

# Lobbying for Trade Regime and Tariff Setting\*

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## Abstract

This paper considers the effects of a firm's lobbying activity on the domestic government's trade policy decision in a political economic approach. Our concerns is about the effects of firm's lobbying activity not only on tariff setting but also on trade regime decision. We can derive the following two conclusions from our political economic model. First, if the partner country's market size is large enough, then the domestic government prefers to participate in an FTA with its country. However, if the market size of the rest of the world is large enough compared to that of the partner country, then the government prefers to carry out complete free trade. Second, in the increase of the weight the government attaches to campaign contributions compared to the aggregate welfare, it tends to choose unilateralism or bilateralism rather than multilateralism.

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# 1 Introduction

There has clearly been a dominant stream toward trade liberalization in the last one or two decades. Such stream can be divided into two visible trends: bilateralism (Free Trade Agreements or Regional Trade Agreements) and multilateralism (negotiations within the GATT/WTO framework). However, in recent years, the main trend of trade policy cooperation between countries is notably FTAs and the negotiations toward multilateral free trade tend to reach a standoff. The aim of this paper is to clarify with a political economic model the reason why bilateral free trade negotiations instead of multilateral negotiations have been actively concluded around the world.<sup>1</sup>

Earlier studies about FTAs in the political economic approach have been conducted with both perfect and imperfect competitive markets. Grossman and Helpman (1995) explore FTA formations in perfect competitive markets using Grossman and Helpman's (1994) political contributions approach.<sup>2</sup> On the other hand, Krishna (1998) and Ornelas (2005a) analyze FTA formations in oligopolistic markets. Krishna (1998) focuses on firms' profits, which mainly affect government's decision of concluding an FTA through their lobbying activities, and shows that the more firms an external country has, the more frequently a bilateral free trade agreement is realized. This is because the trade diversion associated with a bilateral agreement becomes larger. Here, the trade diversion means the effect of the shift from the consumptions supplied by an external country to those supplied by internal countries. Ornelas (2005a) furthermore develops Krishna's (1998) model so as to consider firms' lobbying activities more explicitly and their effects on government's tariff setting, and shows that an FTA induces member governments to lower their external tariffs and enhance trade volumes even between member and non-member countries by doing so. Additionally, it is also suggested that governments will endorse only welfare-improving FTAs.

Our analysis extends Ornelas's (2005a) works and explores the point the earlier studies have not clarified satisfactorily. We focus on the effects of firm's lobbying activity over government's action not only on tariff setting but also on trade regime decision. Our main results can be summarized in the following two points. First, a government prefers to participate in an

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<sup>1</sup>Literature reviews on political economic approaches can be found in detailed surveys conducted by Hillman (1989), Magee et al. (1989), Rodrik (1995) and Helpman (1996).

<sup>2</sup>Grossman and Helpman (1994) analyze the relation between lobbying activities and actual trade policy decisions using the common agency model of Bernheim and Whinston (1986), and succeed in explaining why industries, by offering political contributions, can make incumbent officeholders practice the trade policy of protection that benefits these industries.

FTA if its partner country's market size is large enough. However, if the market size of the rest of the world is large enough compared to that of the partner country, then the government prefers to carry out complete free trade. Second, in the increase of the weight the government attaches to campaign contributions compared to the aggregate welfare, it tends to choose an unilateral or an FTA regime rather than a multilateral regime.

The remainder of this paper is organized as follows. Section 2 presents the basic formulation of the model. In Section 3, we solve the equilibrium tariff level under a given trade regime. Section 4 shows what trade regime the government chooses in equilibrium and clarifies the causes of the government's trade regime decision. Section 5 summarizes our main conclusions and presents some future problems.

## 2 The Model

The model below deals with an oligopolistic competition environment, in which each market is segmented. This model is an extension from the duopolistic competition model of Brander and Krugman (1983). We consider three countries  $i, j, k \in \{A, B, C\}$  and two sectors  $Z, N$  in this model. Here,  $z_j^i$  is the quantity of good  $Z$  supplied by a single firm from country  $j$  to country  $i$ 's market, and  $P^i$  is the equilibrium price of good  $Z$  in country  $i$ 's market. The total sales of the oligopolistically supplied good  $Z$  in country  $i$  are denoted by  $z^i$ ; therefore,  $z^i = z_i^i + \sum_{j \neq i} z_j^i$ . There exists only one firm supplying non-numeraire good  $Z$  in each country.

Aggregate utility of the consumers in country  $i$  is assumed to take the form,

$$U^i(z^i, m^i) = \alpha_i z^i - \frac{1}{2}(z^i)^2 + n^i \quad \text{for all } i \in \{A, B, C\}, \quad (1)$$

where  $n^i$  denotes the consumption of the competitively produced numeraire good  $N$ . Because of the quasi-linear form of the utility function, the inverse demand function takes the linear form,

$$P^i = \alpha_i - z^i \quad \text{for all } i \in \{A, B, C\}, \quad (2)$$

where  $\alpha_i$  represents country  $i$ 's market size. To simplify, we assume that each country's marginal costs of production of good  $Z$  in terms of good  $N$  is constant and equal to  $c$ . Additionally, we denote  $a_i \equiv \alpha_i - c > 0$ . Then, there is a positive correlation of  $a_i$  with country  $i$ 's market size.

We consider the following three trade regimes  $R = \{u, b, m\}$ .  $u$  means unilateral, where each country imposes import tariffs on all imported goods

;  $b$  means bilateral, where country  $A$  and  $B$  sign an FTA and abolish import tariffs against each other, but they continuously impose tariffs on the outside country  $C$ ; and  $m$  means multilateral, where all countries  $A$ ,  $B$ , and  $C$  realize complete free trade.

Our purpose in this paper is to clarify the effect of firms' lobbying activity on each country's decision of trade policies. We consider a three stage noncooperative game with the timing of events as follows:

1. Country  $A$ 's firm proposes his contribution schedule to country  $A$ 's government contingent to his decision of trade policies  $C_A(r, t^A(r))$ , where  $t^i(r)$  are the specific tariffs imposed by country  $i$  under the trade regime  $r \in R$ . Here,  $t^A(b)$  is imposed on imports from country  $C$  but is not imposed on those from country  $B$ . On the other hand,  $t^A(u)$  is imposed on both imports from country  $B$  and  $C$ . Likewise,  $t^A(m) = 0$ ; that is, all imports are not imposed any tariffs on.
2. Country  $A$ 's government chooses its trade regime  $r \in R$ .
3. Country  $A$ 's government decides its external tariff level  $t^A(r)$ .

We add the following two assumptions about countries  $B$  and  $C$ : they obey country  $A$ 's decision on a trade regime; and there are no lobbying activities of any special interest groups in their countries. We solve the equilibrium of this game by backward inductions using the concept of Subgame-Perfect Nash Equilibrium.

### 3 Tariff Setting

#### Unilateral Regime

First, we consider the situation where unilateralism is accomplished as a trade regime. Each country's import tariff is simply added to the marginal costs of firms, so country  $j$ 's firm's effective marginal costs of exports to country  $i$ 's markets become  $c + t^i(u)$ . Hence, we can denote the profits of each country's firm in country  $i$ 's markets by

$$\begin{aligned}\pi_i^i(u, t^i(u)) &= [p^i(u, t^i(u)) - c]z_i^i(u, t^i(u)) \\ &= [a_i - z^i(u, t^i(u))]z_i^i(u, t^i(u)) \quad \text{for all } i \in \{A, B, C\},\end{aligned}\tag{3}$$

$$\begin{aligned}\pi_j^i(u, t^i(u)) &= [p^i(u, t^i(u)) - c - t^i(u)]z_j^i(u, t^i(u)) \\ &= [a_i - z^i(u, t^i(u)) - t^i(u)]z_j^i(u, t^i(u)) \quad \text{for all } i, j \in \{A, B, C\} \text{ and } i \neq j.\end{aligned}\tag{4}$$

We can solve the Cournot-Nash equilibrium output level under unilateral regime from these equations as follows:

$$z_i^i(u, t^i(u)) = \frac{a_i + 2t^i(u)}{4} \quad \text{for all } i \in \{A, B, C\}, \quad (5)$$

$$z_j^i(u, t^i(u)) = \frac{a_i - 2t^i(u)}{4} \quad \text{for all } i, j \in \{A, B, C\} \text{ and } i \neq j. \quad (6)$$

Substituting them into equations (3) and (4), we can easily get  $\pi_j^i(u, t^i(u)) = [z_j^i(u, t^i(u))]^2$ .

We assume that all tariff revenues are equally distributed to domestic consumers, then we can define each country's welfare to be composed of the consumer surplus, firm's profits and tariff revenues; therefore, country  $i$ 's welfare can be represented as follows:

$$W^i(r, t^i(r)) = CS^i(r, t^i(r)) + \pi_i(r, t^i(r)) + t^i(r) \sum_{j \neq i} z_j^i(r, t^i(r))$$

for all  $i, j \in \{A, B, C\}$  and  $r \in R$ , (7)

where  $CS^i(r, t^i(r))$  is the consumer surplus of country  $i$  and  $\pi_i(r, t^i(r)) \equiv \pi_i^i(r, t^i(r)) + \sum_{j \neq i} \pi_i^j(r, t^i(r))$  is the profit by country  $i$ 's firm. By the above equation, we can calculate the welfare of country  $i$  under unilateralism as follows:

$$W^i(u, t^i(u)) = \frac{11a_i^2 + 12t^i(u) \cdot a_i - 20[t^i(u)]^2}{32} + \sum_{j \neq i} \pi_i^j(u, t^j(u))$$

for all  $i, j \in \{A, B, C\}$ . (8)

Here, the last term, which represents the profit of country  $i$ 's firm, is independent of  $t^i(u)$ .

When organized lobbies pay campaign contributions to politicians, country  $A$ 's government has the following two concerns: (1) social welfare and (2) gathering support for the purpose of holding their office. Therefore, the government's objective function can be represented as follows:<sup>3</sup>

$$G^A(r, t^A(r)) = W^A(r, t^A(r)) + \beta \cdot C_A(r, t^A(r)) \quad \beta \geq 0 \quad \text{for all } r \in R. \quad (9)$$

Meanwhile, consider the situation where there are no lobbying activities of country  $A$ 's firm. Maximizing country  $i$ 's welfare with respect to  $t^i(u)$ , we

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<sup>3</sup>Such a form of the objective function is called the political support function. Here,  $\beta$  means the weight the government attaches to campaign contributions compared to the aggregate welfare. See Hillman (1982) and Grossman and Helpman (1994).

can solve country  $i$ 's optimal tariff under unilateralism as follows:

$$t^{i*}(u) = \frac{3}{10}a_i \quad \text{for all } i \in \{A, B, C\}. \quad (10)$$

By substituting each country's optimal tariff level into equation (8), country  $A$ 's welfare is represented by

$$W^{i*}(u) \equiv W^i(u, t^{A*}(u)) = \frac{40a_i^2 + \sum_{j \neq i} a_j^2}{100} \quad \text{for all } i, j \in \{B, C\}. \quad (11)$$

Likewise, the profits of country  $i$ 's firm can be solved as follows:

$$\pi_i^*(u) \equiv \pi_i(u, t^{A*}(u)) = \frac{16a_i^2 + \sum_{j \neq i} a_j^2}{100} \quad \text{for all } i, j \in \{B, C\}. \quad (12)$$

In the situation where country  $A$ 's firm pay contributions to country  $A$ 's government, country  $A$ 's optimal tariff can be solved by substituting  $C_A(u, t^A(u)) = \pi_A(u, t^A(u)) - \bar{V}$  into equation (9) and maximizing  $G^A(u, t^i(u))$ . We call such tariff level *the political tariff* and represent it by  $t^{AP}(u)$ . Then,

$$t^{AP}(u) = \frac{3 + 2\beta}{10 - 4\beta}a_A. \quad (13)$$

Here, we restrict the weight for campaign contributions to  $\beta < \frac{1}{2}$  in order to ensure positive Cournot-Nash equilibrium output levels. Since  $\frac{\partial t^{AP}(u)}{\partial \beta} = \frac{32}{(10-4\beta)^2}a_A > 0$ , an increase in  $\beta$  induces a higher political tariff level.

Using country  $A$ 's political tariff level and the other countries' optimal tariff level, we can solve country  $A$ 's welfare and the profits of country  $A$ 's firm as follows:

$$W^{AP}(u) \equiv W^A(u, t^{AP}(u)) = \left[ \frac{11}{32} + \Phi \right] a_A^2 + \frac{1}{100} \sum_{j \neq A} a_j^2 \quad \text{for all } j \in \{B, C\}, \quad (14)$$

$$\pi_A^P(u) \equiv \pi_A(u, t^{AP}(u)) = \Psi a_A^2 + \frac{1}{100} \sum_{j \neq A} a_j^2 \quad \text{for all } j \in \{B, C\}, \quad (15)$$

where  $\Phi \equiv \frac{(3+2\beta)(15-22\beta)}{8(10-4\beta)^2}$ ,  $\Psi \equiv \frac{4}{(5-2\beta)^2}$ .

## Bilateral Regime

In this subsection, we consider the negotiation of an FTA between country  $A$  and  $B$  under the existence of three countries;  $A, B, C$ . Countries signing an FTA abolish the import tariff against each other, but they continue to impose the prior tariff level  $t^i(b)$  on the outside country. Here, country  $C$  is interpreted as the rest of the world.

The profits made by each country's firm in country  $i$ 's market participated into FTA are represented by

$$\begin{aligned}\pi_j^i(b, t^i(b)) &= [p^i(b, t^i(b)) - c]z_j^i(b, t^i(b)) \\ &= [a_i - z^i(b, t^i(b))]z_j^i(b, t^i(b)) \quad \text{for all } i, j \in \{A, B\},\end{aligned}\quad (16)$$

$$\begin{aligned}\pi_C^i(b, t^i(b)) &= [p^i(b, t^i(b)) - c - t^i(b)]z_C^i(b, t^i(b)) \\ &= [a_i - z^i(b, t^i(b)) - t^i(b)]z_C^i(b, t^i(b)) \quad \text{for all } i \in \{A, B\}.\end{aligned}\quad (17)$$

We can solve the Cournot-Nash equilibrium output level from these equations as follows:<sup>4</sup>

$$z_j^i(b, t^i(b)) = \frac{a_i + t^i(b)}{4} \quad \text{for all } i, j \in \{A, B\}, \quad (18)$$

$$z_C^i(b, t^i(b)) = \frac{a_i - 3t^i(b)}{4} \quad \text{for all } i \in \{A, B\}. \quad (19)$$

Then, the profits made by country  $j$ 's firm in country  $i$ 's market are  $\pi_j^i(b, t^i(b)) = [z_j^i(b, t^i(b))]^2$ ,  $\pi_C^i(b, t^i(b)) = [z_C^i(b, t^i(b))]^2$ ; Therefore, country  $i$ 's welfare under bilateralism is represented by

$$\begin{aligned}W^i(b, t^i(b)) &= \frac{11a_i^2 + 6t^i(b) \cdot a_i - 21(t^i(b))^2}{32} + \pi_j^i(b, t^i(b)) + \pi_C^i(b, t^i(b)) \\ &\quad \text{for all } i, j \in \{A, B\}.\end{aligned}\quad (20)$$

If there are no special interest groups, each country that participates in the FTA sets the optimal tariff so as to maximize its own welfare. Maximizing country  $i$ 's welfare with respect to  $t^i(b)$ , we can solve country  $i$ 's optimal tariff level under FTA as follows:

$$t^{i*}(b) = \frac{1}{7}a_i \quad \text{for all } i \in \{A, B\}. \quad (21)$$

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<sup>4</sup>In the situation where country  $A$  and  $B$  conclude an FTA with each other, the equilibrium production quantities from each country's firm against country  $C$ 's market are the same as those under unilateralism. Hence, country  $C$ 's optimal tariff under bilateralism is also the same as that under unilateralism.

Then, country  $i$ 's welfare is calculated by substituting each country's optimal tariff level into equation (20),

$$W^{i*}(b) \equiv W^i(b, t^{i*}(b)) = \frac{1750a_i^2 + 400a_j^2 + 49a_C^2}{4900} \quad \text{for all } i, j \in \{A, B\}. \quad (22)$$

Additionally, we can solve the profits of country  $i$ 's firm as follows:

$$\pi_i^*(b) \equiv \pi_i(b, t^{i*}(b)) = \frac{400a_i^2 + 400a_j^2 + 49a_C^2}{4900} \quad \text{for all } i, j \in \{A, B\}, \quad (23)$$

where  $\pi_i(b, t^i(b)) \equiv \sum_j \pi_i^j(b, t^j(b)) + \pi_i^C(u, t^{C*}(u))$  for all  $i, j \in \{A, B\}$ .

In the situation where country  $A$ 's firm pay contributions to country  $A$ 's government, country  $A$ 's political tariff level can be solved by substituting  $C_A(b, t^A(b)) = \pi_A(b, t^A(b)) - \bar{V}$  into equation (9) and maximizing  $G^A(b, t^i(b))$ . Therefore,

$$t^{AP}(b) = \frac{3 + 2\beta}{21 - 2\beta} a_A \quad \text{for all } i \in \{A, B\}. \quad (24)$$

Since  $\frac{\partial t^{AP}}{\partial \beta} = \frac{48}{(21-2\beta)^2} > 0$ , an increase in  $\beta$  induces a higher political tariff level against the external country  $C$ .

Using country  $A$ 's political tariff level and the other countries' optimal tariff level, we can calculate Country  $A$ 's welfare and the profits of country  $A$ 's firm as follows:

$$W^{AP}(b) \equiv W^A(b, t^{AP}(b)) = \left[ \frac{11}{32} + \Theta \right] a_A^2 + \frac{4}{49} a_B^2 + \frac{1}{100} a_C^2, \quad (25)$$

$$\pi_A^P(b) \equiv \pi_A(b, t^{AP}(b)) = \Omega a_A^2 + \frac{4}{49} a_B^2 + \frac{1}{100} a_C^2, \quad (26)$$

where  $\Theta \equiv \frac{(3+2\beta)(63-54\beta)}{32(21-2\beta)^2}$ ,  $\Omega \equiv \frac{36}{(21-2\beta)^2}$ .

## Multilateral Regime

The profits made by each country's firm in country  $i$ 's market under multilateral are represented by

$$\pi_j^i(m) = (p^i - c)z_j^i(m) = (a_i - z^i(m))z_j^i(m) \quad \text{for all } i, j \in \{A, B, C\}. \quad (27)$$

We can solve the Cournot-Nash equilibrium output level from these equations as follows:

$$z_j^i(m) = \frac{a_i}{4} \quad \text{for all } i, j \in \{A, B, C\}. \quad (28)$$



Then, the profits made by country  $j$ 's firm in country  $i$ 's market are  $\pi_j^i(m) = [z_j^i(m)]^2$ . The country  $i$ 's welfare and the profits of country  $i$ 's firm are represented by

$$W^{i*}(m) = \frac{11a_i^2 + 2 \sum_{j \neq i} a_j^2}{32}, \quad \pi_i^*(m) = \frac{1}{16} \sum_j a_j^2 \quad \text{for all } i, j \in \{A, B, C\}. \quad (29)$$

Under multilateralism, all countries practice complete free trade. Thus, each country's welfare is independent on the amount of political contributions contingent to tariff level, that is,  $W^{i*}(m) = W^{iP}(m)$ . Likewise, we can easily derive that  $\pi_i^*(m) = \pi_i^P(m)$ .

## 4 Trade Regime Decision

Our main concern in this section is to clarify what trade regime can be chosen by country  $A$ , which has the initiative in carrying out it. The equilibrium trade regime  $r^P$  in the second stage of the trade-policy-decision game in our model is as follows;

$$\begin{aligned} r^P &= u && \text{if } G^A(u, t^{AP}(u)) > G^A(s, t^{AP}(s)) \text{ for all } s \in \{b, m\}, \\ r^P &= b && \text{if } G^A(b, t^{AP}(b)) > G^A(s, t^{AP}(s)) \text{ for all } s \in \{u, m\}, \\ r^P &= m && \text{if } G^A(m) > G^A(s, t^{AP}(s)) \text{ for all } s \in \{u, b\}. \end{aligned}$$

The contribution schedule of country  $A$ 's firm depends on its bargaining power in a lobbying negotiation between the government and the firm. If the government does not possess bargaining power at all, then the contribution schedule of the firm is customized so that contributions leave the government with its reservation payoff  $G_0 = W^{A*}(u)$ ; therefore,

$$C_A^{\min}(r, t^{AP}(r)) = \frac{W^{A*}(u) - W^{AP}(r)}{\beta} \quad \text{for all } r \in R. \quad (30)$$

If the firm has no bargaining power, then the contribution schedule of the firm is customized so that contributions leave the firm with its reservation payoff  $V_0 = \pi^{A*}(u)$ ; therefore,

$$C_A^{\max}(r, t^{AP}(r)) = \pi_A^P(r) - \pi_A^*(u). \quad (31)$$

Generally, the equilibrium contribution schedule of the firm lies between these two values. Letting  $\gamma$  and  $1 - \gamma$  denote respectively the government's and

the firm's bargaining power, for any  $\gamma \in (0, 1]$ , the equilibrium contribution schedule of country  $A$ 's firm under unilateralism can be represented as

$$C_A(r, t^{AP}(r)) = (1 - \gamma)C_A^{\min}(r, t^{AP}(r)) + \gamma \cdot C_A^{\max}(r, t^{AP}(r)). \quad (32)$$

Substituting it into equation (9), we can derive the payoff of country  $A$ 's government under each trade regime as follows:<sup>5</sup>

$$G^{AP}(r) \equiv G^A(r, t^{AP}(r)) = \gamma W^{AP}(r) + (1 - \gamma)W^{A*}(u) + \beta \cdot \gamma[\pi_A^P(r) - \pi_A^*(u)]$$

for all  $r \in R$ .  
(33)

By solving the equilibrium trade regime in the second stage of the upper game, the following proposition can be derived.<sup>6</sup>

**Proposition 4.1** *If the partner country's market size is enough large, then the domestic government prefers to participate in an FTA with its country. However, if the market size of the rest of the world is large enough compared to that of the partner country, then the government prefers to carry out complete free trade.*

Figure 1 shows the relationship between country B and C's market size relative to country A's market size and depicts the condition that each trade regime is realized in equilibrium with respect to each country's relative market size. Here, the trade regime decision of the government is independent on the government's bargaining power  $\gamma$ .

Furthermore, we can confirm that such a condition depends on the weight the government attaches to campaign contributions compared to the aggregate welfare. The following proposition summarizes the effect of shifting this weight  $\beta$  on the government's trade regime decision.

**Proposition 4.2** *As the weight the government attaches to campaign contributions compared to the aggregate welfare increases, the government tends to choose unilateralism or bilateralism rather than multilateralism.*

Figure 2 depicts how these conditions change according to an increase of  $\beta$ . This proposition can be easily shown by this figure. The reason why the government prefers to keep unilateral situation or conclude an FTA rather

<sup>5</sup>Here, if  $\gamma = 0$ , then the politicians' payoff is equal to the domestic welfare under unilateralism, that is,  $G^{AP}(r) = W^{A*}(u)$ . Then, the government is indifferent to trade regimes. Hence, we eliminate the case where country  $A$ 's government has no bargaining power against the domestic firm.

<sup>6</sup>About the detailed derivation of the following propositions, see Appendix.

than choose complete free trade is because the government can make the firm pay more contributions by setting the tariff level most preferred by the firm under an unilateral or a bilateral regime than under a multilateral regime.

## 5 Concluding Remarks

In this paper, we analyze the effect of a firm's lobbying activity over the trade regime decision of a government. Our main results are summarized as follows. First, If the partner country has an enough market size, then the government prefers to participate in an FTA with its country. However, if the market size of the rest of the world is large enough compared to that of the partner country, then the government prefers to carry out complete free trade. Second, in the increase of the weight the government attaches to campaign contributions compared to the aggregate welfare, they tend to keep unilateralism or carry out an FTA instead of choosing multilateralism.

Here, the values of both the government's bargaining power and the weight of campaign contributions compared to the aggregate welfare are exogenously given in this paper. One of our future problems is to analyze the effects of firms' lobbying activity with endogenous these values.

## Appendix

In this appendix, we show the detailed calculation that is required in order to derive our propositions. From equation (33), we can rewrite the equilibrium trade regime as follows:

$$\begin{aligned} r^P &= u && \text{if } W^{AP}(u) - W^{AP}(s) + \beta[\pi_A^P(u) - \pi_A^P(s)] > 0 \text{ for all } s \in \{b, m\}, \\ r^P &= b && \text{if } W^{AP}(b) - W^{AP}(s) + \beta[\pi_A^P(b) - \pi_A^P(s)] > 0 \text{ for all } s \in \{u, m\}, \\ r^P &= m && \text{if } W^{AP}(m) - W^{AP}(s) + \beta[\pi_A^P(m) - \pi_A^P(s)] > 0 \text{ for all } s \in \{u, b\}. \end{aligned}$$

Solving the condition that each trade regime is realized in equilibrium, we can get

$$W^{AP}(b) - W^{AP}(u) + \beta[\pi_A^P(b) - \pi_A^P(u)] > 0 \Leftrightarrow \frac{a_B^2}{a_A^2} > \Lambda, \quad (34)$$

$$W^{AP}(m) - W^{AP}(u) + \beta[\pi_A^P(m) - \pi_A^P(u)] > 0 \Leftrightarrow \frac{a_C^2}{a_A^2} > -\frac{a_B^2}{a_A^2} + \Upsilon, \quad (35)$$

$$W^{AP}(m) - W^{AP}(b) + \beta[\pi_A^P(m) - \pi_A^P(b)] > 0 \Leftrightarrow \frac{a_C^2}{a_A^2} > \frac{125}{343} \cdot \frac{a_B^2}{a_A^2} + \Xi, \quad (36)$$

where  $\Lambda \equiv \frac{4900[\Phi - \Theta + \beta(\Psi - \Omega)]}{351(1+\beta)}$ ,  $\Upsilon \equiv \frac{400[\Phi - \beta(\frac{1}{16} - \Psi)]}{21(1+\beta)}$ ,  $\Xi \equiv \frac{400[\Theta - \beta(\frac{1}{16} - \Omega)]}{21(1+\beta)}$ . Figure 1 depicts these conditions with respect to each country's relative market size. In this figure, we can show that what trade regime the government choose in equilibrium.

Next, we consider how an increase of the weight the government attaches to campaign contributions compared to the aggregate welfare affect these conditions. Since  $\frac{\partial \Lambda}{\partial \beta} > 0$ ,  $\frac{\partial \Upsilon}{\partial \beta} > 0$ ,  $\frac{\partial \Xi}{\partial \beta} > 0$ , such an effect can be depicted by Figure 2. Here, we can confirm that both areas where unilateral and bilateral regimes can be realized in equilibrium are expanded with the increase of  $\beta$ . On the contrary, a multilateral regime is more difficult to be realized in equilibrium.

## References

- 1 Bernheim, B. D. and M. D. Whinston (1986). "Menu Auctions, Resource Allocations, and Economic Influence." *Quarterly Journal of Economics* 101: pp.1-32.
- 2 Bhagwati, J. (1993). "Regionalism and Multilateralism: An Overview." In de Melo, J. and A. Panagariya (eds.), *New Dimensions in Regional Integration*. Cambridge University Press, Cambridge.
- 3 Brander, J. and P. Krugman (1983). "A Reciprocal Dumping Model of International Trade." *Journal of International Economics*. 15: pp.313-321.
- 4 Cadot, O., J. Melo and M. Olarreaga (1999). "Regional Integration and Lobbying for Tariffs against nonmembers." *International Economic review*. 40: pp.635-657.
- 5 Grossman, G. M. and E. Helpman (1994). "Protection for Sale." *American Economic Review* 84: pp.833-850.
- 6 Grossman, G. M. and E. Helpman (1995). "The Politics of Free Trade Agreements." *American Economic Review* 105: pp.667-690.
- 7 Grossman, G. M. and E. Helpman (2001). *Special Interest Politics*. MIT Press, Cambridge.
- 8 Helpman, E. (1996). "Politics and Trade Policy." In Kreps, D. M. and K. F. Wallis (eds.), *Advances in Economics and Econometrics: Theory and Applications* Vol.1. Cambridge University Press, Cambridge: pp.19-45.

- 9 Hillman, A. L. (1989). *The Political Economy of Protection*. Harwood Academic Publishers, Chur.
- 10 Krishna, P. (1998). "Regionalism and Multilateralism: A Political Economy Approach." *Quarterly Journal of Economics* 113: pp.227-251.
- 11 Levy, P. Y. (1997). "A Political-Economic Analysis of Free-Trade Agreement." *American Economic Review* 87: pp.506-519.
- 12 Maggi, G. and A. Rodriguez-Clare (1998). "The Value of Trade Agreements in the Presence of Political Pressures." *Journal of Political Economy* 106: pp.574-601.
- 13 Ornelas, E. (2005a). "Endogenous Free Trade Agreements and the Multilateral Trading System." *Journal of International Economics* 67: pp.471-497.
- 14 Ornelas, E. (2005b). "Rent Distribution and the Political Viability of Free Trade Agreements." *Quarterly Journal of Economics* 120: pp.1475-1505.
- 15 Richardson, M. (1993). "Endogenous Protection and Trade Diversion." *Journal of International Economics* 34: pp.309-324.
- 16 Qiu, L. D. (2004). "Lobbying, Multisector Trade, and Sustainability of Free Trade Agreements." *Canadian Journal of Economics* 37: pp.1061-1083.
- 17 Rodrik, D. (1995). "Political Economy of Trade Policy." In Grossman, G. M. and K. Rogoff (eds.), *Handbook of International Economics*, Vol.3, North-Holland, Amsterdam: pp.1457-1494.
- 18 Viner, J. (1950). *The Customs Union Issue*. Carnegie Endowment for International Peace, New York.

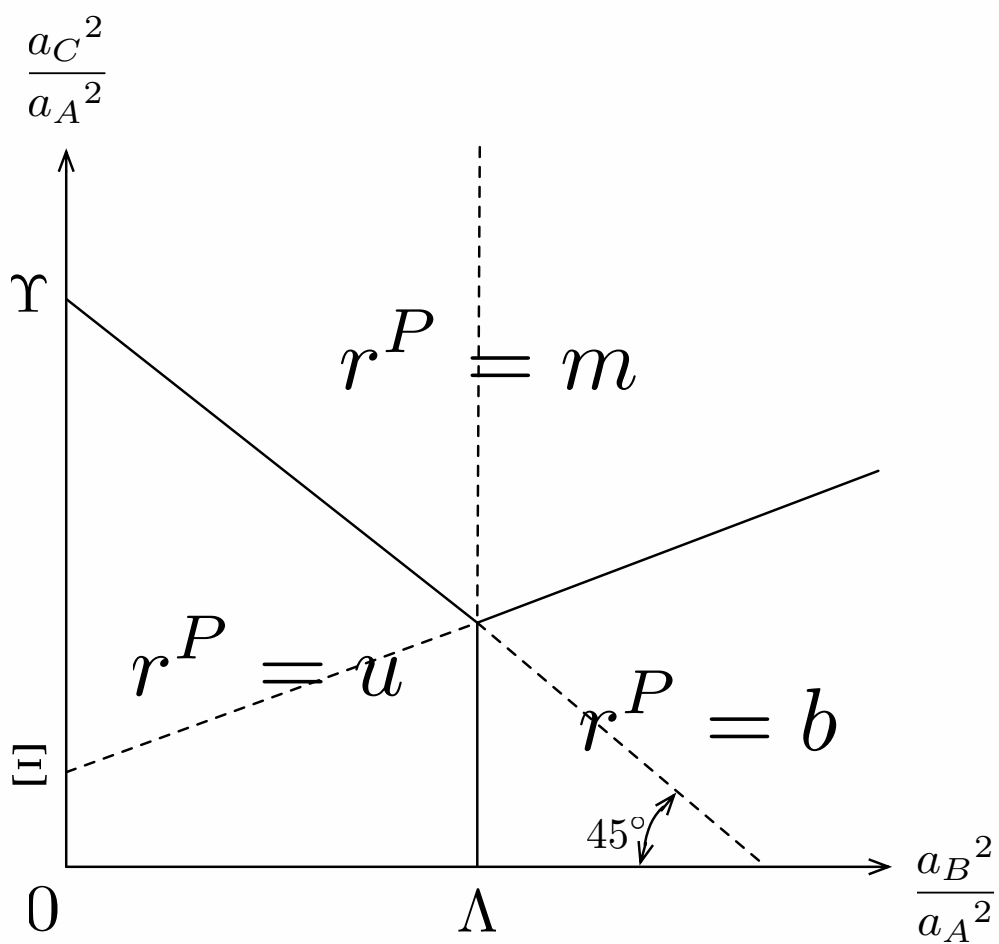


Figure 1: The condition of each equilibrium trade regime

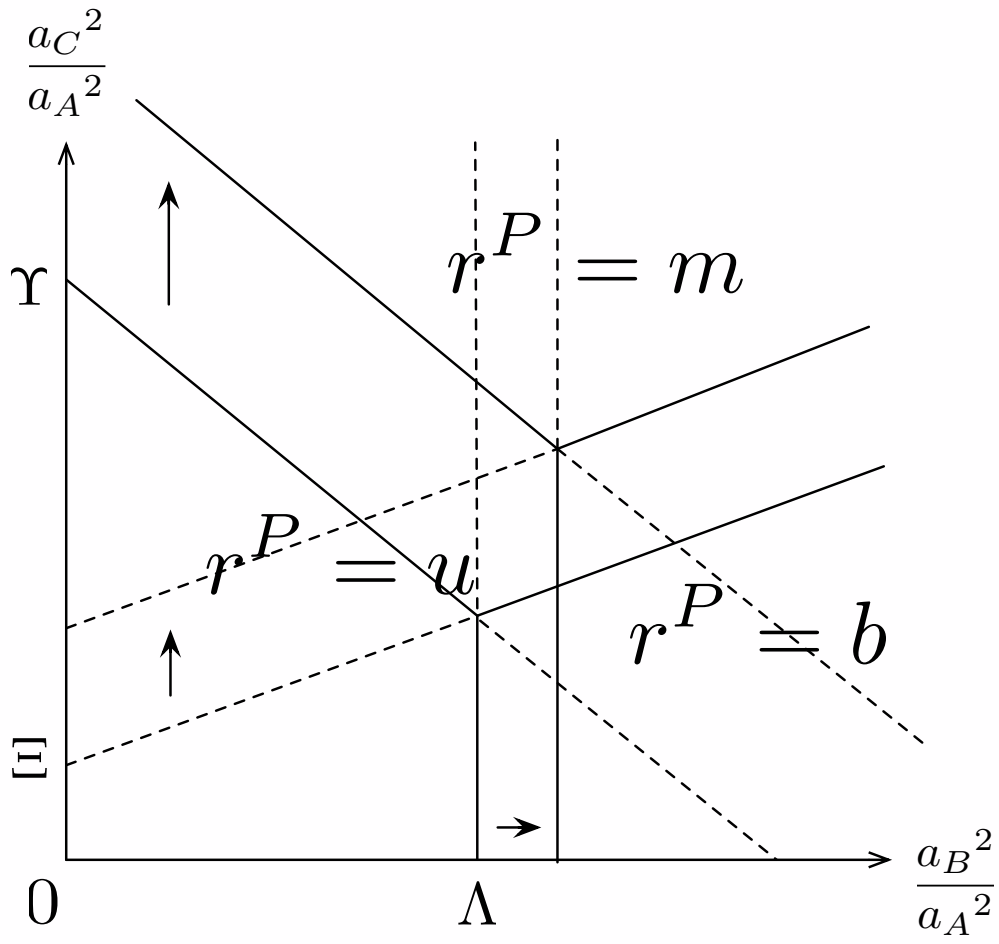


Figure 2: The effect of an increases in  $\beta$  on the equilibrium trade regime