Enlargement and Common External Tariff in a Political-Economic Model of Customs Union

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Abstract

We present a model with three blocks of nations: two of the blocks are members of a Customs Union (CU) and maintain a common external tariff (CET) on the third (non-member). One of the member blocks is a block of new entrants. The producing lobby is assumed to be union-wide and lobbies governments of both blocks 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. In this framework, we find the relationship between the CET and the average level of capital stock owned by the protected sector in the block of new entrants. We find that the CET is unambiguously larger if the new entrants have a larger stock of capital.

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1. Introduction

The European Union (EU) has been one of the most successful and dynamic case of Customs Union (CU) that have been tried. The EU has changed very significantly over the years both in terms of its scope and membership. It started merely as an economic community after the Treaty of Rome in 1957 with six founding members: Belgium, France, Germany, Italy, Luxembourg and the Netherlands. In terms of membership, it has undergone four successive enlargements with Denmark, Ireland and the United Kingdom joining in 1973, Greece in 1981, Portugal and Spain in 1986, and Austria, Finland and Sweden in 1995. The year 2004 saw the biggest enlargement with ten other countries (Czech Republic, Cyprus, Estonia, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia) joining the EU. Two years later two more countries (Bulgaria and Romania) joined the EU, making it a 27-nation Customs Union (CU). Currently, negotiations are going on with many other countries, such as Turkey, for possible accession in the near future.

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 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.

This paper examines the effect of the nature of an enlargement of a CU on the CET. We do so by developing a political-economy model for the determination of the CET in which lobbying by the sector of production protected by the CET plays an important role.

There is a large and growing literature on the effect of lobbying on various variables. 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), 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 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] Tavares (2006) provides an empirical analysis of CET

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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.

[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)."

determination in the EU. She finds evidence of logrolling in voting for the CET and her results suggest that the members used the unanimity principle.

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 Most Favored Nation (MFN) 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 et 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. 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. This is because 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. Recently Bandyopadhyay et al. (2007) extended the model of Bandyopadhyay and Wall (1999) by endogenizing the tariff-formation function and examined the role of political asymmetries in the determination of the CET. The present paper adopts the model of Bandyopadhyay et al. (2007) to examine the issue at hand, viz., the effect of an enlargement of the CU on the CET.

The findings of this paper have important policy implications. In constituting a CU, one should not ignore potential members who are capital-poor in the import competing sector (i.e. have lower endowment of specific capital), because they tend to minimize the protection-

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

enhancing effect on non-members.[4] Alternately, when one is considering expansion of a CU, the more capital-poor the new members are, the less harmful it will be (from a multilateral perspective) to expand the union.

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. For the purpose of this paper, it will be helpful to interpret *A* as the representative of the block of existing members, *B* the representative of the block of new entrants, and *C* the rest of the world.

A and *B* both export good 4 to *C*. Also, goods 1, 2 and 3 are export goods of *A*, *B* and *C*, respectively.[5] *A* and *B* are members of a Customs Union (CU). *C* represents the rest of the world. *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 *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.

A imports goods 2 and 3 from *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:

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

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:

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

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:

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

Using (6) and (7), we have

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

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

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

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

Denoting by $\overline{L}^j$ 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

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

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

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

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

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

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

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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).

(12a) can be written as:

$$V^j = S^j(t) - w_0 h_j, \tag{12b}$$

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

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 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:

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[7] A strand of the existing literature (e.g., Panagariya-Rodrik, 1993) 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.

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

Using (15) in (14), we get

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

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

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

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

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

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

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

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

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. Assuming that the nations are equally susceptible to lobbying, a normalization that we can use is: $\delta_A = \delta_B = 1$. Using (21) in (20a), we get

$$\mu(h^A, h^B) = \alpha(h^A)^\eta + (1-\alpha)(h^B)^\eta. \tag{22a}$$

$$d\mu = \mu_1 dh^A + \mu_2 dh^B, \tag{22b}$$

where μ_1 and μ_2 are strictly positive.

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

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

$$\pi^{CU} = \pi^{3A}(1+t) + \pi^{3B}(1+t) - w_0(h^A + h^B) = (1+t-w_0)\tilde{K} - w_0(h^A + h^B). \tag{23a}$$

Using (20a) through (22a) in (23a):

$$\pi^{CU} = [1 + t\{\mu(h^A, h^B)\} - w_0]\tilde{K} - w_0(h^A + h^B). \tag{23b}$$

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

by:

$$\tilde{K}t'(\mu)\left(\frac{\partial\mu}{\partial h^j}\right) = w_0; \quad j = A, B. \tag{24a}$$

(24a) implies:

$$\frac{\partial\mu}{\partial h^A} = \frac{\partial\mu}{\partial h^B}. \tag{24b}$$

(24b) requires that at the optimum the marginal returns to the industry from lobbying the two

governments must be equalized. Using (22a) and (24b):

$$\frac{h^A}{h^B} = \left(\frac{\alpha}{1-\alpha}\right)^{\frac{1}{1-\eta}}. \tag{25}$$

From (25) it is clear that a rise in A's influence (i.e., α) will raise the relative amount of

lobbying directed at A. Using (22a) and (24a) we can solve for the equilibrium lobbying levels:

$$h^A = \left[\frac{\tilde{K}\alpha\eta t'(\mu)}{w_0}\right]^{\frac{1}{1-\eta}}; \text{ and, } h^B = \left[\frac{\tilde{K}(1-\alpha)\eta t'(\mu)}{w_0}\right]^{\frac{1}{1-\eta}}. \tag{26}$$

This completes the description of our political equilibrium. We shall examine the effect of the

nature of CU enlargement on the equilibrium level of CET.

2.5.   *CU Enlargement and the CET*

In this subsection we shall analyze the consequence of accepting richer countries than

poorer ones. We shall do so by considering two possibilities with respect to the block of

countries B, and these possibilities related to the level of capital stock (i.e., $\bar{K}_3^B$) that the

protected sectors of the new entrants own. Using (26) in (22a) and differentiating it we get:

$$D^\mu d\mu = D^K d\tilde{K},$$ (27)

where,

$$D^\mu = 1 - \frac{\alpha^2 \eta^2 (\tilde{K})^2}{(1-\eta)w_0} \left\{ \frac{\tilde{K}\alpha t'}{w_0} \right\}^{\frac{2\eta-1}{1-\eta}} t'' - \frac{(1-\alpha)^2 \eta^2 (\tilde{K})^2}{(1-\eta)w_0} \left\{ \frac{\tilde{K}(1-\alpha)\eta t'}{w_0} \right\}^{\frac{2\eta-1}{1-\eta}} t'',$$

and,

$$D^K = \left[\frac{\alpha^2 \eta^2}{(1-\eta)} \left\{ \frac{\tilde{K}\alpha \eta t'}{w_0} \right\}^{\frac{2\eta-1}{1-\eta}} + \frac{(1-\alpha)^2 \eta^2}{(1-\eta)w_0} \left\{ \frac{\tilde{K}(1-\alpha)\eta t'}{w_0} \right\}^{\frac{2\eta-1}{1-\eta}} \right] (t' + \tilde{K}\mu t'').$$

Now, from (20a) we get:

$$\frac{dt}{d\tilde{K}} = t' \left(\mu + \tilde{K} \frac{d\mu}{d\tilde{K}} \right).$$ (28)

Using (27) we obtain:

$$\mu + \tilde{K} \frac{d\mu}{d\tilde{K}} = \frac{\mu + \{t'D^K / (t' + t''\tilde{K}\mu)\}}{D^\mu}$$ (29)

From the second order condition for the stage 1 optimization problem, we have $D^\mu > 0$, and

from (27), $D^K / (t' + t''\tilde{K}\mu) > 0$. Therefore:

$$\frac{dt}{d\tilde{K}} > 0.$$ (30)

Enlargement of the CU will mean an increase in $\tilde{K}$, which reflects the aggregate capital stock of

the union. This should raise the CET. In turn, since the relationship is monotonic, we can infer

that the larger the capital stock of the entrant, the larger will be the rise in the CET. If the entrant

is capital-rich, at least in the sense that it has a larger capital stock in the protected sector, we can

expect the CET enhancing effect of the enlargement to be stronger. This result has the

interesting policy implication that if we want to reduce the anti-trade bias of CU expansion, we

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should focus on entrants that are relatively capital-poor. The intuition is the following. The marginal benefit from lobbying is proportional to the output of the industry. In turn, this is positively related to the aggregate capital stock. Capital-rich entrants lead to larger increases in the marginal benefit from lobbying, raising union-wide lobbying and the CET.

3. Conclusion

In a CU, the union-wide industry chooses how much to lobby the individual governments of a CU. In the presence of cross-border lobbying, the productivity of such lobbying depends, *inter alia*, on the size of initial profits of the lobbying groups.

If the new entrants have a bigger protected group, then the productivity of lobbying is larger and therefore more lobbying takes place, making the CET bigger. To be more specific, we have found that there is a positive monotonic relationship between the level of capital stock owned by the protected sectors (of the new entrants) and the level of the CET. These results have interesting policy implications for CU enlargement. Capital-rich new entrants are likely to encourage more protectionist policies with respect to non-members. In turn, this implies that when considering CU expansion, free trade oriented members should be less sympathetic to bringing in capital-rich fresh entrants. ■

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