



Government's Powers and FTAs: The Effect of Domestic and Foreign Powers on Multilateral Trade

Hamed Ghiaie*

Department of Economics and Management, Université de Cergy-Pontoise, France.

Article History

Received date: 10 May 2015

Revised date: 11 Jun 2017

Accepted date: 13 September 2017

Available online: 25 October 2017

JEL Classification:

F5J

F55

Keywords:

Free Trade Agreements

Political economy

Power

External tariff

Abstract

This paper elaborates on the government's powers - both at the domestic level and over foreign countries. The domestic power is the power against domestic lobbies, and the foreign one is the government's international power. To do so, this paper tries to evaluate the effects of these powers on the formation of free trade agreements (FTAs). The theoretical framework follows an oligopolistic-political economy. The main findings of the study show that the optimal solution for the government is paying more attention to the national welfare than lobbies' welfare. In addition, larger FTA helps the government have lower dependency on the lobbies. The paper indicates that the effects of foreign power on FTAs and shows that a larger FTA does not have always positive effects on expanding the FTAs. The effects depend on both domestic and foreign powers that are precisely described through this paper. The issues dealt here are not only theoretically interesting but are relevant while designing domestic and foreign policies.

1. Introduction

WTO 2010 database reports that there are about 280 preferential trade agreements (PTAs) in the world, which more than 200 of them have been established after 1990. These preferential agreements have crucial effects on the global trade and hence their consequences are principal concerns for both economists and policymakers. On the other side, one of policymakers' concerns is the effect of free trade agreements (FTAs) on multilateral trade liberalization (MTL) and the behavior of a government inside and outside of country.

Over the last two decades, free trade agreements (FTAs) have become the most advantageous models of trade liberalization for many countries. In many cases, private business groups initiate regional free trade talks, thereafter main business groups and finally governments start to work on the details of the potential trade agreement (Stoyanov, 2007). A strong agreement needs to be attractive for all interest groups specially those that can lobby governments for or against a free trade, either directly or indirectly. Consequently, political

*hamed.ghiaie@u-cergy.fr

DOI: 10.22099/ijes.2017.15196.1183

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pressures are one of the decisive elements which form many trade agreements.

Governments have the main role for decision making on economic factors e.g. export balance, rate of interests, commercial policies etc. Always there are contrary elements that could affect government's optimal decisions. Considering the competitive environment and different technology and industrial level of countries, indeed, one of the most important factors that could exert influence on decisions is the Government's power.

The power has two types. The first (domestic power) is defined by the level of the government's dependency on domestic parties and lobbies which help the government by their contributions. The impact of the contributions is different on the government's utility, regarding the dependence level of the government on lobbies. The effect could be less (e.g. for those countries that have natural resources like oil, gas etc) and the government is able to increase its aimed utility by optimizing other elements (i.e. national welfare). Otherwise, the impact is significant and the government tries to maximize the lobbies' contributions.

The second kind of the government's power is internationally and toward foreign countries. The definition of this power has an intricate composition, which depends on many different components. This paper has categorized the foreign power in two cases, *competitive relation* and *quasi-colonization* one.

In the competitive relation, there are two countries with almost similar situations that could set a same tariff policy in opposition to each other. If one reduces the tariff, the other does the same and vice versa.

As well, there could be another relation between two countries. For instance, a developed country (which has a highly developed economy and advanced technological infrastructure e.g. China) that is faced by a small non-industrialized country with no good relation with other countries (e.g North Korea). In this paper, it is called a "quasi-colonization relation". If the developed country raises the tariff, the small country could not export its products to the developed one, although the developed country can use its advanced technological infrastructure and makes that good cheaper and exports to that small country.

The second part of this paper briefly reviews the literature of FTAs, endogeneity in FTAs and the role of lobbies and foreign governments on the domestic policy. The third section has two parts. In the first one, paper analyses the optimal dependence level of a government on domestic lobbies. To answer this question, paper introduces a utility function of a government and industries (lobbies) as a conventional political economy model based on [Grossman and Helpman \(1995\)](#), where governments cooperate with lobbies to form the trade policy and regime. Government tries to find the optimal dependence level to maximize its utility function. Paper shows a solution for this problem. This paper develops and tests a theory that specifies the government's predilection for contributions. This preference shows the importance of lobbies for the government and in other words, it shows the power of the government toward

domestic lobbies. At the best of the researchers' knowledge, this gap is not yet touched in the literature. This paper tries to fill out this gap and show how both sides of government power are important to make a FTA and expand economy.

In the second part, three kinds of relations between countries in the form of tariff policy are explained. The first form (considered usually in previous literatures) is unconnected tariff policy in which each country sets its tariff independently. Therefore, in the literature *the foreign benefit of domestic companies* and *the effect of domestic tariff on foreign benefit of domestic companies* are ignored. This paper does not ignore this effect. The paper shows that the policy does not just depend on the foreign power but also, on the domestic power. The results show that under the influence of different domestic and foreign pressures, a politically motivated government may choose various policies. Whereas previous studies emphasized the fact that FTAs usually depress the lobbying power of domestic interest groups, this paper shows that with the presence of interdependency between countries, the opposite is possible. The paper does not analyse a game between two countries to find equilibrium for both interdependent countries, otherwise, it analyses the optimal decision of home government when it has dominant situation to change external tariffs.

2. Literature Overview

The analysis of Preferential trading area (PTAs) and Free Trade agreements (FTAs) in Economic way began with [Viner's work \(1950\)](#) on customs unions. Influenced by Viner, economic studies of FTAs have been largely focused on welfare implications. There is a broad literature explaining why countries form PTAs and FTAs. The domino theory ([Baldwin 1993](#)) gives an explanation of the PTAs' growth. It uses a political economy model focused on the cost (in terms of trade diversion) of being excluded from PTAs. In addition, some papers emphasize the role of economic size and similarity among economies in the formation of FTAs ([Baier and Bergstrand 2004](#)). In another view, there is a political overview on PTAs. There exist many different explanations for why countries sign PTAs, like domestic reforms, strengthen their positions in multilateral negotiations, pursue import-substitution policies at the regional level, address security concerns, or sign PTAs as a reaction to other agreements ([Ravenhill 2008](#)). Recent studies investigate the role of free agreement under imperfect competition (e.g., [Gu and Shen 2014](#)), the expansion of preferential trading arrangements (e.g., [Nomura et al. 2016](#), [Mansfield and Pevehouse 2013](#)), domestic institutions (e.g., [Baccini 2011](#)), interest groups (e.g., [Chase 2005](#); [Dür 2007](#)), bureaucratic interests (e.g., [Elsig and Dupont 2011](#)) and international shocks (e.g., [Mansfield and Reinhardt 2003](#)) in explaining the formation of PTAs.

Studies on FTAs and tariffs show that there are evidences that some FTAs slowed down their multilateral tariff liberalization ([Karacaovali and Limão 2008](#)). In contrast, [Estevadeordal et al. \(2008\)](#) show FTAs have positive effect

on the unilateral tariff liberalization towards non-members in Latin American countries.

In the theoretical literature, there are various results in terms of the effect of FTAs on tariffs (external tariffs). [Mai and Stoyanov \(2014\)](#) expand a theoretical model to show the role of foreign interest groups and external tariffs on FTAs. [Panagariya and Findlay \(1996\)](#) show that the number of labour employed in the sector can endogenously affect its trade tariffs. [Cadot et al. \(1999\)](#) demonstrate that extra-union tariffs could increase in their 3-country model if the protection rises with deeper integration.

[Saggi \(2006\)](#), in a three-country trade oligopoly set-up, finds that FTAs lessen the effectiveness of the multilateral tariff in a symmetric market but as well may ease multilateral trade when asymmetry is applied in terms of market size or cost. [Anderson and Yotov \(2016\)](#) uses Panel data methods and shows these methods resolve two way causality between trade and FTAs. Based on their finding some members gain over 5% of real manufacturing income and some non-members lose less than 0.3%. [Cooper \(2014\)](#) investigates a vast study on the Impact of NAFTA on US trade and shows how this FTA changes the policy of the United States. [Dür et al \(2014\)](#) tries to design a new dataset on the trade agreements to comprehensively manage variables codes and agreements.

The models with exogenously fixed import tariff like [Krishna \(1998\)](#) show that diverting more trade from the rest of the world can motivate countries to design trade-diverting agreements.

On the other hand, in the political economy literature a growing number of studies show trade policy as an endogenous outcome of lobbying activity (by special interest groups). Much of the literature indicate that an optimal solution for a welfare-maximizing government is to lower the external tariff under an FTA to minimize the tariff revenue loss ([Grossman 2016](#), and [Stoyanov and Yildiz 2015](#)). [Positogo \(2016\)](#) clearly expands Government-business relations in the policymaking of bilateral free trade agreements. He explains how the power of governments, domestic or foreign government, affects the quality of a FTA.

[Gawande et al \(2006\)](#) find that negotiation by foreign country to reduce trade barriers could have a significant effect on the tariffs' structure. [Ornelas \(2005\)](#) points out that those sectors which compete on imports may get desperate for lobbying after a FTA and this may lead to a reduction of the FTA growth. He shows a political economy without foreign lobby with an oligopolistic market structure by [Grossman and Helpman's](#) model ([Grossman and Helpman 1995](#)). He shows that FTA formation debilitates the lobbying power of domestic firms because the elimination of tariffs between FTA members shifts part of the tariffs rent from domestic firms towards firms of a partner country. Therefore, political economy factors lower the potential benefit for home country firms and strengthening the welfare maximization considerations and reducing the government's incentives for protection. [Maggi and Rodriguez-Clare \(2007\)](#) show that the FTA reduces the enticement of capital owners to lobby for protectionism so governments find space to reduce external tariffs.

In empirical side, many papers have evaluated the intensity of foreign lobbying in FTAs. [Mitchell \(1995\)](#) has a claim of large political contribution of foreign corporates in the US in 1987-88. [Hansen and Mitchell \(2000\)](#) claim that, although foreign corporations make lower political contributions than domestic ones due to the existing legal restrictions, but they were just as intensive as domestic corporations with respect to lobbying activity and lobbying expenditures. [Gawande et al. \(2006\)](#) demonstrate that the expenditure of foreign agents lobbying to ease trades in the US are even greater than political contributions by domestic corporations, and the elasticity of the US import tariff with respect to foreign lobbying is almost as big as the domestic one. [Baccini \(2015\)](#) provides a large data base to evaluate the FTAs all over the world.

The model in this paper considers different effects of cross-border lobbying activities which change the effect introduced by [Ornelas \(2005\)](#) since the political behavior of domestic government, in setting external tariff, changes the behavior of foreign government. In the presence of foreign lobby, a country may in fact raise external tariffs under the FTA when strong lobby by a country puts extra pressure on the government for trade barriers. This paper shows that foreign power in addition to the domestic one are important factors in the formation of national trade policy and argues that foreign power may change the country's trade policy and can reinforce or weaken the FTAs.

3. Model

3.1 Basic Framework

The studied framework in this section is relatively standard in the literature, e.g., it is used by [Krishna \(1998\)](#) and it has been adopted by [Ornelas \(2005\)](#) and in other works like [Freund \(2010\)](#). Following the lines à la [Ornelas \(2005\)](#), There are $N \geq 3$ countries and two sectors. The competitive one is called X and the oligopolistic one Q . Both goods are homogeneous, produced under constant returns to scale. Production requires only labor L as input. I assume one unit of X for production requires one unit of L , and one unit of Q requires $c > 0$ units of L . With this setting and choose X as the numeraire will result wages set to one for any equilibrium. Technologies are identical across countries and L is inelastically supplied in each country. Hence trade happens only with the oligopolistic behavior in sector Q . Each country hosts some oligopolistic firms. National markets are segmented and the firms compete in a Cournot fashion in these markets. In each market, the domestic and foreign firms behave samely. The only difference is that the foreign firms should pay a fee to export to the so called home country. If a country is not into a FTA, it is forced to pay import tariffs that is set nondiscriminatory.

There is a representative household that consumes with a quasilinear utility function that results into a linear demand for the oligopolistic good, $P(Q) = A - Q$. Q represents aggregate consumption, $P(Q)$ the market's inverse demand for the

oligopolistic good, and $A > c$. Maximizing the utility function subject to the budget constraint clears the country's demand for the competitive good:

$$X = L - QP(Q) = L - (AQ - Q^2)$$

Sometimes under perfect competition, there are extreme results. This equation helps cancel out this kind of solutions as we can see in [Grossman and Helpman \(1995\)](#) and [Richardson \(1993\)](#).

In this paper, in the first part, each government chooses the tariff totally independently so the equilibrium for any country is also independently gained. In the second part, there is an interdependency between the external tariff set by home government and the tariff set by one of the foreign governments. For other country, the tariff chosen by foreign government is unaffected by the tariffs set in home. Therefore, as [Ornelas \(2005\)](#) mentioned, because there is a same condition for all countries, it is possible to allowing the whole analysis to be conducted from the perspective of a home country. Based on [Grossman and Helpman \(1994\)](#), and [Ornelas \(2005\)](#), utility functions for government is:

$$G(t, t^f, C) = W(t, t^f) + bC \quad (1)$$

where,

$$W(t, t^f) = CS(t) + TR(t) + \Pi(t, t^f)$$

$$\Pi(t, t^f) = \Pi^h(t) + \Pi^r(t^f)$$

G is government's utility function. W national welfare, C the amount of contribution of industries or lobbies and b represents the extent of the government's predilection for contributions. In this way, a dollar received as a contribution potentially adds b to the national welfare. National welfare is related to the non-discriminatory external tariff, t , which the government sets for importing goods. t^f is the foreign tariff set by the foreign government for importing goods produced by home country. ([Grossman and Helpman 1994](#)).

National welfare is framed by CS , consumer surplus, TR , tariff revenue gained by external tariff, and Π is domestic industries' benefit. Domestic industries' benefit composed of two kinds of benefit, domestic benefit Π^h , which is gained in home country and foreign benefit Π^r , which is gained by exporting to other countries.

Utility function for industries is,

$$V(t, t^f, C) = \Pi(t, t^f) - C \quad (2)$$

V is domestic industry's utility composed by total benefit of the industry (exactly the benefit defined above) minus the amount of a contribution which the industry intends to take to the government. The contributions are like an instrument in the hands of the oligopolistic industries to affect the government's tariff choice.

There are some solutions for the game between government and industries to define Contribution. Here, based on [Maggi and Rodriguez-Clare \(1998\)](#), this lobbying process is modelled as a simple bargaining problem between industry

and government. The aim of this paper is to analyze the government power so, without the loss of generality, we could fix the industry's pay-off at \bar{V} . So using (2),

$$\bar{V} = \Pi(t, t^f) - C \Rightarrow C = \Pi(t, t^f) - \bar{V} \quad (3)$$

Substituting (3) in (1),

$$G(t, t^f) = W(t, t^f) + b\Pi(t, t^f) - b\bar{V} \Rightarrow$$

$$G(t, t^f) = CS(t) + TR(t) + (1+b)\Pi^h(t) + (1+b)\Pi^r(t^f) - b\bar{V} \quad (4)$$

Government always tries to maximize its utility function, (4), by setting optimal tariff. This case happens when b is exogenous. But what happens when b is endogenous and the external tariff is a function of b .

3.2 Endogeneity of b

b represents the extent of the government's predilection for contributions. This preference shows the importance of lobbies for the government and in other words, it shows the power of the government toward domestic lobbies. If it is zero, lobbies are not important at all (like some countries with full natural resources, or some countries that all general industries owned by government), and the government does not need them. In contrary, if it is too high, the government is more dependent on lobbies and their contributions.

b is endogenous and the government as the previous assumptions is going to find the optimal level of dependency. The equilibrium in each of the N national markets is unaffected by the equilibrium in other markets, in each country the tariffs set elsewhere are taken as given. So we can represent (1) and (2) simply as,

$$G(t, C) = W(t) + bC$$

(5)

$$V(t, C) = \Pi(t) - C \quad (6)$$

Government always tries to maximize its utility,

$$\max_t G(t, C) = W(t) + bC \quad (7)$$

The maximization (7) is depended on b representing the extent of the government's predilection for contributions. Therefore, this preference has a main role. It can change the result of (7).

In such a case, the political tariff is strictly increasing the b . If b is zero, government just maximizes the national welfare and set tariff as t^* that maximizes national welfare. However, if b is too high, (7) has a solution as a prohibitive tariff, t^v , and government just wants to maximize industry's benefit to have more contribution. Considering (7),

$$b \rightarrow 0 \Rightarrow \max_t G(t) = W(t) \Rightarrow t = t^*$$

$$b \rightarrow \infty \Rightarrow \max_t C = \Pi(t) - \bar{V} \Rightarrow t = t^v$$

One conjecture is the optimum tariff is always between t^* and t^v . So the function could be defined as a simple average of this two extreme values by,

$$t(b) = \beta t^* + (1 - \beta)t^v$$

and β should be a function of b so that $b \rightarrow 0 \Rightarrow \beta \rightarrow 0$ and optimum tariff is the prohibitive tariff, otherwise $b \rightarrow \infty \Rightarrow \beta \rightarrow 1$ and optimum tariff is that maximizes national welfare. One conjecture for β is

$$\beta = \frac{b}{1+b}$$

In this case, when b tends to zero, the external tariff tends to t^* , and when it tends to be high, external tariff tends to t^v . So the maximization problem could be rearrange by:

$$\max_b CS(t(b)) + TR(t(b)) + (1+b)C(t(b)) \quad (8)$$

$$\text{where } C = \Pi^h(t(b)) + \Pi^r - \bar{V}$$

We do the same as (3) for (6),

$$\bar{V} = \Pi(t(b)) - C \Rightarrow C(t(b)) = \Pi(t(b)) - \bar{V} \quad (9)$$

After this, for simplicity, t is used instead of $t(b)$. Substituting (9) in (5),

$$\begin{aligned} G(t) &= W(t) + b\pi(t) - b\bar{v} = CS(t) + TR(t) + (1+b)\pi(t) - b\bar{V} \Rightarrow \\ G(t) &= CS(t) + TR(t) + (1+b)\pi^h(t) + (1+b)\pi^r(t) - b\bar{V} \end{aligned} \quad (10)$$

In the case, the tariff chosen by each government is unaffected by the tariffs set elsewhere so π^r and \bar{V} are fixed and do not have any effect on maximization problem.

At first, a situation without FTAs is assessed. There are N countries in the world and for all of them home country sets non-discriminatory tariff.

The sale depended on external tariff is $q^j(t)$ and j Superscripts h and RoW applied on q identify the home market sales of a domestic firm, and of a firm from the $N - 1$ foreign countries in home, respectively.

Proposition 1: *With no FTAs in N-country world, there is a solution for maximization (8) respect to b , and in large enough N , the best response of government is to pay more attention to national welfare rather than lobbies.*

Proof: As the definition for consumer surplus, tariff revenue and profit in literature, there are :

$$CS(t) = U(Q(t)) - P(t)Q(t),$$

$$TR(t) = (N - 1)tq^{RoW}(t),$$

$$C(t) = (P(t) - c)q^h(t) + \pi^r - \bar{V},$$

The first order condition for maximizing (10) respect to b is:

$$\frac{1}{(1+b)^2} \left\{ \left[\frac{dU}{dQ} \frac{dQ}{dt} - P \frac{dQ}{dt} - \frac{dP}{dt} Q \right] + [(N-1)q^{RoW} + (N-1)t \frac{dq^{RoW}}{dt}] + (1+b) \left[\frac{dP}{dt} q^h + (P-c) \frac{dq^h}{dt} \right] \right\} + C(t) = 0$$

For notational ease, the arguments of the functions above are dropped whenever there is no ambiguity. Using expressions from Appendix A, Ornelas (2005), and since $\frac{dU}{dQ} = P$, this can be arranged as:

$$\frac{N-1}{(1+b)^2} \left\{ \left[(q^h - t) \left(\frac{2}{1+N} \right) \right] + \left[q^h \left(\frac{1+2b}{1+N} \right) \right] \right\} + C = 0$$

$$\Rightarrow \frac{N-1}{(1+b)^2} \left\{ \left[\frac{-4t}{1+N} \right] + \left[q^h \left(\frac{3+2b}{1+N} \right) \right] \right\} = -C \tag{11}$$

The right side of (11) is always negative, so the left side should be the same, so there is a unique solution for b in general if

$$q^h(b, N)(3+2b) < 4t(b) \Rightarrow q^h(b, N) < \frac{4t(b)}{3+2b} \equiv g(b) \tag{12}$$

In the left side of (12), $q^h(b, N)$ is a function of b and N , and in the right side, $g(b)$ is a function of b so in fixed N , both sides are the function of b and the feasible interval of b is defined.

If we assume N is large enough, (12) can be arranged as

$$\frac{A-c}{1+N} < \frac{t-2bt}{3+2b}$$

This have a solution if $b < \frac{1}{2}$. So in the case of N is large enough, the solution is in $[0, \frac{1}{2}]$. This result says, in this case, the optimal result for government's

predilection for contributions should be less than 1 so it shows in an oligopolistic situation without FTAs the best response is always to pay more attention to national welfare and not an addition to contribution.

Proposition 2: *with a widespread FTA, the optimal government's predilection for contributions of lobbies tends to zero.*

Proof: Now FTAs are added to the model, a free trade area is an agreement to eliminate all trade barriers between its member countries. This section analyzes the effects of a generic FTA between $M \geq 2$ countries on its members' extent of the government's predilection for contributions. Subscript M will indicate variables evaluated under the FTA equilibrium. Countries are

divided in two groups: $2 \leq M \leq N$ prospective members of the free trade area and $N - M$ outsiders. t_p and t_{RoW} denote, respectively, the government's tariff on imports from its prospective $M - 1$ trade Partners and from the $N - M$, rest of the world. Under an FTA, $t_p = 0$ is imposed. In this case, for clarifying, t_{RoW} is noted by t_{RoW}^M .

The sales of every firm of all the world in the home market depend on both t_p and t_{RoW} : $q^j(t_p, t_{RoW})$ and j Superscripts h , p and RoW applied on q identify the home market sales of a domestic firm, of a firm from the prospective $M - 1$ trade partners, and of a firm from the $N - M$ rest of the world, respectively. Analogous notation is adopted for other variables that also depend on tariffs. In Appendix B, an expression for $q^j(t_p, t_{RoW})$, $j = h, p$ and RoW , and for the price level as a function of the tariffs are driven. As the definition for consumer surplus, tariff revenue and profit in literature, there are:

$$CS(t_{RoW}, t_p) = U(Q(t_{RoW}, t_p)) - P(t_{RoW}, t_p)Q(t_{RoW}, t_p),$$

$$TR(t_{RoW}, t_p) = (N - M)t_{RoW}q^{RoW}(t_{RoW}, t_p) + (M - 1)t_pq^p(t_{RoW}, t_p),$$

$$C(t_{RoW}, t_p) = (P(t_{RoW}, t_p) - c)q^h(t_{RoW}, t_p) + \pi^r - \bar{V}$$

Substitute expressions above in (10) then FOC respect to b :

$$\frac{1}{(1+b)^2} \left\{ \left[\frac{dU}{dQ} \frac{dQ}{dt_{RoW}} - P \frac{dQ}{dt_{RoW}} - \frac{dP}{dt_{RoW}} Q \right] + [(N - M)q^{RoW} + (N - M)t_{RoW} \frac{dq^{RoW}}{dt_{RoW}}] + (1+b) \left[\frac{dP}{dt_{RoW}} q^h + (P - c) \frac{dq^h}{dt_{RoW}} \right] \right\} + C(t) = 0$$

For notational ease, the arguments of the functions below are dropped. Using expressions from Appendix B, and since $\frac{dU}{dQ} = P$, this can be arranged as:

$$\frac{1}{(1+b)^2} \frac{N - M}{1 + N} [(3 + 2b)q^h + 2(M - 1)t_p - 2(M + 1)t_{RoW}] + C = 0 \quad (13)$$

When there is no FTAs, $t_p = t_{RoW}$, $M = 1$ and the previous part happen. In contrary, with FTAs, $t_p = 0$ and :

$$\frac{1}{(1+b)^2} \frac{N - M}{1 + N} [(3 + 2b)q_M^h - 2(M + 1)t_{RoW}^M] + C = 0 \quad (14)$$

In previous part, it is shown when $M = 1$, b should be less than half. In (14) we can see when M tends to N , Contribution tends to zero. Moreover, when contribution tends to zero, b tends to zero. This result notes with a

widespread FTA, the optimal government's predilection for contributions of lobbies tends to zero. With a larger FTA, a government has more incentives to lower its dependency on domestic lobbies and set the external tariff just to maximize its national welfare. The economic intuition could be explained by an increase in dependence level increases external tariff and raises domestic production and the profits. However, the FTA increases domestic competition and lowers the local price and power of domestic lobbies. It shows the FTA reduces the effectiveness of the external tariff in gaining more profit for domestic industry. In addition, the FTA increases share of consumer surplus in government's utility function rather than lobbies' profit by reducing the effectiveness of the external tariff. These reasons decrease the government's incentives to raise its predilection to domestic lobbies.

3.3 Tariff in interdependent relations

In previous model, tariff was a function of b . In this part I assume b is exogenous and tariff is an endogenous parameter. Also in the previous part, as the other literature, the foreign profit of domestic firms, π^f , was assumed fixed. Since there is no relation between the foreign tariff set by the foreign government and the external tariff set by home country, π^f could be fixed and ignored in the maximization problem. In an especial situation in which there is a competition or other particular relations, the foreign tariff has a relation with the external tariff. π^f is a function of foreign tariff and with a functional relation between foreign tariff and the external tariff, π^f is a function of the external tariff. This leads the whole analysis to be seen from the perspective of a home country.

There are two different political- economic relations for a country toward another. In the first type, a reduction of the external tariff results in a reduction of foreign one and vice versa. In the second type, an increase of the external tariff results in a decrease of the foreign tariff. The former happen in a competitive environment when two countries with almost similar situation have a same policy against each other. They are politically in competition. This mostly happens for neighbour countries that have almost same resources and situations. The latter happens when a developed country or more developed country is faced by a small non-industrialized country without good relations with other nations. If the developed country raises the tariff, the small country could not export its products to the developed country. In addition, the developed country can produce that good by its advanced technological infrastructure with a fewer price, and politically has power to export that good to the small country. This relation is called here a quasi-colonization relation (i.g. the relation between China and some countries).

These two definitions are shown, respectively, in :

$$\frac{d\pi^r(t)}{dt} < 0 \quad (15)$$

$$\frac{d\pi^r(t)}{dt} > 0 \quad (16)$$

The foreign tariff, t^f , is a function of the external tariff set by home government. In order to model this relation t^f is denoted as a liner function of t :

$$t^f = \alpha t + t_0^f \quad (17)$$

The coefficient of t has a significant meaning. α is a political exogenous parameter which is defined by home country regarding to its evaluation of the kind of interdependency and its intensity. The amount of α shows the level of interdependency. Regardless of the sign, when α is higher, the foreign tariff is more sensitive to the external tariff. And the sign of α shows the kind of interdependency. If it is positive, (15) holds and countries are in competition. If it is negative, (16) holds and countries are in quasi-colonization relation. If it is zero, we are in the case of fixed π^r and $t^f = t_0^f$ that this case is analyzed in previous literature (see [Ornelas 2005](#)).

Using (1) and (2) and the same solution like(4), then substituting(17) in (4),

$$G(t) = CS(t) + TR(t) + (1+b)\pi^h(t) + (1+b)\pi^r(\alpha t + t_0^f) - b\bar{V} \quad (18)$$

Without the loss of generality, we can assume $t_0^f = 0$. Like maximization problem (7), governments tries to maximize (18),

$$\max_t \quad CS(t) + TR(t) + (1+b)\pi^h(t) + (1+b)\pi^r(\alpha t) \quad (19)$$

External tariff, t , has two kinds, t_p and t_{RoW} denoted, respectively, the government's tariff on imports from its $M - 1$ prospective trade partners and from the $N - M$, rest of the world. Under an FTA, $t_p = 0$ is imposed and for clarifying, t_{RoW} is noted by t_{RoW}^M . As the definition for consumer surplus, tariff revenue, domestic profit and the foreign profit of domestic firms in literature, there are, respectively:

$$CS(t) = U(Q(t_{RoW}, t_p)) - P(t_{RoW}, t_p)Q(t_{RoW}, t_p),$$

$$TR(t_{RoW}, t_p) = (N - M)t_{RoW}q^{RoW}(t_{RoW}, t_p) + (M - 1)t_p q^p(t_{RoW}, t_p),$$

$$\pi^h(t) = (P(t_{RoW}, t_p) - c)q^h(t_{RoW}, t_p),$$

$$\pi^r(t) = \pi^f(t) + \pi^f(t_m) = (p - c - t^f)q^f(t^f) + (M - 1)(p - c - t_m)q^m(t_m) +$$

$$(N - M - 1)(p - c - t_m)q^m(t_m)$$

All definitions are like previous section. Analogous notation is adopted for

the other variables that also depend on tariffs like appendix B.

In Appendix C, expressions of definition of π^f and q^f as functions of the tariffs are driven. π^f is the profit of domestic firms in the country with interdependence relation as (17). q^f is the amount of export of home country to that country. We assume the price out of the home country fixed and equal to p .

π^m is the profit of domestic firms in such countries which their tariffs, t^m (without loss of generality we can assume tariffs in these countries are fixed and equal), are not related to the external tariff. So the profit of domestic firms in those countries is not affected by the external tariff. As well q^m is the export amount of home country to those countries.

Proposition 3: Any interdependency weakens the power of the government against domestic lobbies to reduce external tariff and expand an FTA.

Proof: Maximizing (22) respect to t_{RoW} :

$$\left[\frac{dU}{dQ} \frac{dQ}{dt_{RoW}} - Q \frac{dP}{dt_{RoW}} - P \frac{dQ}{dt_{RoW}} \right] + [(N-M)q^{RoW} + (N-M)t_{RoW} \frac{dq^{RoW}}{dt_{RoW}} + (M-1)t_p \frac{dq^p}{dt_{RoW}}] + (1+b) \left[\frac{dP}{dt_{RoW}} q^h + (P-c) \frac{dq^h}{dt_{RoW}} \right] + (1+b) \left[-\alpha q^f + (p-c-\alpha t_{RoW}) \frac{dq^f}{dt_{RoW}} \right]$$

For notational ease, the arguments of the functions below are dropped whenever there is no ambiguity. Using expressions from Appendix A, and since $\frac{dU}{dQ} = p$, this can be arranged as:

$$[(N-M)(q^h - t_{RoW}) \left(1 - \frac{N-M}{1+N}\right) - (M-1)(q^h - t_p) \frac{N-M}{1+N}] + [-t_{RoW}(N-M) \frac{1+M}{1+N} + t_p(M-1) \frac{N-M}{1+N}] + [(1+2b)q^h \frac{N-M}{1+N}] - (1+2b)[2\alpha(p-c-\alpha t_{RoW})]$$

After some simple manipulations:

$$[3+2b]q^h + [2\alpha^2(1+b) \frac{1+N}{N-M} - 2(1+M)t_{RoW}] + [2(M-1)t_p - 2\alpha(1+b)(p-c) \frac{1+N}{N-M}] = 0 \tag{20}$$

In the absence of FTAs: $t_p = t_{RoW}$ and where there is no potential partner so $M = 1$, Eq. (20) becomes:

$$t_{RoW} = \frac{[3+2b]q^h(t_{RoW}) - 2\alpha(1+b)(p-c) \frac{1+N}{N-1}}{4 - 2\alpha^2(1+b) \frac{1+N}{N-1}} \tag{21}$$

Under an FTA: $t_p = 0$, so:

$$t_{RoW}^M = \frac{[3+2b]q_M^h(t_{RoW}^M) - 2\alpha(1+b)(p-c)\frac{1+N}{N-M}}{2(1+M) - 2\alpha^2(1+b)\frac{1+N}{N-M}} \quad (22)$$

To find the effect of reducing the external tariff for the partner on external tariff for rest of the world when we are not in any FTA, $\frac{dt_{RoW}}{dt_p}$, (20) is rearranged in this equation,

$$B_1q^h + B_2t_{RoW} + B_3t_p - B_4 = 0 \quad (23)$$

derivating (23) respect to t_p to find $\frac{dt_{RoW}}{dt_p}$,

$$B_1\left(\frac{dt_{RoW}}{dt_p}\frac{dq^h}{dt_{RoW}} + \frac{dq^h}{dt_p}\right) + B_2\frac{dt_{RoW}}{dt_p} + B_3 = 0 \Rightarrow$$

$$\frac{dt_{RoW}}{dt_p} = (B_1\frac{dq^h}{dt_p} + B_3) / -(B_2 + B_1\frac{dq^h}{dt_{RoW}}) \quad (24)$$

The numerator is always positive so the sign of (24) is just dependent on the denominator. $\frac{dq^h}{dt_{RoW}} > 0$ and also $B_1 > 0$ so if $B_2 > 0$, it is resulted that

$\frac{dt_{RoW}}{dt_p} < 0$, so:

$$B_2 > 0 \Rightarrow (1+b) > (1+M)\frac{1}{\alpha^2}\frac{N-M}{1+N} \quad (25)$$

The sign of Eq. (24) has a significant meaning. The positivity of (24) means an FTA induces each of its members to reduce the external tariffs against non-members and expand FTAs. Otherwise, the negativity has a contrary meaning. If (25) holds, (24) is negative and a FTA could not induce home country to reduce external tariff and expand FTA.

Equation (25) shows with a higher interdependency (higher α), lower b could hold (25), thereafter (24) is negative and FTA could not help the government to reduce the external tariff. It means interdependency weakens FTAs.

For instance note a country that has relative power against lobbies to reduce external tariff and can easily expand an FTA (b is small) in a situation

without interdependency. If this country starts an interdependent relation with other country, (25) may hold even in that small b . Thereafter (24) would be negative, and the government are not able to reduce the external tariff. It means interdependent relations weaken the power of the government. The exact interval for b in which (24) is negative could be calculated (see appendix D).

On the other hand, this proposition shows when the dependence level of a government on domestic lobbies is high, (25) or precisely appendix D always holds, so entering to an FTA or any agreement to reduce the tariff with potential partners results an increase of non-members' tariff and this is exactly that lobbies want. On the contrary, if government's power against lobbies is high enough (small b), so that (25) or appendix D does not hold and the government has this ability to enter to an FTA, and uses this opportunity to reduce non-members' tariff (in this situation (24) is positive) and expand FTAs.

Figure 1 proves proposition 3 regarding appendix D. In the area above of each graph, (24) is negative. Therefore, as we can see in the figure, in higher interdependency, (24) is negative in a broader area.

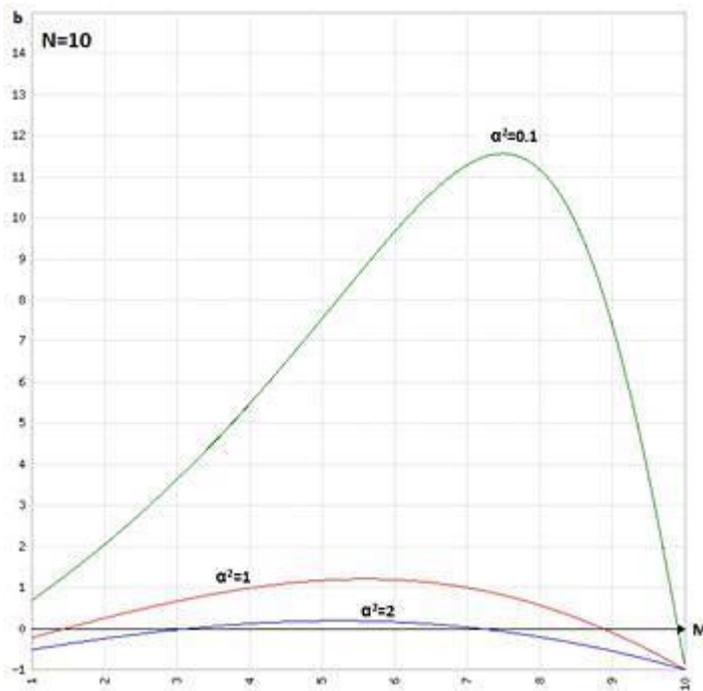


Figure 1: proof of proposition 3

Proposition 4: *In some situations with interdependent relations, an FTA induces its member to increase its external tariffs and the higher increase, the larger is the FTA.*

Proof: Another important effect is the effect of the largeness of FTAs on external tariff (in this condition t_p and external tariff is noted by t_{RoW}). This effect could be analyzed by the effect of M on the external tariff when there is an FTA. Using (20) we have:

$$\frac{dt_{RoW}}{dM} = \left(\frac{B_4}{dM} - B_1 \frac{\partial q_M^h}{\partial M} - \frac{dB_2}{dM} t_{RoW}^M \right) / \left(B_2 + B_1 \frac{\partial q_M^h}{\partial t_{RoW}^M} \right) \quad (26)$$

The numerator is always positive so the sign of (26) is dependent on the denominator. $\frac{\partial q_M^h}{\partial t_{RoW}^M}$ and also $B_1 > 0$, so if $B_2 > 0$, (26) is positive

($\frac{dt_{RoW}}{dM} > 0$). B_2 is positive if (25) holds. Therefore, if condition (25) holds, an FTA induces its member to increase its external tariffs against non-members and this increase is higher, the larger is the FTA.

Indeed, when (25) holds, being in a larger FTA results an increase in nonmembers' tariff and specially the tariff of the country with interdependence relations. Therefore, in this situation an FTA is not able to help countries normalize their relations. Holding (25) means the domestic power of a government is not high enough against lobbies to reduce external tariff. Also with a larger FTA, the country has an access to larger market and it is able to supply their needs by partner countries, so it has a confidence and incentives to fix and continue current relation with its competitor. In a quasi-colonization relation, the same happens because the power of α in B_2 is even, so the sign of α does not affect the sign of B_2 .

Proposition 5: *If tariff are strategic complements (or substitutes), a larger power of lobbies weakens the incentives to instate an FTA.*

Proof: As appendix F, there is:

$$\left(B_1 \frac{N-M}{1+N} + B_2 \right) \frac{dt_{RoW}^M}{d\alpha} = \frac{B_4}{\alpha(p-c)} (q^f - t_f) \quad (27)$$

The sign of right hand side technically depends on α , if $\alpha > 0$, it is positive and vice versa. The positivity or negativity of the left hand side depends on holding (25). If countries are in competition and 15 holds ($\alpha > 0$), with holding (25) the sign of $\frac{dt_{RoW}^M}{d\alpha}$ is positive. An economic explanation follows. In a

competitive relation when a country does not have enough power to overcome domestic lobbies to reduce the external tariff, any increase in competition (politically) results an increase in non-members' tariff, specially the tariff for competitor country. This result weakens the possibility of extending an FTA.

Otherwise if domestic power of the government is high enough (small

b), (25) does not hold and $\frac{dt_{RoW}^M}{d\alpha}$ is negative. In this situation, any increase in interdependency leads to a reduction in the external tariff and it could help expand FTAs.

On the other hand, If $\alpha < 0$ ((16) holds and country has a quasi-colonization relation) and also (25) holds, $\frac{dt_{RoW}^M}{d\alpha}$ is negative. It means when the government does not have high enough power against lobbies, an increasing of interdependency forces the country to reduce the external tariff to make a larger FTA. But it is not agreeable for powerful domestic lobbies. Therefore, in this situation, holding interdependency is not a good answer and lobbies prefer the government reduces the interdependence relation to have a higher external tariff. It prevents expanding FTA.

On the other side, If the government is powerful (small b), $\frac{dt_{RoW}^M}{d\alpha}$ is positive. In this situation, the government has both sides of the power, domestic and foreign, so any increase in the interdependency leads to an increase in the external tariff. It is not a good policy for a powerful government. Therefore, in this situation, holding the interdependency is not a good answer and the government prefers to reduce the interdependent relations to have a lower external tariff. This helps governments expand the FTA.

The table 1 summarizes the result of the proposition 5.

Table 1: Policy recommendation

Sign of α	Kind of relation	Relative power	result
Positive	Competition	Government	any increase in competition leads to a reduction in external tariff and it can help expand the FTAs
Positive	Competition	Lobbies	any increase in competition weakens the possibility of expanding an FTA
Negative	quasi-colonization	Government	Reduction in interdependency leads to lower external tariff and helps an FTA
Negative	quasi-colonization	Lobbies	Reduction in interdependency leads to higher external tariff and weakens an FTA

Here we have an interesting result. At the first glance on a quasi-colonization relation, it seems that it is better to increase the coefficient of the interdependency α to have more profit in the interdependent country and make it more dependent on the home country. Nevertheless, as we could see above, if

home government is such a government which is following expanding FTA, increasing the interdependency is not an optimal solution and it is better for the government to have a policy that reduces the coefficient of the interdependency α . The same exactly happen when lobbies have the relative power. If they are lobbies which are following restricting FTAs, it is better for them to reduce the coefficient of the interdependency α to have a higher non-discriminatory external tariff.

4. Conclusion

The results of this study can be summarized as follows. Having an oligopolistic-political-economy model with a government which is searching for an optimal dependence level and it has to set the external tariff as its power against lobbies, the optimal solution is paying more attention to the national welfare than lobbies. When a government can freely choose its dependence level on domestic lobbies, it is better to choose more domestic power. The results also show that a widespread FTA helps the government do this policy and have more power against domestic lobbies.

On the other side, the paper evaluates the second kind of government's powers which is the foreign power. The paper defines two kinds of foreign relations, competitive relation and quasi-colonization one. In the political world, these relations are easily beheld. In these situations, the tariff of the foreign country is interdependent on the external tariff set by home government. The paper shows that any interdependency weakens the power of the government against the domestic lobbies for reducing the external tariff and expanding an FTA.

The paper indicates that with interdependent relations when the power of the government is not high enough, an FTA induces its member to increase their external tariffs and this increase is higher when the country is in a larger FTA. This result prevents expanding the FTA.

It is also implied that in a competitive situation, in both cases of government's power against the lobbies, an increase in the interdependency helps interest groups access their favourites. However, in the case of powerful lobbies, the interdependency causes a reduction in the pace of the FTA expansion. On the other hand, in the case of powerful government, increasing in the interdependency causes reducing the external tariff and expanding FTAs. In a quasi-colonization situation, in any case of government's power, a reduction in interdependency is recommended.

As one suggestion for the future, a real economy like China could be evaluated for this model. This paper only investigated the theoretical side of the problem, enlightening a way to evaluate a real economy empirically.

Appendices

Appendix A

Here the model is solved as a function of tariffs and parameters. The comparative statics are as well, provided here. For notational ease, the arguments of the functions are dropped below whenever there is no ambiguity.

The choices of each oligopolistic firm regarding its sales in the home market satisfy the first order conditions:

$$\frac{d\pi^h}{dq^h} = P - c - q^h = 0$$

$$\frac{d\pi^{RoW}}{dq^{RoW}} = P - c - t - q^{RoW} = 0$$

There are $N - 1$ outside countries, so summing the first-order conditions above:

$$N(P - c) - Q - (N - 1)t = 0$$

and $Q = q^h + (N - 1)q^{RoW}$, Using $Q = A - P$,

$$P(t) = \frac{A + cN + (N - 1)t}{1 + N}$$

$$q^h(t) = \frac{A + c + (N - 1)t}{1 + N} \Rightarrow q^{RoW} = q^h(t) - t = \frac{A + c + 2t}{1 + N}$$

Appendix B

$$\frac{d\pi^h}{dq^h} = P - c - q^h = 0$$

$$\frac{d\pi^{RoW}}{dq^{RoW}} = P - c - t_{RoW} - q^{RoW} = 0$$

$$\frac{d\pi^p}{dq^p} = P - c - t_p - q^p = 0$$

Like the previous part, $N(P - c) - Q - (M - 1)t_p - (N - M)t_{RoW} = 0$ and $Q = q^h + (N - M)q^{RoW} + (M - 1)q^p$. Using $Q = A - P$,

$$P(t_{RoW}, t_p) = \frac{A + cN + (M - 1)t_p + (N - M)t_{RoW}}{1 + N}$$

$$q^h(t_{RoW}, t_p) = \frac{A - c + (M - 1)t_p + (N - M)t_{RoW}}{1 + N}$$

$$q^h(t_{RoW}, t_p) = q^f(t_f, t_p) + t_{RoW} = q^p(t_f, t_p) + t_p$$

$$q_M^h(t_f^m) = \frac{A + c + (N - M)t_f^m}{1 + N}$$

Appendix C

Same definition like Appendix B, with extra definition for π^f and q^f

$$\frac{d\pi^f}{dq^f} = P - c - t - q^f = p - c - \alpha t_{RoW} - q^f = 0$$

$$q^f(t_{RoW}) = p - c - \alpha t_{RoW}$$

Appendix D

$$B_2 + B_1 \frac{dq^h}{dt_{RoW}} > 0 \Rightarrow 2\alpha^2 n(1+b) \left(\frac{1+N}{N-M} \right) + \left(\frac{N-M}{1+N} \right) + 2(1+b) \left(\frac{N-M}{1+N} \right) > 2(1+M) \Rightarrow$$

$$2(1+b) \left[\alpha^2 n \left(\frac{1+N}{N-M} \right) + \left(\frac{N-M}{1+N} \right) \right] > 2(1+M) - \left(\frac{N-M}{1+N} \right)$$

Appendix E

Using (22),

$$[3 + 2b]q_M^h + [2\alpha^2 n(1+b) \left(\frac{1+N}{N-M} \right) - 2(1+M)]t_{RoW}^m - 2\alpha n(1+b)(p-c) \left(\frac{1+N}{N-M} \right) = 0$$

$$\frac{d}{d\alpha} \rightarrow \left[(3 + 2b) \left(\frac{N-M}{1+N} \right) + 2\alpha^2 n(1+b) \left(\frac{1+N}{N-M} \right) - 2(1+M) \right] \frac{dt_{RoW}^m}{d\alpha} =$$

$$2n(1+b) \left(\frac{1+N}{N-M} \right) (p - c - 2\alpha t_{RoW}^m)$$

and $((p - c) - 2\alpha t_{RoW}^m) = q_{RoW}^f - \alpha t_{RoW}^m$

Using (23),

$$\left[B_1 \left(\frac{N-M}{1+N} \right) + B_2 \right] \frac{dt_{RoW}^m}{d\alpha} = \frac{B_4}{\alpha(p-c)} (q^f - \alpha t_{RoW}^m) = \frac{B_4}{\alpha(p-c)} (q^f - t_f)$$

Acknowledgement

I thank Dr Pamela Bombarda for numerous conversations, Professor Gabriel Desgranges for his great supports, and anonymous referees for detailed and constructive suggestions. I also thank Mr. Vahid Azizian, Mrs. Shahin Mokhtarani and Mr. MohammadReza Ghiaie for their great helps.

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