

Preferential Trade Agreements: Endogenous Response of the Third Country

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Abstract

In most of the current debate on regionalism versus multilateralism, the countries excluded from a Preferential Trading Agreement (PTA) are assumed to be passive players with exogenously fixed trade policies. In reality however, non-members do react to the creation of a trading bloc and relaxing this assumption can provide useful insights. Using a political economy model, this paper explore the case where those excluded countries can adjust their commercial policies in order to minimize the negative effects of the PTA. It is shown that the creation of a PTA can lead the excluded countries to increase their trade barriers with respect to the PTA members.

The findings, interpretations and conclusions expressed in this paper are entirely those of the author and do not necessarily represent the view of the US International Trade Commission or any of its individual Commissioners.

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1. Introduction

In most of the current debate on regionalism versus multilateralism, the excluded economies are assumed to be passive players with exogenously fixed trade policies. In reality however, non-members do react to the creation of a trading bloc. There are broadly four options open to the excluded countries in response to a PTA. Their first option is to apply for membership to or at least association with the trading bloc. Small countries neighboring a large bloc have usually found this compelling (e.g., EFTA countries or some of the CEECs). It has been shown though that the incentive of members to accept new members can decrease and go to zero when the group size becomes large enough (e.g., Andriamananjara, 1998). The experience of Norway's application to the EC in 1973 and that of Switzerland's application to join the EEA in 1992 show that this option might also be blocked domestically (by referendum in both cases).

A second option is to participate more vigorously in multilateral negotiations. Multilateral disciplines could for instance be used to extract compensation payments from the PTA members. The excluded countries could also initiate new rounds of WTO negotiations. At the least, they should make sure that the PTA is subjected to effective multilateral disciplines. However, it is widely accepted that imposing GATT's Article XXIV¹ on a PTA does not guarantee that the excluded countries will not be hurt.

A third option for the excluded countries is to form their own club as a counterbalance. It has often been argued that this was one of the factors behind the US interest in CUFTA and NAFTA, and more recently FTAA. Regionalism elsewhere (e.g., the threat of "fortress Europe") has also clearly motivated some Asian countries to discuss or enter RIAs. The desire to form a counterweight may be enough create a brand new regional agreement.

A fourth option for the excluded countries is to adjust their commercial policies in order to minimize the negative effects of the PTA. This paper explores this option using a simple political economy model. It is shown that the creation of a PTA can lead the excluded countries to increase their trade barriers with respect to the PTA members.

¹ Article XXIV permits deviation from the GATT's cornerstone "most-favored-nation" clause under certain conditions. Free Trade Areas and Customs Unions are permitted if (i) the parties go all the way to

2. The Model

We use a version of the Meade Model with endogenous trade policy, which was introduced by Panagariya and Findlay (1996) to study the effects of a PTA on the *members'* trade policy. In this paper, the model is used to study the effects on the *non-members'* trade policy. Consider a three-country (A, B and C) world with three goods (1, 2, and 3) where A and B are the potential PTA partners. The patterns of trade are exogenously assumed: (i) country B and country C both export good 1 to country A; (ii) A exports good 2 to C; (iii) A exports good 3 to B; and (iv) there is no trade between B and C. While other patterns are possible, this one has the merit of simplicity and serves our purposes well in a very tractable way.

The objective is to determine C's response to the establishment of a PTA between A and B. Thus, we focus our analysis on C, which exports good 1 and imports good 2. Assume that good i ($i = 1$ or 2) is produced via a constant returns to scale technology using a specific factor (denoted Capital or K_i) and a mobile factor (denoted Labor or L_i). Output in sector i is:

$$X_i = F_i(K_i, L_i).$$

Price of good 1, received by country C's producers, is written as p_1 . Firms in sector 1 choose L_1 to maximize their profit $p_1 F_1(K_1, L_1) - wL_1$. This yields the envelope function—denoting the return to in sector 1's specific factor— $\mathbf{p}^1(p_1, w)$ with the following properties:

$$\mathbf{p}_1^1(p_1, w) = F_1(K_1, L_1) \text{ and}$$

$$\mathbf{p}_w^1(p_1, w) = -L_1$$

where $\mathbf{p}_1^1(\cdot)$ and $\mathbf{p}_w^1(\cdot)$ denote partial derivatives with respect to the first argument and w respectively.

With the appropriate choice of units, the international price of good 2 (the import good) is set to unity. Denote t_2 the tariff on good 2 so that its domestic price is $(1 + t_2)$. Firms in sector 2 act competitively in the goods and factor markets, and choose L_2 to maximize their profit

free trade on “substantially all” goods that they trade, and if (ii) external tariffs are not “on the whole” more restrictive than the “general incidence of duties and regulations” before the grouping was formed.

$(1+t_2)F_2(K_2, L_2) - wL_2$. This yields the envelope function $\mathbf{p}^2((1+t_2), w)$ with the following properties:

$$\mathbf{p}_1^2((1+t_2), w) = F_2(K_2, L_2) \text{ and}$$

$$\mathbf{p}_w^2((1+t_2), w) = -L_2$$

where $\mathbf{p}_1^2(\cdot)$ and $\mathbf{p}_w^2(\cdot)$ denote partial derivatives with respect to the first argument and w respectively.

In this model, tariff (t_2) is endogenously determined by the labor used in lobbying (l_2). It is assumed that there is no lobbying in the export sector. As in Findlay and Wellisz (1982) and Panagariya and Findlay (1996), the lobbying function is written as:

$$(1) \quad t_2 = g(l_2), \text{ where } g(0) = 0, g' > 0, g'' < 0.$$

The level of lobbying (l_2) is chosen by the owner of sector 2's specific factors to maximize $\mathbf{p}^2((1+g(l_2)), w) - wl_2$ where the wage rate (w) is taken as given. This yields the first order condition $\mathbf{p}_1^2(\cdot)g'(l_2) = w$. The left-hand side of this expression represents the marginal revenue of lobbying (recall that $\mathbf{p}_1^2((1+t_2), w) = F_2(K_2, L_2)$) while the right hand side represents the marginal cost. The second order condition associated with the lobbyists' problem requires that the marginal revenue of product of lobby be negative:

$$S \equiv \mathbf{p}_1^2(\cdot)g''(l_2) + \mathbf{p}_{11}^2(\cdot)[g'(l_2)]^2 < 0.$$

Finally, there is the full employment constraint:

$$(2) \quad L_1 + L_2 + l_2 = L,$$

where L is the total labor endowment.

This completes the model. Panagariya and Findlay (1996) introduce a useful way to rewrite the model using the profit function, which is essentially the total return to specific factors before subtracting the expenditure on lobbying:

$$R(p_1, (1+t_2), w) = \mathbf{p}^1(p_1, w) + \mathbf{p}^2((1+t_2), w) .$$

$R(\cdot)$ has the following properties:

$$(3) \quad R_1(\cdot) = F_1 (= X_1);$$

$$(4) \quad R_2(\cdot) = F_2 (= X_2); \text{ and}$$

$$(5) \quad R_w(\cdot) = -(L_1 + L_2),$$

where R_i and R_w denote the first partial with respect to the i -th ($i = 1$ or 2) argument and w respectively. Moreover, $R(\cdot)$ is linear homogeneous and strictly convex in its argument: $R_{ii} > 0$, $R_{ww} > 0$. Furthermore, separability implies that $R_{ij} = 0$ for $i \neq j$. Finally, the cross-partials are negative: $R_{wi} < 0$.

The first order condition of the lobbying decision can be rewritten as:

$$(6) \quad R_2(\cdot) g'(l_2) = w.$$

The model now is a fully specified. Equations (1)-(6) can now be solved for six endogenous variables (L_1+L_2), l_2 , t_2 , X_1 , X_2 , w . (L_1+L_2) can be thought of as the total labor used in productive activities while l_2 is the labor used in unproductive rent seeking activities. L_1 and L_2 can be recovered once the system is solved. For completeness, the second order condition of the lobbying decision is now written as:

$$(7) \quad S \equiv R_2(\cdot) g''(l_2) + R_{22}(\cdot) [g'(l_2)]^2 < 0.$$

3. Effects of a PTA

Winters (1997) has argued that the most direct way in which a PTA affects the rest of the world is through the terms of trade. Since country A imports good 1 from both B and C, the local price of that good in A's market, say p_1^A , has to satisfy the two equalities:

$$p_1^A = p_1^B (1+t^B) \text{ and}$$

$$p_1^A = p_1^C (1+t^C),$$

where p_1^B and p_1^C are the producer prices in B and C respectively, and t^B and t^C are the tariffs that A imposes on imports from B and C respectively. A's preferential liberalization with B—i.e., a decrease in t^B —is likely to decrease p_1^A even in the presence of a positive price effect on p_1^B . From C's viewpoint, as A's policy with regards to t^C remains the same, the PTA is perceived as a deterioration of the terms of trade which is represented by a decline in C's producer price p_1^C (i.e., $dp_1 < 0$). (From this point on, C's producer price will be written simply as p_1 instead of p_1^C .)

The effects of a PTA on the excluded country have been studied, among others, by Mundell (1964) who shows that preferential liberalization by one member unambiguously improves the other member's terms of trade and deteriorates that of the excluded country. This result has also been explicitly shown by Riezman (1979) who uses a 3-good-3-country model to demonstrate this result under reasonable (mainly "regularity") conditions. In a model where the PTA members' tariffs are "optimally" determined, Bond, Riezman and Syropoulos (2004) find that the liberalization of internal trade by symmetric members can cause the outside country's terms of trade to improve (and its welfare to rise) by inducing PTA members to reduce their optimal external tariffs. In this paper, we abstract away from "optimal tariff" considerations and keep the member's external tariff constant. Thus, the outsider's terms of trade is more likely to worsen.²

The negative impact of a PTA on the non-members' terms of trade has, also, been empirically shown by Chang and Winters (2002) in the context of Mercosur. In particular, they find that the establishment of Mercosur was associated with significant declines in the prices of non-members' exports to Brazil and that these can be largely explained by tariff preferences.

We can now study the effects of a PTA between A and B on country C's tariff t_2 . Totally differentiating equations (1)-(6), we obtain:

$$(1') \quad dt_2 = g'(\cdot) dl_2;$$

² Keeping the PTA members' external tariffs unchanged is a simplifying assumption that allows us to focus on a mechanism that could drive the excluded country's response to intra-PTA trade liberalization. Numerous analysts argued that the establishment of the PTA could lead to an endogenous change in the tariffs that members imposes on non members. In a model similar to the one used here, Panagariya and Findlay (1996) show how preferential trading (a FTA more so than a CU) can lead to increased lobbying for protection against non-members. In a political economy model, Ornelas (forthcoming) finds that a bilateral agreement may lead members to reduce their tariffs against non-members. As mentioned, Bond, Riezman and Syropoulos (2004) find that in response to intra-PTA trade liberalization, individual members have an incentive to reduce their "optimal" external tariffs.

$$\begin{aligned}
(2') \quad & d(L_1+L_2) + dl_2 = 0; \\
(3') \quad & R_{11} dp_1 + R_{1w} dw = dX_1; \\
(4') \quad & R_{22} dt_2 + R_{2w} dw = dX_2; \\
(5') \quad & R_{1w} dp_1 + R_{2w} dt_2 + R_{ww} dw = -d(L_1+L_2); \\
(6') \quad & R_{22} g'(\cdot) dt_2 + R_{2w} g'(\cdot) dw + R_2 g''(\cdot) dl_2 = dw.
\end{aligned}$$

This 6x6 system can be simplified to get a more compact 2x2 system:

$$\begin{aligned}
T dl_2 + R_{ww} dw &= -R_{1w} dp_1 \\
S dl_2 + T dw &= 0;
\end{aligned}$$

where $S \equiv R_2(\cdot)g''(l_2) + R_{22}(\cdot)[g'(l_2)]^2 < 0$ and $T \equiv R_{2w}g'(\cdot) - 1 < 0$ since R_{2w} is negative.

This system in turn yields the relationship between the terms of trade p_1 and respectively the wage rate w and the lobbying level l_2 :

$$\begin{aligned}
\frac{dw}{dp_1} &= \frac{S \cdot R_{1w}}{T^2 - S \cdot R_{ww}}, \text{ and} \\
\frac{dl_2}{dp_1} &= -\frac{T \cdot R_{1w}}{T^2 - S \cdot R_{ww}}.
\end{aligned}$$

Recalling that $S < 0$, $T < 0$, $R_{1w} < 0$, and $R_{ww} > 0$, we can see directly from the above that $\frac{dw}{dp_1} > 0$

and $\frac{dl_2}{dp_1} < 0$, that is, the establishment of the PTA between A and B decreases the wage rate and

increases the level of lobbying in C. Solving back into the 6x6 system, the following additional results can be obtained:

$$\frac{dt_2}{dp_1} < 0, \quad \frac{dL_2}{dp_1} < 0, \quad \frac{dX_2}{dp_1} < 0, \quad \frac{dL_1}{dp_1} > 0, \quad \text{and} \quad \frac{dX_1}{dp_1} > 0.$$

Intuitively, there are two different choices for employment: (i) productive versus unproductive lobbying activities and (ii) producing in the export sector versus producing in the import competing sector. The creation of the PTA leads some of the workers initially working in sector 1 to move into lobbying, and others into import competing sector.

In terms of the first choice, a discriminatory arrangement between A and B deteriorates C's terms of trade (a decrease in p_1), which leads to a decrease in the wage rate ($\frac{dw}{dp_1} > 0$). This in turn leads to an increase in the incentive to lobby as the marginal revenue from lobbying becomes larger than the marginal cost (which is the wage rate). Hence, the result is an increase in the level of lobbying in the import competing sector ($\frac{dl_2}{dp_1} < 0$) and ultimately an increase in C's tariff on import ($\frac{dt_2}{dp_1} < 0$). This is shown graphically in the upper panel in Figure 1 which represents the lobbying decision derived in Equation (6). The horizontal axis represents the allocation of labor between productive and unproductive activities, and a rightward shift (from l_2 to l_2') in the equilibrium denotes an increase in the labor used in lobbying activities.

The dynamics of labor reallocation in the productive sector is shown in the lower panel of Figure 1 using the usual 3x2 graphical tool representing the marginal revenue product of the two sectors. The equilibrium labor allocation is naturally the intersection of the two curves. Starting from the status quo (point **1**), the initial decrease in the terms of trade, p_1 , leads to a decrease in the wage rate as well as a movement of labor from the export sector to the import competing one. This is represented by a movement from point **1** to point **2** and it happens because at the status quo labor allocation, the marginal revenue of producing in the export sector becomes smaller than that of producing in the import competing sector.

The decrease in the total labor available for productive activities (L_1+L_2) due to the increase in l_2 —represented by a rightward movement of the left horizontal axis and of the import sector's marginal revenue product curve—leads to an increase in the wage rate. But this increase is not enough to offset the initial decline. Moreover, the decrease in (L_1+L_2) leads to contractions in both productive sectors, which are not enough to offset the initial changes. Finally, as t_2 increases, sector 2's marginal revenue product curve shifts upwards. These effects are represented by a move from point **2** to point **3**. The net effects are an expansion in the import

competing industry ($\frac{dL_2}{dp_1} < 0$ and $\frac{dX_2}{dp_1} < 0$) and a contraction in the export industry ($\frac{dL_1}{dp_1} > 0$ and $\frac{dX_1}{dp_1} > 0$).

4. Conclusion

In the model presented in this paper, the creation of a PTA causes the excluded countries to raise their tariffs against those that are members of the PTA. Hence, by creating or by joining trading bloc, countries can end up losing their market access in the rest of the world. This possibility of “endogenous retaliation” by the excluded countries should be an important consideration for countries contemplating the creation of a trading bloc. This is especially true if the potential outsiders include one’s major trading partners.³

It should be noted that the word “tariff”, as it was used in this paper, should be interpreted very broadly as reflecting the general level of protection in the receiving country. For instance, Winters (1996) writes that “in a world of trend liberalization, merely going slowly than you otherwise would is essentially a form of increased protection.”

The retaliatory response of the excluded countries could also take the form of the formation of another trading bloc. There is no (and there would not be) WTO rules preventing the excluded countries from forming their own bloc. The creation of the second bloc, in turn, may lead to an increase in the external tariffs of the original bloc. The results in this paper then suggest that the current wave of regionalism could lead to more regionalism, and that the world trading system may end up being segmented into a number of competing and relatively closed trading blocs.

³ Panagariya (1994) offers another illustration of this possibility in the context of the feasibility of an East Asian trading bloc. He argues East-Asian countries such as Japan, Korea or China have been persistent targets of market-opening actions (structural impediment initiatives or Super 301 threats) by the United States during the last two decades. Initiatives by these countries for a FTA, which can potentially divert trade from the US, are almost certain to lead to retaliation from the latter. Such retaliation would be extremely costly, especially for Korea and China which both sell about a quarter of their imports to the US.

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Figure 1. Labor allocation between productive and lobbying activities and between export and import competing sectors:

Upper Panel: As the wage rate decreases from w to w' , the labor employed in the lobbying activities increases from l_2 to l_2'

Lower Panel: As the terms of trade decreases from p_1 to p_1' , the wage rate decreases from w to w' , the labor employed in the lobbying activities increases from l_2 to l_2' , the labor employed in the export sector decreases from L_1 to L_1' ,

