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# A Political-Economy Analysis of Free Trade Areas and Customs Unions

A customs union is more effective than a free trade area for reducing the power of interest groups.

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## Summary findings

Panagariya and Findlay analyze the welfare effects of regional integration in a model of endogenous protection.

They show that introducing preferential trading leads to an increase in protection against countries outside the preferential trading area. Moreover, the important Meade result of preferential trading breaks down in the presence of endogenous protection.

According to the Meade result, if excess demands exhibit net substitutability, the introduction of preferential trading is welfare-improving. In the presence of endogenous protection, because preferential trading is accompanied by increased protection against nonpartners, its effect on welfare is ambiguous.

Panagariya and Findlay also compare free trade areas and customs unions. They provide the first formal treatment of the argument that a customs union is a more effective instrument for diluting the power of interest groups than is a free trade area.

Under a customs union, the tariff available to one country becomes available to all countries in the union. This introduces a free-rider problem in lobbying and all lobbying takes place in one country.

The lobby chooses a lower (common) external tariff under a customs union than under a free trade area. This means that welfare in the country where lobbying takes place is higher under a customs union than under a free trade area, although the same may not hold true for the other country. The level of the common external tariff declines as the number of members in the union increases.

Therefore, the larger the number of partners in a customs union, the more likely it will improve the welfare of member countries. But, because of the free-rider problem, lobbies are likely to resist the enlargement of the customs union.

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This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to understand the economics of regionalism. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Nellie Artis, room N10-031, extension 37947 (25 pages). March 1994.

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**A POLITICAL-ECONOMY ANALYSIS OF  
FREE TRADE AREAS AND CUSTOMS UNIONS**

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Following Viner's (1950) lead, trade theorists have generally treated trade policy as exogenous in evaluating the welfare effects of preferential trading arrangements. The general approach has been to start with a tariff distorted equilibrium and ask whether a particular set of preferential tariff reductions between union partners is welfare-improving for each participating country, the union and the world as a whole.<sup>1</sup>

The recent revival of regionalism around the world, particularly the North American Free Trade Agreement (NAFTA), has led trade theorists to take a fresh look at the theory of regional economic integration. Today, the world trading system is far more complex than that represented in the stylized, Vinerian models. An important dimension of this complexity is the endogeneity of trade policies.<sup>2</sup> In most countries, trade policies are the result of complex interactions between the government and interest groups. Sometimes, governments themselves are not benign, welfare maximizing entities and pursue objectives other than welfare maximization. This endogenous nature of trade policy, richly analyzed in a large number of contributions under the rubric of "political economy of trade policy," has important implications for our understanding of regional economic integration.<sup>3</sup>

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<sup>1</sup>For instance, see Meade (1956), Lipsey (1960), Berglas (1979), Riezman (1979), and Lloyd (1982).

<sup>2</sup>Another dimension, not emphasized in this paper, is the increased interdependence of different regional arrangements. Today, the world is dividing almost simultaneously into a few large trading blocs. This means that regional arrangements can no longer be analyzed in isolation as has been the case with much of the Vinerian literature. Krugman (1991) and Deardorff and Stern (1991) provide models of trading blocs which emphasize this interdependence.

<sup>3</sup>Among key contributions to this literature are Krueger (1974), Brock and Magee (1978), Bhagwati and Srinivasan (1980) and Findlay and Wellisz (1982). Two book-length treatments of the subject are Magee, Brock, and Young (1989) and Hillman (1989). Grossman and Helpman (1993) and Melo, Panagariya and Rodrik (1993) analyze endogenous policy formulation in models of regional integration. Of these, as noted below, the latter is more directly relevant to the present paper.

In this paper, we reconsider the theory of preferential trading and customs unions in a model of endogenous trade policy. We address three key questions: (i) What are the likely implications of the introduction of preferential trading for trade policies towards third countries? (ii) How does our conventional understanding of the welfare economics of preferential trading change when we allow for endogenous trade policy? (iii) How do free trade areas (FTAs) and customs unions (CUs) compare when tariffs on third countries are determined endogenously?

We analyze these questions in the three-good, three-country Meade model with the modification that trade policy is determined endogenously. We demonstrate that the introduction of preferential trading has the effect of raising protection against imports from the rest of the world. This result captures an important aspect of the political economy of free trade areas. As has been suggested by Bhagwati (1993), FTAs can lead to a more vigorous implementation of anti-dumping laws against third-country suppliers. More broadly, NAFTA may have restricted the ability of the United States to make bold offers for liberalization at the GATT in products exported by Mexico.

Our second result concerns Meade's original result on preferential trading. According to this result, the introduction of preferential trading is welfare improving provided the imports from the union partner exhibit substitutability with respect to exports. Because preferential trading leads to increased protection against nonpartners, this key result breaks down in the presence of endogenous trade policy.

Finally, we demonstrate that in general, the FTA and CU cannot be ranked uniquely with respect to welfare. Because there is a free-rider problem in lobbying under a CU, the

common external tariff under this arrangement is lower than that in the higher-tariff country under the FTA. But the common external tariff is likely to be higher than that in the lower-tariff country under FTA. It follows that the country with lower tariff under FTA can be worse off under a CU. As the number of partners in the union grows larger, the free-rider problem becomes worse, the common external tariff declines, and the likelihood that welfare is higher under a CU than under an FTA rises.

To our knowledge, the only paper closely related to ours is that by Melo, Panagariya and Rodrik (1993). Using a model borrowed from the "rules versus discretion" literature of macroeconomics, these authors consider the effects of regional integration on welfare. There are two countries in the model. In the initial equilibrium, a policy variable is determined in each country through a game between the national government and a private lobby. Regional integration replaces the national government by a regional authority and the policy variable is determined at the regional level. This leads to a free-rider problem of the type mentioned in the previous paragraph. Because we employ the standard general-equilibrium model, our analysis is in the spirit of the traditional international trade literature and allows a richer treatment of preferential trading in the presence of endogenous trade policy.

The paper is organized as follows. In Section 1, we reformulate the Meade model making trade policy endogenous. In Section 2, we analyze the effects of preferential trading. In Section 3, we compare FTAs and CUs. Concluding remarks are offered in Section 4.

Before we begin, it may be noted that following the standard practice in the literature on economic integration, our analysis is cast in terms of tariffs. But tariffs should be viewed as representing protection resulting from various trade policy instruments such as voluntary

export restraints, anti-dumping actions, and other mechanisms. We are aware that tariff increases are generally ruled out by the GATT bindings. Therefore, when our model predicts any tariff increases, they should be viewed as increases in the level of overall protection rather than tariffs per se.

### 1. The Meade Model with Endogenous Trade Policy

Let there be three countries, A, B and C and three goods, 1, 2 and 3. By assumption, each country exports one good and imports the other two. We let goods 1, 2 and 3 be export goods of A, B and C, respectively. A and B are potential partners in a regional arrangement and C represents the rest of the world. A and B are small in relation to C such that the terms of trade are determined in C.

We outline the equilibrium in country A in detail. Equilibrium in country B can be outlined symmetrically. The role of country C is simply to absorb any excess demands and supplies from A and B at the fixed terms of trade. Each good is produced using a sector specific factor and a common factor. The factor specific to sector  $i$  ( $i = 1, 2, 3$ ) is labeled "sector  $i$  capital" and that common to all sectors is referred to as labor. Output, capital and labor in sector  $i$  are denoted  $X_i$ ,  $K_i$ , and  $L_i$ , respectively. Each good is produced via a conventional constant-returns-to-scale technology,

$$(1) \quad X_i = F_i(\bar{K}_i, L_i) \quad i = 1, 2, 3$$

where a bar over a variable is used to indicate that the variable is fixed. Goods 2 and 3 are imported and good 1 is exported by A. We choose the units of goods in such a way that the

world price of each good is 1. Denoting by  $t_i$  the tariff on good  $i$ , the domestic price of good  $i$  is  $1 + t_i$ . Because A exports good 1, we have  $t_1 = 0$  and  $t_2, t_3 > 0$ . Acting competitively in the goods and factor markets, firms in sector  $i$  choose  $L_i$  to maximize profits given by  $(1 + t_i) F_i(\bar{K}_i, L_i) - wL_i$ . The outcome is a profit function  $\pi^i(1 + t_i, w)$  which is linear homogenous in its arguments. Moreover,

$$(2) \quad \pi_1^i(1 + t_i, w) = F_i(\bar{K}_i, L_i)$$

$$(3) \quad \pi_w^i(1 + t_i, w) = -L_i$$

Where  $\pi_1^i(\cdot)$  and  $\pi_w^i(\cdot)$  denote partial derivatives of  $\pi^i(\cdot)$  with respect to the first argument and  $w$ , respectively.

In (2) and (3), we have 6 equations in 7 variables  $F_i(\cdot)$ ,  $L_i$  and  $w$ . Adding the full-employment constraint, we can obtain an exactly determined system of equations. We can then study the effects of exogenous changes in tariffs induced by the introduction of preferential trading. This is the standard Meade exercise.

Our objective is to make tariffs endogenous, however. To accomplish this in a simple way, we employ the lobbying function introduced by Findlay and Wellisz (1982) with the simplification that labor is the only factor used in lobbying. We write

$$(4) \quad t_i = (1 - \alpha_i) g_i(l_i) \quad g_i(0) = 0, g_i' > 0, g_i'' < 0; \quad 0 \leq \alpha_i \leq 1$$

where  $l_i$  is the amount of labor used in lobbying in sector  $i$  and  $\alpha_i$  is a shift variable whose role is explained later. No lobbying is permitted in sector 1, the exportable, so that (4) holds



for  $i = 2, 3$ . The level of lobbying is chosen so as to maximize the return to the sector-specific factor. That is to say, lobbyists maximize  $\pi^i [1 + (1 - \alpha_i) g_i(l_i), w] - wl_i$  with respect to  $l_i$ . This yields the first-order condition

$$(5) \quad (1 - \alpha_i) g_i'(l_i) \pi_1^i(\cdot) = w$$

where  $g_i'(l_i)$  is the derivative of  $g_i(\cdot)$  with respect to  $l_i$ . Recalling that  $\pi_1^i(\cdot) = F_i(\cdot) = X_i$ , the left-hand side of (5) can be interpreted as the revenue generated by employing an additional unit of labor in lobbying or the marginal revenue product (MRP<sub>i</sub>) of lobbying. The right-hand side of (5) is the marginal cost of lobbying. Thus (5) says that lobbyists equate the marginal revenue and marginal cost of lobbying. Note that we assume that lobbyists take the wage rate as given. This is a standard assumption in models of lobbying.

The second-order condition associated with the lobbyists' problem requires that the marginal revenue product of labor given by the left-hand side of (5) be negative function of  $l_i$ . That is to say,

$$(6) \quad \frac{\partial(\text{MRP}_i)}{\partial l_i} \equiv S_i = (1 - \alpha_i) g_i''(l_i) \pi_1^i(\cdot) + [(1 - \alpha_i) g_i'(l_i)]^2 \pi_{11}^i(\cdot) < 0$$

The first term on the right-hand side is negative while the second term is positive.

Therefore, the right-hand side is not automatically negative. In the following,  $S_i$  will be used to denote the expression on the right-hand side of (6).

We can now introduce the full employment constraint:

$$(7) \quad L_1 + L_2 + L_3 + l_2 + l_3 = \bar{L}$$

where  $\bar{L}$  is the total endowment of labor.

The model for country A is now fully specified. Imbedded in equations (2) - (5) and (7), we have 11 equations in 11 variables,  $L_i$ ,  $F_i (=X_i)$ ,  $l_2$ ,  $l_3$ ,  $t_2$ ,  $t_3$  and  $w$ . We can specify country B's model analogously with the modification that it exports good 2 rather than 1.

Before we proceed to introduce preferential trading, it is useful to rewrite the model in a more compact form. For this, we first define the profit function

$$(8) \quad R(1+t_1, 1+t_2, 1+t_3; w) \equiv \Sigma \pi^i(1+t_i, w)$$

Alternatively,  $R(\cdot)$  can be derived by maximizing  $\Sigma(1+t_i) F_i(\bar{K}_i, L_i) - wL_i$  with respect to

$L_i$ . Essentially,  $R(\cdot)$  is the total return to specific factors before subtracting the expenditures on lobbying.

We denote by  $R_i(\cdot)$  the first partial of  $R(\cdot)$  with respect to the  $i$ th argument for  $i = 1, 2, 3$ . The first partial of  $R(\cdot)$  with respect to  $w$  is denoted  $R_w(\cdot)$ . By analogy,  $R_{ij}(\cdot)$  and  $R_{iw}$  denote the second partials of  $R(\cdot)$ . In view of (8), we have

$$(9) \quad R_i(\cdot) \equiv \pi^i(\cdot); \quad R_w(\cdot) \equiv \sum_{i=1}^3 \pi_w^i(\cdot)$$

Recall that the  $\pi^i(\cdot)$  are linear homogeneous and strictly convex in their arguments. Therefore,  $R(\cdot)$  will also be linear homogeneous and strictly convex in its arguments. The strict convexity implies that the  $R_{ii}(\cdot)$  and  $R_{ww}(\cdot)$  are positive. Furthermore, given that  $R(\cdot)$

is separable in the  $1+t_i$  as shown in (8), we have  $R_{ij}(\cdot) = 0$  for  $i \neq j$  ( $i, j=1, 2, 3$ ). The remaining cross partial,  $R_{iw}(\cdot)$ , being equal to  $\pi'_{1w}(\cdot)$ , is negative.

In view of (9), the envelope properties (2) and (3) are replaced by

$$(2') \quad R_i(\cdot) = F_i (= X_i)$$

$$(3') \quad R_w(\cdot) = -(L_1 + L_2 + L_3)$$

We can also replace (5) by

$$(5') \quad (1 - \alpha_i) g_i'(l_i) R_i(\cdot) = w$$

Our system now consists of 9 equations--three in (2'), one in (3'), two in (4), two in (5') and one in (7). These equations can be solved for nine endogenous variables,  $L_1 + L_2 + L_3$ ,  $l_1$ ,  $l_2$ ,  $l_3$ ,  $t_1$ ,  $t_2$ ,  $t_3$ ,  $X_i$  ( $i = 1, 2, 3$ ) and  $w$ . The newly introduced profit function in (8) makes the model more compact--and subsequent comparative statics less cumbersome--by replacing  $L_1$ ,  $L_2$  and  $L_3$  by a single variable,  $L_1 + L_2 + L_3$ . The former can, in principle, be recovered from (1) once we have solved for the  $X_i$ . For completeness, note that the second-order condition associated with the lobbying equilibrium, (6), should now be written

$$(6') \quad S_i = (1 - \alpha_i) g_i''(l_i) R_i(\cdot) + [(1 - \alpha_i) g_i'(l_i)]^2 R_{ii}(\cdot) < 0.$$

## 2. Preferential Trading

We now introduce preferential trading between A and B. In the traditional models of preferential trading, this is done by lowering intra-union tariffs exogenously. In our model, tariffs are endogenous. Therefore, the essence of preferential trading must be captured

through an institutional change which shifts the lobbying function for the good imported from the partner country, good 2, down such that for the same level of lobbying a lower tariff is realized. This is accomplished by shifting  $\alpha_2$  up holding  $\alpha_3$  constant. Without loss of generality, we can set  $\alpha_2 = \alpha_3 = 0$  at the initial equilibrium. Differentiating (3'), (4) and (5') for  $i = 2, 3$ , and (7) totally and evaluating at  $\alpha_2 = \alpha_3 = 0$ , we obtain

$$(10) \quad R_{w_2} dt_2 + R_{w_3} dt_3 + R_{ww} dw = -d(L_1 + L_2 + L_3)$$

$$(11) \quad dt_2 = g_2' dl_2 - g_2 d\alpha_2$$

$$(12) \quad dt_3 = g_3' dl_3$$

$$(13) \quad -[w + g_2 g_2' R_{22}] d\alpha_2 + S_2 dl_2 = (1 - g_2' R_{2w}) dw$$

$$(14) \quad S_3 dl_3 = (1 - g_3' R_{3w}) dw$$

$$(15) \quad d(L_1 + L_2 + L_3) + dl_2 + dl_3 = 0$$

In deriving (13) and (14) from (5'), we have substituted  $t_i$  in terms of  $l_i$  using (4). This is why there are no  $dt_i$  terms in these equations. Solving the two equations for  $dl_2$  and  $dl_3$ , we obtain

$$(13') \quad dl_2 = \frac{1}{S_2} [(1 - g_2' R_{2w}) dw + (w + g_2 g_2' R_{22}) d\alpha_2]$$

$$(14') \quad dl_3 = \frac{1}{S_3} (1 - g_3' R_{3w}) dw$$

Substituting these into (11) and (12) and the resulting expressions into (10), we have

$$(16) \quad d(L_1 + L_2 + L_3) = -R_{w2} \left[ \frac{g_2'}{S_2} \{ (1 - g_2' R_{2w}) dw + (w + g_2 g_2' R_{22}) d\alpha_2 \} - g_2 d\alpha_2 \right] \\ - \frac{R_{w3} g_3'}{S_3} (1 - g_3' R_{3w}) dw - R_{ww} dw$$

We can now substitute (13'), (14') and (16) into (15) to solve for  $dw/d\alpha_2$ .

$$(17) \quad \left[ \frac{1}{S_2} (1 - g_2' R_{2w})^2 + \frac{1}{S_3} (1 - g_3' R_{3w})^2 - R_{ww} \right] \frac{dw}{d\alpha_2} = -\frac{1}{S_2} (w + g_2 g_2' R_{22}) (1 - g_2' R_{2w}) - g_2 R_{2w}$$

Given  $S_2, S_3 < 0$ ,  $R_{ii} > 0$ ,  $R_{iw} < 0$ , and  $g_i' > 0$ , equation (7) leads to  $dw/d\alpha_2 < 0$

unambiguously. That is, the introduction of a preferential trading arrangement leads to a reduction in the wage rate. Intuitively, the increase in  $\alpha_2$  reduces the incentive for lobbying in sector 2. Because lobbying activity uses only labor, there is a direct reduction in the demand for labor. In addition, there is an indirect reduction in the demand for labor due to a decline in protection to good 2. Both effects contribute to a decline in the wage rate.

Combining (12) and (14'), we have

$$(18) \quad \frac{dt_3}{d\alpha_2} = \frac{g_3'}{S_3} (1 - g_3' R_{3w}) \frac{dw}{d\alpha_2}$$

Given our result that the wage rate declines in response to the introduction of preferential trading, this equation implies that the latter leads to an increase in  $t_3$ . Thus, we have the interesting result that trade liberalization vis-a-vis the partner country is accompanied by

increased protection against the rest of the world. Reduction in opportunities to lobby against one trading partner makes lobbying against the other partner more attractive. Assuming that goods 2 and 3 are close substitutes, this result captures the spirit of Bhagwati's (1993) fears regarding pernicious effects of FTAs on trade policies towards third countries. To quote him:

"Imagine that the United States begins to eliminate (by outcompeting) an inefficient Mexican industry once the FTA goes into effect. Even though the most efficient producer is Taiwan, if the next efficient United States outcompetes the least efficient Mexico, that would be desirable trade creation...

"But what would the Mexicans be likely to do? They would probably start AD actions against Taiwan, which would lead to reduced imports from Taiwan..."

If we think of A, B and C as Mexico, U.S.A. and Taiwan and of goods 2 and 3 as textile products imported from B (United States) and C (Taiwan), respectively, our result is in close conformity with this example.

The effect of the introduction of preferential trading on  $t_2$  can be obtained formally by combining (11) and (13'). We have

$$(19) \quad \frac{dt_2}{d\alpha_2} = \frac{g_2'}{S_2} (1 - g_2' R_{2w}) \frac{dw}{d\alpha_2} - \left[ g_2 - \frac{g_2'}{S_2} (w + g_2 g_2' R_{22}) \right]$$

In (18), the first term is positive while the second term (including the negative sign) is negative. The second term captures the effect of the increase in  $\alpha_2$  holding the wage constant. This effect lowers  $t_2$  by reducing the marginal revenue product directly as well as through a reduction in the output of good 2. The first term captures the effect on  $t_2$  due to a change in the wage rate. Because the wage declines, profitability of lobbying rises solely on this account. Of course, stability dictates that the net result of these two opposite effects be a decline in  $t_2$ .

We next turn to the effect of preferential trading on welfare. Meade's original result is that if we have  $t_2 = t_3$  initially and the excess demand for good 2 exhibits substitutability with the excess demand for exportables, the introduction of preferential trading is necessarily welfare improving. Intuitively, an exogenous reduction in  $t_2$  increases the imports of good 2 but may increase or reduce the imports of good 3. If the imports of good 3 rise, deleterious effects of tariffs are reduced in both goods and welfare improves necessarily. If imports of good 3 decline as is likely, however, the harmful effect of distortion in that sector increases. The question then is whether the loss due to this change is smaller than the gain from the rise in the imports of good 2. If excess demands for goods 2 and 1 exhibit substitutability, exports of good 1 rise in response to a reduction in  $t_2$ . Given balanced trade, this means that there is a net expansion of imports, i.e., imports of good 2 expand more than the decline in the imports of good 3. If we now also assume that  $t_2 = t_3$  initially, the welfare gain due to the larger expansion of imports of good 2 must exceed the welfare loss due to a contraction of imports of good 3. On balance, welfare improves.

In view of the results already derived, it should not be surprising that this important Meade result may not hold in the presence of endogenous trade policy. We have already seen that the introduction of preferential trading is accompanied by increased protection against third countries. Therefore, there is no guarantee that substitutability between excess demands for good 2 and good 1 will be sufficient to lead to a net expansion of imports. The combined effect of a reduction in  $t_2$  and increase in  $t_3$  may well be to reduce total trade. Moreover, we must take into account the effect of the introduction of preferential trading on real resources used in lobbying.

In the remainder of this section we present a formal proof of these results. We assume that preferences can be represented by a well-defined social welfare function. We can then obtain the expenditure function in the usual way. The budget constraint or, equivalently, the trade balance condition requires that expenditure and income be equal. Letting  $U$  denote utility and  $E(\cdot)$  represent the expenditure function, we have

$$(20) \quad E(1+t_1, 1+t_2, 1+t_3; U) = R(1+t_1, 1+t_2, 1+t_3; w) + w(L_1+L_2+L_3) \\ + t_2(E_2 - R_2) + t_3(E_3 - R_3)$$

On the right-hand side  $R(\cdot)$  represents profits plus wage income in the lobbying activity. The second term stands for wage income from employment in productive activity. Finally, the last two terms represent the tariff revenue assumed to be redistributed in a lump sum fashion. Throughout, it is assumed that  $t_1 = 0$ . In our formulation,  $t_2$  and  $t_3$  are endogenous, but we keep this fact in the background.

Differentiating (20) totally, allowing both  $t_2$  and  $t_3$  to change, we have



$$(21) \quad \begin{aligned} Z dU = & -w(dl_2 + dl_3) + [t_2(E_{22} - R_{22}) + t_3(E_{32} - R_{32})] dt_2 + [t_2(E_{23} - R_{23}) \\ & + t_3(E_{33} - R_{33})] dt_3 - [t_2 R_{2w} + t_3 R_{3w}] dw \end{aligned}$$

where  $Z \equiv E_U - t_2 E_{2U} - t_3 E_{3U}$  and is positive as long as all goods are normal. Recall that  $R_{ij} = 0$  for  $i \neq j$  in our specific-factors formulation. But in general, they are nonzero. The next step is to exploit the zero-degree homogeneity of the  $E_i(\cdot)$  and  $R_i(\cdot)$  in prices. Zero-degree homogeneity of  $E_2(\cdot)$  and  $R_2(\cdot)$  in prices and the wage allows us to write

$$(22) \quad (E_{21} - R_{21}) + (1 + t_2)(E_{22} - R_{22}) + (1 + t_3)(E_{23} - R_{23}) - wR_{2w} = 0$$

This, in turn, yields

$$(22') \quad t_2(E_{22} - R_{22}) + t_3(E_{23} - R_{23}) = -\frac{1}{1+t_2} [(t_2 - t_3)(E_{23} - R_{23}) + t_2(E_{21} - R_{21}) - t_2 w R_{2w}]$$

Making use of (22') and an analogous expression for  $t_2(E_{32} - R_{32}) + t_3(E_{33} - R_{33})$ , we can rewrite (21) as

$$(21) \quad \begin{aligned} Z dU = & -w(dl_2 + dl_3) - (t_2 R_{2w} + t_3 R_{3w}) dw \\ & - \frac{1}{1+t_2} [(t_2 - t_3)(E_{23} - R_{23}) + t_2(E_{21} - R_{21}) - w t_2 R_{2w}] dt_2 \\ & - \frac{1}{1+t_3} [(t_3 - t_2)(E_{32} - R_{32}) + t_3(E_{31} - R_{31}) - w t_3 R_{3w}] dt_3 \end{aligned}$$

Consider first the Meade result. In the absence of lobbying,  $l_2 = l_3 = 0$ . If we then lower  $t_2$ , holding  $t_3$  fixed exogenously (i.e.,  $dt_2 < 0$  and  $dt_3 = 0$ ) at  $t_2 = t_3$ , we see that the right-hand side is positive provided  $E_{21} - R_{21} > 0$ , i.e., excess demands for goods 2 and 1 exhibit net substitutability. In arriving at this conclusion, we also make use of the fact that the reduction in  $t_2$  lowers  $w$  ( $dw/dt_2 < 0$ ) and that  $R_w < 0$  for  $i = 2, 3$ .

Next, suppose tariffs are endogenous. In this case,  $dt_3 > 0$  and  $dl_2 + dl_3 \neq 0$ . We can no longer ignore the first and the last term in (21'). The first term captures the welfare effect of the change in the overall level of lobbying activity. Because  $w$  falls,  $l_3$  rises. But the decline in the profitability of lobbying in sector 2 (i.e., the rise in  $\alpha_2$ ) lowers  $l_2$ . Thus, the net effect on  $l_2 + l_3$  is ambiguous. Regarding the last term, if we make the usual substitutability assumption--i.e.,  $E_{31} - R_{31} > 0$ --its contribution to welfare is negative at  $t_2 = t_3$ . Thus, substitutability and  $t_2 = t_3$  are no longer sufficient to sign the right-hand side of (21').

### 3. FTA vs. Customs Union

We now assume that countries A and B have decided to eliminate trade restrictions between themselves but must choose between FTA and CU. The former allows the external tariff to be determined at the national level while the latter requires them to be determined at the regional level. Formally, we can imagine that under an FTA, tariffs on third countries in each union member continue to be determined via the lobbying function introduced in (4), while under a customs union, an institutional change requires the determination of a common external tariff.

A key question is how should the lobbying function be formulated in the case of a customs union. We know that if this choice is made arbitrarily, we can obtain any ranking of FTA and CU we like. Therefore, we opt for as neutral a choice as possible.<sup>4</sup> In the case of a customs union, we write the lobbying function for good 3 as

$$(23) \quad t_3^c = h_3(l_3^c) \equiv h_3(l_3 + l_3^*) \quad h' > 0, \quad h'' < 0$$

where an asterisk is used to distinguish country B's variables and superscript c is used to indicate union-wide variables under a customs union. Accordingly,  $t^c$  is the common external tariff and  $l_3^c \equiv l_3 + l_3^*$ . We assume that the regional institution is equally responsive to lobbying by agents of the two members. Who invests into lobbying is not important. What matters is how much.

Under an FTA, lobbying is done at the national level and tariffs in the two member countries may be different. We write

$$(4') \quad t_3^F = g_3(l_3); \quad t_3^{F*} = g_3(l_3^*).$$

For ease of comparison, we assume that the lobbying functions under FTA are identical in the two countries.

To maintain neutrality, we assume that functions  $h_3(\cdot)$  and  $g_3(\cdot)$  are related with each other according to

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<sup>4</sup>We draw heavily on Rodrik and Panagariya (1993) who, in turn, draw on Rodrik (1986).

$$(24a) \quad h_3(l_3 = l_3^*) = g_3 \left[ \frac{l_3 + l_3^*}{2} \right]$$

$$(24b) \quad h_3'(l_3 + l_3^*) < g_3'(l_3 + l_3^*)$$

According to (24a), if  $l_3 = l_3^* = \bar{l}_3$  so that the lobbies in each of A and B invest  $\bar{l}_3$

amount of resources, the external tariff under an FTA and CU is the same. Under an FTA, we have

$$t_3^F = g_3(\bar{l}_3); \quad t_3^{F'} = g_3(\bar{l}_3)$$

and under a customs union, we have

$$t_3^C = h_3(\bar{l}_3 + \bar{l}_3) = h_3(2\bar{l}_3) = g_3 \left[ \frac{2\bar{l}_3}{2} \right] = g_3(\bar{l}_3) = t_3^F, t_3^{F'}.$$

Thus, lobbying functions themselves are neutral with respect to the type of regional arrangement chosen.

Another way to compare  $h_3(\cdot)$  and  $g_3(\cdot)$  is that under a CU, if lobbying is done by agents of a single country, say A, they will have to invest twice as much resources to obtain a given level of tariff as under an FTA. Under a CU, the tariff granted to A is also granted to B. Therefore, the effort required to obtain a given tariff is twice as much. Viewed this way, it is clear that our formulation captures the free-rider problem which is often associated with the formation of a CU. In policy discussions, it is commonly asserted that a customs union can be an instrument of weakening the interest groups seeking protection. A surrender

of tariff-making power to the regional institution means less influence of interest groups within a member nation.

According to (24b), for a given amount of labor employed in lobbying, the marginal product of lobbying is higher under an FTA than under a CU. Equation (24a) above is not sufficient to yield this condition. But the condition is plausible and is satisfied by function

$$g_3(\cdot) = \lambda l_3^\beta \text{ where } \beta \text{ lies between 0 and 1.}$$

The question we wish to address now is whether FTA and CU can be ranked and what does this ranking depend on. To answer, we must first determine equilibrium tariffs under the two regimes. Under FTA, the tariff will be determined as in the previous section. Under CU, the problem is trickier.

Protection is a private good under an FTA. But under a CU, it becomes a public good subject to the free-rider problem. As we demonstrate below, this feature yields the usual outcome associated with the private provision of public goods: Only the "most desperate" buyer chooses to pay for it while the others choose to free ride.<sup>5</sup>

Consider the problem of the lobby in country A. Its problem is to maximize

$\pi^3 [1 + h_3 (l_3 + l_3^*), w] - w l_3$  with respect to  $l_3$  taking  $w$  as given. Recall that  $\pi^3(\cdot)$  was introduced in Section 1 in the context of equations (2) and (3). At the optimum, the marginal revenue product of  $l_3$  must be larger than or equal to the marginal cost of  $l_3$ . That is,

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<sup>5</sup>For a review of the literature on private provision of public goods, see Cornes and Sandler (1986). Also see Hillman (1989, 1991) and Ursprung (1990) in this context.

$$(25) \quad h_3'(l_3^c) \pi_1^3 [1 + h_3(l_3^c), w] \geq w$$

where  $l_3^c \equiv l_3 + l_3^*$  is the total amount of labor employed in lobbying. An analogous condition can be written for country B's lobby. The question then is whether (25) and this condition for B's lobby can simultaneously hold as equalities. The answer is that only by a sheer coincidence is this possible. Treating (25) as an equality, we can determine  $l_3^c$  as a function of  $w$ . Likewise, the condition for B gives us another equation determining  $l_3^c$  as a function of  $w^*$ , the wage in B. It is unlikely that the two equations will yield the same value of  $l_3^c$ .

To explain what is going on here, assume that the wage is constant in each country. For example, we could assume that the exportable in each country (i.e., good 1 in A and good 2 in B) uses only labor. We can then represent the marginal revenue product of  $l_3$  given by the left-hand side of (24) as a function of  $l_3^c$  alone. This is done in figure 1. By virtue of the second-order condition this curve, labeled  $mrp$ , is downward-sloped. The wage is labeled  $w$ .

Next, draw country B's marginal revenue product curve. Suppose it lies below country A's curve as shown by  $mrp^*$ . If the wage in B lies above  $w^*$ , the lobby in B will choose to free ride the lobby in country A. If the wage is below  $w^*$ , the lobby in B will do all lobbying and A will free ride. The reason is that in the former case, for  $l_3^* = 0$ , A's

best choice is  $l_3 = \bar{l}_3^c$  and for  $l_3 = \bar{l}_3^c$ , B's best response is  $l_3^* = 0$ . Thus, the

solution  $l_3 = \bar{l}_3^c$  and  $l_3^* = 0$  is a Nash equilibrium. Analogously, in the latter case,  $l_3 = 0$

and  $l_3^* = \bar{l}_3^c$  is a Nash solution. If the wage in B coincides with  $w^*$ , the total lobbying will

still be  $\bar{l}_3^c$  but how it is divided between A and B is indeterminate.

Observe that given  $\pi_1^3(\cdot) = X_3$ , the level of output of the good imported from country C plays a key role in the determination of which lobby supplies the common external tariff. The larger the ratio of this output to the wage rate in a country, the more likely that lobbying will be concentrated in that country. Thus, for instance, given the relative sizes of import-competing industries in the U.S. and Mexico, despite the lower wage in Mexico,

under a customs union arrangement, one will expect the United States to be the "supplier" of the common external tariff.

For concreteness, assume that all lobbying is done in country A. If we are also willing to assume now that the exportable uses only labor so that the wage is the same under an FTA and CU, following Panagariya and Rodrik (1993), a number of additional conclusions can be derived. For example, we can show that the level of lobbying and hence the tariff is lower under a customs union than that in A under FTA. The common external tariff can, however, be higher than the tariff in B under the FTA. This means that if country B happens to be relatively open under an FTA, it can end up with a higher external tariff under a customs union. For instance, in the Mexico-U.S. regional arrangement, Mexico could end up more protective under a customs union than under an FTA.<sup>6</sup> It is interesting to quote Corden here,

"The broader danger is that the United States will compel Mexico to impose restrictions on imports from Japan and elsewhere that match the United States' own restrictions, so as to avoid trade deflection--i.e., the direct or indirect import of goods from outside into the United States via Mexico if the latter is less protectionist. The main point is that NAFTA should aim to be an FTA--a true FTA--but should not become a CU, since the latter would lead to Mexico's trade restrictions on imports from outside being determined in Washington, DC."

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<sup>6</sup>Observe that we carefully avoid the use of the term "higher tariff" and use "more protective" instead. The tariffs in U.S.A. are lower than those in Mexico, but other trade restrictions such as VERs and anti-dumping processes perhaps make the U.S. look more protective.



An additional result which may be derived is that as the number of members in the potential regional arrangement rises, assuming that A remains the supplier of the common external tariff, the level of the external tariff declines. This is because the increase in the number of members in the union exacerbates the free-rider problem. An implication of this result is that countries will be better off entering into a customs union with larger number of countries than with smaller number of them. But it also implies that lobbies will likely resist the enlargement of a customs union more than of an FTA.

Finally, the welfare ranking of FTA and CU is not unique in general. Though the country which supplies the external tariff under a CU is better off under this arrangement than under an FTA, the other country may be worse off. This is because the latter may end up with higher tariffs under a CU than under an FTA. The larger the number of members, the more likely that a CU will dominate an FTA.

#### 4. Summary of Results

In this paper, we have analyzed the welfare effects of regional integration in a model of endogenous protection. We have shown that in this setting, the introduction of preferential trading leads to an increase in protection against countries outside the preferential trading area. We have also demonstrated that the important Meade result on preferential trading breaks down when protection is endogenous. According to the Meade result, if excess demands exhibit net substitutability, the introduction of preferential trading is welfare improving. In the presence of endogenous protection, because preferential trading is

accompanied by increased protection against non-partners, its effect on welfare is ambiguous. Benefits of preferential trading are counteracted by increased protection against outsiders.

We have also compared free trade areas and customs unions. Here we have provided the first formal treatment of the argument that a customs union is more effective than a free trade area in diluting the power of interest groups. Under a customs union, the tariff available to one country becomes available to all countries in the union. This introduces a free-rider problem in lobbying and all lobbying takes place in one country. The lobby chooses a lower (common) external tariff under a customs union than under a free trade area. This means that welfare in the country where lobbying takes place is higher under a customs union than under a free trade area. The same need not hold true for the other country, however. If that country chooses a lower tariff under a free trade area than the common external tariff under the customs union, its welfare under the former arrangement will be higher. Finally, the level of the common external tariff declines as the number of members in the union increases. Therefore, the larger the number of partners in a customs union the more likely it will improve welfare of member countries. By the same token, due to the free rider problem, lobbies are likely to resist the enlargement of a customs union.

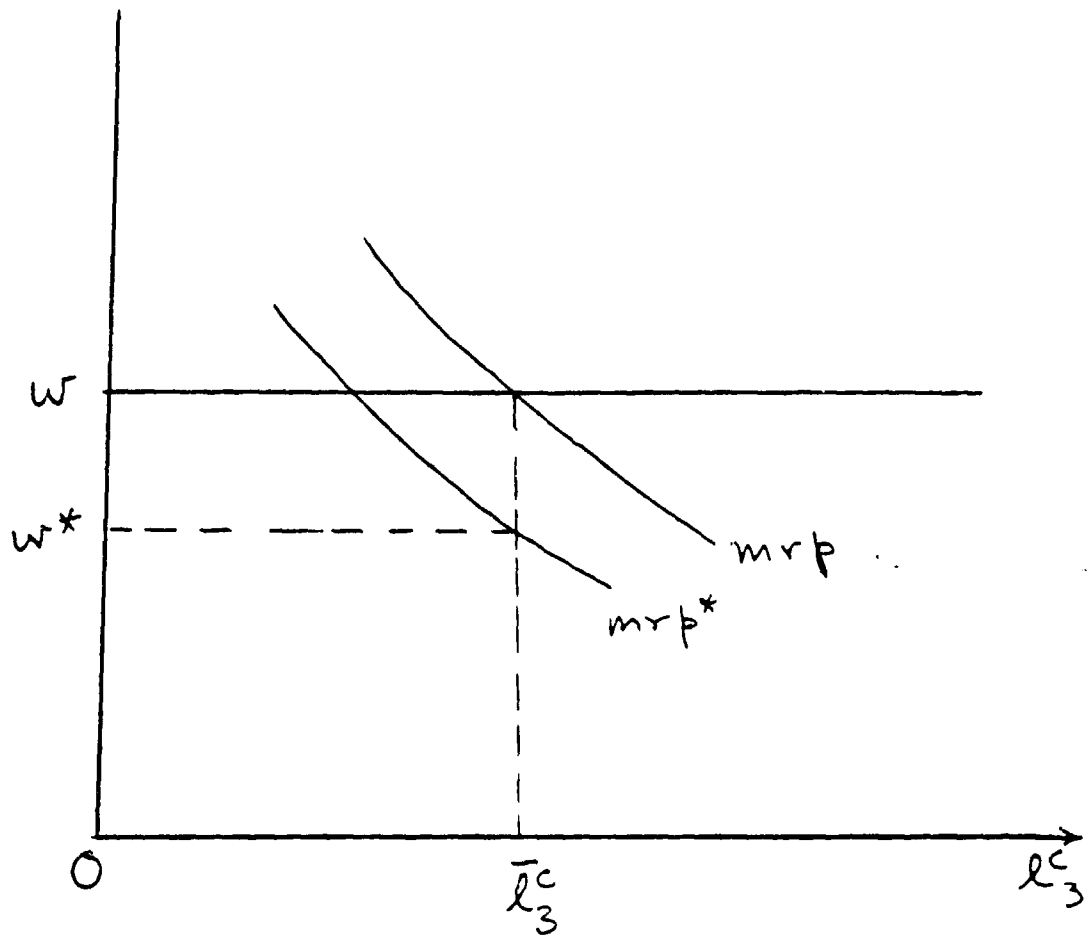


Figure 1.

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