

# The Customs Union issue: Why do we observe so few of them?\*

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## Abstract

The number of preferential trade agreements has greatly increased over the past two decades, yet most existing arrangements take the form of free trade areas, and less than ten percent can be considered to be fully fledged customs unions. This paper develops a political economy model of trade policy under imperfect competition to provide a positive explanation for the prevalence of free trade areas. In a three-country setting, a representative from each prospective member is elected to determine the tariffs to be applied on imported goods. Under a customs union, the necessity to coordinate tariffs leads voters to strategically delegate power to more protectionist representatives. We show that strategic delegation may imply that free trade areas increase welfare compared to customs unions. Moreover, the model also indicates conditions under which free trade areas are more likely to be politically viable than customs unions.

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# 1 Introduction

In the last two decades the world economy has witnessed an impressive increase in the number of preferential trade agreements that entered into force. Interestingly, as reported by the World Trade Organization,<sup>1</sup> over ninety percent of the agreements effective as of April 2008 take the form of free trade areas (FTAs) or other limited scope deals, whereas slightly less than ten percent are represented by customs unions (CUs) (see Figure 1). This evidence is in many ways surprising, as the existing literature has indicated that CUs are – at least from the point of view of the welfare of the member countries – the optimal form of preferential agreements.<sup>2</sup>

How can the role of FTAs as the dominant preferential trading arrangement be explained? We answer this question by developing a political economy model of trade policy determination that enables us to analyze the formation of preferential trade arrangements and to compare the social welfare effects and political viability of free trade areas and customs unions. To this end we construct a simple three-country, three-good model, in which two potential member countries strategically interact to choose the tariff levels to be implemented vis à vis each other and the rest of the world, whereas the rest of the world implements most-favored-nation tariffs.

The underlying economic structure is the oligopolistic model used in several analyses of regionalism,<sup>3</sup> and in our benchmark analysis each prospective member produces different subsets of final goods (i.e. we have “perfect” geographical specialization), and ‘small’ countries are able to influence their import prices because markets are segmented and firms are price setters. In each country, individuals derive income from labor supply and from the profits of an oligopolistic firm, whose ownership is unevenly distributed among the citizenry. Building upon this structure, we consider a representative democracy framework in which the policy maker in charge of international trade policy is chosen from among all citizens, and the elected representative is unable to commit<sup>4</sup> ex-ante to a given policy.<sup>5</sup>

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<sup>1</sup>See: [http://www.wto.org/english/tratop\\_e/region\\_e/region\\_e.htm](http://www.wto.org/english/tratop_e/region_e/region_e.htm).

<sup>2</sup>See Woodland (1982) for an early contribution in a perfectly competitive setting, Saggi (2006) and Ornelas (2007) for more recent models based on an oligopolistic market structure.

<sup>3</sup>See Freund (2000), Krishna (1998) Ornelas (2005b), Saggi (2006) and Ornelas (2007) among others.

<sup>4</sup>Maggi and Rodriguez Clare (1998, 2007) have highlighted how international trade agreements can work as a commitment device. As highlighted by one of the referees, the mechanism we highlight in our model is different though, as commitment is obtained not simply by entering a trade agreement, but by selecting a particular citizen type to carry out the negotiations.

<sup>5</sup>Thus, we follow the basic framework of Besley and Coate (1997), where citizens in democratic systems choose representatives (politicians) rather than directly voting for policies. Our setting is well suited to describe the working of the European Union’s common commercial policy (CCP), whereby each member state is represented by a minister in the trade policy making body (the Council of Ministers).

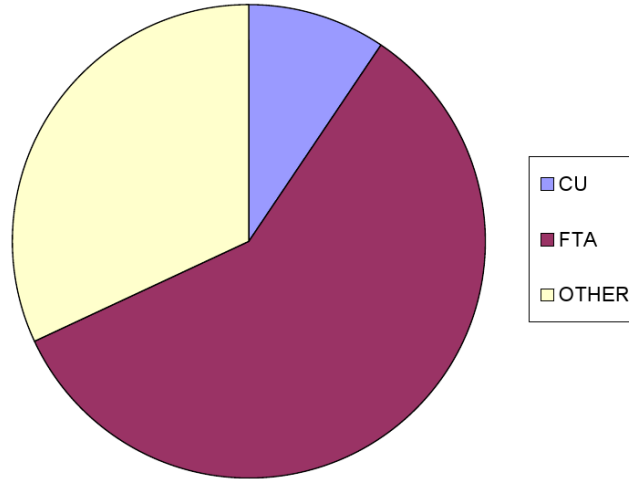


Figure 1: Preferential Trading Arrangements by type (April 2008)

We model the choice of the trade policy regime as a four-stage game. In the first stage, each potential member country votes to decide whether a non-discriminatory MFN trade policy, a free trade area or a customs union will be implemented. In the second stage, the citizenry chooses a representative, who will then select the tariff level vis à vis the rest of the world in the third stage of the game. The emerging trade policy is non-discriminatory under the MFN regime. If instead a preferential agreement is in place, free trade will prevail between members countries. External tariffs will be coordinated if a customs union is formed,<sup>6</sup> whereas each member will set trade policy autonomously if a free trade area has been established.<sup>7</sup> In the fourth stage, firms compete in quantities, taking as given the trade policy that has been set in the third stage.

In our setting, the individual with the median ownership share in the firm is the pivotal

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<sup>6</sup>In the case of the European Union, the leading example of a customs union, external trade policy is set by the Council of Ministers and the EU Commission. Trade policy decisions in the Council of Ministers – the “legislative body” – are taken by a qualified majority in the case of trade in goods, whereas unanimity is instead required in the case of trade in services.

<sup>7</sup>In the case of NAFTA, an important free trade area between Canada, Mexico and the United States, the Free Trade commission is the main institutional body, responsible for assisting in the resolution of disputes emerging between member countries on the interpretation of the NAFTA agreement. Importantly, neither the Free Trade commission, nor any other NAFTA institution has authority on the external trade policies adopted by NAFTA members.

player. Assuming that the median voter receives a fraction of the profits which is lower than the population's average, we show how the distribution of income in each country relates to the choice of trade policy regime. We establish several interesting results. First, we find that the necessity to coordinate tariffs in customs unions leads the median voter to strategically delegate power to a more protectionist representative.<sup>8</sup> This does not occur when a free trade area or an MFN regime is chosen, as no tariff coordination occurs and markets are segmented. Second, we show that strategic delegation may lead customs unions to be welfare-dominated by free trade areas if the degree of income inequality is sufficiently low.<sup>9</sup> Moreover, in our model, free trade areas raise the member's welfare relative to the MFN regime independently of the distribution of income, while customs unions decrease welfare relative to the MFN regime if the degree of income inequality is sufficiently small.

We also investigate the political viability of the trade regime in the first stage of the game. Since the median voter has a lower than average stake in the oligopolistic firm, profits derived from high tariffs are less important for political viability than for social welfare. We show that under our benchmark assumption of perfect geographic specialization, customs unions are not politically viable,<sup>10</sup> whereas free trade areas are politically viable if income inequality is sufficiently low.<sup>11</sup> Our main conclusions are robust to the introduction of asymmetries in the extent of market competition. We turn next to consider a more general setting, in which the two perspective member countries might share similar production structures, i.e. geographic specialization is less than perfect. Interestingly, we show that as long as the

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<sup>8</sup>The idea that a principal might benefit from delegating decision making power to an agent who is "tougher" than himself had been suggested already by Schelling (1956). Jones (1989) and Segendorff (1998) have formalized it in a general bargaining setting, while Willmann (2006) and Laussel and Riezman (2005) have applied it to the endogenous formation of trade policy for respectively a small and a large country. Conconi, Facchini and Zanardi (2011) have considered the role played by strategic delegation in the U.S. congress's decision to grant or not fast track authority to the President. Gatsios and Karp (1991) have instead highlighted the potential role it can play – within a customs union – in attributing to one member country the power to set the common external tariff.

<sup>9</sup>A similar result has been obtained also by Melatos and Woodland (2007). In this paper, the authors employ a coalition formation game where preferential trade agreements may emerge in equilibrium depending on their effects on social welfare in a setting with heterogeneity in consumer preferences and in endowments across countries. Interestingly, they show that free trade areas may block the formation of customs unions if consumer preferences are sufficiently different across member countries.

<sup>10</sup>In a stylized lobbying model Richardson (1994) has reached a similar conclusion, arguing that an FTA might be more desirable from the point of view of a lobby than a CU, since "...in an FTA a domestic industry need to lobby only the domestic government for a particular tariff, whereas, in a CU, a given tariff requires that a larger legislative group be courted".

<sup>11</sup>Notice that only welfare enhancing free trade areas can be sustained as an equilibrium in our framework. Our findings thus strengthen an earlier, similar result obtained by Ornelas (2005a), in a setting where trade policy is driven by pressure groups' activities. For a more pessimistic view, in which pressure groups' activities can lead to the formation of welfare reducing free trade areas, see Grossman and Helpman (1995) and Krishna (1998). The key difference between the two sets of models is that in the latter tariff rates toward non member countries are assumed to be fixed, while in Ornelas (2005a) they are endogenous.

production structures are not too different, and income inequality within each country is not too extreme, a customs union might actually emerge in the political equilibrium.

Two important messages thus emerge from our analysis. On the one hand, countries characterized by geographically specialized production patterns are more likely to form a free trade area, the smaller is the income inequality within each country. On the other, countries whose production structure are very different are unlikely to form customs union, independently of the income distribution. Only if production structures are sufficiently similar and income inequality within each prospective member is not too extreme, will customs unions emerge. Thus, our model suggests a possible explanation for why we observe only few customs unions around the globe, and why they typically involve - like in the case of the European Union - “similar” countries.

The rest of the paper is organized as follows. In section 2 we introduce the model and determine the equilibrium prices and quantities taking as given the tariff levels implemented by each country. In Section 3 we determine the equilibrium tariff levels under different trade policy regimes, and compare the social welfare effects of the different preferential trade agreements. In Section 4 we study the political viability of these arrangements, whereas in section 5 we extend our analysis in two directions. First, we introduce asymmetries in the size of member and non-member countries, as next we consider the effects of imperfect geographic specialization. Section 6 concludes.

## 2 The Model

To analyze the formation of preferential trade agreements, we employ a standard oligopolistic trade model that has been used in several analyses of regionalism (Freund 2000, Krishna 1998, Ornelas 2005b and Ornelas 2007). In particular, we consider a three-country, three-good setting, where countries  $A$  and  $B$  are prospective members, while country  $F$  is an aggregate entity that stands for the rest of the world. Good 0 is a basic good that is produced in all three countries, using only labor according to the identity production technology  $X_0 = L_0$ . This good is freely traded and serves as the numéraire. As a result, if this good is produced in equilibrium, wages will be equal to 1. Goods 1 and 2 are instead produced by duopolies, with one firm being located in country  $F$ , and the second in member country  $A$  (good 1) and member country  $B$  (good 2) respectively.<sup>12</sup> The two goods are produced using only labor according to a constant returns to scale production function, which gives rise to a constant marginal cost of production  $c$  (in terms of the numéraire). Oligopolistic firms

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<sup>12</sup>We will relax this assumption in section 5.

compete in quantities (Cournot competition).

Introducing notation that will prove useful later on, let  $x_{s,d}^i$  denote the quantity of good  $i$  produced in country  $s$  and consumed in country  $d$ . Our geographically specialized production pattern implies that  $x_{B,d}^1 = x_{A,d}^2 = 0$ . Each country can apply tariffs on trade with its partners unless a preferential trade agreement is in place.<sup>13</sup> Denote by  $t_{s,d}$  the tariff applied by country  $d \in \{F, A, B\}$  on imports from country  $s \in \{F, A, B\}$ , where clearly  $t_{d,d} = 0$ . Country  $d$ 's tariff matrix is described by  $\mathbf{t}_d = (t_{A,d}, t_{B,d}, t_{F,d})$ . The tariffs applied by the various countries can be denoted more synthetically in matrix form by  $\mathbf{t} = (\mathbf{t}_F, \mathbf{t}_A, \mathbf{t}_B)$  where the tariff on products traded between PTA members is zero, as are the elements on the diagonal.

The population in each country consists of a continuum of individuals of mass one. Each individual supplies one unit of labor, but individuals differ in the stake they own of the profitable duopolists. We denote by  $\gamma_{s,l}$  the fraction of the oligopolistic sector's profits allocated to individual  $l$  in country  $s$ . We assume that the oligopolistic sector's distribution of profits is the same in countries  $A$  and  $B$ . Without loss of generality, we normalize the fraction of the profit that is received by the average voter to one ( $\bar{\gamma} = 1$ ). Typical wealth distributions then imply that the share of profits received by the median voter  $\gamma^m$  is such that  $\gamma^m \leq 1$  (Alesina and Rodrik 1994). Following Dutt and Mitra (2002),  $\gamma^m$  can also be considered an inverse index of inequality – or an index of equality in the distribution of assets.

Preferences are identical across countries and individuals and can be described by the following quasi-linear, additively separable, utility function:

$$u(x) = x^0 + \sum_i u_i(x^i) \quad (1)$$

where  $u_i(\cdot) = Hx^i - \frac{x^{i2}}{2}$ , implying that the demand for goods 1 and 2 are linear and take the form  $x^i = H - p^i$ . The assumptions used on the supply side and demand side of the model imply that markets for goods 1 and 2 are *segmented*, i.e. prices in country  $s$  are not affected by tariffs imposed by country  $d$ .

Given the preferences described by equation 1, the indirect utility of individual  $l$  in

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<sup>13</sup>If a preferential trade agreement is in place and member countries' external tariffs are different, then we assume that rules of origin are applied to prevent the duty free trans-shipment of goods between countries  $A$  and  $B$ .

country  $j$  can be written as follows:

$$v(\mathbf{t}, \gamma_{j,l}) = 1 + \gamma_{j,l}^i \pi_j^i(\mathbf{t}) + \sum_d \sum_i t_{d,j}^i x_{d,j}^i(\mathbf{t}_j) + \sum_i [u(x_j^i(\mathbf{t}_j)) - p_j^i(\mathbf{t}_j) x_j^i(\mathbf{t}_j)] \quad (2)$$

where the first term represents labor income and the second is the share of profits of sector  $i$ ,  $\pi_j^i(\mathbf{t}) = \sum_d [p_d^i - c - t_{j,d}^i] x_{j,d}^i$ , allocated to individual  $l$  in country  $j$ . The third term captures tariff revenues which are rebated lump-sum to each individual, and the fourth describes consumer surplus, where  $x_j^i = \sum_s x_{s,j}^i$  is the total quantity of good  $i$  being sold in country  $j$ .<sup>14</sup>

As for the sequence of events, we consider a four stage game among the three countries where different trade policy regimes can be chosen by country A and B. In the first stage, each prospective member holds a sequence of votes to choose between a non-discriminatory “most-favored-nation” trade policy, a free trade area or a customs union. In the second stage, the population of each country elects a representative who will, in the third stage, decide the countries’ tariff policy. If no preferential agreement is in place, each country’s representative will choose the non-discriminatory tariffs to be applied on all trade. If a preferential agreement is in place, then the representatives of countries  $A$  and  $B$  decide tariffs on country  $F$ . In this case, the formation of a free trade area does not require cooperation between elected representatives to decide tariffs on country  $F$ , whereas we follow the literature in assuming that the formation of a customs union does. In stage four, firms compete in quantities, taking as given the trade policy that has been set during the third stage. We solve the model backwards, starting from stage four.

## 2.1 Fourth Stage: Production and Consumption Choices

In the fourth stage of the model, firms make production choices taking as given the tariff matrix  $\mathbf{t}$ . If a preferential agreement between countries  $A$  and  $B$  is in place, then  $t_{AB}^i = t_{BA}^i = 0$  for all  $i$ . Otherwise, countries apply MFN tariffs on imports. Notice that country  $F$  always applies MFN tariffs on goods imported from  $A$  and  $B$ , and that the tariffs chosen by  $F$  do not affect the equilibrium in  $A$  and  $B$ , since markets are segmented in this model. This allows us to focus on the equilibrium outcomes in countries  $A$  and  $B$ .

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<sup>14</sup>In choosing identical quasi-linear preferences, linear demand curves, and firms competing in quantities under constant marginal costs, we follow the vast majority of the literature which has analyzed the formation of preferential agreements under imperfectly competitive markets (see for instance Freund (2000), Goyal and Joshi (2006), Krishna (1998), Ornelas (2005b, 2007), and Saggi (2006)). As it will become clear, the choice of these simple functional forms is important to obtain an analytical solution for the relationship between the trade policy regimes and the degree of strategic delegation.

In general terms, country  $s$ ' firm producing good  $i$  solves the following problem with respect to country  $d$ 's market:

$$\max_{x_{s,d}^i} [p_d^i - c - t_{s,d}^i] x_{s,d}^i$$

where to save on notation we have omitted the fact that quantities and prices are a function of the tariffs. The first order condition is given by

$$\frac{\partial p_d^i}{\partial x_{s,d}^i} x_{s,d}^i + p_d^i = c + t_{s,d}^i \quad \text{for all } d \quad (3)$$

Focusing on country  $A$  (a similar analysis applies to  $B$ ) and using our assumption of linear demand, equation (3) implies that

$$\begin{aligned} x_{A,A}^1 - x_{F,A}^1 &= t_{F,A}^1 \\ x_{B,A}^2 - x_{F,A}^2 &= t_{F,A}^2 - t_{B,A}^2 \end{aligned} \quad (4)$$

Thus, a firm's sales in country  $A$  differs from its competitors' sales according to the difference in the tariffs imposed on imports. Rearranging, we obtain the following equilibrium prices and quantities

$$\begin{aligned} x_{A,A}^1 &= \frac{(H + t_{F,A}^1 - c)}{3} & x_{B,A}^2 &= \frac{(H + t_{F,A}^2 - 2t_{B,A}^2 - c)}{3} \\ x_{F,A}^1 &= \frac{(H - 2t_{F,A}^1 - c)}{3} & x_{F,A}^2 &= \frac{(H + t_{B,A}^2 - 2t_{F,A}^2 - c)}{3} \\ p_A^1 &= \frac{(H + t_{F,A}^1 + 2c)}{3} & p_A^2 &= \frac{(H + t_{F,A}^2 + t_{B,A}^2 + 2c)}{3} \end{aligned} \quad (5)$$

where we assume that  $H > c$ . As it is clear from expressions (5), the price of good 1 and 2 in  $A$  depends only on the trade policies adopted by that country and does not depend on the trade policy adopted by any other country, because markets are segmented.

### 3 Second and Third Stages: Determining Tariff Policy

In this section we determine the trade policy chosen under the different scenarios. We start by analyzing the non-cooperative setting (MFN and FTA) in which countries  $A$  and  $B$  independently determine their policies vis à vis the rest of the world and compare the resulting levels of protection. We turn next to the analysis of the cooperative outcome (CU)



and then compare welfare across the different trade policy regimes.

In terms of the political process, we model the workings of a representative democracy. Voters in each country select a citizen as their representative, and elected representatives set tariffs. An important feature of this two-stage political process is the possibility for the median voter to strategically delegate representation to a different citizen, to obtain a more favorable outcome than the one he could obtain by representing the country himself.<sup>15</sup>

### 3.1 Non-cooperative trade policies

Our representative democracy framework calls for the population of each country to elect a citizen who will choose the tariff level to be applied on imports. The objective of each representative is then to find tariffs that maximize his own welfare, given the tariffs chosen by other countries. We represent the share of the representative’s profit by using ‘hats’ and continue to focus our analysis on country  $A$ . The representative’s problem is given by:

$$\max_{t_A} v(\mathbf{t}, \hat{\gamma}_A) \quad (6)$$

where the indirect utility function is described in (2). The difference between the MFN and the FTA regimes is that in the former the tariffs applied on imports do not depend on the good’s country of origin, while if  $A$  is part of an FTA with  $B$ , imports from  $B$  are allowed to enter free of duty. Assuming that an interior solution exists,<sup>16</sup> the tariff vector chosen by representative  $\hat{\gamma}_A$  is given by

$$\mathbf{t}_A = \mathbf{t}_A(\hat{\gamma}_A, \hat{\gamma}_B) \quad (7)$$

In other words, the tariff vector chosen by the representative in country  $A$  depends on his identity and potentially also on the identity of the other country’s representative. Who will serve as the country’s representative in the determination of trade policies? Notice that the voters’ problem in stage 2 of our setting is unidimensional since they have to choose one representative. In appendix A, we show that the voters’ indirect utility function satisfies the single crossing property under all the trade regimes we are considering. As Gans and Smart (1996) have shown, this is a sufficient condition to invoke the median voter theorem to identify the country’s representative.

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<sup>15</sup>Compared to the popular “protection for sale” approach introduced by Grossman and Helpman 1994, the setup we have adopted focuses on voters preferences, irrespective of their ability to influence the policy making process through contributions. If one were to translate this into the “protection for sale” framework, it would imply a consumer lobby that is more powerful than industry specific interests.

<sup>16</sup>See Helpman (1997) for details.

The median voter's second stage problem is given by:

$$\max_{\hat{\gamma}_A} v(\mathbf{t}(\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m) \quad (8)$$

We are now ready to establish our first result:

**Proposition 1** *If trade policies are set non-cooperatively, strategic delegation does not arise in equilibrium. Furthermore, if an FTA is formed, tariffs applied to non-member countries are (weakly) lower than under a MFN arrangement.*

**Proof.** Focusing on country A, we start by solving, for a given representative  $\hat{\gamma}_A$ , the MFN tariff determination problem. The first order conditions for problem 6 is given by:

$$\begin{aligned} -\frac{\partial p_A^1}{\partial t_A^1} x_A^1 + x_{F,A}^1 + t_A^1 \frac{\partial x_{F,A}^1}{\partial t_A^1} + \hat{\gamma}_A \frac{\partial \pi_{A,A}^1}{\partial t_A^1} &= 0 \\ -\frac{\partial p_A^2}{\partial t_A^2} x_A^2 + x_A^2 + t_A^2 \left( \frac{\partial x_{F,A}^2}{\partial t_A^2} + \frac{\partial x_{B,A}^2}{\partial t_A^2} \right) &= 0 \end{aligned} \quad (9)$$

where we have used the fact that  $x_{B,A}^1 = x_{A,A}^2 = 0$ . Using equilibrium prices and quantities from (5) we obtain

$$\begin{aligned} t_A^{MFN,1} &= \frac{(H-c)(1+2\hat{\gamma}_A)}{11-2\hat{\gamma}_A} \\ t_A^{MFN,2} &= \frac{(H-c)}{4} \end{aligned} \quad (10)$$

from which it immediately follows that the tariff choice in country A does not depend on the identity of country B's representative.

Turning now to the choice of the country's representative under a MFN policy, the first order condition of problem (8) is given by:

$$\underbrace{\sum_i \frac{\partial v(\mathbf{t}^{MFN}(\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m)}{\partial t_A^{MFN,i}} \frac{\partial t_A^{MFN,i}}{\partial \hat{\gamma}_A}}_{\text{Term 1}} + \underbrace{\sum_i \frac{\partial v(\mathbf{t}^{MFN}(\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m)}{\partial t_B^{MFN,i}} \frac{\partial t_B^{MFN,i}}{\partial \hat{\gamma}_A}}_{\text{Term 2}} = 0 \quad (11)$$

where from equation (10) we know that Term 2 is equal to zero since  $\frac{\partial t_B^{MFN,i}}{\partial \hat{\gamma}_A} = 0$ . Moreover, equation (10) also implies that  $\frac{\partial t_A^{MFN,1}}{\partial \hat{\gamma}_A} > 0$  and  $\frac{\partial t_A^{MFN,2}}{\partial \hat{\gamma}_A} = 0$  so that equation (11) can be

re-written as  $\frac{\partial v(\mathbf{t}^{MFN}(\widehat{\gamma}_A, \widehat{\gamma}_B), \gamma_A^m)}{\partial t_A^{MFN,1}} = 0$ . Thus we have that

$$\left( \frac{H + t_A^{MFN,1} - c}{3} \right) (1 + 2\gamma_A^m) - 4t_A^{MFN,1} = 0$$

We can substitute  $t_A^{MFN,1}$  as described in (10), which yields

$$\widehat{\gamma}_A = \gamma_A^m$$

In other words, the median voter in each country *does not* delegate power. The equilibrium MFN tariffs are then expressed by

$$\begin{aligned} t_A^{MFN,1} &= \frac{(H - c)(1 + 2\gamma^m)}{11 - 2\gamma^m} \\ t_A^{MFN,2} &= \frac{(H - c)}{4} \end{aligned} \quad (12)$$

and similar expressions apply to country  $B$ . Thus, our geographically specialized production pattern implies that  $t_A^{MFN,1} = t_B^{MFN,2}$  and  $t_A^{MFN,2} = t_B^{MFN,1}$  in equilibrium.

Turning now to the analysis of the FTA, the solution of problem 6 is given by

$$\begin{aligned} t_{F,A}^{FTA,1} &= \frac{(H - c)(1 + 2\widehat{\gamma}_A)}{(11 - 2\widehat{\gamma}_A)} \\ t_{F,A}^{FTA,2} &= \frac{(H - c)}{11} \end{aligned} \quad (13)$$

and similar expressions apply to country  $B$ . Following the same logic as in the MFN case, we can identify each member country's representative under an FTA. It is easy to show that

$$\widehat{\gamma}_A = \gamma_A^m$$

Thus, once again the median voter in each country does not delegate power. The equilibrium tariffs are then given by

$$\begin{aligned} t_{F,A}^{FTA,1} &= \frac{(H - c)(1 + 2\gamma^m)}{(11 - 2\gamma^m)} \\ t_{F,A}^{FTA,2} &= \frac{(H - c)}{11} \end{aligned} \quad (14)$$

Similarly, we can solve country  $B$ 's median voter problem and show that  $t_{F,A}^{FTA,1} = t_{F,B}^{FTA,2}$  and

$t_{F,A}^{FTA,2} = t_{F,B}^{FTA,1}$ . Comparing equation (14) and (31) thus immediately establishes the second part of the result. ■

The intuition for the first part of Proposition 1 is as follows. In our model, markets for goods 1 and 2 are segmented, and as a result the equilibrium prices in country  $A$  bare no relationship to the equilibrium prices in country  $B$ . Moreover, in this non-cooperative setting, tariffs applied by country  $A$  can differ from the tariffs applied by country  $B$ . Clearly, the median voter does better by simply representing her own interests, because she has no influence on the partner’s decision in this case.

As for the second part of Proposition 1, the decline in the tariff applied to the non-produced good is the result of the median voter’s successful efforts to attenuate the degree of trade diversion generated by the preferential access granted to the partner country. This result has been obtained before in the literature and is known as “the tariff complementarity effect” (Saggi 2006 and Ornelas 2007).<sup>17</sup>

Finally, for future reference, note that the tariff applied on imports of good 1 decreases with the extent of income inequality both under the MFN and the FTA regimes. This result holds because less inequality means that the median voter owns a higher share of the domestic firm and hence has a greater interest in a higher tariff. We turn next to the study of cooperative preferential agreements.

### 3.2 Cooperative trade policies

The main feature of customs unions is that member countries coordinate their external trade policies and apply common external tariffs. Following the literature,<sup>18</sup> the external tariff in a CU is chosen so as to maximize the joint welfare of the two countries’ representatives,<sup>19</sup> i.e. it is the solution to the following problem

$$\max_{t^i} v(\mathbf{t}, \hat{\gamma}_A) + v(\mathbf{t}, \hat{\gamma}_B) \quad \text{for } i = \{1, 2\} \quad (15)$$

where  $\hat{\gamma}_A$  and  $\hat{\gamma}_B$  are the elected representatives in the two countries and now tariffs applied on trade with country  $F$  are equal ( $t^i = t_{F,A}^i = t_{F,B}^i$ ) across countries, but not necessarily

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<sup>17</sup>Estevadeordal, Freund and Ornelas (2008) find strong support for the presence of this effect in their empirical study of preferential trading arrangements in Latin America.

<sup>18</sup>Ornelas (2007) and Saggi (2006) model the choice of common external tariffs to maximize the aggregate welfare of the countries. In this case, the representative voter would correspond to the average voter in our paper. In a model with strategic delegation, Willmann (2006) assumes that legislators maximize their aggregate welfare when choosing the most-favored-nation tariffs for a small economy. Similarly, Grossman and Helpman (2005) assume that the legislative majority maximizes its aggregate welfare when choosing most-favored-nation tariffs for a small economy.

<sup>19</sup>Which seems realistic as long as both countries are of similar size.

across sectors. The resulting tariff vector chosen is given by

$$\mathbf{t}^{CU} = \mathbf{t}^{CU}(\hat{\gamma}_A, \hat{\gamma}_B) \quad (16)$$

As before, in the second stage of the model, in country A the representatives will be chosen by the median voter as the solution to the following problem

$$\max_{\hat{\gamma}_A} v(\mathbf{t}^{CU}(\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m) \quad (17)$$

and the same is true in country B. We are then able to establish our second result:

**Proposition 2** *If trade policy is set cooperatively, strategic delegation occurs, and the elected representative is an individual with an ownership share in the import competing firm twice that of the median voter.*

**Proof.** The first order conditions of problem (15) are given by

$$\begin{aligned} -\frac{\partial p_A^1}{\partial t^1} x_A^1 + x_{F,A}^1 + t^1 \frac{\partial x_{F,A}^1}{\partial t^1} + \hat{\gamma}_A \left( \frac{\partial \pi_{A,A}^1}{\partial t^1} + \frac{\partial \pi_{A,B}^1}{\partial t^1} \right) - \frac{\partial p_B^1}{\partial t^1} x_B^1 + x_{F,B}^1 + t^1 \frac{\partial x_{F,B}^1}{\partial t^1} &= 0 \\ -\frac{\partial p_A^2}{\partial t^2} x_A^2 + x_{F,A}^2 + t^2 \frac{\partial x_{F,A}^2}{\partial t^2} - \frac{\partial p_B^2}{\partial t^2} x_B^2 + x_{F,B}^2 + t^2 \frac{\partial x_{F,B}^2}{\partial t^2} + \hat{\gamma}_B \left( \frac{\partial \pi_{B,A}^2}{\partial t^2} + \frac{\partial \pi_{B,B}^2}{\partial t^2} \right) &= 0 \end{aligned} \quad (18)$$

In the case of a CU, member countries freely trade goods originating within the CU and apply the same external tariffs. Moreover, in our framework, the demand structure is symmetric between the two perspective member countries, and as a result we have that  $x_A^1 = x_B^1$ ,  $x_A^2 = x_B^2$ ,  $\pi_{A,A}^1 = \pi_{A,B}^1$ ,  $\pi_{B,A}^2 = \pi_{B,B}^2$ , and  $\frac{\partial x_{F,A}^1}{\partial t^1} = \frac{\partial x_{F,B}^1}{\partial t^1}$ . Thus, the equation system (18) can be simplified to obtain

$$\begin{aligned} -\frac{\partial p_A^1}{\partial t^1} x_A^1 + x_{F,A}^1 + t^1 \frac{\partial x_{F,A}^1}{\partial t^1} + \hat{\gamma}_A \frac{\partial \pi_{A,A}^1}{\partial t^1} &= 0 \\ -\frac{\partial p_A^2}{\partial t^2} x_A^2 + x_{F,A}^2 + t^2 \frac{\partial x_{F,A}^2}{\partial t^2} + \hat{\gamma}_B \frac{\partial \pi_{B,B}^2}{\partial t^2} &= 0 \end{aligned} \quad (19)$$

Using (5), we can obtain the following expressions for the tariff levels:

$$\begin{aligned} t^{CU,1} &= \frac{(H-c)(1+2\hat{\gamma}_A)}{(11-2\hat{\gamma}_A)} \\ t^{CU,2} &= \frac{(H-c)(1+2\hat{\gamma}_B)}{(11-2\hat{\gamma}_B)} \end{aligned} \quad (20)$$

It is clear from (20) that the greater the share of profits received by the elected representatives, the higher the tariff applied on trade with non-members.

Turning now to the selection of the representative, the first order condition of problem 17 is given by

$$\frac{\partial v(\mathbf{t}^{CU}(\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m)}{\partial t^{CU,1}} \frac{\partial t^{CU,1}}{\partial \hat{\gamma}_A} = 0 \quad (21)$$

where we used  $\frac{\partial t^{CU,2}}{\partial \hat{\gamma}_A} = 0$  following (20). From equation (20) we know that  $\frac{\partial t^{CU,1}}{\partial \hat{\gamma}_A} \neq 0$ , which implies that equation (21) yields  $\frac{\partial v}{\partial t^{CU,1}} = 0$ . Substituting equilibrium conditions (5) into equation (21) yields the following:

$$(H - c)(1 + 4\gamma^m) - (11 - 4\gamma^m)t^{CU,1} = 0 \quad (22)$$

Substituting  $t^{CU,1}$  from (20) we have that

$$\hat{\gamma}_A = 2\gamma^m \quad (23)$$

■

The intuition for Proposition 2 is as follows. In the case of customs unions, both country  $A$  and  $B$  benefit from the implementation of a tariff on imports of good 1, because the tariff lowers the exporting price of the outside firms. Still,  $A$  gains more from protection in that sector than  $B$ , because it also benefits from profit shifting, whereas the costs of the tariff are equally shared between the member countries. Cooperative tariff setting forces the representatives to internalize the negative externalities on country  $B$  from a tariff imposed on imports of good 1. Anticipating this cooperative outcome, the median voter in country  $A$  is better off by delegating power to a representative who is more protectionist than herself.

Substituting (23) in equation (20) we can calculate the common external tariffs

$$\begin{aligned} t^{CU,1} &= \frac{(H - c)(4\gamma^m + 1)}{(11 - 4\gamma^m)} \\ t^{CU,2} &= \frac{(H - c)(4\gamma^m + 1)}{(11 - 4\gamma^m)} \end{aligned} \quad (24)$$

In contrast to the other regimes we have considered so far, in a CU the tariff on the good not produced domestically also depends on the identity of a representative, namely the representative of the partner country. Note that the tariffs on both goods are increasing in  $\gamma^m$ , i.e. they decrease in the extent of inequality for similar reasons as discussed before.

### 3.3 Welfare Comparison

In this section, we compare the welfare levels that can be achieved in the three possible trade policy scenarios we have considered, and in doing so we weigh equally the utility of all individuals, focusing on the average voter's indirect utility function,  $v(\mathbf{t}, \bar{\gamma})$  as our welfare measure.<sup>20</sup>

We start by considering welfare under the two types of preferential trading agreements. From equations (14) and (24), it is clear that the common external tariffs under a customs union are higher than the external tariffs in an FTA, independently of the distribution of income. This result is well known, and has been obtained before, for instance, by Freund (2000), Saggi (2006) and Ornelas (2007) in models where tariffs were chosen so as to maximize aggregate welfare. In these settings, tariffs are higher in a CU than in an FTA because in a CU member countries take into account the profits of each other's firms in choosing trade policy, while this is not the case in an FTA. Thus, higher tariffs vis à vis the rest of the world are chosen to preserve the preferential treatment reserved to the member countries' firms in the CU. In our framework, this mechanism is complemented by the strategic delegation effect present under the CU (and absent under the FTA regime), which also leads the median voter to delegate trade policy making to a representative who has a much higher stake than herself in the local duopolist's profits.<sup>21</sup>

Our first result is summarized in the following

**Proposition 3** *Free trade areas raise member countries' welfare relative to customs unions as long as the fraction of profits received by the median voter exceeds a critical level  $\tilde{\gamma}_{FTA,CU}^m$ .*

**Proof.** See Appendix B. ■

To grasp the intuition for this result, we need to focus on the role played by strategic delegation. As it has been shown by Ornelas (2007) and Saggi (2006) in similar models, if trade policy is set by the average voter, the CU welfare dominates a FTA. This is because CU members extract rents from the rest of the world by coordinating their external trade policies. In particular, they choose relatively high external tariffs to produce welfare-reducing trade diversion in a member's own market, in exchange for the enhanced export profits brought about by trade diversion in the partner's market. As long as there are sufficiently high rents to be extracted from the rest of the world, the CU welfare dominates the FTA arrangement.

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<sup>20</sup>See also Facchini, Lorz and Willmann (2006).

<sup>21</sup>Cadot, de Melo and Olarreaga (1999) study the conditions under which the formation of a CU leads to higher tariffs than the formation of an FTA in the presence of pressure groups (lobbies). Their results show that CUs may lead to higher protection against non-members than FTAs, in particular in the presence of unionwide pressure groups (deep integration).

As we have shown though, in our representative democracy model, in the CU case strategic delegation occurs, and given the specifics of our model, a representative that owns twice the median voter's share in the oligopolistic firms is chosen to set the policy. In the FTA case on the other hand no delegation occurs, and the policy is set by the median. Clearly, if the median voter's ownership share is exactly one half, the trade policy chosen under the CU is the welfare maximizing one, and welfare will be higher than in the FTA case (as discussed above). As income inequality declines (i.e.  $\gamma > 1/2$ ), the policy maker under the CU regime becomes more protectionist than the average, and will choose a common external tariff that is increasing with  $\gamma^m$ , whereas in the FTA case, as  $\gamma^m$  increases, the policy maker's preferences become increasingly aligned with those of the average voter. The result is that there exists a threshold value  $\tilde{\gamma}_{FTA,CU}^m$  such that if  $\gamma^m > \tilde{\gamma}_{FTA,CU}^m$ , the distortionary effect brought about by strategic delegation more than offset the benefits from internalizing the tariff externality in the CU compared to the FTA.

We can now turn to the welfare ranking of the preferential arrangements versus the status-quo MFN regime.

**Proposition 4** *The following holds:*

1. *[i)]*
2. *The creation of a free trade area raises member countries' welfare relative to the MFN regime, regardless of the fraction of profits received by the median voter.*
3. *If the share of profits received by the median voter exceeds a critical level  $\tilde{\gamma}_{CU,MFN}^m \in (\tilde{\gamma}_{FTA,CU}^m, 1)$ , then a customs union decreases member countries' welfare relative to the MFN regime.*
4. *If  $\gamma^m \in (\tilde{\gamma}_{FTA,CU}^m, \tilde{\gamma}_{CU,MFN}^m)$  then a customs union welfare dominates the MFN regime but it is dominated by an FTA.*

**Proof.** See Appendix C. ■

To understand the intuition behind this result, let us start by considering part *i*). Note that both under the MFN and the FTA trade regime, the policy is set by the median voter, i.e. there is no strategic delegation in either case. Proposition 1 shows that country *A*'s tariff on good 1 is equal under the two scenarios. Thus, there are no welfare differences related to the consumption of good 1.<sup>22</sup> The profits of the firm producing good 1 in country *A* on the

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<sup>22</sup>Remember that country *B* does not produce good 1.



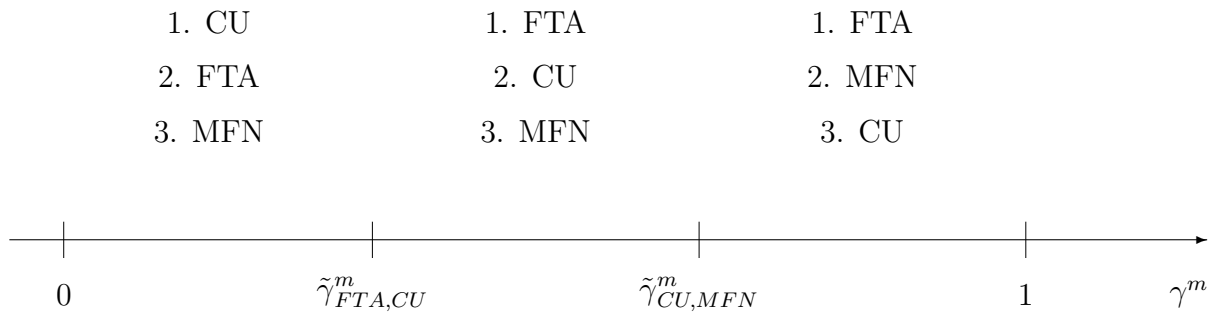


Figure 2: Welfare Ranking

other hand increase since it has preferential access to country  $B$ 's market after the formation of the FTA. At the same time, country  $A$  relies only on imports to meet its demand for good 2, and for this reason, the choice of the tariff applied on this good does not depend on the identity of the representative (and therefore it corresponds with that of the average voter). If an FTA is created, country  $B$ 's firm has duty free access to country  $A$ 's market. It can be shown that the tariff revenue loss on imports of good 2 are larger than the consumer surplus gains associated to a lower domestic price for that good (see Appendix C). This is due to a deterioration in the terms of trade vis à vis both the other member country (as a result of preferential access) and the rest of the world (because of the tariff complementarity effect). Combining the two markets, we can show that the increase in profits in the market for good 1 exceeds the welfare losses in the market for good 2, and this does not depend upon the income distribution.<sup>23</sup> Thus, the reduction in external tariffs brought about by the tariff complementarity effect, combined with the exchange of preferential access that occurs in the FTA is key to understand our finding.<sup>24</sup>

As for part *ii*), we know from proposition 3 that if income inequality is sufficiently low the representative elected to set trade policy in the CU might be so protectionist as to make the CU welfare-dominated by the FTA regime. At the same time, part *i*) of proposition 4 highlights that in our model – like in Ornelas (2007) and Saggi (2006) – an FTA is always preferred to the MFN regime from the point of view of aggregate welfare. The question is then whether it might ever be possible for the MFN arrangement to lead to higher welfare

<sup>23</sup>This result depends on the assumption that the two member countries' markets are symmetric and on the fact that the tariff which is affected by the creation of the FTA does not depend on  $\gamma^m$ .

<sup>24</sup>Notice that this result closely resembles the one obtained by Ornelas (2007), who suggested that “In such a case, while it is impossible for a country to benefit directly from a constraint on its policies towards the imports from partner countries ..., it can gain if preferences conceded presuppose preferences received.”

levels than the CU. As it turns out, if income inequality is sufficiently low, strategic delegation under the CU leads to the selection of a representative that is so protectionist compared to the average voter, as to make the CU welfare inferior to the MFN regime.

Finally, result *iii*) follows immediately from *i*), *ii*) and proposition 3. Figure 2 summarizes our findings.

## 4 First Stage: Political Viability of PTAs

In this section, we focus on the first stage of our model to study the political economy of the formation of preferential trade agreements. To find the equilibrium trade policy regime, we look for the Condorcet winner, i.e. the regime that beats any other in any pairwise comparison. We start by considering a vote in which each country is asked to choose between the MFN regime and the formation of an FTA. Once the outcome of this vote is known, the polity is asked to choose between the result of the first vote and a deeper form of integration, namely a Customs Union.<sup>25</sup>

If countries  $A$  and  $B$  decide to form a preferential agreement, then voters choose the representative that will decide trade tariffs as described in the previous section. Otherwise, the MFN trade policy remains in place. The set-up of the problem allows us to conclude that the median voter is pivotal in the voting process. Since the decision to form a preferential agreement has to be supported by both countries, then an FTA (CU) is established if  $\{FTA, FTA\}$  ( $\{CU, CU\}$ ) is a Nash equilibrium of this game.

Political viability of preferential agreements is measured using the median voter's indirect utility function,  $v(\mathbf{t}, \gamma^m)$ . Of course, the latter is not the same as that of the average voter, which we used to establish the welfare rankings in the previous section. Our first result provides a characterization of the conditions under which a free trade area will be preferred to the status quo.

**Proposition 5** *The formation of a free trade area will be preferred by the median voter over the MFN regime if the share of profits received by the median voter  $\gamma^m \in (0, 1)$  exceeds a critical level  $\check{\gamma}_{FTA, MFN}^m$ .*

**Proof.** See Appendix D. ■

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<sup>25</sup>Alternatively, we could start by considering the decision between the MFN arrangement and a CU and then, in the second stage, pit against each other the winner vs. an FTA. The two sequences deliver the same final outcome.

Proposition 5 says that an FTA is politically viable if the level of inequality is sufficiently small. To understand the intuition behind this result, we can write the change in the median voter's indirect utility comparing the MFN regime to the formation of a PTA as follows:

$$\Delta v(\mathbf{t}^{MFN}, \mathbf{t}^{PTA}, \gamma_A^m) = \underbrace{\Delta v(\mathbf{t}^{MFN}, \mathbf{t}^{PTA}, \bar{\gamma}_A)}_{\text{Social welfare}} - \underbrace{(1 - \gamma_A^m)}_{\text{Inequality}} \underbrace{(\Delta \pi_A^1(\mathbf{t}^{MFN}, \mathbf{t}^{PTA}))}_{\text{Pr of its}} \quad (25)$$

where ‘ $\Delta$ ’ represents the change in variables from the MFN regime to a preferential agreement and  $\mathbf{t}^{MFN}, \mathbf{t}^{PTA}$  represent, respectively, the tariff matrixes in the MFN regime and when a preferential trading arrangement has been introduced. The second term on the right-hand-side of equation (25) highlights the importance of profit changes when comparing the different trade regimes. Equation (25) indicates that the change in the median voter's indirect utility is positively correlated with the change in social welfare, while it is negatively correlated with changes in the product of profits and inequality.

From Proposition 4 we know that an FTA always increases social welfare relative to the MFN regime. This implies that the first term on the right-hand-side of expression (25) is positive. Furthermore, we also know from Proposition 4 that this term does not depend on the extent of inequality. As for the second term, we know from the previous discussion that an FTA increases profits relative to the MFN regime. As we have shown in Appendix C, the increase in profits generated by the creation of an FTA relative to the MFN regime does not depend on the extent of inequality.<sup>26</sup> Since  $\gamma^m \in (0, 1)$ , the second term on the right-hand-side of equation (25) is positive and decreases with  $\gamma^m$ . Recalling that the change in welfare does not depend upon  $\gamma^m$ , the result follows immediately.

Even if an FTA is always welfare enhancing compared to the MFN regime, it is not always politically viable. This is because, as shown in equation (25) an increase in profits relative to the MFN regime is not as important on political grounds as it is on welfare grounds, since the median voter owns a below-average share of the industry.

We are now in a position to consider the outcome of a vote between the MFN regime and the creation of a CU, which only takes place if the MFN regime is chosen in the first round. Our result is summarized in the following:

**Proposition 6** *A customs union will never be chosen over the MFN regime.*

**Proof.** See Appendix D. ■

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<sup>26</sup>This is true since Proposition 1 indicates that the MFN and FTA tariffs applied by country  $A$  on good 1 are the same, and the tariffs applied by country  $B$  on good 1 under the MFN and FTA regimes do not depend on the extent of inequality (see expressions (12) and (14)).

To understand the intuition behind this result, recall that profits are always higher in a CU than in the MFN regime. Thus, in the comparison of the welfare change brought about by the formation of a CU, profits play a very important role in establishing the conditions discussed in proposition 4, under which the CU welfare dominates the MFN regime. As shown in equation (25), the only difference between the (change) in the median and the average voter's welfare is due to the former having a lower ownership share in the duopolist firm's profits. It is this factor that explains why the CU is never viable from a political point of view.

Notice the difference between our findings in Propositions 5 and 6. Whereas an FTA can be sustained in equilibrium if income inequality is sufficiently low, a CU can never be. Two main factors explain this result. On the one hand, an FTA always dominates the MFN regime from the point of view of welfare, while this is not true for a CU. On the other, while profits increase both when an FTA and when a CU are introduced, in the former they increase by less than in the latter. As the median voter's share in the profits is lower than the average's, profits are less important on the political ground than on the welfare ground. From this argument it immediately follows that

**Proposition 7** *A customs union will never be preferred over a free trade area.*

From our analysis, we can thus conclude that only the formation of an FTA is a politically viable alternative to the MFN regime in our setting with representative democracy and perfect geographic specialization.

## 5 Extensions

In this section, we extend our analysis in two directions. First, we study the effect of an increase in market competition on welfare and on the political viability of different trade arrangements by allowing the number of firms per sector that are active in  $F$  to be larger than one.<sup>27</sup> Second, we relax our assumption of perfect geographic specialization in production patterns across the two perspective member countries. As will be shown below, similarity in production patterns mitigates the incentives for strategic delegation, and hence makes the establishment of a customs union more likely. While carrying out these analyses, we retain all other assumptions of the model.

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<sup>27</sup>We have also explored the effects of asymmetries in the income distribution between the perspective member countries on the choice of trade policy regime. The qualitative results of the analysis carried out in section 4 are not affected, and are available from the authors upon request.

## 5.1 Changes in the number of firms in country $F$

Let  $n_F > 1$  be the number of firms in country  $F$  producing goods 1 and 2, while, as before, one firm produces good 1 (2) in country  $A$  ( $B$ ). The equilibrium prices and quantities for country  $A$  are then given by:

$$\begin{aligned}
 x_{A,A}^1 &= \frac{(H + n_F t_{F,A}^1 - c)}{n_F + 2} & x_{B,A}^2 &= \frac{(H + n_F t_{F,A}^2 - (n_F + 1) t_{B,A}^2 - c)}{n_F + 2} \\
 x_{F,A}^1 &= \frac{(H - 2t_{F,A}^1 - c)}{n_F + 2} & x_{F,A}^2 &= \frac{(H + t_{B,A}^2 - 2t_{F,A}^2 - c)}{n_F + 2} \\
 p_A^1 &= \frac{(H + n_F t_{F,A}^1 + (n_F + 1) c)}{n_F + 2} & p_A^2 &= \frac{(H + n_F t_{F,A}^2 + t_{B,A}^2 + (n_F + 1) c)}{n_F + 2} \quad (26)
 \end{aligned}$$

where  $x_{F,A}^i$  represents the quantity of good  $i$  produced by a firm located in country  $F$  and consumed in country  $A$ . Similar expressions apply to country  $B$ , only that country  $B$  produces good 2 rather than good 1.

The solution of the second and third stages of the model follow the same steps as in the previous sections. It is straight-forward to show that the results of Proposition 1 continue to hold, which implies that the median voter does not delegate power under the MFN and FTA regimes, i.e.  $\hat{\gamma} = \gamma^m$ .<sup>28</sup> Moreover, the result of Proposition 2 applies also in this case, as we find the same level of strategic delegation in when a customs union is formed,  $\hat{\gamma} = 2\gamma^m$ . In other words, the degree of strategic delegation in the case of a CU depends only on the number of countries sharing the cost of protection: an increase in the number of firms producing goods 1 and 2 in the rest of the world does not alter the incentives faced by the median voter in the two member countries.<sup>29</sup> The equilibrium tariffs under the three

<sup>28</sup>As we explain in Section 3, the median voter does better by representing herself since member countries do not coordinate external tariffs in these two cases and since markets are segmented.

<sup>29</sup>More generally, a similar model with  $m$  symmetric prospective member countries would yield  $\hat{\gamma} = m\gamma^m$ . The details of the proof are available upon request from the authors.

possible regimes are given by:

$$\begin{aligned} t_A^{MFN,1} &= \frac{(H-c)(1+2\gamma^m)}{3n_F - 2n_F\gamma^m + 8} \\ t_A^{MFN,2} &= \frac{(H-c)}{n_F + 3} \end{aligned} \quad (27)$$

$$\begin{aligned} t_A^{FTA,1} &= \frac{(H-c)(1+2\gamma^m)}{3n_F - 2n_F\gamma^m + 8} \\ t_A^{FTA,2} &= \frac{(H-c)}{3n_F + 8} \end{aligned} \quad (28)$$

$$t_A^{CU,1} = t_A^{CU,2} = \frac{(H-c)(1+4\gamma^m)}{3n_F - 4n_F\gamma^m + 8} \quad (29)$$

Notice that the MFN and FTA tariff levels are negatively related to the number of firms in country  $F$ . In the case of a customs union, tariffs may instead increase or decrease with the number of firms in country  $F$ . It is easy to show that if the level of inequality is sufficiently low ( $0.75 < \gamma^m < 1$ ), then the tariffs chosen under a CU increase with the number of firms active in country  $F$ , while the opposite holds if inequality is high.

To gain some intuition for the relationship between tariffs under different trade regimes and the number of firms in country  $F$ , let us start by considering trade policies chosen as to maximize social welfare (i.e. the average individual's utility). We can use expressions (27), (28), and (29)<sup>30</sup> to conclude that under this hypothesis, there exists a negative relationship between tariffs and the number of firms in country  $F$ . As shown by Krishna (1998) in a similar framework, the higher the number of firms in the non-member country, the greater is the degree of trade diversion brought about by a preferential agreement. It is exactly to offset trade diversion that welfare maximizing external tariffs decrease with the number of firms in  $F$ .

Under the MFN and FTA regimes, the fraction of profits received by the representative voter (the median) is less than the fraction received by the average voter, since  $\gamma^m < 1$ . Thus, an increase in profits due to an increase in tariffs matters less to the representative than to the average voter, and this explains the negative relationship between tariffs and the number of firms in country  $F$  in the MFN and FTA regimes. On the other hand, the representative in a CU may receive a fraction of profits greater than the average voter. In this case, tariffs may increase or decrease with  $n_F$  depending on the fraction of profits he receives. If this fraction is significantly greater than the fraction received by the average

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<sup>30</sup>In this case, the tariffs that maximize welfare under the MFN and FTA regimes can be found by replacing  $\gamma^m = 1$  in expressions (27) and (28). In the case of a customs union, we replace  $2\gamma^m = 1$  in expression (29).

voter, (i.e. if  $0.75 < \gamma^m < 1$  and hence  $2\gamma_m > 1.5^{31}$ ), then an increase in the number of firms active in  $F$  leads to an increase in the common external tariffs. Thus, an increase in the number of firms in country  $F$  increases so much the strategic gains in profits for firms based in member countries brought about by trade diversion, as to increase the common external tariff chosen by the representative.

To assess aggregate welfare, we continue to focus on the average voter and the behavior of  $v(\mathbf{t}, \bar{\gamma})$ . Using the external tariffs derived in expressions (28) and (29), we see that the common external tariffs under a CU are higher than the external tariffs under an FTA. Likewise, the representative of each country under a CU is more protectionist than under an FTA due to the strategic delegation effect discussed above. The difference with respect to the previous sections lies in the assumption that the number of firms based in country  $F$  is greater than the number of firms located in the member countries ( $n_F > 1$ ). As discussed above, our framework implies that the higher the number of firms in the non-member country, the greater the degree of trade diversion under a preferential agreement, given the external tariffs. These arguments give rise to the following result.

**Proposition 8** *Free trade areas raise member countries' welfare relative to customs unions if the fraction of profits received by the median voter exceeds a critical level  $\tilde{\gamma}_{FTA,CU}^m(n_F)$ . This threshold is decreasing with  $n_F$ .*

The proof of Proposition 8 follows the same lines as the proof of Proposition 3.<sup>32</sup> The first part of the result says that the formation of an FTA welfare dominates the formation of a CU if the degree of inequality is sufficiently small. The same reasoning that underlies Proposition 3 applies here. If the degree of income inequality is sufficiently low, each representative in the case of a CU chooses external tariffs that are substantially higher than the external tariffs maximizing aggregate welfare, while the external tariffs chosen under an FTA are more in line with aggregate welfare.

The second part of Proposition 8 states that an increase in the number of firms in country  $F$  makes it more likely for an FTA to welfare dominate a CU in our model. This is true since the critical value  $\tilde{\gamma}_{FTA,CU}^m(n_F)$  needed to ensure that an FTA raises welfare relative to a CU decreases with the number of firms in the rest of the world. We have illustrated the relationship between  $\tilde{\gamma}_{FTA,CU}^m$  and  $n_F$  in Figure 3.<sup>33</sup> This result can be understood if we

<sup>31</sup>Remember that in this case  $\hat{\gamma}_A = 2\gamma_m$ .

<sup>32</sup>To prove Proposition 8, we calculate the fraction of profits received by the median voter that sets  $v(\mathbf{t}^{CU}, \bar{\gamma}_A)$  equal to  $v(\mathbf{t}^{FTA}, \bar{\gamma}_A)$ . The solution of this process yields the critical level  $\tilde{\gamma}_{FTA,CU}^m(n_F)$ . Three solutions emerge from this process but only one provides an answer compatible with  $0 < \gamma^m < 1$ .

<sup>33</sup>The graph shows that as the number of firms in country  $F$  grows larger, values of  $\gamma^m > 0.59$  imply

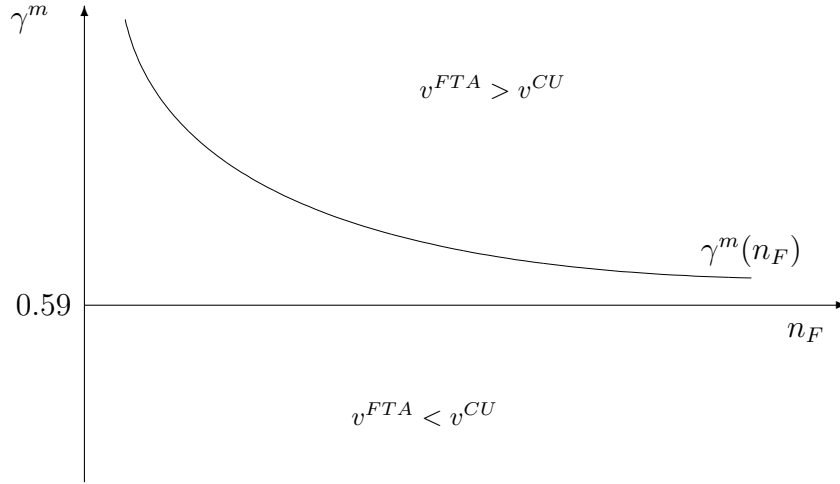


Figure 3: Increasing the number of firms in the rest of the world

remember that the higher the number of firms in country  $F$ , the greater the degree of trade diversion brought about by the preferential agreement. Note that common external tariffs under a CU are higher than the external tariffs under an FTA as shown by expressions (28) and (29). Therefore, the greater the number of firms in country  $F$ , the greater the degree of trade diversion induced by a CU relative to an FTA.<sup>34</sup>

It is also important to understand how average welfare changes when we compare the MFN regime with a preferential trade agreement between  $A$  and  $B$ . The results are summarized in the following proposition:

**Proposition 9** *The following holds:*

1. [i)]
2. *The creation of a free trade area raises member countries' welfare relative to the MFN regime, regardless of the fraction of profits received by the median voter.*
3. *If the share of profits received by the median voter exceeds the critical level  $\tilde{\gamma}_{CU,MFN}^m(n_F) \in (\tilde{\gamma}_{FTA,CU}^m(n_F), 1)$ , then a customs union decreases member countries' welfare relative to the MFN regime. This threshold decreases with  $n_F$ .*

that an FTA raises welfare relative to a CU. Using Propositions 3 and 8, we can show that the critical value  $\tilde{\gamma}_{FTA,CU}^m(n_F)$  needed to ensure that an FTA raises welfare relative to a CU satisfies  $0.59 < \tilde{\gamma}_{FTA,CU}^m < 0.76$ .

<sup>34</sup>Note that this effect is most obvious when inequality is sufficiently small ( $0.75 < \gamma^m < 1$ ) since an increase in  $n_F$  leads to an increase in common external tariffs under a CU while it leads to a decrease of external tariffs under an FTA. Moreover, Proposition 1 highlights the presence of a tariff complementarity effect under an FTA, which is clearly trade creating.



4. If  $\gamma^m \in (\tilde{\gamma}_{FTA,CU}^m(n_F), \tilde{\gamma}_{CU,MFN}^m(n_F))$  then a customs union welfare dominates the MFN regime but it is dominated by an FTA.

The proof of Proposition 9 follows the same steps as the proof for Proposition 4,<sup>35</sup> and the intuition behind this result is similar. Let us start with part *i*). The change in welfare between the MFN and FTA regimes depends on the tariffs applied to the imports of the good not produced in each member country (i.e., the tariff on good 2 in country *A* and the tariff on good 1 in country *B*). Equations (27) and (28) show that these tariffs do not depend on the distribution of income, and, therefore, the change in welfare between the MFN and FTA regimes does not depend on the degree of income inequality.

As for the second part,<sup>36</sup> one can conclude from equations (27) and (29) that the common external tariffs under a CU are higher than under the MFN regime if the degree of income inequality is not too large. In particular, for sufficiently low levels of inequality, the common external tariffs under a CU are high enough so as to significantly decrease the tariff revenues relative to the MFN regime. This explains the result relating the welfare effects of the MFN and CU regimes. Moreover, this result is reinforced the greater the number of firms in country *F* because this tends to increase the trade diversion effect related to the formation of a CU. This explains why  $\tilde{\gamma}_{CU,MFN}^m$  declines with  $n_F$ . In general, Propositions 8 and 9 indicate that as the number of firms in country *F* grows, so does the size of the parameter space guaranteeing that the FTA and the MFN regimes are preferred on welfare grounds to the formation of a CU.

Learning about the welfare effects of the formation of preferential agreements is desirable, but the implementation of preferential agreements depends on their political viability, and thus on their effect on the median voter's welfare. Focusing on country *A* (the analysis for *B* is similar), we use the external tariffs given by expressions (27), (28), and (29), and the equilibrium prices and quantities of (26) to establish:

**Proposition 10** *The following holds:*

1. [*i*)]

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<sup>35</sup>We can show that the difference between  $v(\mathbf{t}^{FTA}, \bar{\gamma}_A)$  and  $v(\mathbf{t}^{MFN}, \bar{\gamma}_A)$  is positive for  $0 < \gamma^m \leq 1$  and it is not dependent on the distribution of income.

<sup>36</sup>The difference between  $v(\mathbf{t}^{CU}, \bar{\gamma}_A)$  and  $v(\mathbf{t}^{MFN}, \bar{\gamma}_A)$  yields a complex expression but simulations indicate that as we increase the number of firms in country *F*, the lower is the critical value  $\tilde{\gamma}_{CU,MFN}^m(n_F)$  so that  $v(\mathbf{t}^{CU}, \bar{\gamma}_A)$  equals  $v(\mathbf{t}^{MFN}, \bar{\gamma}_A)$  decreases. This exercise also indicates that as  $n_F$  grows larger, the minimum cut-off for  $\gamma^m$  converges to 0.59 (the picture would look very similar to Figure 1)

2. The formation of a free trade area will be preferred over the MFN regime if the share of profits received by the median voter exceeds a critical value  $\check{\gamma}_{FTA,MFN}^m(n_F)$ . This threshold increases with  $n_F$ .
3. A customs union will never be chosen over the MFN regime.
4. A customs union will never be preferred over a free trade area.

The proof of Proposition 10 follows the same steps as the proof of Propositions 5, 6 and 7. Let us first consider part *i*). Proposition 10 implies that even though an FTA is always welfare enhancing compared to the MFN regime (as shown by Proposition 9), it might not be politically viable.<sup>37</sup> This occurs because, as shown in equation (25), an increase in profits relative to the MFN regime is not as important on political grounds as it is on welfare grounds, since the median voter's profit share is lower than the average of the population. Moreover, the critical value  $\check{\gamma}_{FTA,MFN}^m(n_F)$  increases with the number of firms in country  $F$ . This happens because the higher  $n_F$ , the greater the strategic gains in profits for firms based in member countries brought about by preferential access. Consequently, the strategic gains in profits due to preferential access need to be more important for the median voter for an FTA to remain politically viable (and thus the threshold increases with  $n_F$ ).

Parts *ii*)<sup>38</sup> and *iii*) can be understood following the same arguments as for Propositions 6 and 7. Summing up, Propositions 8-10 extend our previous results and highlight once more the desirability and political viability of an FTA when the level of inequality is low.

## 5.2 Imperfect Geographical Specialization

In our benchmark analysis we have focused on the case in which each oligopolistic industry is located in only one of the prospective member countries. This stark assumption has allowed us to clearly capture the role played by the strategic delegation motive in shaping the formation of preferential trading agreements. At the same time, our benchmark model is unlikely to correspond fully to the real world production structure, as perspective member countries could have similar sectorial structures to some extent. Considering this possibility,

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<sup>37</sup>The difference between  $v(\mathbf{t}^{FTA}, \gamma_A^m)$  and  $v(\mathbf{t}^{MFN}, \gamma_A^m)$  yields the expression  $-24 - 17n_F - 3n_F^2 + \gamma_A^m(80 + 48n_F + 7n_F^2)$ . We can then set  $v(\mathbf{t}^{FTA}, \gamma_A^m)$  equal to  $v(\mathbf{t}^{MFN}, \gamma_A^m)$  to find  $\check{\gamma}_{FTA,MFN}^m(n_F) = \frac{(24 + 17n_F + 3n_F^2)}{(80 + 48n_F + 7n_F^2)}$ . The latter expression can be used to show that as the number of firms in country  $F$  increases, the higher is the critical value  $\check{\gamma}_{FTA,MFN}^m$  so that a free trade area will emerge as an equilibrium.

<sup>38</sup>Comparing the expressions for  $v(\mathbf{t}^{CU}, \gamma_A^m)$  and  $v(\mathbf{t}^{MFN}, \gamma_A^m)$ , simulations indicate that there is no  $\gamma^m \in (0, 1]$  such that  $v(\mathbf{t}^{CU}, \gamma_A^m) > v(\mathbf{t}^{MFN}, \gamma_A^m)$ . The simulation exercise focuses on varying  $n_F$  to calculate  $\gamma^m$  such that  $v(\mathbf{t}^{CU}, \gamma_A^m) = v(\mathbf{t}^{MFN}, \gamma_A^m)$ . In this case, we could not find  $\gamma^m \in \{0, 1\}$  that satisfies that equality.

we now extend our model by allowing the two oligopolistic goods to be produced both in country  $A$  and in country  $B$  — while retaining our previous assumption that  $F$  produces both. In particular, while in country  $F$  each industry is present with a firm of size one, a measure  $\alpha$  (with  $0.5 \leq \alpha \leq 1$ ), of industry 1 is located in country  $A$ , and a measure  $1 - \alpha$  is located in country  $B$ . The opposite is true for industry 2. Finally, we assume that the share of profits that accrues to individual  $l$  in country  $s$ ,  $(\gamma_{s,l})$ , does not vary across sectors.<sup>39</sup>

Let  $x_{A,B}^1$  be the quantity of good 1 produced by a firm located in country  $A$  and consumed in country  $B$ . Since a measure  $\alpha$  of firms in industry 1 are located in country  $A$ , the amount of good 1, produced in country  $A$ , and consumed in country  $B$  is given by  $\alpha x_{A,B}^1$ . Given the preferences described by equation 1, the indirect utility of individual  $l$  in country  $A$  can be written as follows:

$$\begin{aligned} v(\mathbf{t}, \gamma_{A,l}) &= 1 + \gamma_{A,l} [\alpha \pi_A^1(\mathbf{t}) + (1 - \alpha) \pi_A^2(\mathbf{t})] + t_{F,A}^1 x_{F,A}^1(\mathbf{t}_A) + t_{F,A}^2 x_{F,A}^2(\mathbf{t}_A) \\ &\quad + (1 - \alpha) t_{B,A}^1 x_{B,A}^1(\mathbf{t}_A) + \alpha t_{B,A}^2 x_{B,A}^2(\mathbf{t}_A) + \sum_i [u(x_A^i(\mathbf{t}_A)) - p_A^i(\mathbf{t}_A) x_A^i(\mathbf{t}_A)] \end{aligned}$$

where  $\pi_A^i(\mathbf{t}) = \sum_d [p_d^i - c - t_{A,d}^i] x_{A,d}^i$ . In this case, total sales of good 1 in country  $A$  are described by  $x_A^1 = x_{F,A}^1 + \alpha x_{A,A}^1 + (1 - \alpha) x_{B,A}^1$ , and similarly for good 2 we have  $x_A^2 = x_{F,A}^2 + (1 - \alpha) x_{A,A}^2 + \alpha x_{B,A}^2$ . The indirect utility for an individual based in country  $B$  is defined analogously. We can now proceed to solve the model by backward induction.

In the fourth stage, firms choose production, taking the tariff matrix  $\mathbf{t}$  as given. If a preferential agreement between countries  $A$  and  $B$  is in place, then  $t_{AB}^i = t_{BA}^i = 0$  for all  $i$ . Otherwise, countries apply MFN tariffs on imports. Note that in contrast to the model developed in section 2, we now have production of each good in both prospective member countries. The quantities and corresponding prices are given as follows:

$$\begin{aligned} x_{A,A}^1 &= \frac{[H + (1 - \alpha) t_{B,A}^1 + t_{F,A}^1 - c]}{3} & x_{A,A}^2 &= \frac{(H + \alpha t_{B,A}^2 + t_{F,A}^2 - c)}{3} \\ x_{F,A}^1 &= \frac{[H + (1 - \alpha) t_{B,A}^1 - 2t_{F,A}^1 - c]}{3} & x_{F,A}^2 &= \frac{(H + \alpha t_{B,A}^2 - 2t_{F,A}^2 - c)}{3} \\ x_{B,A}^1 &= \frac{[H - (2 + \alpha) t_{B,A}^1 + t_{F,A}^1 - c]}{3} & x_{B,A}^2 &= \frac{[H - (3 - \alpha) t_{B,A}^2 + t_{F,A}^2 - c]}{3} \\ p_A^1 &= \frac{[H + (1 - \alpha) t_{B,A}^1 + t_{F,A}^1 + 2c]}{3} & p_A^2 &= \frac{(H + \alpha t_{B,A}^2 + t_{F,A}^2 + 2c)}{3} \end{aligned}$$

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<sup>39</sup>This assumption is required in order for the median, and hence the median voter, to be well defined.

We now turn to the second and third stages where tariff policy is determined. We follow the same approach that we used in Sections 2–4, and start by considering the non-cooperative regimes, that is MFN and FTA. We obtain the following result:

**Proposition 11** *If trade policies are set non-cooperatively, strategic delegation does not arise in equilibrium. Furthermore, if an FTA is formed, tariffs applied to non-member countries are lower than under an MFN arrangement, provided that both member countries produce the oligopolistic goods.*

**Proof.** As for the first part of this result, under unilateral tariff setting the median voter cannot do better than representing the district herself. This is because

$$\max_{t_A} v(t_A, t_B, \gamma_A^m) \geq \max_{\hat{\gamma}_A} v(t_A(\hat{\gamma}_A), t_B, \gamma_A^m) \quad (30)$$

by the nature of unconstrained maximization and the assumption that tariffs in each member country are set non-cooperatively. As for the second part, the equilibrium tariffs for the MFN regime are given as follows (similar expressions apply to country B):

$$\begin{aligned} t_A^{MFN,1} &= \frac{(H-c)(1+2\alpha\gamma^m)}{4+7\alpha-2\alpha\gamma^m(2-\alpha)} \\ t_A^{MFN,2} &= \frac{(H-c)(1+2(1-\alpha)\gamma^m)}{11-7\alpha-(1+\alpha)2(1-\alpha)\gamma^m} \end{aligned} \quad (31)$$

The symmetric production structure implies that in equilibrium  $t_A^{MFN,1} = t_B^{MFN,2}$  and  $t_A^{MFN,2} = t_B^{MFN,1}$ . Notice that as long as the two goods are produced in both  $A$  and  $B$ , inequality matters in determining both MFN tariffs. Furthermore, if  $\alpha = 1$ , the tariff levels reported in equation (31) collapse to the findings of equation (13). On the other hand, if  $\alpha = 1/2$ , we find that the tariffs in the two sectors are the same, as the two sectors equally contribute to the median voter's well being.

Turning to the analysis of a free trade area, also in this case in each country the median voter does not delegate power. The equilibrium tariffs for this regime are given by:

$$\begin{aligned} t_{F,A}^{FTA,1} &= \frac{(H-c)(1+2\alpha\gamma^m)}{11-2\alpha\gamma^m} \\ t_{F,A}^{FTA,2} &= \frac{(H-c)[1+2(1-\alpha)\gamma^m]}{[11-2(1-\alpha)\gamma^m]} \end{aligned} \quad (32)$$

Similar expressions obtain for country  $B$ , and we note that  $t_{F,A}^{FTA,1} = t_{F,B}^{FTA,2}$  and  $t_{F,A}^{FTA,2} = t_{F,B}^{FTA,1}$ . Also in this case, if  $\alpha = 1$  the tariff levels reported in (32) correspond to those in

equation (14), whereas if  $\alpha = 1/2$  the tariffs applied on the oligopolistic goods are identical. Comparing equation (32) to (31) establishes the second part of the proposition. ■

Turning to the cooperative regime of a customs union, we have the following result:

**Proposition 12** *If trade policy is set cooperatively, strategic delegation occurs, and the elected representative is an individual with an ownership share in the import competing firm that is higher than that of the median voter. Furthermore, strategic delegation increases with the degree of geographic specialization.*

**Proof.** Solving the third stage of the model we obtain the following common external tariffs chosen by the prospective member countries' representatives:

$$\begin{aligned} t^{CU,1} &= \frac{(H - c) \{1 + 2[\alpha\hat{\gamma}_A + (1 - \alpha)\hat{\gamma}_B]\}}{\{11 - 2[\alpha\hat{\gamma}_A + (1 - \alpha)\hat{\gamma}_B]\}} \\ t^{CU,2} &= \frac{(H - c) \{1 + 2[(1 - \alpha)\hat{\gamma}_A + \alpha\hat{\gamma}_B]\}}{\{11 - 2[(1 - \alpha)\hat{\gamma}_A + \alpha\hat{\gamma}_B]\}} \end{aligned} \quad (33)$$

It is clear from (33) that the greater the share of profits received by the elected representatives, the higher is the tariff applied to imports from the non-member country.

Turning now to the selection of the representative, the first order condition of the median voter's problem in the second stage of the model is given by

$$\frac{\partial v [\mathbf{t}^{CU}(\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m]}{\partial t^{CU,1}} \frac{\partial t^{CU,1}}{\partial \hat{\gamma}_A} + \frac{\partial v [\mathbf{t}^{CU}(\hat{\gamma}_A, \hat{\gamma}_B), \gamma_A^m]}{\partial t^{CU,2}} \frac{\partial t^{CU,2}}{\partial \hat{\gamma}_A} = 0$$

and as a result

$$\hat{\gamma}_A = 2\gamma_A^m (1 - 2\alpha + 2\alpha^2) \quad (34)$$

Substituting equation (34) in equation (33) we can calculate the equilibrium common external tariffs:

$$t^{CU,1} = \frac{(H - c) [1 + 4\gamma^m (1 - 2\alpha + 2\alpha^2)]}{[11 - 4\gamma^m (1 - 2\alpha + 2\alpha^2)]} \quad (35)$$

$$t^{CU,2} = \frac{(H - c) [1 + 4\gamma^m (1 - 2\alpha + 2\alpha^2)]}{[11 - 4\gamma^m (1 - 2\alpha + 2\alpha^2)]} \quad (36)$$

Note that common external tariffs continue to be higher than the external tariffs under the FTA regime. Once again, if  $\alpha = 1$  we revert to the benchmark case (see equation (24)).

■

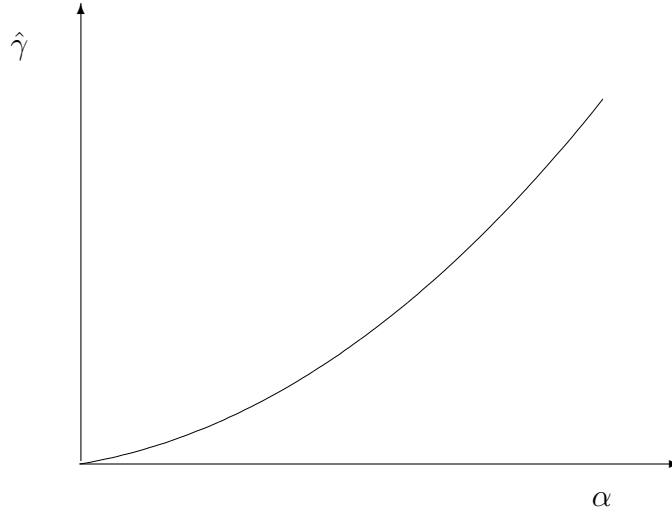


Figure 4: Geographic concentration and strategic delegation

The relationship between the degree of strategic delegation in a customs union and the degree of geographic concentration is illustrated in figure 4. As it can be seen, there is no strategic delegation if  $\alpha = 1/2$ , i.e. when the two oligopolistic industries are uniformly distributed across countries. This result is intuitive, as in this limiting case the costs and benefits of a tariff are perfectly aligned from the point of view of the median voter. Furthermore, if  $\alpha = 1/2$  comparing the equilibrium tariffs in the MFN arrangement (equation 31) with the equilibrium tariffs for a customs union (equation (35)) reveals that the common external tariffs of a customs union are actually *lower* than the MFN tariffs.<sup>40</sup> This result is in line with Ornelas (2007) and Saggi (2006) who find that the common external tariffs of a custom union are lower than the MFN tariffs when they are chosen to maximize social welfare. This result is intuitive, as the cooperative tariff setting that occurs under the customs union leads to the internalization of the effects of tariffs across member countries. Then, maximizing social welfare corresponds to balancing the profit shifting motive of preferential trade present under a customs union with the inherent trade diversion of the preferential regime, which leads social welfare maximizers to decrease the external tariffs when the economic size of member and non-member countries are similar. In our setting, this effect is reinforced by the fact that median voters, who receive a lower share of profits than the average voters, choose external tariffs if no strategic delegation occurs,  $\alpha = 1/2$ .

We can now compare the welfare levels that can be achieved under the three regimes.

<sup>40</sup>In fact, if  $\alpha = 1/2$ ,  $t^{CU} < t^{MFN}$  iff  $(\gamma^m)^2 - 4.5\gamma^m + 3.5 > 0$ , which is satisfied for  $\gamma^m < 1$ , while both tariffs coincide if  $\gamma^m = 1$ .

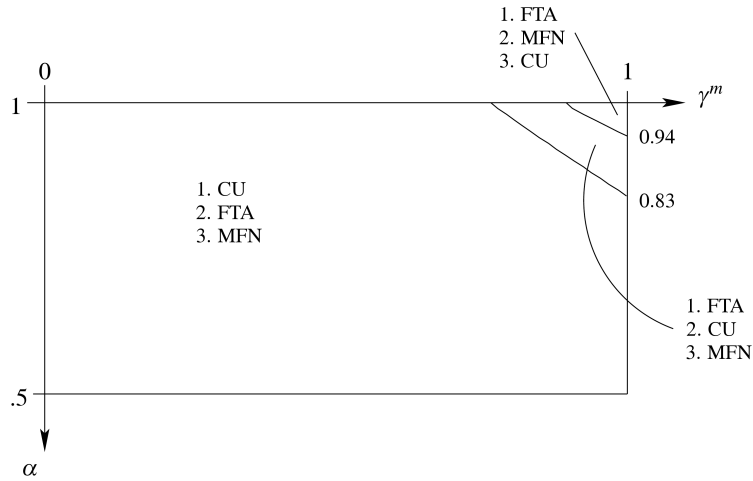


Figure 5: Welfare rankings

Numerical simulations suggest that for any value of  $\alpha < 1$ , a free trade area continues to dominate the status-quo MFN regime from the point of view of the member countries, as in the baseline case we had illustrated in figure 2. Turning to the case of a customs union, our benchmark analysis suggested that the attractiveness of a customs union for the average citizen increased with the extent of income inequality (see figure 2). How is this ranking affected if we allow for lower levels of geographical specialization? Our benchmark findings were driven by the strategic delegation that was at work in the CU case (see the discussion in section 3.3). As geographic specialization declines, so does the extent of strategic delegation in a CU (see fig 4). This mechanism is illustrated in figure 5, which builds on Figure 2.

In fact, the horizontal axis ( $\alpha = 1$ ) captures our benchmark model. As geographical specialization decreases, we move down the vertical axes towards a uniform distribution of industries across member countries ( $1/2 \leq \alpha \leq 1$ ). As we noted above, greater geographic homogeneity reduces strategic delegation, and makes the customs union more attractive. This means that the ranges of  $\gamma^m$  for which ' $CU \succ FTA \succ MFN$ ' and ' $FTA \succ CU \succ MFN$ ' extend further to the right as  $\alpha$  decreases. Numeric simulations allow us to conclude that for  $\alpha < 0.94$  the customs union always dominates the MFN regime, independently of the degree of inequality. At the same time, for  $\alpha < 0.83$  the customs union always dominates the free trade area, irrespective of  $\gamma^m$ .

We now turn to the first stage of our model, where voters determine the trade policy regime in a sequence of two referenda. As in our benchmark analysis, they first choose between the status-quo MFN regime and a free trade area, and subsequently between the outcome of the first referendum and a customs union. Since the share of profits accruing to

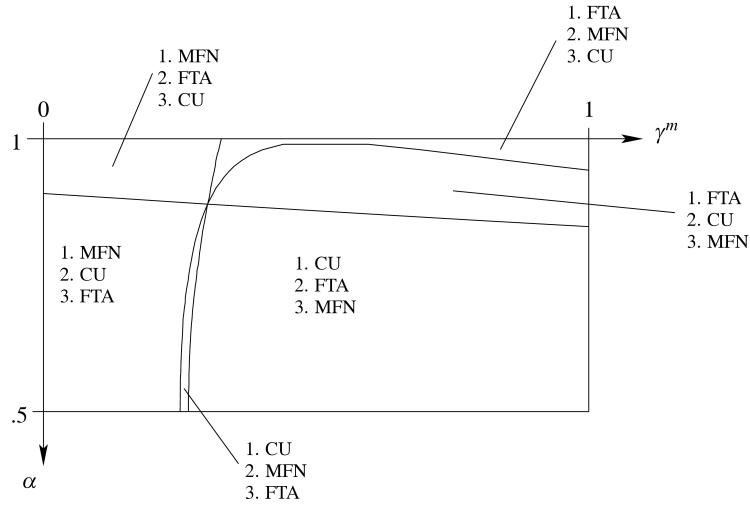


Figure 6: The median voter's rankings

an individual does not vary across sectors, the median voter is decisive. We hence investigate how he compares the various regimes. Our analysis is based also in this case on numerical simulations, the results of which are illustrated in figure 6.

Recall that the change in the median voter's indirect utility between the MFN regime and the creation of a PTA can be decomposed (see equation 25) into a change in social welfare and a (negative) change in profits brought about by the fact that the median has stake in the domestic firm(s) lower than the average. Importantly, as we saw before, this additional term leads to a different ranking of the two non-cooperative regimes. From the perspective of the average voter, as we have seen, a free trade area is always preferred to the MFN regime. From the median's perspective, this is true only if the median voter's ownership share in the oligopolistic firms is sufficiently close to the average. On the other hand, if the median has a much lower stake in it than the average, then the lower weight he puts on profits overturns the ordering. This argument is illustrated in figure 6, where in the left section the MFN regime is unambiguously preferred by the median voter to the free trade area, whereas the opposite is true for higher levels of  $\gamma^m$ , which correspond to lower income inequality. Lower levels of geographic specialization (i.e. lower values of  $\alpha$ ), as in the case of the average voter, make instead a customs union more attractive also for the median voter. This can be seen in figure 6 – on the left as well as on the right section – where the CU becomes increasingly attractive for the median voter as  $\alpha$  decreases.

Figure 6 can also be used to illustrate the three possible outcomes that can emerge in the political equilibrium. In the northeastern corner, where the free trade area dominates both



other regimes, the median voter will choose this regime as the winner. In the left portion of the figure, the status quo MFN regime dominates, and will be the implemented policy. In the southeastern section of the figure the customs union dominates, and will be the trade regime of choice.<sup>41</sup>

Thus, allowing for imperfect geographic specialization brings about some important new insights in our analysis of the formation of customs unions. In particular, we have shown that this type of agreement is politically viable if the geographic patterns of specialization between member countries are not too different and if income inequality, as measured by  $\gamma^m$ , is not too large. Thus, our model is able to explain why custom unions are unlikely to emerge among countries whose production structures differ substantially or that are characterized by high levels of income inequality, whereas they can come about among similar countries with relatively low levels of income inequality (like in the case of the European Union).

## 6 Conclusions

In this paper, we have developed a representative democracy model of the formation of a preferential trading arrangement to provide a rationale for the greater popularity of free trade areas over customs unions. Most of the existing literature finds that, due to the presence of tariff coordination, customs unions tend to raise welfare in member countries compared to free trade areas. In this paper, we have shown that this is not necessarily true. In particular, we have found that if inequality is small, an FTA raises welfare relative to a customs union for the member countries, because voters elect very protectionist representatives when a customs union is in place. The resulting high common external tariffs may then be deleterious to welfare in member countries relative to a free trade area. Our analysis thus highlights the importance of taking into account the ex-ante income distribution in prospective member countries while investigating the welfare consequences of the formation of preferential trade arrangements.

We have also used our framework to study the political viability of free trade areas and customs unions. First of all, we have shown that FTAs are likely to emerge as a political equilibrium, whenever income inequality is not too pronounced. Moreover, only welfare enhancing free trade agreements can be sustained in a political equilibrium, a finding which reinforces an earlier result obtained by Ornelas (2005a) in a model with pressure

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<sup>41</sup>Notice that merely the outcome of the first round depends on whether the FTA is preferred over the MFN regime (the large section to the right of figure 6), or vice versa (the thin slice in the middle of figure 6).

groups.<sup>42</sup> Secondly, we have shown that, in a context where the production of final goods is strongly geographically specialized, the distortions brought about by strategic delegation are so severe to make the CU unlikely to be chosen by a representative democracy. Only if perspective member countries share similar production structures and income inequality is not too pronounced, can a CU emerge as a political equilibrium. This is an important result, as it provides a new rationale for why the very small number of existing CU involve relatively similar countries (like in the case of the EU or the Gulf Cooperation Council<sup>43</sup>), and for why no North–South customs union exists, even if a large number of FTAs have recently entered into force. On the other hand, in the case of FTAs, the presence of North-South agreements such as the North American Free Trade Area as well as South-South arrangements involving very asymmetric national economies such as Russia and other former Soviet republics under the CISFTA are prominent.

The political economy approach used in this paper focuses on the role played by representative democracy in determining the welfare effects and the political viability of FTAs and CUs. In our setting, the median voter plays a pivotal role in determining the fate and effects of the different trade policy options available to the prospective member countries. This approach is inspired by the fact that “any government is likely to be responsive to the wishes of the majority when key distributional issues are at stake” (Alesina and Rodrik, 1994). Alternatively, another important branch of the literature on PTAs applies the lobbying approach which (more recently) has focused on the rent reduction aspect brought about by the abolition of internal tariffs — see Ornelas (2005a) for such analysis of FTAs. This reduction in rents lowers the incentive to lobby for protection in FTAs. The political mechanism we employ in our model revolves around the possibility to strategically delegate representation of the country in order to influence cooperative tariff setting. This channel operates only in the CU case, as FTAs do not entail cooperative tariff setting. Using this constitutional approach thus enables us to elucidate one important difference between the two forms of PTAs.<sup>44</sup>

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<sup>42</sup>Cadot, de Melo and Olarreaga (2001) consider the design of an FTA that is welfare-enhancing as well as political viable in the presence of pressure groups. The structure of the model is similar to the specific-factors model employed by Grossman and Helpman (1995). Their paper shows that each member country can implement free trade in one sector while maintaining the pre-FTA MFN tariff in the other sector. Exchange of market access guarantess the political viability of this FTA. Welfare gains come from an increase in consumer surplus that exceeds tariff revenue losses at the aggregate (union) level.

<sup>43</sup>All members are countries rich in natural resources and whose economies specialize in the exploration of these resources.

<sup>44</sup>Freund and Ornelas (2010) argue that the current results available in the literature about FTAs are not easy to generalize to CUs. Our flexible framework allows us to consider different type of PTAs, including CUs.

Our analysis abstracted away from explicitly considering the role that international institutional constraints might play in shaping the tariff policies that can be implemented in equilibrium in a PTA. Art. XXIV is particularly important in this regard, as it constraints FTA and CU members not to increase, on average, their external tariffs compared to the status quo. While explicitly modelling the working of art XXIV in the context of our model is beyond the scope of this paper, the introduction of this provision will make the establishment of a CU more likely, as it will reduce the scope for strategic delegation under this regime.<sup>45</sup> Unfortunately, as it has been recently argued by Chase (2006) ...“article XXIV is ‘extremely elastic’ (Curzon, 1965: 64), ‘unusually complex’ (Dam, 1970: 275), and ‘full of holes’ (Bhagwati, 1993: 44) due to language that is full of ‘ambiguities’ and ‘vague phrases’ (Haight, 1972: 397)”. This has resulted in the practical lack of enforcement of its provisions. “In the GATT’s 47–year history, only one working party determined that a regional trading arrangement had satisfied Article XXIV, yet none were found to be incompatible with GATT rules” (Chase 2006).<sup>46</sup>

## 7 Appendix

### 7.1 Appendix A

This appendix shows that the median voter theorem can be applied in our framework. Gans and Smart (1996) have established that if preferences satisfy the single crossing property, the median voter result holds.

To assess whether this is the case, we need to insert the expressions for profit, tariff revenue, and consumer surplus into the individual’s indirect utility function, and substitute the expression for the tariffs under each regime. The general form of the indirect utility function under the various trade regimes can be written as follows:

$$V(\hat{\gamma}, \gamma) = \gamma\pi(\hat{\gamma}) + \text{rest}(\hat{\gamma})$$

Single crossing in this context is satisfied if for all  $\hat{\gamma}' > \hat{\gamma}$  and for all  $\gamma' > \gamma$  it is true that  $\hat{\gamma}' \succeq_{\gamma} \hat{\gamma}$  implies  $\hat{\gamma}' \succeq_{\gamma'} \hat{\gamma}$ . Given the form of the indirect utility function above,

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<sup>45</sup>Syropoulos (1999) and Mrazova, Vines and Zissimos (2010) have explicitly considered the effects of GATT’s art. XXIV on the welfare of both member and non–member countries in normative trade models, showing that it does not necessarily improve non–members and world welfare.

<sup>46</sup>PTAs among developing countries can also come into existence under the so–called “enabling clause” introduced in 1979, which represents a significant exception to the provisions contained in art. XXIV. Importantly, MERCOSUR was established under the enabling clause and as a result it was subject to a rather loose scrutiny (see Prusa (2011).)

showing single crossing reduces to showing that profit function  $\pi(\cdot)$  is increasing in  $\hat{\gamma}$ . In all three trade regimes, the profit function is an increasing function of the tariff expression  $(H - c)(1 + 2\hat{\gamma}) / (11 - 2\hat{\gamma})$ , and that expression is increasing in the representative's identity  $\hat{\gamma}$  as well. Thus, single crossing is always satisfied and the median voter theorem can be applied.

## 7.2 Appendix B

In this appendix we establish proposition 3. Let  $\Delta v(\mathbf{t}^{CU}, \mathbf{t}^{FTA}, \gamma_A^m) = v(\mathbf{t}^{CU}, \bar{\gamma}_A) - v(\mathbf{t}^{FTA}, \bar{\gamma}_A)$ . Since our preferences are additive and quasi-linear, this difference can be rewritten as

$$\Delta v(\mathbf{t}^{CU}, \mathbf{t}^{FTA}, \gamma_A^m) = \Delta CS_A + \Delta \pi_A^1 + \Delta TR_A \quad (37)$$

where  $\Delta CS_A$  represents the change in consumer surplus,  $\Delta \pi_A^1$  is the change in profits and  $\Delta TR_A$  stands for the change in tariff revenues. Using external tariffs described by expressions (14) and (24), and applying equilibrium prices and quantities described in expressions (5), we can compare the welfare levels between the two trade regimes. The sum of the changes in consumer surplus and producer surplus when member countries move from an FTA to a CU can be represented by the following expression:

$$\Delta CS_A + \Delta (\pi_{A,A}^1 + \pi_{A,B}^1) = \frac{8\gamma^m(3993 + 7502\gamma^m - 2640\gamma^{m^2} + 160\gamma^{m^3})(c - H)^2}{121(121 - 66\gamma^m + 8\gamma^{m^2})^2} \quad (38)$$

The right hand side of equation (38) is equal to zero if  $\gamma^m = \{-0.45, 4.32, 12.62\}$ . Since  $\gamma^m \in (0, 1]$  then  $\Delta CS + \Delta (\pi_{A,A}^1 + \pi_{A,B}^1)$  is greater than zero in the parameter space under investigation. The change in tariff revenue when member countries move from an FTA to a CU is described by the following expression:

$$\Delta TR_A = \frac{8\gamma^m(-27951 + 59290\gamma^m - 16368\gamma^{m^2} + 992\gamma^{m^3})(c - H)^2}{121(121 - 66\gamma^m + 8\gamma^{m^2})^2} \quad (39)$$

The right hand side of equation (39) is equal to zero if  $\gamma^m \in \{0.55, 4.41, 11.52\}$ . Thus, we can show that if  $\gamma^m > (<)0.55$  then tariff revenues in an FTA are greater (less) than in a CU. Furthermore, if  $\gamma^m \in (0.76, 1]$  then  $\Delta TR_A$  is sufficiently negative as to establish our result.

### 7.3 Appendix C

In this appendix we prove proposition 4. Once again, using external tariffs described by expressions (31) in proposition 1 and applying equilibrium prices and quantities described in expressions (5) we can determine welfare levels under the different trade regimes.

To establish part *i*) of the proposition, notice that there are no welfare differences related to the consumption of good 1 in country *A*. The increase in the profits of the firm that produces good 1 in country *A* due the formation of the FTA equals to  $\frac{135(c-H)^2}{1936}$ . In the case of good 2, the sum of the gains in consumer surplus and of the losses in tariff revenue with the FTA formation equals  $-\frac{(c-H)^2}{44}$ . The summation of changes in profits, consumer surplus and tariff revenue equals to  $\frac{91(c-H)^2}{1936} > 0$  and we have thus established the result.

Turning to part *ii*), the sum of the changes in consumer surplus and producer surplus between the MFN and the CU regime are represented by the following expression:

$$\Delta CS_A + \Delta (\pi_{A,A}^1 + \pi_{A,B}^1) = \frac{(34485 - 33396\gamma^m + 22756\gamma^{m^2} - 5280\gamma^{m^3} + 320\gamma^{m^4})(c-H)^2}{16(121 - 66\gamma^m + 8\gamma^{m^2})^2} \quad (40)$$

Two real values of  $\gamma^m$  insure that the right hand side of equation (40) equals zero, i.e  $\gamma^m \in \{4.34, 10.65\}$ . Since  $\gamma^m \in (0, 1]$  then  $\Delta CS + \Delta (\pi_{A,A}^1 + \pi_{A,B}^1)$  is greater than zero in the parameter space under investigation.

The corresponding change in tariff revenue is given by:

$$\Delta TR_A = -\frac{(11737 - 27588\gamma^m + 36404\gamma^{m^2} - 9504\gamma^{m^3} + 576\gamma^{m^4})(c-H)^2}{8(121 - 66\gamma^m + 8\gamma^{m^2})^2} \quad (41)$$

There are no values of  $\gamma^m \in (0, 1]$  such that the right hand side of equation (41) equals zero. This finding differs from the discussion on Appendix B about the effects of CU formation on tariff revenues, since tariffs in the MFN regime are non-discriminatory. Thus, moving from the MFN to a CU regime is more costly in terms of tariff revenue than moving from an FTA to a CU. We can then add expressions (40) and (41) to show that if  $\gamma^m > 0.8874$  the MFN regime welfare dominates a CU.

### 7.4 Appendix D

In this section we establish proposition 5 and 6. Using external tariffs described by expressions (31), (14), and (24), and applying the equilibrium price and quantity described in

expressions (5), we obtain the following measures for the decisive median voter:

$$\begin{aligned}
v(\mathbf{t}^{CU}, \gamma_A^m) &= \frac{(H-c)^2 (55 - 8\gamma^m - 16\gamma^{m^2})}{(11 - 4\gamma^m)^2} + \gamma^m \pi_{A,F}^1 \\
v(\mathbf{t}^{FTA}, \gamma_A^m) &= \frac{(H-c)^2 (605 + 242\gamma^m - 32\gamma^{m^2})}{121(11 - 2\gamma^m)} + \gamma^m \pi_{A,F}^1 \\
v(\mathbf{t}^{MFN}, \gamma_A^m) &= \frac{(H-c)^2 (84 + 19\gamma^m - 2\gamma^{m^2})}{176 - 32\gamma^m} + \gamma^m \pi_{A,F}^1
\end{aligned} \tag{42}$$

To establish proposition 5 notice that

$$v(\mathbf{t}^{FTA}, \gamma_A^m) - v(\mathbf{t}^{MFN}, \gamma_A^m) = \frac{(H-c)^2 (135\gamma^m - 44)}{1936}$$

This implies that  $v(\mathbf{t}^{FTA}, \gamma_A^m) > v(\mathbf{t}^{MFN}, \gamma_A^m)$  if  $0.3259 = \check{\gamma}_{FTA, MFN}^m < \gamma^m < 1$ .

To prove proposition 6, consider

$$v(\mathbf{t}^{CU}, \gamma_A^m) - v(\mathbf{t}^{MFN}, \gamma_A^m) = -\frac{(H-c)^2 (-484 + 1925\gamma^m - 1990\gamma^{m^2} + 32\gamma^{m^3} + 32\gamma^{m^4})}{16(121 - 66\gamma^m + 8\gamma^{m^2})^2} \tag{43}$$

There are no values of  $\gamma^m \in (0, 1)$  such that the right hand side of equation (43) equals to zero, and this establishes the result.

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