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REGIONALISM AND MULTILATERAL TRADE LIBERALIZATION WITH ASYMMETRIC COUNTRIES

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Regionalism and Multilateral Trade Liberalization with Asymmetric Countries

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Abstract

I examine the impact of regionalism on the process of multilateral trade liberalization when countries are asymmetric. I use a three country, three good, competing exporters model, with countries being symmetric in everything but their discount factors. I find that the impact of regionalism on trade liberalization depends critically, on which countries engage in regionalism. These results suggest that the WTO would be better off if it examined each case individually, instead of allowing all regionalism through Article XXIV.

Key Words: Regionalism, Trade Liberalization, WTO.

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1. Introduction

One of the most controversial issues in International Trade is the impact of regionalism on the multilateral trade liberalization process of the World Trade Organization (WTO). The multilateral process was very successful in lowering average tariffs from over 40% in the late 1940's to less than 5% now. Many economists fear that the recent proliferation of regional trade agreements, or as some like to call them preferential trade agreements, is going to slow down this process. Others feel that regionalism is just an attempt by some countries to liberalize trade even further and as such it can only help the WTO process. The WTO itself seems to subscribe to this latter view by granting an exception from the Most Favored Nation (MFN) principle to virtually all regionalism (Article XXIV).[1]

The economic literature on this topic can be divided into two categories. The first category includes papers with static models. Typically these papers compare two regimes that differ only in the number of countries. They then compare the Nash optimal tariffs and conclude that if these tariffs are higher in the regime with the fewer countries, regionalism must hurt the process. Some of the papers on this line of research are those by Bhagwati (1988, 1991), Bhagwati and Panagariya (1996) and Krugman (1991). These papers find that under certain conditions regionalism helps and under others it hurts the multilateral process.

The other line of research considers dynamic tariff games and focuses on enforcement problems associated with escaping a terms of trade Prisoners' Dilemma. Such papers focus on the impact of regionalism (fewer countries) on the cooperative

[1] Other WTO provisions, like Article V of GATS and the Enabling Clause, provide similar exceptions to regional agreements.

tariffs (E.g. Bagwell and Staiger (1997[a], 1997[b])). These papers reinforce the point that the impact of regionalism on trade liberalization can be positive or negative depending on the circumstances. They also make the point that regionalism can have temporary, as well, as permanent effects. In the Bagwell and Staiger papers Free Trade Areas cause a temporary increase in cooperative tariffs and Customs Unions a temporary decrease.

In all of these cases the countries are symmetric. Only Bagwell and Staiger (1997[c]) deals directly with this issue in the context of asymmetric countries. In their model countries are identical in everything but their discount factors. Bagwell and Staiger consider regionalism between two patient[2] countries, which engage in a multilateral agreement with an impatient country. They find that the lower the discount factor of the patient countries the more likely it is that regionalism will lower multilateral tariffs. They also found that Customs Unions are always worse[3] than Free Trade Areas.

The present paper extends the Bagwell and Staiger model but focuses on the asymmetry between countries. The key issue is whether the impact of regionalism depends on which countries engage in regionalism. The paper also examines how the Bagwell and Staiger results change if the incentives of the impatient country are examined.

Within this framework, the analysis shows that if two very patient countries engage in regionalism, Free Trade Areas tend to increase the impatient country's multilateral tariffs, while Customs Unions lower those tariffs. On the other hand, if one of the patient countries and the impatient country engage in regionalism, Customs Unions and Free Trade Areas lower multilateral tariffs if the discount factor is low enough, with

[2] A country is patient if its discount factor is high.
[3] Worse in the sense that CUs lead to higher cooperative tariffs.

Customs Unions always being worse than Free Trade Areas. It is obvious from comparing these two cases that the impact of regionalism on multilateral tariffs depends on which countries engage in it.

The paper is organized in the following way. Section 2 presents the basic static model, following closely Bagwell and Staiger (1997[c]). Section 3 presents the dynamic version of the model and develops the general tariff solutions to the three regimes. The results are more general than in Bagwell and Staiger (1997[c]) to allow for regionalism between asymmetric countries. Section 4 examines the impact on the incentives of the impatient country of regionalism between the two patient countries. Section 5 analyzes the impact of regionalism between a patient and an impatient country and compares and contrasts these results with those in Section 4. Finally section 6 presents the conclusions.

2. The static model

The model follows very closely that of Bagwell and Staiger (1997[c]). I consider a world with three countries and three goods. Each country imports a single good that is exported by each of the other two countries. Let J={A,B,C} denote each of the three countries. Also let i={a,b,c} denote each of the three goods. Let a be the good imported by country A, b that imported by B and c be that imported by C. Each country is endowed with zero units of its import good and 3/2 units of each of its two export goods. Figure 1 illustrates the trade flows between the three countries.

All countries consume all the goods. The demand for good i in country J is given by:

$$D(P_i^J) = \alpha - \beta P_i^J . \qquad (1)$$

I assume that countries import goods only for their own consumption. If tariffs are non-discriminatory, as in the MFN case, this would always be true in equilibrium. However, in the case of regional agreements[4] it is possible for a country to import goods only to re-export them to the third country. To rule this out, I assume that the cost associated with serving another market is very large. This ensures that the model remains tractable.

Let L(J) and R(J) denote the left and right hand trading partners of J as they appear in Figure 1. Similarly let l(j) and r(j) denote the goods exported by J to its left and right hand partners respectively. Also, let $\tau_j^{L(J)}$ be the tariff that country J charges on imports from its left hand partner and $\tau_{l(J)}^{J}$ be the tariffs charged for J's exports to its left hand partner. Similarly define $\tau_j^{R(J)}$ and $\tau_{r(J)}^{J}$. All tariffs are assumed to be non-negative and non-prohibitive.

Having described the structure of the model, I proceed to solve for the Nash equilibrium tariffs. The price of a good in each of the three countries must be such that agents can not make profits by buying in one country and selling in another for a higher price. If arbitrage opportunities exist the markets are not in equilibrium. The no-arbitrage conditions are:

$$P_j^J = P_j^{L(J)} + \tau_j^{L(J)} = P_j^{R(J)} + \tau_j^{R(J)}, \qquad (2)$$

for all J$\in$ {A,B,C}. The export supply functions are:

$$X^{J}_{i(J)}(P^{J}_{i(J)}) = 3/2 - D(P^{J}_{i(J)}), \tag{3}$$

for i$\in$ {l,r}. Market clearing then implies:

$$D(P^{J}_{j}) = X^{L(J)}_{j}(P^{L(J)}_{j}) + X^{R(J)}_{j}(P^{R(J)}_{j}). \tag{4}$$

From market clearing and the no-arbitrage conditions, equilibrium prices in terms of the relevant tariffs are:

$$P^{J}_{j}(\tau^{R(J)}_{j}, \tau^{L(J)}_{j}) = \frac{\alpha - 1}{\beta} + \frac{\tau^{R(J)}_{j} + \tau^{L(J)}_{j}}{3} \text{ and}$$

$$P^{J}_{i(J)}(\tau^{J}_{i(j)}, \tau^{I(J)}_{i(j)}) = \frac{\alpha - 1}{\beta} - \frac{2\tau^{J}_{i(j)} - \tau^{I(J)}_{i(j)}}{3}, \tag{5}$$

where (I,i) $\in$ {(R,l),(L,r)}

Equations (5) imply that the price of good j in country J is increasing in the tariffs imposed by J for imports of that good from its two trading partners. Also, the domestic price of the export good l(J) is decreasing in the tariff J is facing in that export market and is increasing in the tariff competing exporters from R(J) are facing.

From (3), (4) and (5) the equilibrium export and import volumes are:

[4] Regional agreements have discriminatory tariffs.

$$D_j(\tau_j^{L(J)}, \tau_j^{R(J)}) = 1 - \frac{\beta(\tau_j^{L(J)} + \tau_j^{R(J)})}{3} \text{ and}$$

$$X_{i(j)}^{J}(\tau_{i(j)}^{J}, \tau_{i(j)}^{I(J)}) = \frac{1}{2} - \frac{\beta(2\tau_{i(j)}^{J} - \tau_{i(j)}^{I(J)})}{3}, \qquad (6)$$

where (I,i) $\in$ {(R,l),(L,r)}. From (6) observe that J's import volume is decreasing in the tariffs charged on imports from either of its two trading partners. Export volume is decreasing in the tariffs faced by J in its export markets and increasing in the tariffs faced by competing exporters.

Governments set tariffs to maximize the sum of consumer surplus, producer surplus[5] and tariff revenue over all goods. Each country's welfare function is, therefore, given by:

$$W^J(\tau_J^{R(j)}, \tau_J^{L(j)}, \tau_{r(J)}^{J}, \tau_{r(J)}^{L(J)}, \tau_{l(J)}^{J}, \tau_{l(J)}^{R(J)}) = \int_{P_j^J}^{\alpha/\beta} D(P)dP + \int_{P_{l(j)}^J}^{\alpha/\beta} D(P)dP + \int_{P_{r(j)}^J}^{\alpha/\beta} D(P)dP$$
$$+ \frac{3P_{l(J)}^{J}}{2} + \frac{3P_{r(J)}^{J}}{2} + \tau_J^{R(j)} X_J^{R(j)} + \tau_J^{L(j)} X_J^{L(j)}. \qquad (7)$$

Differentiating (7) with respect to $\tau_j^{R(J)}$ and $\tau_j^{L(J)}$ and setting the derivatives equal to zero we get the best response functions for country J as:

[5] Since there is no production in the model, producer surplus refers to the surplus of the owners of the goods.

$$\frac{\partial W^J}{\partial \tau_j^{L(J)}} = 0 \Rightarrow \tau_j^{L(J)} = \frac{3}{22\beta} + \frac{7\tau_j^{R(J)}}{11} \text{ and}$$

$$\frac{\partial W^J}{\partial \tau_j^{R(J)}} = 0 \Rightarrow \tau_j^{R(J)} = \frac{3}{22\beta} + \frac{7\tau_j^{L(J)}}{11}. \quad (8)$$

Observe that the tariffs charged by country J are independent of those charged by the other countries. This is due to the fact that a partial equilibrium model with no taxes on exports is used.

Equation (8) demonstrates the existence of a tariff complementarity effect, first demonstrated by Bagwell and Staiger (1997[c]), which is driven by the competing exporter structure of the model. As the tariff on imports from R(J) increases it becomes more attractive for J to increase its tariff on imports of j from L(J). This is the result of three reinforcing effects:

a) A higher $\tau_j^{R(J)}$ leads to a higher domestic price for j which in turn means that the consumer surplus cost of an increase in $\tau_j^{L(J)}$ is lower.

b) A higher $\tau_j^{R(J)}$ leads to an increase of imports from L(J), so the increase in tariff revenue associated with an increase in $\tau_j^{L(J)}$ is higher.

c) With a higher $\tau_j^{R(J)}$, the increase in tariff revenue associated with the increase in imports from R(J) due to the increase in $\tau_j^{L(J)}$ is higher.

This tariff complementarity effect will be driving most of the results in the rest of the paper.

From the best response functions in (8), the Nash tariffs are:

$$\tau_j^{L(J)} = \tau_j^{R(J)} = \frac{3}{8\beta} \qquad (9)$$

From (6) and (9) observe that these Nash tariffs are not prohibitive. Also from (7) observe that a country's welfare is negatively affected by a tariff on its exports (terms of trade worsen) and positively affected by a tariff on its competitors' exports (terms of trade improve)[6]. The overall impact of an importing country's tariff on an exporting country's welfare is negative leading to a negative externality on all its trading partners. Since countries do not take that into account when they choose their tariffs, the Nash tariffs involve too much protection. Efficiency (maximizing $W^A+W^B+W^C$) requires free trade. Countries are therefore faced with a Prisoners' Dilemma problem due to these terms of trade externalities.

3. Most Favored Nation (MFN) and Regionalism

The rest of the paper analyzes the impact of regionalism on multilateral tariffs in different situations. It is assumed that enforcement problems at the multilateral level lead to cooperative tariffs higher than zero. Otherwise, regionalism will have little impact on the multilateral process. Multilateral cooperation is modeled as the infinite repetition of the static game in the previous section. The three countries agree to cooperate until there is some deviation. If any country deviates they all revert to playing their Nash tariffs forever. This repeated game can lead to subgame perfect equilibria that involve

[6] $\frac{\partial W_j}{\partial \tau_{r(j)}^J} = -\frac{1}{3} - \frac{4\beta\tau_{r(j)}^J}{9} + \frac{2\beta\tau_{r(j)}^{L(J)}}{9} < 0$ and $\frac{\partial W_j}{\partial \tau_{r(j)}^{L(J)}} = \frac{2}{3} + \frac{2\beta\tau_{r(j)}^{L(J)}}{9} - \frac{\beta\tau_{r(j)}^J}{9} > 0$.

cooperation and avoid the terms of trade Prisoners Dilemma demonstrated in the previous section.[7]

Three different regimes are analyzed. The first is MFN, where countries are forced to impose non-discriminatory tariffs on imports of the same good from all their trading partners. This will serve as the benchmark regime. The impact of the other two regimes will be compared to this benchmark. The second regime involves a Free Trade Area (FTA) between two of the three countries and the third involves a Customs Union (CU) between two of the three countries.

A. MFN

This case represents multilateral tariff cooperation under the auspices of the WTO. Article 1 of the WTO is known as the MFN clause, and basically requires that every country impose non-discriminatory tariffs on imports of the same good from different countries. In the context of this model, MFN imposes the following restriction:

$$\tau_j^{R(J)} = \tau_j^{L(J)} \equiv \tau_j, \qquad (10)$$

for all $J \in \{A,B,C\}$. The multilateral agreement consists of a set of tariffs $\{\tau_{amfn},\tau_{bmfn},\tau_{cmfn}\}$, the lowest that can be supported under the threat of infinite Nash reversion. The per-period benefit of deviating from these tariffs is given by the difference between the welfare obtained by deviating to your optimal tariffs and that obtained by cooperating. That is given by:

[7] This is a straightforward application of the Folk theorem.

$$W^J(\tau_N,\tau_N,\tau_{r(J)mfn},\tau_{r(J)mfn},\tau_{l(J)mfn},\tau_{l(J)mfn}) - W^J(\tau_{jmfn},\tau_{jmfn},\tau_{r(J)mfn},\tau_{r(J)mfn},\tau_{l(J)mfn},\tau_{l(J)mfn})$$
$$= \frac{1}{3}(\tau_N - \tau_{jmfn}) + \frac{4\beta}{9}(\tau_{jmfn}^2 - \tau_N^2) \equiv W_D^J, \qquad (11)$$

where τ_N is the best response tariff given by (9). Recall that there is a dominant strategy in tariffs, or in other words the best response tariff does not depend on the tariffs charged by other countries. The incentive to deviate is characterized by two key properties. The first is that the lower the cooperative tariff τ_{jmfn} is the higher the incentive to deviate. The second is that the incentive to deviate is zero when there is no cooperation (i.e. countries charge their Nash tariffs).

The benefits of deviating must be compared to the cost of the trade war[8] that such a deviation will cause. The per-period cost of deviating is given by:

$$W^J(\tau_{jmfn},\tau_{jmfn},\tau_{r(J)mfn},\tau_{r(J)mfn},\tau_{l(J)mfn},\tau_{l(J)mfn}) - W^J(\tau_N,\tau_N,\tau_N,\tau_N,\tau_N,\tau_N)$$
$$= \frac{1}{3}\tau_{jmfn} - \frac{4\beta}{9}\tau_{jmfn}^2 - \frac{1}{6}(\tau_{(J)mfn} + \tau_{l(J)mfn}) + \frac{\beta}{18}(\tau_{r(J)mfn}^2 + \tau_{r(J)mfn}^2) + \frac{\beta\tau_N^2}{3} \equiv W_P^J. \qquad (12)$$

The cost of deviating is increasing in a country's own cooperative tariff and decreasing in other countries' cooperative tariffs. This is a direct result of the fact that higher tariffs within the country lead to increased tariff revenue and lower tariffs on a country's export goods lead to higher producer surplus.

The incentive constraint faced by each country is:

$$W_D^J \leq \frac{\delta^J}{1-\delta^J} W_P^J , \qquad (13)$$

for all J∈{A,B,C} where δ^J is the discount factor for country J. Define the equilibrium MFN tariff, τ_{jmfn}, as the lowest tariff that satisfies (13). That would be the tariff that satisfies (13) with equality. In later sections, I will assume that $\delta^B=\delta^C=1$ and that $\delta^A<1$. This asymmetry will lead to different countries supporting different tariffs and will be driving all of the results.

B. Free Trade Areas

The second regime is that of a FTA between two of the three countries. I assume that the motives behind the creation of the FTA are non-economic and therefore exogenous to the model. Most analysts agree that political, cultural and other non-economic factors are very important motives in the creation of FTAs. This will simplify the analysis and provide a tractable framework.

FTAs exist in a more general multilateral tariff cooperation framework. In other words, the members of the FTA still cooperate multilaterally with the external country. I will assume that FTAs have exogenous institutions that enforce the internal agreement even if multilateral cooperation fails. Again, such institutions might be the result of cultural, political and other non-economic links.

Consider a FTA between countries A and B. This means that internal tariffs will be set equal to zero. Therefore,

[8] A trade war is the reversion to the Nash tariffs for ever.

$$\tau_b^A = \tau_a^B = 0. \qquad (14)$$

From (8) and (14) we get that the Nash tariffs in the FTA case for both members of the FTA will be:

$$\tau_{Nfta} = \frac{3}{22\beta}. \qquad (15)$$

Notice that these tariffs are lower than the Nash tariffs in the MFN case given by (9). This is a direct consequence of the tariff complementarity effect[9] discussed earlier. In other words, lowering the tariffs on imports from the partner country to zero leads to lowering the tariffs on imports from the external country. The Nash tariffs of the external country will be the same as in the MFN case.

The benefit of deviating from the cooperative multilateral tariffs for each of the three countries is

$$W_{DFTA}^A \equiv W^A(0, \tau_{Nfat}, 0, \tau_{bfta}^C, \tau_{cfta}, \tau_{cfta}) - W^A(0, \tau_{Nfta}, 0, \tau_{Nfta}, \tau_N, \tau_N) =$$
$$\frac{1}{6}(\tau_{Nfta} - \tau_{afta}^C) + \frac{11\beta}{18}((\tau_{afta}^C)^2 - (\tau_{Nfta})^2)$$

$$W_{DFTA}^B \equiv W^B(\tau_{Nfta}, 0, \tau_{afta}^C, 0, \tau_{cfta}, \tau_{cfta}) - W^B(0, \tau_{Nfta}, 0, \tau_{Nfta}, \tau_N, \tau_N) =$$
$$\frac{1}{6}(\tau_{Nfta} - \tau_{bfta}^C) + \frac{11\beta}{18}((\tau_{bfta}^C)^2 - (\tau_{Nfta})^2)$$

[9] In a lot of the papers in this field, regionalism leads to an increase in Nash tariffs because of a market power effect (Bagwell and Staiger 1997[a], 1997[b], Hadjiyiannis 1999). Tariff complementarity leads to the exact opposite with regionalism reducing Nash tariffs.

$$W^C_{DFTA} \equiv W^C(\tau_N, \tau_N, \tau_{afta}, 0, \tau_{bfta}, 0) - W^C(\tau_{cfta}, \tau_{cfta}, \tau^C_{afta}, 0, \tau^C_{bfta}, 0)$$
$$= \frac{1}{3}(\tau_N - \tau_{cfta}) + \frac{4\beta}{9}(\tau^2_{cfta} - \tau^2_N). \quad (16)$$

The per-period cost of deviating from the multilateral cooperative tariffs is:

$$W^A_{PFTA} \equiv W^A(0, \tau^C_{afta}, \tau^C_{bfta}, 0, \tau_{cfta}, \tau_{cfta}) - W^A(0, \tau_{Nfta}, 0, \tau_{Nfta}, \tau_N, \tau_N) =$$
$$\frac{1}{3}(\tau^C_{afta} - \tau_{Nfta}) + \frac{5\beta}{9}((\tau_{Nfta})^2 - (\tau^C_{afta})^2) + \frac{1}{6}(\tau_N - \tau_{cfta}) + \frac{\beta}{18}((\tau_{cfta})^2 - (\tau_N)^2)$$

$$W^B_{PFTA} \equiv W^B(\tau^C_{bfta}, 0, \tau^C_{afta}, 0, \tau_{cfta}, \tau_{cfta}) - W^B(\tau_{Nfta}, 0, \tau_{Nfta}, 0, \tau_N, \tau_N) =$$
$$\frac{1}{3}(\tau^C_{bfta} - \tau_{Nfta}) + \frac{5\beta}{9}((\tau_{Nfta})^2 - (\tau^C_{bafta})^2) + \frac{1}{6}(\tau_N - \tau_{cfta}) + \frac{\beta}{18}((\tau_{cfta})^2 - (\tau_N)^2)$$

$$W^C_{PFTA} \equiv W^C(\tau_{cfatn}, \tau_{cfatn}, \tau^C_{afta}, 0, 0, \tau^C_{bfta}) - W^C(\tau_N, \tau_N, \tau_{Nfta}, 0, 0, \tau_{Nfta})$$
$$= \frac{1}{3}(\tau_{cfta} - \tau_N) + \frac{4\beta}{9}(\tau^2_N - \tau^2_{cfta}) - \frac{1}{3}(\tau^C_{afta} + \tau^C_{bfta}) + \frac{4\beta}{18}((\tau^C_{afta})^2 + (\tau^C_{bfta})^2) \quad (17)$$
$$+ \frac{2\tau_{Nfta}}{3} - \frac{4\beta\tau^2_{Nfta}}{9}.$$

The incentive constraint for each of the three countries is

$$W^J_{DFTA} \leq \frac{\delta^J}{1-\delta^J} W^J_{PFTA}, \quad (18)$$

where δ^J is the discount factor for country J. Observe that the expressions in (16) and (17) are more general than those in Bagwell and Staiger (1997[c]) because this analysis considers FTAs between countries with different discount factors. Bagwell and Staiger only consider FTAs between symmetric countries.

C. Customs Unions

This section examines the case where countries A and B form a CU. As with FTAs these are created for exogenous non-economic reasons and the internal agreement is enforced by internal institutions even in periods when multilateral agreements fail.

The only difference between CUs and FTAs is that CUs set their tariffs to maximize the joint Welfare of all members. In this framework this leads to Nash tariffs that are different from those in the other two regimes. The Nash tariffs in the CU case are:

$$\tau_{Ncu} = \frac{3}{10\beta}. \qquad (19)$$

Notice that these tariffs are lower than the Nash tariffs in the MFN case given by (9), but higher than those in the FTA case given by (15). This is because CU members worry about the effect lower tariffs have on other CU members. In a CU, a member country imposes zero tariffs to the imports from its partner, but positive tariffs on imports from the external country. Therefore, the partner country has an advantage in competing with the external country in that market. If one CU member reduces its tariffs on the external country, it reduces this tariff advantage given to its CU partner thus lowering that partner's welfare. Since, CUs maximize joint welfare they would take this effect into account and charge higher tariffs to the external country.

CUs deviate or cooperate as one country. If the CU is going to deviate and start a trade war it might as well get the most out of the deviation, by deviating in all the

products imported from the external country. In addition, MFN imposes no restriction on size of the CU tariffs to the external country. This is because the CU now imports two different goods from C, one going to country A and one to country B. Since these are different goods the tariffs do not have to be the same.

Maximization of cooperative welfare, however, requires that these two tariffs are set equal. Recall that a CU will maximize the joint welfare of its two members. That requires that the marginal benefit from the two tariffs be equalized. Since the two countries are identical in everything but the discount factor and welfare is independent of the discount factor, the two tariffs have to be equal.

The per-period benefits to deviation from the cooperative multilateral tariffs for the CU and country C are:

$$W_{DCU}^{CU} \equiv \frac{1}{3}(2\tau_{Ncu} - 2\tau_{cu}) + \frac{5\beta}{9}((2(\tau_{cu})^2 - 2(\tau_{Ncu})^2) \text{ and}$$

$$W_{DCU}^{C} = \frac{1}{3}(\tau_N - \tau_{cu}) + \frac{4\beta}{9}(\tau_{cu}^2 - \tau_N^2). \qquad (20)$$

The per-period cost of deviating for the CU and country C is:

$$W_{PCU}^{CU} = \frac{1}{3}(2\tau_{cu} - 2\tau_{Ncu}) + \frac{5\beta}{9}(2(\tau_{Ncu})^2 - 2(\tau_{cu})^2)$$
$$+ \frac{1}{3}(\tau_N - \tau_{ccu}) + \frac{\beta}{9}((\tau_{ccu})^2 - (\tau_N)^2)$$

$$W_{PCU}^{C} = \frac{1}{3}(\tau_{ccu} - \tau_N) + \frac{4\beta}{9}(\tau_N^2 - \tau_{ccu}^2) - \frac{2}{3}\tau_{cu} + \frac{4\beta}{9}(\tau_{cu}{}^2) + \frac{2\tau_{cu}}{3} - \frac{4\beta\tau_{cu}^2}{9}. \quad (21)$$

The incentive constraints faced by the CU and C are:

$$W_{DCU}^{CU} \leq \frac{\delta^{CU}}{1-\delta^{CU}} W_{PCU}^{CU} \text{ and}$$

$$W_{DCU}^{C} \leq \frac{\delta^{C}}{1-\delta^{C}} W_{PCU}^{C}. \quad (22)$$

The discount factor of the CU will be some weighted average of the discount factors of the member countries. As above, the lowest non-negative cooperative tariffs that satisfy (22) will be the equilibrium tariffs under the CU regime.

4. Regionalism between two patient countries

This section considers regionalism between the two patient countries B and C, and concentrates on the incentives of the external country A. I assume that $\delta^B=\delta^C=1$ and $\delta^A<1$. Bagwell and Staiger (1997[c]) considered regionalism between two patient countries and concentrated on the incentives of the internal countries. They did this by assuming that the discount factor for the external impatient country was set to zero making it impossible for this country to support any tariffs lower than its Nash tariffs[10].

[10] With $\delta=0$ the future has no value to this country, so the loss of cooperation has no impact on its incentives. This country, therefore, just maximizes its present welfare by setting its tariffs equal to its Nash tariffs.

Bagwell and Staiger (1997[c]) identified three effects associated with regionalism. The first is tariff complementarity. Recall that this refers to the lowering of Nash tariffs charged for imports from one country when the tariff to imports from the other country is lowered. Regionalism involves the lowering to zero of internal tariffs and due to tariff complementarity the Nash tariffs charged for the imports from the external country are lowered. These lower deviating tariffs lower the incentive of member countries to deviate putting downward pressure on cooperative tariffs.

The mirror image of tariff complementarity is the punishment effect. The lower Nash tariffs lead to higher welfare under punishment. Since punishments are not as severe after regionalism, cooperative tariffs will tend to be higher. The third effect is the tariff discrimination effect. In the MFN case, the two patient countries charge lower tariffs than the impatient country because they have to offer the same tariff to their two trading partners. The impatient country, therefore, free rides in the sense that it is charged lower tariffs than those it charges the other countries. Regionalism, however, allows the patient countries to charge different tariffs to the two countries. They no longer have an incentive to lower their external tariffs to the impatient country. Therefore, the tariff discrimination effect tends to increase cooperative tariffs.

With the discount factor of the external country set to zero these effects can be ranked. The low discount factor eliminates the punishment effect. The tariff complementarity effect is independent of the discount factor while the tariff discrimination effect is increasing in the discount factor. Bagwell and Staiger conclude that the lower the discount factor of the patient countries the more likely it is that

regionalism will benefit multilateral trade liberalization and that Customs Unions are always more likely to hurt the process.

Contrary to them, I consider the incentives of the external country (A) with the discount factors of the member countries (B and C) set to one. With these extremely high discount factors the loss of future cooperation has an infinite value, while the benefit of deviating from the cooperative multilateral tariffs is only finite. This means that countries B and C can support any non-negative tariff including free trade. In other words, these countries are so patient that they don't face any enforcement problems.

These countries, however, will be maximizing their cooperative welfare and the tariff that maximizes that, is not necessarily free trade. Raising tariffs results in a positive terms of trade effect and it can be shown that their optimal cooperative tariff will not be zero. Recall that efficiency requires free trade, so in effect countries B and C prefer larger slices of a smaller pie to smaller slices of a bigger pie. I will assume that there exists a system by which countries can offer each other lump sum transfers. In this case, country A will be willing to offer such transfers to B and C to induce them to choose zero cooperative tariffs. This will be beneficial for A, because it now gets a larger slice of a larger pie. From this point on, I will assume that because of this lump sum system of transfers, the cooperative tariffs of B and C are always zero under all regimes.

Let A, the impatient country have a discount factor of δ^A. The benefit of deviating and the cost of deviating in the MFN case for country A is:

$$W^A_{DMFN} = \frac{1}{3}(\tau_N - \tau_a) + \frac{4\beta}{9}(\tau_a^2 - \tau_N^2) \text{ and}$$

$$W_{PMFN}^{A} = \frac{1}{3}\tau_a - \frac{4\beta}{9}\tau_a^2 + \frac{\beta}{3}\tau_N^2 . \qquad (23)$$

The benefit and cost of deviating in the FTA case are:

$$W_{DFTA}^{A} = \frac{1}{3}(\tau_N - \tau_a) + \frac{4\beta}{9}(\tau_a^2 - \tau_N^2) \text{ and}$$

$$W_{PFTA}^{A} = \frac{1}{3}(\tau_a - \tau_N) + \frac{4\beta}{9}(\tau_N^2 - \tau_a^2) - \frac{4\beta}{9}\tau_{Nfta}^2 + \frac{2}{3}\tau_{Nfta} . \qquad (24)$$

Finally, the benefit and cost of deviating in the CU regime is:

$$W_{DCU}^{A} = \frac{1}{3}(\tau_N - \tau_a) + \frac{4\beta}{9}(\tau_a^2 - \tau_N^2) \text{ and}$$

$$W_{PCU}^{A} = \frac{1}{3}(\tau_a - \tau_N) + \frac{4\beta}{9}(\tau_N^2 - \tau_a^2) - \frac{4\beta}{9}\tau_{Ncu}^2 + \frac{2}{3}\tau_{Ncu} . \qquad (25)$$

Proposition 1: If the discount factor for countries B and C is 1 and regionalism occurs between them, then a FTA leads to higher cooperative tariffs for A and a CU leads to lower cooperative tariffs for A.

Proof: From (23), (24) and (25) observe that

$$W_{DMFN}^{A} = W_{DFTA}^{A} = W_{DCU}^{A}$$
$$W_{PCU}^{A} > W_{PMFN}^{A} > W_{PFTA}^{A}$$

Therefore, $\tau_{cu}^{A} < t_{mfn}^{A} < \tau_{fta}^{A}$.

The intuition behind Proposition 1 is the following. Countries B and C are so patient that in the presence of lump sum transfers, they always set their external tariffs equal to zero. In this case, the tariff complementarity and the tariff discrimination effects are eliminated. The only remaining effect is the punishment effect. Recall that this refers to the impact on the punishment welfare of Nash tariffs. Regionalism leads to a lowering of the Nash tariffs. The decrease is much higher in the FTA case than the CU case. The lower Nash tariffs have two effects. The first is that an overall decrease in Nash tariffs increases trade and makes everyone better off. The second is that regionalism decreases A's exports by offering A's competitors (the members of the regional agreement) a much lower tariff than A.

In the FTA case there is a huge decrease in Nash tariffs from $3/8\beta$ to $3/22\beta$ so A is better off because of more trade. At the same time, A has to put up with tariff discrimination and loses some trade to it. The FTA tariff is so low that the tariff discrimination is small and therefore the first effect dominates. Overall A gets an increase in trade and an increase in its punishment welfare. Since punishments are not that severe, cooperative tariffs increase, making FTAs bad for multilateral cooperation.

The opposite happens in the CU case. The decrease in the overall tariffs is small form $3/8\beta$ to $3/10\beta$. The expansion of trade because of this is, therefore, small. On the other hand, the tariff discrimination is now very large since A's competitors face zero tariffs while A faces $3/10\beta$. This leads to an overall decrease in trade for A, making punishments more severe. As a result cooperative tariffs drop and CUs are beneficial to the multilateral process.

The difference between these results and the Bagwell and Staiger results is simply due to the fact that they examine the impact of regionalism on the incentives of the patient countries, while I analyze the incentives of the impatient external country. Both approaches have important implications for Article XXIV of the WTO. The main result that comes out of both is that not all regionalism is good and a general exception from MFN to virtually all regionalism might not be the best policy for the WTO.

5. Regionalism between a patient and an impatient country

This section analyzes the case where an impatient country and a patient country engage in regionalism. The most important issue is whether the results of the previous section are sensitive to which of the three countries engage in regionalism. The assumptions on the discount factors are the same as in the previous section. In other words, countries B and C are very patient with discount factors of 1 and country A has a discount factor of δ^A. The difference is that A and B are now the countries engaging in regionalism. As above, a system of lump sum transfers between countries exists, that ensures that the patient countries always set their tariffs equal to zero.

In this case, the benefit and cost of deviating for country A in the MFN case are:

$$W^A_{DMFN} = \frac{1}{3}(\tau_N - \tau_a) + \frac{4\beta}{9}(\tau_a^2 - \tau_N^2) \text{ and}$$

$$W^A_{PMFN} = \frac{1}{3}\tau_a - \frac{4\beta}{9}\tau_a^2 + \frac{\beta}{3}\tau_N^2 . \qquad (26)$$

The benefit and cost of deviating in the FTA case are:

$$W_{DFTA}^{A} = \frac{1}{6}(\tau_{Nfta} - \tau_a) + \frac{11\beta}{18}(\tau_a^2 - \tau_{Nfta}^2) \text{ and}$$

$$W_{PFTA}^{A} = \frac{1}{6}(\tau_a - 2\tau_{Nfta}) - \frac{\beta}{18}\tau_N^2 - \frac{11\beta}{18}\tau_a^2 + \frac{2\beta}{3}\tau_{Nfta}^2 + \frac{1}{6}\tau_N . \quad (27)$$

Notice that these expressions are different from those in (24) because in this case A is a member of the FTA while in the previous section it was not.

The CU case is going to be a bit more complicated because it is not clear what the discount factor of the CU will be. Recall that the CU maximizes the joint welfare of its two members and decides when the two members are going to deviate. Members do not deviate unilaterally. I assume that the discount factor of the CU will be a weighted average of the two discount factors, 1 and δ^A. Therefore, the lowest the CU discount factor can be is δ^A and the highest is 1. I assume that the political process within the CU determines where in that interval the actual discount factor is. Also, recall that cooperative welfare maximization requires that the tariffs for imports by countries A and B have to be the same. This is a result of the symmetry between A and B. These countries only differ in their discount factors and cooperative welfare is independent of the discount factor. The benefit and cost of deviating for the CU, per member country, are given by:

$$W^A_{DCU} = \frac{1}{3}(\tau_{Ncu} - \tau_{cu}) + \frac{5\beta}{9}(\tau^2_{cu} - \tau^2_{Ncu}) \text{ and}$$

$$W^A_{PCU} = \frac{1}{3}(\tau_c - \tau_{Ncu}) + \frac{5\beta}{9}(\tau^2_{Ncu} - \tau^2_{cu}) - \frac{\beta}{18}\tau^2_N + \frac{1}{6}\tau_N . \quad (28)$$

Again, these expressions are different from those in (25) because A is now a member of the CU.

Proposition 2: If countries B and C have a discount factor of 1 and countries A and B engage in regionalism then:

a) The lower the value of δ^A, the more likely it is that a FTA will lower cooperative tariffs.

b) The lower the value of δ^A, the more likely it is that a CU will lower cooperative tariffs.

Proof: From (26), (27) and (28) observe that

$W^A_{DFTA} < W^A_{DMFN}$
$W^A_{DCU} < W^A_{DMFN}$
$W^A_{PFTA} < W^A_{PMFN}$
$W^A_{PCU} < W^A_{PMFN}$

Therefore, a FTA will lower both the cost and benefit of deviating. The cost of deviating is increasing in δ^A, while the benefit is independent of δ^A. This means that as δ^A is lowered the impact on the benefit of deviation dominates leading to lower cooperative tariffs. The same is true for the CU case.

The intuition behind the result for both the FTA and the CU is very similar to that in Bagwell and Staiger. The tariff complementarity effect lowers the incentive to deviate putting pressure towards lowering cooperative tariffs. The punishment effect lowers the cost of deviating putting pressure towards increasing cooperative tariffs. In this case there is no tariff discrimination effect since in all cases the patient countries impose zero tariffs. The lower the value of δ^A, the more likely it is that the tariff complementarity effect will dominate leading to lower cooperative tariffs.

Figure 2 demonstrates these results. Figure 2 defines δ^{CU} as the discount factor that equates the cooperative tariff under MFN and CU and δ^{FTA} as the discount factor that equates the cooperative tariff under MFN and FTA. Notice that as in Bagwell and Staiger CUs are always worse than FTAs. This is due to two effects. The first is that the tariff complementarity effect is weaker under a CU because of the higher Nash tariff. Also, recall that the discount factor for the CU will be weakly higher from the discount factor for the MFN and FTA case. That will tend to increase the punishment effect relative to the tariff complementarity effect in the CU case leading to even higher tariffs.

The implications of this case on Article XXIV are clear. Once again, not all regionalism is good for multilateral cooperation. For cases where a very patient country and an impatient country engage in regionalism, there is a range of discount factors for the impatient country in which a FTA would be beneficial ($\delta \in [0,\delta^{FTA}]$) and a range where a CU would be beneficial ($\delta \in [0,\delta^{CU}]$).

The most important result of the paper, however, is that the effects of regionalism change when we consider different combinations of countries engaging in regionalism. This is obvious when we compare the results in the two different cases examined in the

paper. If the two patient countries engage in regionalism FTAs will hurt the multilateral process and CUs will help the process (at least from the point of view of the impatient country). On the other hand, if a patient and an impatient country engage in regionalism the effects of regionalism will depend critically on the discount factor of the impatient country. If the discount factor is low enough regionalism is beneficial, with CUs requiring a lower discount factor than FTAs.

6. Conclusions

The present paper extends the Bagwell and Staiger (1997[c]) model to examine whether the impact of regionalism on multilateral tariffs in a model with asymmetric countries, changes depending on which countries engage in regionalism. The three countries in the model are identical in everything but their discount factors. I assumed that two countries are very patient and one country is impatient. I then examined two cases, one in which the two patient countries engage in regionalism and one in which one of the patient and the impatient country engage in regionalism.

In the first case, I found that the impatient country lowers its multilateral tariffs, if that regionalism is in the form of a Customs Union. On the other hand, if regionalism is in the form of a Free Trade Area the impatient country increases its multilateral tariffs. The results differ from Bagwell and Staiger (1997[c]) because I consider the impact of regionalism on the incentives of the impatient country, while they considered the impact on the incentives of the patient countries.

The results change dramatically when regionalism between the impatient country and one of the patient countries is considered. In this case the impact of regionalism

depends on the discount factor of the impatient country. The results are very similar to those in Bagwell and Staiger (1997[c]). The tariff complementarity effect works to lower multilateral tariffs while the punishment effect works to increase tariffs. The latter is increasing with the discount factor of the impatient country while the former is independent of that discount factor. Therefore, a lower discount factor leads to a higher likelihood that FTAs will lower multilateral tariffs.

Comparing the results from these two scenarios, it is easy to see that in an asymmetric world, the impact of regionalism is going to depend critically on which countries are involved in regionalism. In some cases, regionalism might be beneficial and in others it might not. This again points out the fact that granting a general exception to virtually all regionalism, as Article XXIV of the WTO does, might not be the right policy. The WTO might be better off by examining each case individually and then deciding which cases lower multilateral tariffs and which do not.

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Figure 1

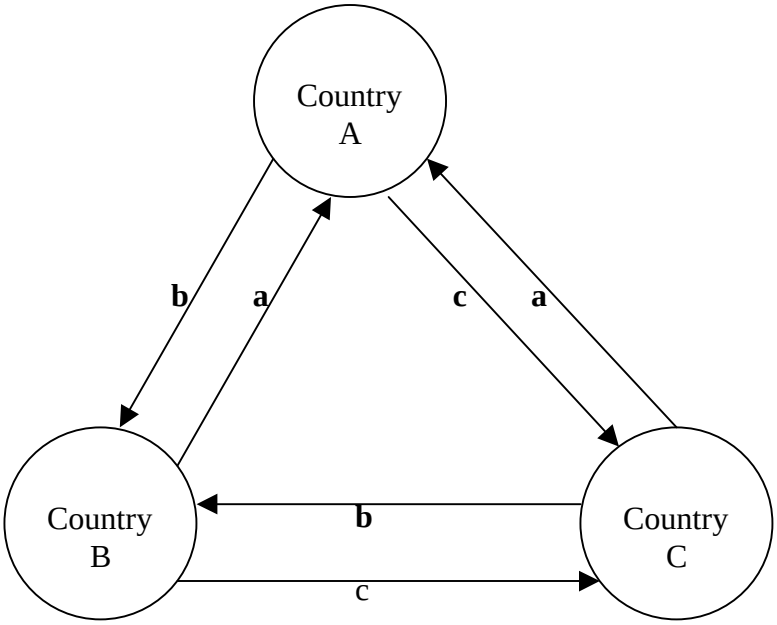
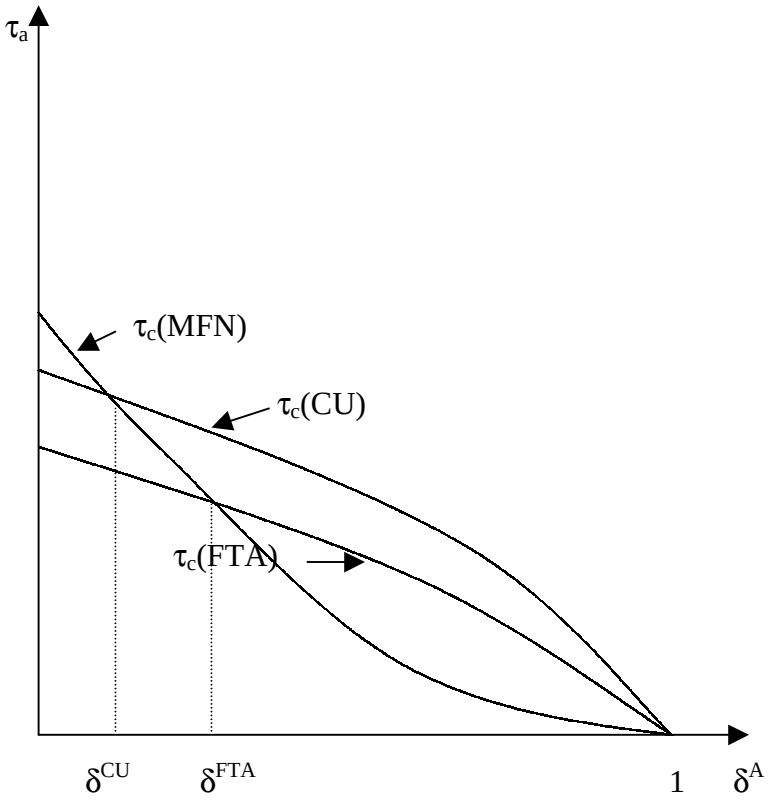


Figure 2



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