to game [Table 1] for all  $\delta \geq \frac{D(\Phi) - C(\Phi)}{D(\Phi) - N(\Phi, \Phi')}$ .

We can view the cooperative outcome to this game as characterizing the international agreement in the absence of an external enforcement mechanism. We now assume that governments are constrained to reach cooperative agreements that are self-enforcing.

We will not go into the nature of solution of the game further, since it is not the focus of this paper. Our interest is whether the regime type of a country affects its willingness to abstain from the rent-shifting (beggar-thy-neighbor) policy that improves domestic conditions at the expense of its trading partner.

#### 4.3 Impacts of the political accountability on cooperative outcome

The payoff to cooperation is  $C(\Phi) - N(\Phi, \Phi')$  in every ensuing period. Given the government’s discount factor  $\delta$ , the benefit of not defecting and maintaining cooperation in future periods is

$$B^C(\Phi, \Phi') = \frac{\delta}{1-\delta} [C(\Phi) - N(\Phi, \Phi')],$$

**Proposition 3:** *The benefits from cooperation rise with the political accountability at home; i.e.,  $\frac{\partial}{\partial \Phi} B^C(\Phi, \Phi') > 0$ .*

The proof is in the appendix. The proposition 3 is intuitive. The meaning of the political accountability here is that a government is more responsive to the public interests at large. This implies in turn that the government exerts all possible efforts to enhance social welfare. Social welfare is always enhanced by cooperation, and hence, as a country becomes more democratic, the country gets more benefits from cooperation.

On the other hand, what about the incentive to defect? The one-time benefit for a country from defecting and imposing its political equilibrium tariff,  $\hat{t}$ , is

$$B^D(\Phi) = D(\Phi) - C(\Phi)$$

Therefore, the difference between sticking to the cooperative regime and defecting once, and being punished thereafter is

$$B^{C-D}(\Phi, \Phi') = B^C(\Phi, \Phi') - B^D(\Phi)$$

Taking into account the defection, the proposition 4 is established.

**Proposition 4:** *For any pair of cooperative tariffs,  $\frac{\partial}{\partial \Phi} B^{C-D}(\Phi, \Phi') > 0$ .*

The proof is also in the appendix. The proposition shows that the difference between the benefits (for the home policy-maker) from cooperating and the benefits from defecting grows with the level of democracy at home. This implies that there is an increased, unilateral willingness to be more cooperative in the international trading environment. Summing the propositions 3 and 4 up, the accountability of a government to the will of the public at large, defined as the measure of democracy, increases a unilateral incentive to liberalize and a more accommodating position in the international negotiating environment. That is, an increase in the accountability of elected executive in a democracy facilitates more cooperative equilibrium outcome in the international arena.

## V. CONCLUDING REMARKS

The economic conditions such as comparative advantage and factor specificity are important in determining who gains and loses from trade and barriers to trade. Which of the affected sectors are successful in the policy-making arena,

however, depends on the political process. The problem is that the political process is again influenced by the regime type. Therefore, the regime type matters too. Some political scientists (Bliss and Russett, 1998; Mansfeld et al., 2000; Remmer, 1998) provide empirical results on the relation between democracy and trading, but theoretical models on this subject have not been well developed. In this paper we have examined the effects of democracy on a country's trade policy. In particular, the focus was on the question of whether democracy can facilitate the international cooperation associated with trade liberalization. We found that a country's policy maker held more accountable to the will of the electorate is more likely to unilaterally liberalize and more cooperative internationally. In a democracy, in which the role of election is key, the institutional structure of government decision-making has an influence over the trade barrier levels chosen, and the willingness to engage in cooperative trade equilibrium. These theoretical results are consistent with empirical results carried out by the political scientists above.

The results in this paper must be interpreted very carefully. Because we adopt a narrow definition of democracy that focuses on the political accountability of a country's chief executive to the interests of the electorate at large. In fact, definitions of democracy abound in the literature. Also, there are various aspects of democracy which may appear to be benefits or undesirable with respect to well functioning markets. We have missed these respects. This work is not intended to be a complete description on this subject. Rather it represents the first step in understanding the economic benefits of democracy. In spite of paper's limitation, I hope that this study offered some insights into the nature of the politico-economic equilibrium in the international trading environment. More extensive and rigorous research on the nexus between the various features of democracy and economic cooperation should follow.

## Appendix

**Proof of Proposition 2.** The first-order condition of the government's optimization problem is:

$$H_t(t, \theta, \Phi) \equiv \theta \pi_t^d(t) + \Phi G_t(t) = 0$$

After totally differentiating this expression with respect to  $\theta$ , it is shown that

$\frac{d\hat{t}}{d\theta} = \frac{H_{t\theta}}{-H_{tt}} = \frac{\pi_t^d(t)}{-H_{tt}} > 0$ , since  $\pi_t^d > 0$  and  $H_{tt} < 0$  by the second-order condition for the maximization.

Similarly,

$$\frac{d\hat{t}}{d\Phi} = \frac{H_{t\Phi}}{-H_{tt}} = \frac{G_t}{-H_{tt}}$$

Since the equilibrium tariff to this game is larger than that which maximizes  $G$  (i.e.,  $\hat{t} > t^*$ ),  $G_t < 0$  when evaluated at equilibrium. Then  $\frac{\partial \hat{t}}{\partial \Phi} < 0$ . ■

### Proof of Proposition 3.

$$\begin{aligned} \frac{\partial B^C(\Phi, \Phi')}{\partial \Phi} &= \frac{\delta}{1-\delta} \frac{\partial}{\partial \Phi} [C(\Phi) - N(\Phi, \Phi')] \\ &= \frac{\delta}{1-\delta} \frac{\partial}{\partial \Phi} [\Omega(t^c, \tau^c; \Phi) - \Omega(\hat{t}(\Phi), \hat{\tau}(\Phi'); \Phi)] \\ &= \frac{\delta}{1-\delta} [G(t^c, \tau^c) - (\Omega_t \frac{\partial \hat{t}(\Phi)}{\partial \Phi} + G(\hat{t}(\Phi), \hat{\tau}(\Phi'); \Phi))] \end{aligned}$$

Since  $\Omega_t = 0$  at  $(\hat{t}(\Phi), \hat{\tau}(\Phi'))$

$$\frac{\partial B^C(\Phi, \Phi')}{\partial \Phi} = \frac{\delta}{1-\delta} [G(t^c, \tau^c) - G(\hat{t}(\Phi), \hat{\tau}(\Phi'); \Phi)]$$

Keeping the symmetric world in mind,  $G(t^c, \tau^c) - G(t^*, \tau^*) > 0$ , since cooperation dominates the Nash equilibrium to the optimal tariff setting game. Also,  $\hat{t}(\Phi) > t^*$ ,  $\hat{\tau}(\Phi') > \tau^*$  for all values of  $(\Phi, \Phi')$ , and  $G_t < 0$  for all  $t > t^*$ , and  $G_\tau < 0$  for all  $\tau > 0$ . Thus

$$G(t^c, \tau^c) - G(\hat{t}(\Phi), \hat{\tau}(\Phi')) > G(t^c, \tau^c) - G(t^*, \tau^*) > 0. \quad \blacksquare$$

**Proof of Proposition 4.**

$$\frac{\partial}{\partial \Phi} B^{C-D}(\Phi, \Phi^f) = \frac{\partial}{\partial \Phi} B^C(\Phi, \Phi^f) - \frac{\partial}{\partial \Phi} B^D(\Phi)$$

Here

$$\begin{aligned} \frac{\partial B^D(\Phi)}{\partial \Phi} &= \frac{\partial}{\partial \Phi} D(\Phi) - \frac{\partial}{\partial \Phi} C(\Phi) \\ &= \frac{\partial}{\partial \Phi} \Omega(\hat{t}(\Phi), \tau^c; \Phi) - G(t^c, \tau^c) \\ &= \Omega_t \frac{\partial \hat{t}(\Phi)}{\partial \Phi} + G(\hat{t}(\Phi), \tau^c; \Phi) - G(t^c, \tau^c) \\ &= G(\hat{t}(\Phi), \tau^c; \Phi) - G(t^c, \tau^c) < 0, \end{aligned}$$

since  $\Omega_t = 0$  at  $\hat{t}(\Phi)$  and welfare is reduced by a rise in tariffs from the cooperative levels. With  $\frac{\partial}{\partial \Phi} B^C(\Phi, \Phi^f) > 0$  (in the proposition 3),  $\frac{\partial}{\partial \Phi} B^{C-D}(\Phi, \Phi^f) > 0$ . ■



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