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Political Asymmetry and Common External Tariff in a Customs Union.*

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Abstract

We present a three-nation model, where two of the nations are members of a Customs Union (CU) and maintain a common external tariff (CET) on the third (non-member) nation. The producing lobby is assumed to be union-wide and lobbies both governments to influence the CET. The CET is determined jointly by the CU. We follow the political support function approach, where the CU seeks to maximize a weighted sum of the constituents' payoff functions, the weights reflecting the influence of the respective governments in the CU. A central finding of this paper is that the CET rises monotonically with the degree of asymmetry in the weights if the two countries are equally susceptible to lobbying. If the weights are the same, but the respective governments are asymmetric in their susceptibilities to lobbying, the CET also rises monotonically with this asymmetry. However, an increase in one type of asymmetry, in the presence of the other type of asymmetry, may reduce the CET.

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1. Introduction

There has been a proliferation of preferential trading agreements in all parts of the world. Prominent among them are the NAFTA and the EU. In the former arrangement, member nations have free trade between them, but set their tariffs on non-members independently. This is an example of a Free Trade Area (FTA). On the other hand, EU is organized along the lines of a Customs Union (CU), where, in addition to intra-bloc free trade, the members set a common tariff on non-members (i.e., the common external tariff - CET). The CET is determined jointly by the member nations, with different members having different levels of influence on the decision making. Efforts exercised by different members in the decision making are also typically influenced by lobbying from interest groups.

There is a large and growing literature on the effect of lobbying. There are broadly two strands of this literature. One is along the lines of DUP (Directly Unproductive Profit-Seeking Activities) *a la* Bhagwati (1982). Panagariya and Rodrik (1993), Panagariya and Findlay (1996) and Richardson (1994) among others, follow this approach. The second strand follows the pioneering work of Grossman and Helpman (1994), where contributions by lobbyists and its influence on trade policy is considered explicitly.[1]

A substantial part of the literature on the political economy of trade policy is concerned with preferential trading agreements (PTAs). Krishna (1998) finds that trade diverting preferential agreements are more likely to be supported by firms within a union, because the gain is at the expense of the market share of firms based in non-member nations. Thus, political

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[1]Mitra (1999) builds on this framework and considers how lobbies may be formed endogenously. Along these lines, Krishna and Mitra (2005) argue that it may be a good idea to unilaterally reduce tariffs in certain situations, because this may strengthen the export lobby in the foreign nation to form and lobby that nation's government towards a more liberal trade policy.

economy factors favor trade diverting unions compared to trade creating ones and this is undesirable from the perspective of multilateral trade liberalization. Cadot, de Melo and Olarreaga (1999) present a political economy model following the Grossman and Helpman (1994) approach. They find that "deep integration" within PTAs leads to rising protection levels against non-member nations.[2]

Saggi (2006) presents an oligopoly model to focus on the role of symmetry (and asymmetry) between three trading nations. Assuming symmetry, he finds that the cooperative agreement is more difficult to sustain compared to MFN (Most Favored Nation) for both an FTA and a CU. Under cost (and market size) asymmetry between the nations, he finds that asymmetry may, under certain situations, improve rather than hurt cooperation. Riezman (1979) shows that if intra-union trade volume is small, all members of a CU are likely to benefit from it. With a smaller intra-union volume, a potential terms of trade loss of one member with respect to another is likely to be dominated by terms of trade gains from external trade. Kennan and Riezman (1990) highlight the rise in the CET due to coordination between members which allows them to internalize terms of trade externalities created by their respective tariff policies. Bond at al. (2004) find that if FTA member nations are sufficiently large they benefit from such an agreement because of larger intra-union trade liberalization effects which dominate the adverse terms of trade effects vis-à-vis the rest of the world. Raimondos-Moller and Woodland (2006) show that even non-preferential trading clubs can gain from coordinated tariff reforms in the presence of income transfers between member nations. A computational approach pursued by Abrego at al. (2006) finds that a CU tends to raise external tariffs in a large majority of cases.

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[2] For example, the definition of "deep integration" in CU that they provide (page-646) is: "..under deep integration, the CU's trade policy is determined by a pan-union agency (such as the European Commission) subject to influence by pan-union lobbies (such as EROFER, the European Union's steel lobby, and others)."

This paper is distinct in that the focus is not on traditional efficiency or terms of trade motives of tariff changes but rather on the political determinants of the CET. Unlike some of these papers which deal with asymmetry, the focus here is not on differences in endowments or volume of trade but rather on parameters reflecting underlying political conditions of member nations.

The above literature abstracts from cross-border lobbying by firms. A recent contribution by Gawande, Krishna and Robbins (2006) finds that foreign lobbies play an empirically significant role in the determination of US tariffs. Allowing for cross-border lobbying, Grossman and Helpman (1995, Appendix) find that FTAs may be more difficult to implement, because now a lobby can block the agreement not only by lobbying its own government but it may approach the other member government as well. Schiff and Winters (2003, page-92) worry that regional integration may accentuate cooperation of lobbying groups and raise protection.[3] In a similar vein, Bandyopadhyay and Wall (1999) present a model of cross-border lobbying and compare FTA and CU tariffs. In an FTA, tariff of a nation is determined through a tariff generating function *a la* Findlay and Wellisz (1982). Each member nation's firm (that is competing with the non-members imports) simply lobbies their nation's government and there is no incentive to engage in cross-border lobbying. The endogenous FTA tariff of a nation depends on the tariff generating function of that nation and its marginal cost of lobbying. In contrast, the CU determines a CET that is generated through a lobbying function which is a convex combination of the respective nations' tariff generating functions. Lobbying is aimed by the union-wide industry at both member governments. They find that the CET is higher than the FTA tariff unless the two member nations are symmetric.

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[3] Winters (1993) raises similar concerns about the political economy of tariff setting in the European union.

This paper builds on the above literature to focus on the role of asymmetry and its effects on the CET. Rather than assuming an ad hoc tariff-generating function for the CET, we derive one from the member governments' objective functions which are susceptible to cross-border and within-border lobbying of the DUP type. The asymmetries that we consider are in the influences of the member countries in the CU decision making and in the susceptibility of each member nation's government to lobbying. We find that, in the absence of one type of asymmetry, an increase in the other type of asymmetry between members always raises the CET. However, in the presence of one type of asymmetry, an increase in the other type of asymmetry between members may reduce the CET.

The findings of this paper have important policy implications. In constituting a CU, one should look for more symmetric members to minimize the protection-enhancing effect on non-members.[4] Alternately, when one is considering expansion of a CU, it seems that the more similar the new members are to the existing members, the less harmful it will be (from a multilateral perspective) to expand the union. However, in the presence of a multitude of political asymmetries, asymmetries may not increase the protection-enhancing effect on non-members.

2. The Model and Analysis

In our model there are three countries labeled *A*, *B* and *C* and four goods – 1, 2, 3 and 4. Countries *A* and *B* both export good 4 to country *C*. Also, goods 1, 2 and 3 are export goods of

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[4] See for example, Winters (1993), Grossman and Helpman (1995) and Schiff and Winters (2003) for a discussion on protection-augmenting effects in a CU.

countries A, B and C, respectively.[5] Countries A and B are members of a Customs Union (CU).

Country C represents the rest of the world. Countries A and B are small in relation to country C,

so that the prices of all the goods are determined in C. The Common external tariff (CET) of the

CU is determined in a three stage game in countries A and B. In the first stage, the import

competing industry engages in lobbying for the CET. In the second stage, the CU chooses the

CET. In the third and final stage, individual competitive firms choose their output levels. In

order to achieve a sub-game-perfect equilibrium, we work with a backward induction.

Country A imports goods 2 and 3 from nations B and C, respectively. Since B is a

member of the CU, there cannot be any tariff in A on good-2. Thus, lobbying is done only for a

tariff on good-3. The same logic applies to B. Let us assume that both A and B have the same

linear production function for good-4:

$$X_4 = w_0 L_4; \ 0 < w_0 < 1, \tag{1}$$

where L_4 is labor used in producing good-4. The wage rate w in both nations (A and B) must be:

$$w = p_4 w_0, \tag{2}$$

where p_4 is the price of good-4. By suitable choice of units we can set p_4 to unity.

2.1. *National Welfare of a Member Nation*

We assume that there is a representative consumer in nation-j ($j=A,B$) with the following

utility function:

$$U^j = u(c_1^j, c_2^j, c_3^j) + c_4^j, \tag{3}$$

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[5] Nation C is not explicitly modeled in this paper. We lay out the preference and production structures in A and B below. The asymmetry between A and B that drives their respective patterns of trade is through the asymmetry in their respective endowments of specific capital for goods 1 and 2. A (B) has a sufficiently large endowment of capital specific to good-1 (good-2) to make it a net exporter of the good.

where c_i^j is the consumption of good-i in nation j. Let m^j be the income of the consumer in nation j. Assuming identical utility functions between A and B and noting that the consumers in A and B face a common set of prices (in a CU), the indirect utility function is:

$$V^j = v^j(p_1, p_2, p_3) + m^j, \ \mathrm{j} = A, B, \tag{4}$$

where, $v^j(p_1, p_2, p_3) = u\{c_1^j(.), c_2^j(.), c_3^j(.)\} - \sum_{i=1}^{3} p_i c_i^j(.)$, and $c_i^j(.) = c_i^j(p_1, p_2, p_3)$.

Without loss of any generality, we set all international prices to unity. The domestic prices of good-1 and good-2 are one, but the domestic price of good-3 is $1 + t$, where t is the CET on good-3. Denoting by X_i^j the output of good-i in nation-j, we have:

$$m^j = X_1^j + X_2^j + (1+t)X_3^j + X_4^j + t(C_3^j - X_3^j). \tag{5}$$

We assume that goods 1-3 are produced using identical Leontief technology in the two nations:

$$X_i = Min\{a_i K_i, L_i\}; \ i = 1, 2, 3, \tag{6}$$

where a_i is the labor to capital ratio in good-i. Also, denote by $\bar{K}_i^j$ the good-i-specific capital stock in nation-j. Then:

$$X_i^j = a_i \bar{K}_i^j, \ \text{where,} \ i = 1, 2, 3; \mathrm{j} = A, B. \tag{7}$$

Using (6) and (7), we have

$$L_i^j = a_i \bar{K}_i^j. \tag{8}$$

Using (1) and (7), and noting that the level of consumption of good-3 is identical in A and B, (5) reduces to:

$$m^j = a_1 \bar{K}_1^j + a_2 \bar{K}_2^j + a_3 \bar{K}_3^j + X_4^j + tC_3(p_3 = 1 + t)$$

$$= a_1 \bar{K}_1^j + a_2 \bar{K}_2^j + a_3 \bar{K}_3^j + w_0 L_4^j + tC_3(p_3 = 1 + t) \tag{9}$$

Denoting by $\bar{L}^j$ the endowment of labor in country j, by L_i^j amount of labor used in the production of good-i in country j, and by h_j the union-wide lobbying group's use of lobbying resources from nation j,[6] we have

$$L_4^j = \bar{L}^j - h_j - L_1^j - L_2^j - L_3^j. \tag{10}$$

Using (8) and (10) in (9):

$$m^j = \bar{B}^j + w_0(\bar{L}^j - h_j) + tC_3(1+t) \tag{11}$$

where $\bar{B}^j = a_1\bar{K}_1^j + a_2\bar{K}_2^j + a_3\bar{K}_3^j - w_0(\sum_{i=1}^{3} a_i\bar{K}_i^j)$.

Note that $\bar{B}^j$ is independent of t. Using (11) in (4), the indirect utility function of the representative individual in nation-j is derived as:

$$V^j = v^j(1,1,1+t) + \bar{B}^j + w_0(\bar{L}^j - h_j) + tC_3(1+t). \tag{12a}$$

(12a) can be written as:

$$V^j = S^j(t) - w_0h_j, \tag{12b}$$

where, $S^j(t) = v^j(1,1,1+t) + \bar{B}^j + w_0\bar{L}^j + tC_3(1+t)$.

2.2 *Government Objective Function*

Under the CET, the price of good-3 is equalized across the union (of *A* and *B*) and the benefit from a higher CET accrues to the union-wide industry for good-3. We assume that lobbying is organized at this union level and the industry lobbies the member governments for a

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[6] Here we follow the DUP (Directly Unproductive Profit-Seeking Activities, *a la* Bhagwati; see chapter 34 of Bhagwati et al., 1998, for a nice survey) approach. In the DUP approach, lobbying is analyzed as an activity that requires real resources which are taken away from productive activities and used for rent seeking. Therefore, lobbying causes a direct income loss for the nation and also indirectly affects national income through its effects on import tariffs (and hence relative prices).

higher tariff. Each member nation's government can be influenced by this lobbying to attach an extra weight to the industry's producer surplus net of lobbying contributions.[7] This weight is assumed to be increasing in lobbying effort with diminishing returns. That is, denoting by ρ^j the weight attached by nation-j to the producer surplus of good-3, we have:

$$\rho^j = \rho^j(h^j), \ \frac{d\rho^j}{dh^j} > 0, \text{ and } \frac{d^2\rho^j}{dh^{j^2}} < 0, \ j = A, B; \tag{13}$$

where h^j is the lobbying effort expended on nation-j's government by the union-wide lobby. The objective function of nation-j's government is:

$$G^j = S^j(t) - w_0 h_j + \rho^j(h^j)[\pi^{3A}(1+t) + \pi^{3B}(1+t) - w_0(h^A + h^B)], \tag{14}$$

where, as mentioned earlier, h_j is the amount of lobbying resources of nation-j used by the union-wide lobby. $\pi^{3j}(1+t)$ is the surplus for producers (of good-3) located in nation-j. Using (7) above, the producer surplus of sector-3 in country j is:

$$\pi^{3j}(1+t) = (1+t)X_3^j - w_0 L_3^j \Rightarrow \pi^{3j}(1+t) = (1+t-w_0)a_3 \overline{K}_3^j. \tag{15}$$

Using (15) in (14), we get

$$G^j(t, h_j, h^j, h^i) = S^j(t) - w_0 h_j + \rho^j(h^j)[(1+t-w_0)\tilde{K} - w_0(h^j + h^i)],$$

$$j, i = A, B; \ j \neq i, \text{ and, } \tilde{K} = a_3(\overline{K}_3^A + \overline{K}_3^B). \tag{16}$$

2.3. *Tariff Determination by the Customs Union (Stage-2)*

Following the political support function approach, we assume that the CU tariff-setting

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[7] A strand of the existing literature (e.g., Panagariya-Rodrik, 1995) assumes that lobbying increases tariffs. The rationale is that through lobbying a government is influenced to attach special importance to the lobbying group. We propose a channel through which the lobbying may influence the government. It can be viewed as an advertising campaign conducted by the union wide industry to convince a member government to attach a higher weight to that industry. In turn, this weight will increase, the greater the resources spent by the industry in this campaign.

body maximizes a weighted sum of the member-nation governments' objective functions.[8] The

weights may differ to capture asymmetric national influence on the tariff setting process. Let α

be the relative weight attached to A. Then the CU objective function is:

$$C(t, h_A, h_B, h^A, h^B) = \alpha G^A(t, h_A, h^A, h^B) + (1 - \alpha) G^B(t, h_B, h^B, h^A). \tag{17}$$

Noting that lobbying is done in stage-1, the first order condition for the choice of t is:

$$\alpha \frac{\partial G^A}{\partial t} + (1 - \alpha) \frac{\partial G^B}{\partial t} = 0. \tag{18}$$

From (16), it can be derived that:

$$\frac{\partial G^A}{\partial t} = \frac{\partial S^A}{\partial t} + \rho^A(h^A)\tilde{K}, \text{ and, } \frac{\partial G^B}{\partial t} = \frac{\partial S^B}{\partial t} + \rho^B(h^B)\tilde{K}. \tag{19a}$$

Using (11) and (12b), noting the equalization of consumer prices over the union, and given that

the utility functions are identical between A and B, we have:

$$\frac{\partial S^A}{\partial t} = \frac{\partial S^B}{\partial t} = S'(t). \tag{19b}$$

Using (18), (19a) and (19b):

$$S'(t) + \tilde{K}\mu = 0 \Rightarrow t = t(\mu), \text{ where, } \mu = \alpha\rho^A(h^A) + (1 - \alpha)\rho^B(h^B). \tag{20a}$$

Using (20a), we find:

$$\frac{dt}{d\mu} = \frac{\tilde{K}}{-S''(t)} > 0, \tag{20b}$$

since $S''(t) < 0$ in order to satisfy the second order condition of the choice of the CU tariff.

From (20a) and (20b) notice that given $\tilde{K}$, the CET depends entirely on μ, which may be

thought of as a composite weight attached by the tariff setting authority to union-wide producer

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[8] See Hillman (1982) and Rodrik (1995, pages 1464-65) for simple expositions.

interests (in good-3). Of course, μ is endogenous and depends on the equilibrium levels of h^A

and h^B, described in the following sub-section. In addition, α and the parameters capturing the

functional forms of ρ^A and ρ^B also affect μ. The effect of these parameters on μ is through

direct as well as through induced effects on h^A and h^B. The following analysis examines this

issue. For tractability, let us assume a specific form for the ρ^j functions:

$$\rho^j(h^j) = \delta_j(h^j)^\eta, \text{ where, } j = A, B, \text{ and, } 0 < \eta < 1.$$ (21)

Formulation (21) assumes that lobbying directed at a member government will raise the weight

attached by the nation to the lobbying sector's (i.e., sector-3) producer surplus. Diminishing

returns imply that this effect becomes smaller as lobbying increases. Also, even at the same

lobbying level (i.e., for $h^A = h^B$), ρ^A need not equal ρ^B, because the governments may be

differentially susceptible to lobbying. This is captured by the parameter δ_j. If the nations are

equally susceptible to lobbying, a normalization that we can use is that: $\delta_A = \delta_B = 1$. To capture

asymmetric lobbying susceptibilities without raising the global level of susceptibility, we

consider a mean preserving spread of this susceptibility parameter as follows:

$$\delta_A = 1 + \varepsilon, \text{ and, } \delta_B = 1 - \varepsilon, \text{ where, } 0 < \varepsilon < 1.$$ (22)

Note that a rise in ε spreads the marginal productivity of lobbying further apart between the two

nations, while keeping the average [i.e., $\dfrac{\delta_A + \delta_B}{2}$] constant. Please refer to Figure-1 for a sense

of how this spread works. Using (21) and (22) in (20a), we get

$$\mu(h^A, h^B, \alpha, \varepsilon) = \alpha(1 + \varepsilon)(h^A)^\eta + (1 - \alpha)(1 - \varepsilon)(h^B)^\eta.$$ (23a)

$$d\mu = \mu_1 dh^A + \mu_2 dh^B + \mu_\alpha d\alpha + \mu_\varepsilon d\varepsilon.$$ (23b)

Although μ_1 and μ_2 are strictly positive, the analysis that follows shows that α and ε have ambiguous effects on h^A and h^B. Therefore, the effects (on μ) of these parameters through the endogenous variables are in general ambiguous. The direct effects of the parameters are:

$$\mu_\alpha = (h^A)^\eta - (h^B)^\eta + \varepsilon\{(h^A)^\eta + (h^B)^\eta\}, \text{ and, } \mu_\varepsilon = \alpha(h^A)^\eta - (1-\alpha)(h^B)^\eta. \tag{24}$$

If h^A exceeds h^B, μ_α is necessarily positive and μ_ε is also positive for all α not less than one-half. We show below that these direct effects dominate, and we can derive unambiguous conclusions about the effects of the parameters on μ and hence on the CET.

2.4. *The Determination of Lobbying Activities (Stage-1)*

The union-wide industry maximizes the joint profits net of lobbying costs:

$$\pi^{CU} = \pi^{3A}(1+t) + \pi^{3B}(1+t) - w_0(h^A + h^B) = (1+t-w_0)\tilde{K} - w_0(h^A + h^B). \tag{25a}$$

Using (20a) through (23a) in (25a):

$$\pi^{CU} = [1 + t\{\mu(h^A, h^B, \alpha, \varepsilon)\} - w_0]\tilde{K} - w_0(h^A + h^B). \tag{25b}$$

The industry's first order conditions on how much to lobby the respective governments is given by:

$$\tilde{K}t'(\mu)\left(\frac{\partial\mu}{\partial h^j}\right) = w_0; \quad j = A, B. \tag{26a}$$

(26a) implies:

$$\frac{\partial\mu}{\partial h^A} = \frac{\partial\mu}{\partial h^B}. \tag{26b}$$

(26b) requires that at the optimum the marginal returns to the industry from lobbying the two governments must be equalized. Using (23a) and (26b):

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$$\frac{h^A}{h^B} = \left[\left(\frac{\alpha}{1-\alpha}\right)\left(\frac{1+\varepsilon}{1-\varepsilon}\right)\right]^{\frac{1}{1-\eta}}. \tag{27}$$

From (27) it is clear that a rise in A's influence (i.e., α) will raise the relative amount of lobbying directed at A. Similarly, given α, a rise in the susceptibility parameter for A (i.e., ε) will also raise the relative amount of lobbying in A. Under perfect symmetry (i.e., $\alpha = \frac{1}{2}$, and $\varepsilon = 0$), $h^A = h^B$. Further, notice from (27) that:

$$h^A \geq h^B, \text{ if and only if, } \alpha \geq \frac{1-\varepsilon}{2}. \tag{28}$$

Equation (28) implies that if lobbying susceptibilities are equal ($\varepsilon = 0$), then more lobbying is directed at A, if it has a greater influence on the CU tariff setting compared to B (i.e., if $\alpha > \frac{1}{2}$), and *vice versa*. Also, if A's susceptibility to lobbying is larger (i.e., if $\varepsilon > 0$), then even for equal influence ($\alpha = \frac{1}{2}$), more lobbying will be directed at A. In the former case, the industry concentrates its lobbying on A because its government will have a greater ability to influence the tariff setting body. In the latter case, this happens because A's government is relatively easily lobbied and is therefore more easily convinced to ask for higher tariffs.

Using (23a) and (26a) we can solve for the equilibrium lobbying levels:

$$h^A = \left[\frac{\tilde{K}\alpha(1+\varepsilon)\eta t'(\mu)}{w_0}\right]^{\frac{1}{1-\eta}}; \text{ and, } h^B = \left[\frac{\tilde{K}(1-\alpha)(1-\varepsilon)\eta t'(\mu)}{w_0}\right]^{\frac{1}{1-\eta}}. \tag{29}$$

From (29) it is clear that given μ, a rise in either parameter raises h^A and reduces h^B. This is because a rise in α or ε raises the returns from lobbying A's government and reduces it from lobbying B's. However, as μ changes, it affects $t'(\mu)$, and hence the marginal benefit of lobbying both governments [see (26a)]. For example, consider a rise in α and assume that the initial parameter combination is such that μ rises. This will raise or reduce the marginal benefit

of lobbying depending on whether t'' is positive or negative. Therefore, in general, the effect of a change in the parameters on h^A and h^B is ambiguous.

Using (29) in (23a) and differentiating it, we get an expression of the form:

$$D^\mu d\mu = D^\alpha d\alpha + D^\varepsilon d\varepsilon, \tag{30}$$

where:

$$D^\mu = \left[1 - \left(\frac{\eta\mu}{1-\eta}\right)\left(\frac{t''}{t'}\right)\right](t')^{\frac{\eta}{\eta-1}} > 0, \text{ using second order condition for stage-1 optimization,}[9]$$

$$D^\alpha = \left(\frac{\tilde{K}\eta}{w_0}\right)^{\frac{\eta}{1-\eta}}\left(\frac{1}{1-\eta}\right)\left[(1+\varepsilon)^{\frac{1}{1-\eta}}(\alpha)^{\frac{\eta}{1-\eta}} - (1-\varepsilon)^{\frac{1}{1-\eta}}(1-\alpha)^{\frac{\eta}{1-\eta}}\right], \text{ and,}$$

$$D^\varepsilon = \left(\frac{\tilde{K}\eta}{w_0}\right)^{\frac{\eta}{1-\eta}}\left(\frac{1}{1-\eta}\right)\left[(1+\varepsilon)^{\frac{\eta}{1-\eta}}(\alpha)^{\frac{1}{1-\eta}} - (1-\varepsilon)^{\frac{\eta}{1-\eta}}(1-\alpha)^{\frac{1}{1-\eta}}\right].$$

Therefore:

$$\frac{dt}{d\alpha} = t'(\mu)\frac{d\mu}{d\alpha} \geq 0 \text{ if and only if } D^\alpha \geq 0 \Rightarrow \frac{\alpha}{1-\alpha} \geq \left(\frac{1-\varepsilon}{1+\varepsilon}\right)^{\frac{1}{\eta}}, \text{ and,} \tag{31a}$$

$$\frac{dt}{d\varepsilon} = t'(\mu)\frac{d\mu}{d\varepsilon} \geq 0 \text{ if and only if } D^\varepsilon \geq 0 \Rightarrow \frac{\alpha}{1-\alpha} \geq \left(\frac{1-\varepsilon}{1+\varepsilon}\right)^{\eta}. \tag{31b}$$

However, regardless of the ambiguities of the effects of α and ε on h^A and h^B, (31a) and (31b) suggest that we can make some definite statements regarding the effects of the parameters on the CET (through μ). We first consider one asymmetry at a time. The following proposition follows directly from (31a) and (31b).

Proposition:

(i). For $\varepsilon = 0$, the CET falls (rises) monotonically with α for $\alpha < \frac{1}{2}$ ($\alpha > \frac{1}{2}$). The CET

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[9] The proof is somewhat tedious and is available from the authors on request.

reaches a minimum at $\alpha = \frac{1}{2}$.

(ii). For $\alpha = \frac{1}{2}$, the CET increases monotonically with ε, for any $\varepsilon > 0$.

The proposition above highlights the cases of two pure asymmetries. Figures 2 and 3 illustrate parts (i) and (ii) of the proposition, respectively. If $\varepsilon = 0$, and we change α, we are focusing only on the asymmetry in the political support weights. On the other hand, if $\alpha = \frac{1}{2}$, there is no asymmetry in these weights and changes in ε capture only the extent of relative lobbying susceptibilities. This result can be explained intuitively as follows. First, consider the case where ε equals zero. When α exceeds one-half, the government in country A draws more lobbying. This raises its weight attached to producer surplus above country B's. Given that μ is a composite weight attached by the CET determining authority, a further rise in α (above $\frac{1}{2}$) raises A's importance in that composite, driving μ higher and in turn raising the CET. This effect may be compounded by two more factors. For given union-wide lobbying, a rise in A's influence will draw a larger share of lobbying to it [see (27) above]. Second, union-wide lobbying may intensify as μ rises.[10] Both of these may amplify the initial effect on the CET. Similar logic applies when $\alpha = \frac{1}{2}$, and ε is raised further starting from a positive value.

In general, i.e., when both types of asymmetries co-exist, the properties of the CET as described above still hold except that the value of α [ε], for a given level of ε [α], at which the CET is minimized depends on the value of ε [α]. Let us denote these two values by $\alpha^*(\varepsilon)$ and $\varepsilon^*(\alpha)$. These two functions can be shown to be monotonically decreasing functions. Thus, for any given positive level of ε, in the range $\alpha^*(\varepsilon) < \alpha < \alpha^*(0) = \frac{1}{2}$, an increase in

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[10] It can be shown that: $h^U = h^A + h^B = \left(\dfrac{\tilde{K}\eta}{w_0} \right) \mu t'(\mu) \Rightarrow \dfrac{dh^U}{d\mu} > 0, iff, t' + \mu t'' > 0$. A sufficient condition for this to be satisfied is that: $t'' \geq 0$.

asymmetry in relation to α will reduce the common external tariff. As for $\varepsilon^*(\alpha)$, it can be shown that $\varepsilon^*(\alpha) < 0$ for all $\alpha > \frac{1}{2}$. Thus, if $\alpha > \frac{1}{2}$, an increase in asymmetry with respect to ε will increase the CET. However, for all $\alpha < \frac{1}{2}$, in the range $0 < \varepsilon < \varepsilon^*(\alpha)$, an increase in asymmetry with respect to ε will reduce the value of the CET.

3. Conclusion

In a CU, the union-wide industry chooses the government that should be lobbied more intensely depending on the final productivity of such lobbying in terms of raising the CET. There are two factors on which this productivity depends in our analysis: (i) the more easily a government may be convinced through lobbying (say *susceptibility* of a government) the greater is this productivity; and (ii) the greater the *power/influence* of a government (and its representative) on the central tariff making body, the higher the productivity. In turn, this will mean that asymmetry between the members will lead to asymmetric lobbying. The more easily convinced government [i.e., case (i) above], or the more powerful one [i.e., case (ii)], will be lobbied more intensely.
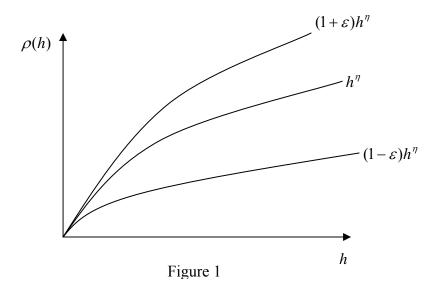
There is a positive monotonic relationship between the degrees of asymmetry and the level of the CET. For equal *susceptibilities*, a greater relative *power* of a member nation's government monotonically raises the CET. On the other hand, for equal *power*, a rise in the spread of the *susceptibilities* must also monotonically raise the tariff. These results have the interesting policy implication that more heterogeneous Customs Unions are likely to be more protectionist with respect to non-members. They also imply that when considering expansion of a CU, free trade oriented members should be less sympathetic to bringing in dissimilar fresh entrants. ∎

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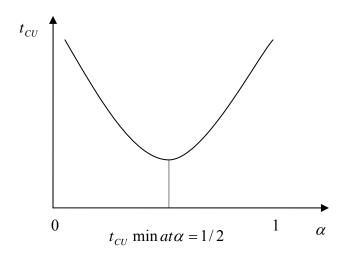
$\rho(h)$

$(1+\varepsilon)h^{\eta}$

h^{η}

$(1-\varepsilon)h^{\eta}$

h

Figure 1

t_{CU}

0

1

α

$t_{CU}\ \min at\alpha =1/2$

Figure 2

Figure 3