Regionalism and Conflict: Peace Creation and Peace Diversion

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Abstract

In this paper we investigate the link between preferential trade agreements and conflict. We set up a two-stage 3-country competing importer trade model with governments deciding on whether to engage in military conflict or peace in the first stage and on trade policy in the second stage. We identify a peace creation and a peace diversion effect of regionalism on conflict. Peace creation refers to the reduction in the probability of conflict between members and peace diversion refers to the increase in the probability of conflict between members and non-members. This paper is the first to explicitly model and identify the peace diversion effect, and is also the first to consider large countries endogenizing the gains from trade and trade policy.

Keywords: Preferential Trade Agreements, Regionalism, Military Conflict, War

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1 Introduction

It is commonly believed that the most important reason for establishing the European Coal and Steel Community (ECSC) in 1951 (which later developed into the European Union (EU)) was the desire to avoid another devastating major war in Europe. The EU itself subscribes to this view. This is clearly reflected in the Schuman declaration of May 9 1950 which led to the creation of the ECSC.[2] Also, in interpreting the EU motto "United in Diversity" the official EU webpage states that "Europeans are united in working together for peace and prosperity".[3]

In this paper, we investigate the link between preferential trade agreements (PTAs) and conflict in an effort to evaluate whether the expectations of the "founding fathers" of the EU were justified. At the same time we analyze the impact of PTAs on the probability of conflict between members of the PTA and nonmembers. To this end, we develop a three-country competing-importers model that links trade and commercial policy to military expenditures and conflict. We assume that two of the three countries are enemies in the sense that each of these countries contests part of the resources of the other. In the first stage, the two enemies decide whether to start a war or not, while in the second stage all three countries decide on tariffs and trade with each other. Countries at war do not trade. In the event of war the winner gets the contested resource, while the probability of winning the war depends on the military expenditures in the two countries. We then compare the possibility of conflict without regionalism to that under

[2] http://europa.eu/abc/symbols//9-may/decl_en.htm
[3] http://europa.eu/abc/symbols/motto/index_en.htm

all possible combinations of free-trade areas and customs unions.

We find that in the absence of regionalism, war can only happen if there are large asymmetries in military expenditures between the two enemies. Regionalism between enemies generally decreases the probability of conflict, in the sense that even larger asymmetries are necessary for war to be optimal. This is a direct result of an increase in the opportunity cost of starting a war which is of course the welfare during peacetime. PTAs increase peacetime welfare due to (i) the elimination of trade barriers between member countries; and (ii) the improved terms of trade against the third country stemming from the market-power and tariff-complementarity effects of regionalism. This confirms the expectations of the EU founders. We refer to this effect as the peace creation effect of PTAs reminiscent of the trade creation effect of PTAs of Viner (1950).

However, the effect of PTAs between one of the enemies and the third country on the possibility of conflict is more complicated. A customs union decreases the likelihood that the enemy involved in regionalism starts a war, because the increase in peacetime welfare is higher than the increase in wartime welfare due to the customs union. The opposite is true for the enemy that is outside the customs union. Its peacetime welfare decreases because of the negative terms-of-trade effect the customs union imposes, while wartime welfare is unaffected. The overall effect on the likelihood of war is therefore ambiguous. A free-trade area, however, increases the probability of war for both enemies. We refer to the increase in the probability of the non-member country starting a war as the peace diversion effect of PTAs (analogous to the trade diversion effect in Viner (1950)).

There are very few papers dealing with the link between regionalism and conflict. Mansfield and Pevenhouse (2000) using a panel data of bilateral trade flows find evidence of peace creation in PTAs. Vicard (2012) in another empirical investigation finds that deep PTAs such as customs unions and common markets reduce the probability of conflict but free trade agreements have no effect. Martin et al. (2011) analyze the reverse causation and find that a high frequency of past conflicts increases the probability of signing a PTA. The paper is clearly also related to the literature on trade and conflict which is much more extensive. There is a voluminous literature empirically investigating what is usually referred to as the Liberal Peace argument with mixed results. The argument is that high bilateral trade flows increase the opportunity cost of starting a war and therefore decrease the probability of conflict (see among others Oneal and Russett, 1999; Polachek, 1980; and Martin et al., 2008[4]). A number of papers find no evidence of the Liberal peace argument (see Kim and Rousseau, 2005) or even evidence of the opposite (usually referred to as the realist argument; see among others Barbieri, 1996). In this case, the argument is that competition over resources becomes even more intense when the value of those resources increases due to trade. On the theoretical side, this paper is related to the work of Skaperdas and Syropoulos (2001) and Garfinkel et al. (2009, 2012). These papers develop Heckscher-Ohlin models of trade with insecure resources and compare the welfare in autarky and free trade. They find that the terms of trade are a key factor in determining whether free trade increases welfare relative to

[4]Martin et al (2008), however, also finds that multilateral openness increases the probability of conflict.

autarky.

The contribution of the paper is twofold. First it is the only paper explicitly modelling and identifying the peace diversion effect of PTAs. Second, this is the only paper that offers a full fledged trade model of regionalism (or trade) and conflict with large countries. This is important since the gains from trade and thus the opportunity cost of conflict are endogenous.

2 The Model

We assume the world consists of three countries, A, B, and C, that trade three goods, a, b, and c, with trade being subject to the imposition of specific (non-prohibitive) import tariffs. Country J is endowed with three units of good j that are uniformly distributed over its territory, and zero units of the other two goods, where $J \in \{A, B, C\}$ and $j \in \{a, b, c\}$. On the consumption side, we maintain the assumptions that demand functions are symmetric across countries and goods, and that the demand for any given good in any country is independent of the other two goods' prices. More specifically, the demand for good $i \in \{a, b, c\}$ in country J is of the linear form $C\left(P_i^J\right) = \alpha - \beta P_i^J$, where $\alpha > 3$, $\beta > 0$ are constants and P_i^J is good i's price in country J. Given our set-up, country J exports good j to the other two countries, that is, we have a competing-importers framework.

Countries A and B are "enemies," as they contest a fraction $\mu < 1$ of each other's territory. This territorial dispute between countries A and B induces them to engage in the production of "guns," which, for simplicity, is assumed to be a non-consumption, non-tradable good. Arming has two

offsetting welfare effects. On the one hand, gun production consumes a country's endowment, or resources, in a uniform manner across its territory. On the other hand, a country's allocation of resources to arming enhances its chances of prevailing in a military conflict, should such a conflict arise. More specifically, should countries A and B go to war, country A prevails with probability $g^A/\left(g^A+g^B\right)$ and, thereby, seizes the whole of country B's disputed territory while retaining its own contested territory, where g^A, $g^B<1$ denote the fraction of their endowment that countries A and B, respectively, devote to gun production. Therefore, in the event of victory, country A appropriates $3\mu\left(1-g^B\right)$ units of good b, with $3\left(1-g^B\right)$ being country B's post-arming, pre-war endowment of good b. Symmetrically analogous relationships hold for country B. War is, however, costly even in the event of victory. In particular, should countries A and B engage in military conflict, they lose, respectively, K^A units of good a and K^B units of good b (on top of each losing its contested territory to the other if defeated), where K^A, K^B are a priori known to both countries. K^A, K^B can be thought of as the (fixed) cost of destruction born by, respectively, countries A and B as a result of the military dispute. In addition, in the event of war, bilateral trade between countries A and B is totally disrupted.

To keep our analysis as straightforward as possible, we introduce two simplifying assumptions.[5] First, any endowment a country seizes through war can only be used for domestic consumption, that is, it cannot be exported. Second, there is no territorial dispute between country C and either country

[5] *It is important to stress that the qualitative nature of our findings is robust to relaxing either of these assumptions.*

A or country B; thus, country C devotes no resources to the production of guns (that is, $g^C = 0$).

The timing of actions undertaken by the three countries is as follows:

- Stage 1: Countries A and B decide simultaneously on whether to wage war against each other, taking g^A and g^B as given. In the event of war, they experience the aforementioned changes in their endowments and bilateral trade relationship.

- Stage 2: All three countries simultaneously pick their import tariffs.

To explore the ramifications of trade and regionalism for interstate conflict, we solve this two-stage game under five different scenarios: (i) no regionalism, which is our benchmark scenario; (ii) an FTA agreement between countries A and B; (iii) an FTA agreement between countries A and C; (iv) a CU agreement between countries A and B; and (v) a CU agreement between countries A and C. For each scenario, we solve the game backwards in order to identify its subgame-perfect Nash equilibria in pure strategies.

3 Conflict in the Absence of a PTA

We start by solving our two-stage game under the benchmark scenario, that is, under no regionalism. To this end, we first look at stage 2 and derive the Nash equilibrium tariffs as a function of the stage-1 outcome. There exist three possible stage-1 outcomes to consider: (i) peace; (ii) war between countries A and B, in which country A prevails; and (iii) war between countries A and B, in which country B prevails.

Let us begin with peace. Letting τ_j^{-J} denote the tariff of country $-J$ on good j, the no-arbitrage condition yields $P_j^{-J} = P_j^J + \tau_j^{-J}$, where $J \in \{A, B, C\}$, $-J \in \{A, B, C\} \setminus \{J\}$, and $j \in \{a, b, c\}$. The equilibrium prices can then be obtained from the usual market-clearing conditions: $C\left(P_j^J\left(\overrightarrow{\tau}_j\right)\right) + \sum_{-J} C\left(P_j^{-J}\left(\overrightarrow{\tau}_j\right)\right) = 3\left(1 - g^J\right)$, where $\overrightarrow{\tau}_j$ represents the vector of tariffs good j faces internationally.[6]

We define the welfare of country J as the sum over each (consumption) good of consumer surplus, producer surplus, and tariff revenue:

$$W^{Jnregpeace} = \int_{P_j^J\left(\overrightarrow{\tau}_j\right)}^{\frac{\alpha}{\beta}} C\left(P\right) dP + \sum_{-j} \int_{P_{-j}^J\left(\overrightarrow{\tau}_{-j}\right)}^{\frac{\alpha}{\beta}} C\left(P\right) dP + \int_0^{P_j^J\left(\overrightarrow{\tau}_j\right)} 3\left(1 - g^J\right) dP + \sum_{-j} \tau_{-j}^J M_{-j}^J\left(\overrightarrow{\tau}_{-j}\right), \tag{1}$$

where $-j \in \{a, b, c\} \setminus \{j\}$, and M_{-j}^J represents the imports into country J of good $-j$. Setting $\left(\partial W^{Jnregpeace}/\partial \tau_{-j}^J\right) = 0$ and solving for τ_{-j}^J, we obtain countries' best-response tariffs. For instance, country A's best-response tariff on good b equals:

$$\tau_b^{A^R} = \frac{3(1 - g^B) + \beta \tau_b^C}{8\beta}, \tag{2}$$

with symmetrically analogous relationships holding for the rest of the countries and goods. As equation (2) illustrates, there is strategic complementarity between countries' tariff policies. The intuition is straightforward. A higher tariff, for example, on good b by country C implies, ceteris paribus, more units of b being shipped to country A. Thus, a higher τ_b^C raises the tariff-revenue gain for country A from marginally increasing τ_b^A, inducing

[6] Recall here that $g^C = 0$ throughout our analysis.

country A to actually impose as well a higher tariff on good b. Finally, using the best-response tariff functions, the Nash equilibrium tariffs are readily derived:

$$\tau_{-j}^{J^{nregpeace}} = \frac{3\left(1-g^{-J}\right)}{7\beta}. \tag{3}$$

Let us consider next the second possible stage-1 outcome: war between countries A and B, in which country A prevails. As we discussed above, in such a case, country A seizes the whole of country B's disputed territory and, as a result, obtains $3\mu\left(1-g^B\right)$ units of good b, which can be used solely for domestic consumption. Moreover, due to the destruction brought about by the military conflict, country B loses (additionally) K^B units of good b, while country A loses K^A units of good a. Finally, bilateral trade between countries A and B ceases. Therefore, national welfare for countries A and B is now, respectively, given by:

$$\begin{aligned} W^{A^{nregwinsA}} &= \int_{P_a^A(\tau_a^C)}^{\frac{\alpha}{\beta}} C\left(P\right)dP + \int_{P_b^A}^{\frac{\alpha}{\beta}} C\left(P\right)dP \\ &+ \int_{P_c^A(\tau_c^A,\tau_c^B)}^{\frac{\alpha}{\beta}} C\left(P\right)dP + \int_0^{P_a^A\left(\tau_a^C\right)} \left[3\left(1-g^A\right)-K^A\right]dP \\ &+ \int_0^{P_b^A} 3\mu\left(1-g^B\right)dP + \tau_c^A M_c^A\left(\tau_c^A,\tau_c^B\right) \text{ and} \end{aligned} \tag{4}$$

$$\begin{aligned} W^{B^{nregwinsA}} &= \int_{P_b^B\left(\tau_b^C\right)}^{\frac{\alpha}{\beta}} C\left(P\right)dP + \int_{P_c^B(\tau_c^A,\tau_c^B)}^{\frac{\alpha}{\beta}} C\left(P\right)dP \\ &+ \int_0^{P_b^B\left(\tau_b^C\right)} \left[3\left(1-\mu\right)\left(1-g^B\right)-K^B\right]dP + \tau_c^B M_c^B\left(\tau_c^A,\tau_c^B\right). \end{aligned} \tag{5}$$

On the other hand, national welfare for C is still given by (1), as the war between A and B does not affect country C's endowment, nor does it disrupt

C's bilateral trade with either of the adversaries.

Straightforward calculations yield the following Nash equilibrium tariffs:

$$\tau_c^{A^{nregwinsA}} = \frac{3}{7\beta} = \tau_c^{B^{nregwinsA}}, \tag{6}$$

$$\tau_a^{C^{nregwinsA}} = \frac{3\left(1-g^A\right)-K^A}{3\beta}, \text{ and} \tag{7}$$

$$\tau_b^{C^{nregwinsA}} = \frac{3\left(1-\mu\right)\left(1-g^B\right)-K^B}{3\beta}. \tag{8}$$

The welfare ramifications for the three countries of the third possible stage-1 outcome—war between countries A and B, in which country B prevails—are symmetrically analogous to the ones of the second possible stage-1 outcome—war between countries A and B, in which country A prevails—which we have just analyzed. The Nash equilibrium tariffs under the scenario that country B has won the war against country A in stage 1, then, equal:

$$\tau_c^{A^{nregwinsB}} = \frac{3}{7\beta} = \tau_c^{B^{nregwinsB}}, \tag{9}$$

$$\tau_a^{C^{nregwinsB}} = \frac{3\left(1-\mu\right)\left(1-g^A\right)-K^A}{3\beta}, \text{ and} \tag{10}$$

$$\tau_b^{C^{nregwinsB}} = \frac{3\left(1-g^B\right)-K^B}{3\beta}. \tag{11}$$

Last, we turn to stage 1, where countries A and B decide simultaneously on whether to wage war against each other, taking g^A and g^B as given. To do so, they compare their welfare under peace against their expected welfare under war. For example, country A compares $W^{A^{nregpeace}}$ against $\left(g^A/\left(g^A+g^B\right)\right)W^{A^{nregwinsA}}+\left(g^B/\left(g^A+g^B\right)\right)W^{A^{nregwinsB}}$. To solve the first

stage of the game, we need to resort to numerical analysis.[7] As Figure 1 illustrates, war takes place if (and only if) countries' military expenditures (that is, g^A and g^B) are sufficiently asymmetric. Intuitively, war is optimal for a given country if (i) its probability of prevailing is sufficiently high; and (ii) the endowment it will appropriate in the event of victory is sufficiently large. If g^A and g^B are sufficiently asymmetric, both of the aforementioned conditions are satisfied for the country with the relatively high military expenditures, which has thereby an incentive to initiate war against the country with the relatively low level of arming.

4 Conflict in the Presence of an FTA

We next examine the implications of an FTA agreement for interstate conflict. Two scenarios are considered: (i) an FTA agreement between countries A and B, that is, an FTA agreement between the enemy countries; and (ii) an FTA agreement between countries A and C, that is, an FTA agreement between one of the enemy countries and the third country. In the former scenario, should countries A and B engage in military conflict, their FTA breaks down and there is no bilateral trade any longer between them.

4.1 An FTA between Countries A and B

We start by examining stage 2 and solving for the Nash equilibrium tariffs as a function of the stage-1 outcome. As before, we need to consider three

[7] The numerical analysis was carried out using Mathematica. The file is available from the authors upon request.

possible stage-1 outcomes: (i) peace; (ii) war between countries A and B, in which country A prevails; and (iii) war between countries A and B, in which country B prevails. Let us start with peace. In such a case, the FTA between countries A and B is preserved, meaning that $\tau_b^A = \tau_a^B = 0$. Otherwise, the welfare for country $J \in \{A, B, C\}$ is still given by (1). It is direct to show that the Nash equilibrium tariffs then equal:

$$\tau_c^{A^{ftaABpeace}} = \frac{3}{7\beta} = \tau_c^{B^{ftaABpeace}}, \tag{12}$$

$$\tau_a^{C^{ftaABpeace}} = \frac{3\left(1 - g^A\right)}{8\beta}, \text{ and} \tag{13}$$

$$\tau_b^{C^{ftaABpeace}} = \frac{3\left(1 - g^B\right)}{8\beta}. \tag{14}$$

Two observations can be readily made. First, $\tau_c^{A^{ftaABpeace}} = \tau_c^{B^{ftaABpeace}} = \tau_c^{A^{nregpeace}} = \tau_c^{B^{nregpeace}} = (3/7\beta)$. Second, $\tau_a^{C^{ftaABpeace}} < \tau_a^{C^{nregpeace}}$ and $\tau_b^{C^{ftaABpeace}} < \tau_b^{C^{nregpeace}}$, reflecting the tariff-complementarity effect of FTA formation.[8] To gain some insight into these results, note that the reduction to zero of the tariffs of countries A and B on each other has a negative impact on their exports to country C, lowering the tariff-revenue gain for country C from marginally raising τ_a^C or τ_b^C. Therefore, the removal of all trade barriers between A and B induces C to reduce its import tariffs on goods a and b. On the other hand, because of our assumption that the demand for any given good in any country does not depend on the other two goods'

[8] The term "tariff complementarity" was first introduced by Bagwell and Staiger (1999). However, in their competing-exporters model, the tariff-complementarity effect of PTAs works to reduce the tariffs of member countries vis-à-vis non-member countries. By contrast, in our competing-importers framework, it works to lower the tariffs of non-member countries vis-à-vis member countries.

prices, the optimal tariff choices of countries A and B vis-à-vis country C are unaffected by their FTA agreement.

Under the other two possible stage-1 outcomes—war between countries A and B, in which either country A or country B prevails—the FTA breaks down and bilateral trade between A and B ceases. Thus, under the two different stage-1 war outcomes, the stage-2 subgames (and their tariff equilibria) are identical with the corresponding benchmark ones.

Finally, let us consider stage 1. To solve the first stage of the game, numerical analysis is required anew. As Figure 2 demonstrates, for sufficiently small g^B, the likelihood of country A waging war against country B decreases as a result of their FTA agreement, meaning that for such values of g^B, the FTA between countries A and B has a "peace-creation" effect on country A. Intuitively, the FTA agreement between countries A and B has no effect on A's expected welfare under war, whereas it does raise, for sufficiently small g^B, A's welfare under peace via (i) its tariff-complementarity effect, which acts to improve A's terms of trade vis-à-vis country C; and (ii) totally eliminating the inefficient Nash trade barriers between A and B.

However, as Figure 2 illustrates, for "extreme" values of g^B, the likelihood of A initiating war against B increases as a result of their FTA agreement. The intuition is slightly more involved in this case. In particular, as we argued above, the FTA between countries A and B leaves A's expected welfare under war unaffected. On the other hand, under peace, the FTA in question has (i) a positive effect on P_a^A, reducing consumer surplus in country A; but also (ii) a negative effect on P_b^A, raising the surplus of consumers in country A. For extreme values of g^B, country B's post-arming endowment

of good b that is available for consumption globally is "small," substantially weakening the relative strength of the latter consumer-surplus effect. In fact, it turns out that for such values of g^B, the FTA agreement between A and B leads, under peace, to a decrease in A's overall welfare mainly via inflicting on it a consumer-surplus loss. In any case, as this scenario arises only for unrealistically high values of g^B, we choose to ignore it in our subsequent analysis.

Parallel results hold for country B. Hence, for the (empirically) relevant range of g^A and g^B, an FTA agreement between the enemy countries has a peace-creation effect on both of them, rendering the eruption of war less likely.

4.2 An FTA between Countries A and C

We now examine the impact of an FTA agreement between countries A and C on the likelihood that the enemy countries go to war. Given the FTA between A and C, we have, by definition, that $\tau_c^A = \tau_a^C = 0$. In order to derive the stage-2 Nash equilibrium tariffs, suppose first that the stage-1 outcome is peace. It can be readily shown that under this scenario, the Nash equilibrium tariffs equal:

$$\tau_b^{A^{ftaACpeace}} = \frac{3\left(1-g^B\right)}{7\beta} = \tau_b^{C^{ftaACpeace}}, \tag{15}$$

$$\tau_a^{B^{ftaACpeace}} = \frac{3\left(1-g^A\right)}{8\beta}, \text{ and} \tag{16}$$

$$\tau_c^{B^{ftaACpeace}} = \frac{3}{8\beta}. \tag{17}$$

Suppose next that war breaks out in stage 1, in which country A prevails. Straightforward calculations yield the following Nash tariffs:

$$\tau_c^{B^{ftaACwinsA}} = \frac{3}{8\beta} \text{ and} \tag{18}$$

$$\tau_b^{C^{ftaACwinsA}} = \frac{3\left(1-\mu\right)\left(1-g^B\right) - K^B}{3\beta}. \tag{19}$$

Alternatively, if country B wins the war, the tariffs that emerge in Nash equilibrium equal:

$$\tau_c^{B^{ftaACwinsB}} = \frac{3}{8\beta} \text{ and} \tag{20}$$

$$\tau_b^{C^{ftaACwinsB}} = \frac{3\left(1-g^B\right) - K^B}{3\beta}. \tag{21}$$

Note that $\tau_a^{B^{ftaACpeace}}$, $\tau_c^{B^{ftaACpeace}}$, $\tau_c^{B^{ftaACwinsA}}$, and $\tau_c^{B^{ftaACwinsB}}$ are strictly lower than, respectively, $\tau_a^{B^{nregpeace}}$, $\tau_c^{B^{nregpeace}}$, $\tau_c^{B^{nregwinsA}}$, and $\tau_c^{B^{nregwinsB}}$, which stems from the tariff-complementarity effect of FTA formation.

Finally, we turn to stage 1. The results from our numerical analysis are depicted in Figure 2. As the figure illustrates, country A is more likely to initiate war against country B as a result of its FTA agreement with country C. Intuitively, there are two offsetting forces at work here. In particular, the FTA agreement between countries A and C increases A's welfare under peace via (i) eliminating the inefficient Nash trade barriers between A and C; and (ii) its tariff-complementarity effect, which works to improve A's terms of trade vis-à-vis country B. However, through the former channel, the FTA in question also raises A's expected welfare under war. Our numerical analysis

does reveal that the pro-war force (that is, the latter one) dominates. To gain some insight into this, recall that under war, country A only trades with country C; thus, the removal of all trade barriers between A and C has a significantly larger (positive) welfare impact on A under war than under peace.

At the same time, as Figure 2 demonstrates, country B is more likely as well to wage war against country A as a result of the FTA agreement between A and C. The intuition underlying this finding is straightforward. Once again, there are two conflicting forces at play. On the one hand, the FTA between A and C lowers B's welfare under peace via its tariff-complementarity effect, which acts to worsen B's terms of trade vis-à-vis both FTA partners. On the other hand, via inducing the deterioration of B's terms of trade vis-à-vis country C, the FTA in question also decreases B's expected welfare under war. Trivially, the pro-war force (that is, the former one) is relatively stronger and hence, the FTA between countries A and C increases the likelihood of country B initiating war against its enemy. To sum up, an FTA agreement between one of the enemy countries and the third country produces a "peace-diversion" effect on both adversaries, rendering the eruption of war more likely.

5 Conflict in the Presence of a CU

We finally examine the ramifications of a CU agreement for interstate conflict. In the same spirit as above, we consider two alternative scenarios: (i) a CU agreement between countries A and B, that is, a CU agreement between the

enemy countries; and (ii) a CU agreement between countries A and C, that is, a CU agreement between one of the enemy countries and the third country. Note that in the former scenario, the CU between the enemy countries only survives under peace.

5.1 A CU between Countries A and B

Suppose first that the stage-1 outcome is peace. In such a case, the CU between the enemy countries is preserved, meaning that $\tau_b^A = \tau_a^B = 0$ and that countries A and B have a common external tariff vis-à-vis country C. Straightforward calculations reveal that in Nash equilibrium:

$$\tau_c^{A^{cuABpeace}} = \tau_c^{B^{cuABpeace}} = \frac{6}{5\beta}, \tag{22}$$

$$\tau_a^{C^{cuABpeace}} = \frac{3\left(1-g^A\right)}{8\beta}, \text{ and} \tag{23}$$

$$\tau_b^{C^{cuABpeace}} = \frac{3\left(1-g^B\right)}{8\beta}. \tag{24}$$

Observe that $\tau_c^{A^{cuABpeace}} = \tau_c^{B^{cuABpeace}} > \tau_c^{A^{nregpeace}} = \tau_c^{B^{nregpeace}}$, which is due to the market-power effect of CU formation. In particular, as the CU members harmonize their external tariff policies, the CU enjoys more market power (that is, a greater ability to affect world prices) than either of its members taken individually. This naturally results in countries A and B jointly implementing more restrictive import policies as compared with their unilateral policies in the absence of the CU. By contrast, $\tau_a^{C^{cuABpeace}} < \tau_a^{C^{nregpeace}}$ as well as $\tau_b^{C^{cuABpeace}} < \tau_b^{C^{nregpeace}}$, reflecting the tariff-complementarity effect of CU formation.

If instead a war breaks out in stage 1—in which either country A or country B prevails—the CU, then, breaks down and bilateral trade between A and B is totally disrupted. Therefore, under the two different stage-1 war outcomes, the stage-2 subgames (and their tariff equilibria) are exactly the same as the corresponding benchmark ones.

Last, we look at stage 1. Figure 3 depicts the findings that emerge from our numerical analysis. As the figure shows, the likelihood that countries A and B wage war against each other decreases as a result of their CU agreement, that is, the CU agreement between A and B produces a peace-creation effect on both enemy countries. Intuitively, the CU between A and B has no effect on their expected welfare under war, but it does raise their welfare under peace via (i) eliminating their inefficient Nash trade barriers against each other; and (ii) its market-power and tariff-complementarity effects, which work to improve A's and B's terms of trade vis-à-vis country C.

5.2 A CU between Countries A and C

We finally investigate the implications of a CU agreement between countries A and C for military conflict between the enemy countries. Given the CU between countries A and C, we have, by definition, that $\tau_c^A = \tau_a^C = 0$ and that countries A and C impose a common tariff on non-member country B (if they both trade with B). Under the scenario of peace in stage 1, the

following tariffs arise in Nash equilibrium:

$$\tau_b^{A^{cuACpeace}} = \frac{6\left(1-g^B\right)}{5\beta} = \tau_b^{C^{cuACpeace}}, \tag{25}$$

$$\tau_a^{B^{cuACpeace}} = \frac{3\left(1-g^A\right)}{8\beta}, \text{ and} \tag{26}$$

$$\tau_c^{B^{cuACpeace}} = \frac{3}{8\beta}. \tag{27}$$

Consider next the second possible stage-1 outcome: war between countries A and B, in which country A prevails. It is straightforward to show that the Nash equilibrium tariffs, then, equal:

$$\tau_c^{B^{cuACwinsA}} = \frac{3}{8\beta} \text{ and} \tag{28}$$

$$\tau_b^{C^{cuACwinsA}} = \frac{3\left(1-\mu\right)\left(1-g^B\right)-K^B}{3\beta}. \tag{29}$$

If instead country B prevails in the war, the following tariffs emerge in Nash equilibrium:

$$\tau_c^{B^{cuACwinsB}} = \frac{3}{8\beta} \text{ and} \tag{30}$$

$$\tau_b^{C^{cuACwinsB}} = \frac{3\left(1-g^B\right)-K^B}{3\beta}. \tag{31}$$

Observe here that (i) $\tau_b^{A^{cuACpeace}} = \tau_b^{C^{cuACpeace}} > \tau_b^{A^{nregpeace}} = \tau_b^{C^{nregpeace}}$, reflecting the market-power effect of CU establishment; and (ii) $\tau_a^{B^{cuACpeace}}$, $\tau_c^{B^{cuACpeace}}$, $\tau_c^{B^{cuACwinsA}}$, and $\tau_c^{B^{cuACwinsB}}$ are strictly lower than, respectively, $\tau_a^{B^{nregpeace}}$, $\tau_c^{B^{nregpeace}}$, $\tau_c^{B^{nregwinsA}}$, and $\tau_c^{B^{nregwinsB}}$, which stems from the tariff-complementarity effect of CU formation.

Last, let us turn to stage 1. The results from our numerical analysis are illustrated in Figure 3. As the figure demonstrates, country A is less likely to initiate war against country B as a result of its CU agreement with country C. The intuition underlying this finding is direct. Two conflicting forces are at work here. On the one hand, the CU between A and C raises A's welfare under peace via (i) totally eliminating the inefficient Nash trade barriers between A and C; and (ii) its market-power and tariff-complementarity effects, which act to improve A's terms of trade vis-à-vis country B. On the other hand, through the former channel, the CU in question also increases A's expected welfare under war. Trivially, the pro-peace force (that is, the former one) is relatively stronger and thereby, the CU between A and C decreases the likelihood of country A waging war against its enemy.

However, country B is more likely to start a war against country A as a result of the CU agreement between A and C, meaning that the overall effect of the CU on the likelihood that the enemy countries go to war is ambiguous. Intuitively, there are once again two offsetting forces at play. In particular, the CU between A and C lowers B's welfare under peace via its market-power and tariff-complementarity effects, which work to worsen B's terms of trade vis-à-vis both CU partners. At the same time, via inducing the deterioration of B's terms of trade vis-à-vis country C, the CU in question also has a negative impact on B's expected welfare under war, but clearly, the pro-war force (that is, the former one) dominates. In other words, a CU agreement between one of the adversaries and the third country produces a peace-diversion effect on the enemy country left out of the agreement.

6 Empirical Evidence

This section investigates empirically whether the peace-creation and peace-diversion effects of PTAs predicted by our theoretical model are in line with the historical data on interstate conflicts, international trade, and regionalism.

6.1 Data and Main Variables

The principal source of the data used in this paper is the COW project, which makes available a wide range of data sets related to armed conflicts and international relations over the last two centuries. Our dependent variable, MID_{ijt}, is the occurrence of an MID between two countries, and comes from the COW MID data set, version 3.02, that spans the period 1816–2001. Our analysis, however, uses only the years 1958–2000, primarily due to data restrictions regarding our main explanatory variables related to regionalism. To obtain robust estimates of war determinants, we follow the empirical literature on military conflicts and use a broad definition of war. In particular, we define MID_{ijt} to be equal to 1 (and 0 otherwise) when an MID occurs at date t between countries i and j involving the display of force, the use of force, or actual warfare, that is, when an MID of hostility level 3, 4, or 5, respectively, in the COW coding system takes place. In our robustness analysis, we experiment with a stricter definition of war by classifying as such only MIDs with a hostility level of (i) either 4 or 5; or (ii) solely 5.[9]

The key explanatory variables, capturing regionalism, are created using

[9]For more information on this data, see Jones et al. (1996), Faten et al. (2004), and the COW website (http://www.correlatesofwar.org/).

information available in de Sousa (2012). In particular, for each country pair at date t, an FTA as well as a CU dummy are constructed, FTA_{ijt} and CU_{ijt}, in order to investigate the impact of PTAs on the probability of conflict between member countries, that is, so as to assess their peace-creation effect. We also create two additional PTA-related variables, $PTFTA_{ijt}$ and $PTCU_{ijt}$, in order to explore the impact of PTAs on the probability of conflict between member and non-member countries, that is, so as to assess their peace-diversion effect. The variables $PTFTA_{ijt}$ and $PTCU_{ijt}$ reflect the percentage of trade of the country pair $(i,\ j)$ at date t with the rest of the world (ROW) that is covered by FTA and CU agreements, respectively. More specifically, $PTFTA_{ijt}$ is computed as follows:

$$PTFTA_{ijt} =$$
$$= \frac{\text{FTA trade of } i \text{ with ROW at } t + \text{FTA trade of } j \text{ with ROW at } t}{\text{Total trade of } i \text{ with ROW at } t + \text{Total trade of } j \text{ with ROW at } t}, \quad (32)$$

where the ROW is all countries except i and j, and the trade data comes from the COW Bilateral Trade data set, version 2.01.[10] It is important to stress that the numerator does not include the bilateral trade of countries i and j with third countries that have simultaneously FTA agreements with both of the former. This is done so that our econometric analysis follows closely our theoretical model. Of course, we adjust the denominator of (32) accordingly. $PTCU_{ijt}$ is computed in an analogous way.

Moreover, to enhance comparability with the existing literature, we exploit the data set assembled by Martin et al. (2008), which includes a long

[10] For more information on the trade data, see Barbieri et al. (2008, 2009).

list of potential common determinants of both regionalism and conflict.[11] These variables can be broadly divided into two sets: gravity (or trade) variables and political ones. The former set includes variables such as bilateral weighted distance, or dummies controlling for contiguity, colonial links, and the sharing of a common language between countries i and j. The latter set includes variables controlling for the size of the two countries, their political regime, and the diplomatic affinity between them.

Our sample contains 260,781 annual country-pair ("dyadic") observations over the period 1958–2000. Out of these, only 1,321 (that is, 0.51%) are engaged in a military conflict according to our definition. Table 1 presents descriptive statistics for the main variables used in our regressions. As is evident from the table, when the sample is restricted in our preferred regression specification (column 4 of Table 2) due to data availability, the overall MID frequency as well as the descriptive statistics for the PTA-related variables all remain similar.

6.2 Empirical Strategy

The occurrence of an MID between two countries, i and j, at time t is a binary event, and its probability is estimated using a logit model. The empirical specification adopted follows largely the literature and is given by:

$$\Pr(MID_{ijt}) = \beta_0 + \beta_1 FTA_{ijt} + \beta_2 CU_{ijt} + \beta_3 PTFTA_{ijt} + \beta_4 PTCU_{ijt} + \boldsymbol{\gamma}\mathbf{Z}_{ijt}, \tag{33}$$

[11] The data is available on Mayer's webpage (http://econ.sciences-po.fr/thierry-mayer).

where the dependent variable—MID_{ijt}—and the PTA-related explanatory variables—FTA_{ijt}, CU_{ijt}, $PTFTA_{ijt}$, $PTCU_{ijt}$—are as defined above, and $\mathbf{Z}_{ijt}$ is a vector of gravity and political controls. This empirical specification enables us to test the main predictions derived from our theoretical model, which can be stated in terms of equation (33) as follows:

Testable Prediction 1: The existence of an FTA or a CU between countries i and j decreases the probability of conflict between them (*peace creation*). We therefore expect that β_1, $\beta_2 < 0$.

Testable Prediction 2: The higher the percentage of trade of the country pair (i, j) with the ROW that is covered by FTA agreements, the higher the probability of conflict between the two countries (*peace diversion*). We then expect that $\beta_3 > 0$.

Sign of β_4: As the percentage of trade of the country pair (i, j) with the ROW that is covered by CU agreements rises, the probability of conflict between the two countries could potentially increase or decrease. Thus, our theory offers no prediction for the sign of β_4.

An obvious econometric issue that emerges when estimating equation (33) is the likely endogeneity of the FTA and the CU dummies. A negative correlation between these two variables and the probability of interstate conflict could arise with causality running in both directions. In order to address this issue, we estimate equation (33) in three different ways. First, we include a large number of potential common determinants of both regionalism and conflict. Second, we take advantage of the panel dimension of our data set and control for country-pair fixed effects. Thereby, we control for time-invariant historical, cultural, and/or other factors that could be affecting

regionalism as well as the probability of interstate conflict, and for which we have no observable variables to account for in our regressions. Third, to control for unobserved, but time-varying common determinants of regionalism and conflict, we employ an instrumental variable strategy.

6.3 Results

Table 2 presents the pooled logit estimations in the first four columns and the fixed-effect estimations in columns 5 and 6. These estimations are along similar lines as those appearing in Table 3 in Martin et al. (2008). In all regressions, we control for the number of peaceful years since the last MID between the country pair (i, j), which is standard in the political science literature. Moreover, all regressions, except those in which we control for country-pair fixed effects, include a contiguity dummy and the weighted distance between the two countries as these are natural determinants of interstate conflict as well as of regionalism.

In the first two regressions, the sample is substantially restricted to only contiguous pairs (model 1), and contiguous pairs with a bilateral weighted distance of less than 1,000 km (model 2). These are the country pairs which we expect to be the most prone to engaging in military conflict. In these regressions, in which we do not include any additional controls, the PTA-related explanatory variables are not statistically significant.

Regression 3 uses the full sample of country pairs and controls for time effects. More specifically, we include year dummies to control for any global factors that might be affecting the probability of interstate conflict as well

as the evolution of regionalism over time. Furthermore, we include 10 dyadic past-war dummies, indicating whether the country pair was at war at date $t-1$, $t-2$,..., $t-10$, so as to control for temporal autocorrelation of the dependent variable. This set of dyadic past-war dummies along with the year dummies are included in all the regressions henceforth. In addition, we introduce a dummy variable for zero trade between the country pair, accounting for the existence (or not) of an economic relationship between the two countries.[12] In this regression, we find evidence of both peace creation, as indicated by the negative sign of the coefficients on the FTA and the CU dummies, and peace diversion, as indicated by the positive sign of the coefficient on $PTCU_{ijt}$.

In regression 4, we introduce a broad set of gravity and political controls that are potential common determinants of both interstate conflict and regionalism. In particular, we include dummies indicating whether countries i and j share a common language, whether one of the countries has ever been a colony of the other, and whether the two countries have had a common colonizer after 1945. These variables have been shown empirically to affect trade flows between countries (e.g., Rose, 2004), and hence, they might also affect countries' incentives to sign PTAs. At the same time, countries having colonial links or speaking the same language tend to share cultural, historical, and/or institutional traits that might affect the probability of engaging in military conflict against each other. We further control for the number of General Agreement on Tariffs and Trade/World Trade Organiza-

[12] Following Martin et al. (2008), the zero-trade dummy is lagged by 4 years to address the issue of contemporaneous reverse causality.

tion (GATT/WTO) members in the country pair. This variable is related to the economic ties between the two countries and might, therefore, affect the probability of interstate conflict. It is also naturally correlated with FTA and CU formation.

Political controls are also included such as the level of democracy and the size of the countries since large countries are exposed to more opponents and may depend less on foreign trade, which might affect the incentives to create RTAs. To control for diplomatic affinity between countries we use variables such as a dummy variable for common membership of a defense alliance, (*alliance*) and the correlation of voting in the UN General Assembly (lagged by four years). Finally two controls for the cross sectional serial correlation of wars are also included; the distance to the nearest war that does not involve a country from the pair as well as the total number of MIDs (excluding their potential bilateral MID) which the countries of the pair are involved in time t. Even after we use this wide range of political and gravity controls, model 4 still provides evidence for peace diversion predicted by the theoretical model.

In columns 5-6 we add country pair fixed effects and replicate specification 4. Column 5 shows the results of the fixed effect logit model, which includes only those pairs of countries that experienced a conflict over the sample period. In column 6 we proceed with a standard Linear probability fixed effect estimation, for which the whole sample can be used. The results in column 5 continue to be supportive and consistent with the theoretical predictions, while in column 6 we do not get statistical significance of the main variables of interest. Note that since we pool together data on a large number of country pairs over a long time period, the error term is

likely to exhibit serial correlation for a given country pair. To account for this possibility we cluster the robust standard errors at the dyad level in all specifications.

We perform several robustness checks on our preferred specification (column 4) of Table 2. While controlling for a range of potential co-determinants of regionalism and conflict, our specification still provides evidence of peace creation and peace diversion. For example, by adding a dummy for those countries that have permanent seat in the UN's Security Council and a dummy for communist countries, which were less open to trade, our results do not change qualitatively. In another specification we add a dummy if one of the countries is an oil exporting country to account for the fact that they maybe more open to trade and more prone to conflicts. The result on peace diversion still goes through. In another set of regressions we control for the level and difference in GDP per capita within a pair of countries as well as the square of this difference to allow for possible non-linearity and our result remains robust. Furthermore controlling for the level and difference of (log of) military expenditure does not affect the results.[13] Nonetheless, unobservable omitted factors could still bias the results. To deal with this issue we further implement an instrumental variable (IV) strategy

6.4 Instrumental Variables

Since there are two potentially endogenous variables (FTA and CU) , the objective is to find two instruments that are strongly correlated with FTA and CU, but do not directly affect the likelihood of conflict. To this end, the

[13]These robustness results are available by the authors.

number of CUs and FTAs signed by the two countries with third countries in $(t-5)$ are used as instrumental variables for CU and FTA membership. This choice is driven by the domino theory of regionalism (Baldwin, 1997), which suggests that the creation or enlargement of an RTA increases the incentives on non-members to apply for membership. Empirical evidence by Egger and Larch (2008) provides support to this theory, and in particular suggest that the number of RTAs signed by each country with third countries could qualify as instruments correlated strongly with the existence of an RTA between two countries in a particular year. A similar approach was also used by Vicard (2012), in instrumenting RTA membership with the number of deep and shallow RTAs signed with third countries in $(t-5)$ by the two countries. Using an instrumental variable technique is not straight forward in the case of a fixed effects logit model and the case of endogenous variables which are dummy variables. Therefore,we follow one of the solutions provided by Wooldridge (2002), and estimate pooled linear probability models.

Table 3 presents the second stage results of our instrumented regressions using a pooled linear regression model. The regressions are performed on the same sample and use the same control variables as column 4 of Table 2. Column 1 uses as instruments: (i) the number of FTAs signed with third countries at time $t-4$ by the two countries in each dyad and (ii) the number of custom union agreements signed with third countries at time $t-4$ by the country pair; Column 2 simply uses the fifth lag instead of the fourth one as instruments. The reported results in columns 1 and 2, of Table 3 confirm that all regionalism variables have the right sign and are significant at the 5% level. In column 3 we "compact" the FTA and CU variables into one RTA dummy

variable, which is expected to have a negative impact on the probability of a conflict according to our theory. The advantage of this approach is that it allows us to perform a Sargan (1958) test for overidentification since we have now two instruments for only one endogenous variable. The test statistic is 0.49 and the corresponding p-value is 0.48 indicating that the joint null hypothesis of instrument exogeneity cannot be rejected. Also in all cases,we find that the instruments are strong as confirmed by the large values of the Cragg-Donald and the Kleibergen-Paap F-statistics which well exceed the Stock and Yogo (2005) critical values. Overall the results remain supportive of our theoretical prediction for peace diversion.

In a similar manner as before, several robustness checks are performed. While controlling for a host of other variables such as adding a dummy for those countries that have permanent seat in the UN's Security Council, a dummy for communist countries,a dummy indicating that one of the countries in the dyad is oil exporting our results related to peace diversion and peace creation do not change qualitatively In terms of peace diversion both variables have the right sign, and PTFTA remains always statistically significant as predicted by our theoretical model. The result on peace diversion still goes through, while controlling for the level and difference in GDP per capita within a pair of countries as well as the square of this difference. Furthermore controlling for the level and difference of (log of) military expenditure does not affect the results.[14]

[14]These robustness results are available by the authors.

7 Conclusions

In this paper we investigate the impact of Customs Unions and Free Trade Areas on the possibility of conflict in the context of a 3-country competing-importers model. Countries are large and therefore the gains from trade which represent the opportunity cost of conflict are endogenous. Governments are faced with a two-stage game, deciding first on whether to engage in conflict or peace and then choosing tariffs to maximize their welfare. We compare the decision of when to engage in conflict under all possible agreements with the benchmark case of no regionalism.

We find that PTAs lead to a peace creation and a peace diversion effect. Peace creation is the reduction in the probability of conflict between members of a FTA or a CU. Regionalism increases peacetime welfare due to free trade between members and the improved terms of trade between members and non-members. This increases the opportunity cost of conflict and therefore reduces the possibility of war. This seems to be what the founders of the EU envisioned and what the EU itself still presents as the key reason for its creation. However, just as in the case of trade creation and trade diversion, peace creation is accompanied by peace diversion. In other words, regionalism increases the possibility of a non-member country starting a war because regionalism reduces the gains from trade due to the worsened terms of trade with member countries. The paper contributes to the literature in two ways. First it is the first paper to explicitly model and identify the peace diversion effect and second it is the first paper to endogenize the gains from trade including trade policy by considering large countries.

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Figure 1: No Regionalism

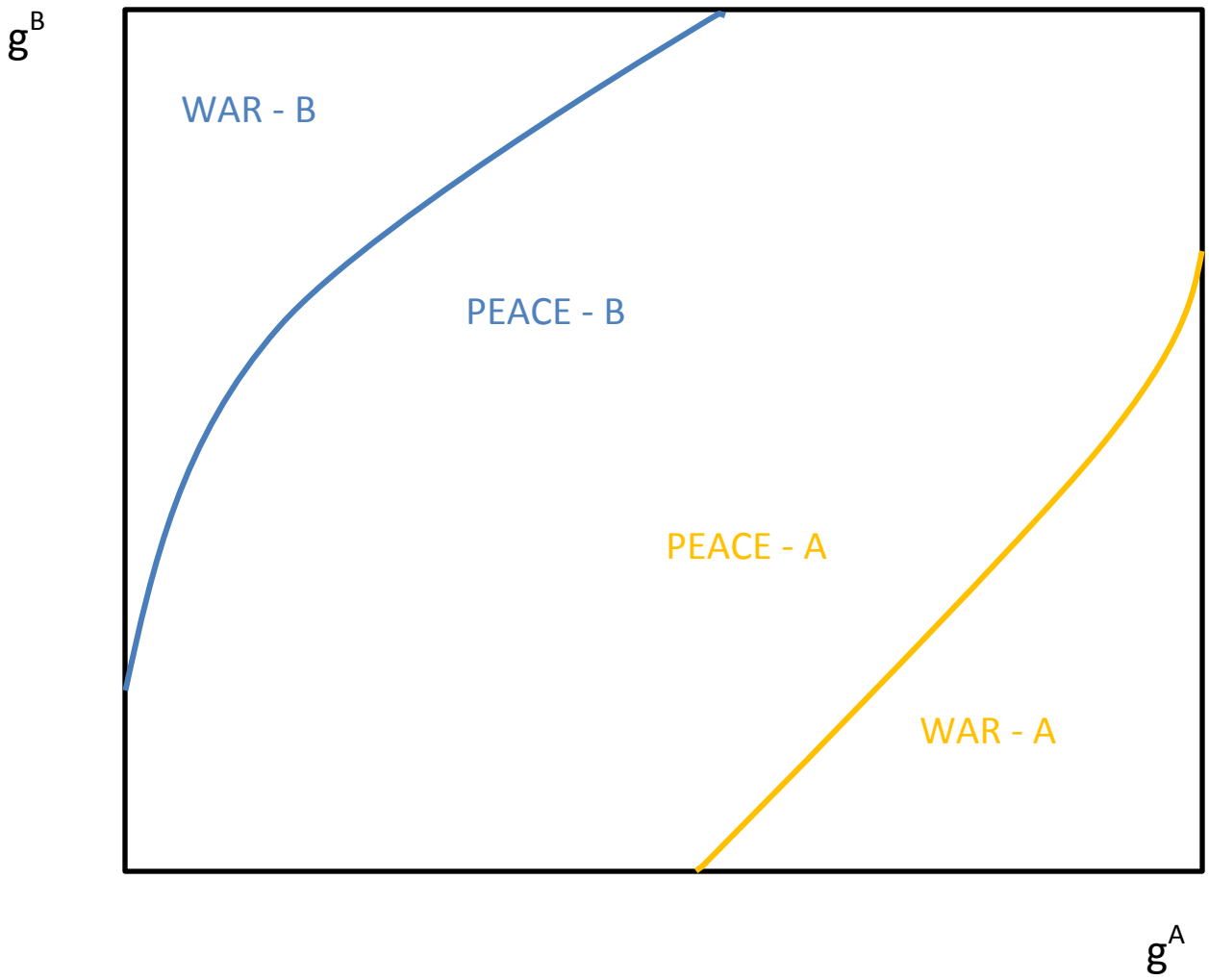

Figure 2: FTAs

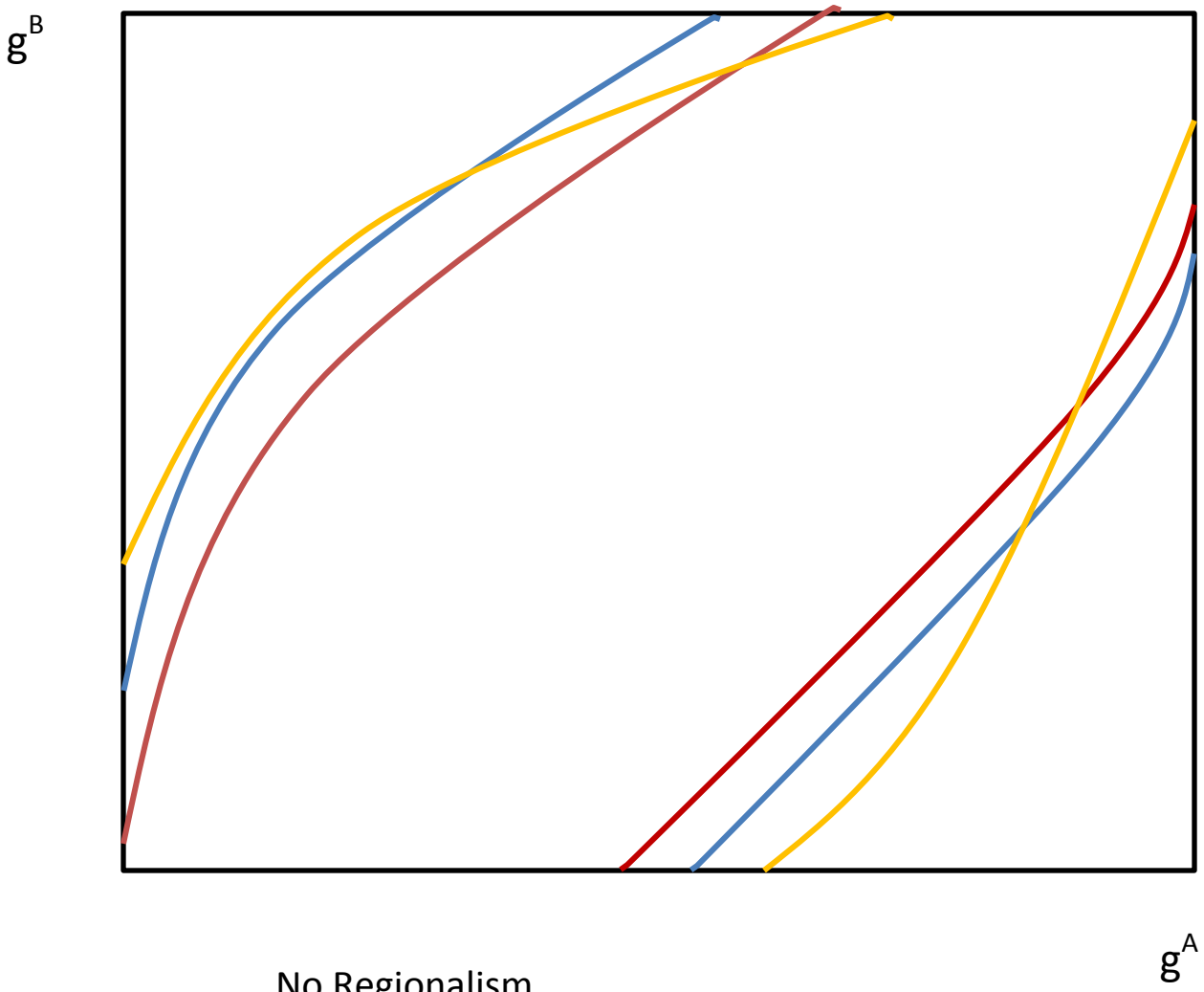

Figure 3: CUs

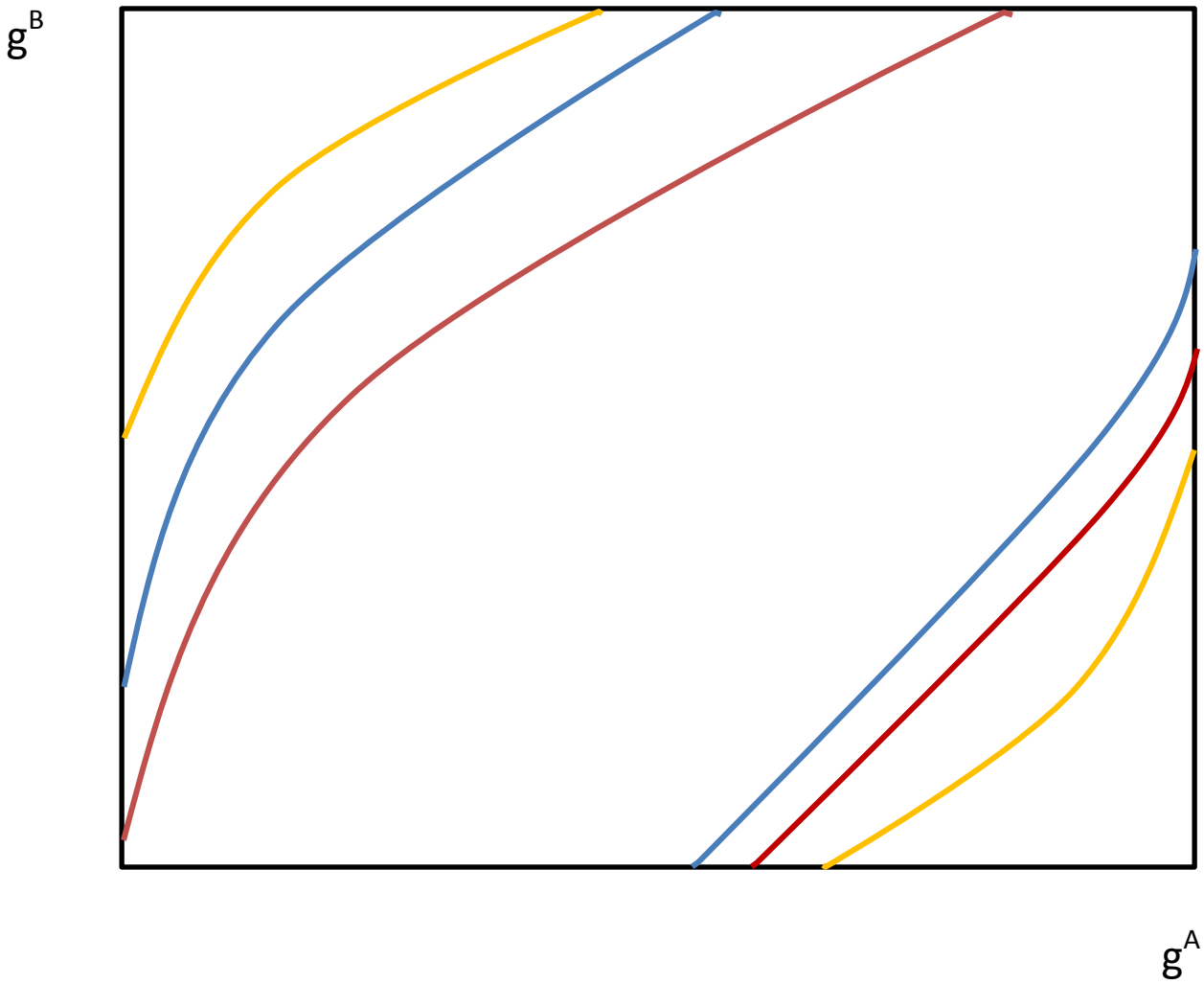

Table 1: Descriptive Statistics (1958 -2000)

Variable	Full Sample		Restricted	
	Frequency	%	Frequency	%
MID	1,321	0.51	677	0.54
FTA	3,525	1.35	1,867	1.48
CU	4,422	1.70	2,270	2.15
	Mean	sd	Mean	sd
PTFTA	.087	.175	.09	.17
PTCU	.089	.191	.11	.21
Observations	260,781		126,295	

Notes: Descriptive statistics (frequencies percentages mean and standard deviation) of the main variables employed in the analysis for the whole sample, and the sample conditioning on the explanatory variables in column 4 of Table 2.

Table 2: Impact of PTAs on Military Conflict

	Dependent Variable: MID					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
FTA(d)	-0.721 (0.440)	-0.875 (0.594)	-2.255*** (0.678)	-1.735** (0.690)	-2.690** (1.252)	-0.0397* (0.0213)
CU(d)	-0.371 (0.239)	-0.395 (0.263)	-0.462* (0.238)	-0.0123 (0.222)	0.388 (0.366)	-0.0237 (0.0203)
PTFTA	-1.272 (1.172)	-0.376 (1.422)	-0.0499 (0.456)	-0.646 (0.567)	-0.0338 (0.817)	0.00146 (0.0175)
PTCU	0.528 (0.917)	-0.635 (1.184)	1.141*** (0.328)	0.769** (0.300)	1.702** (0.860)	-0.00755 (0.0212)
Peace	-0.0646*** (0.0121)	-0.0569*** (0.0153)	-0.0748*** (0.00758)	-0.0197*** (0.00285)	0.0196*** (0.00309)	0.00621*** (0.000318)
ln distance	-0.0826 (0.124)	0.218 (0.235)	-0.394*** (0.0942)	-0.852*** (0.103)		
Contiguity(d)			1.124*** (0.231)	1.013*** (0.229)		
zero trade(t-4)(d)			-0.503*** (0.174)	-0.484** (0.196)	0.113 (0.227)	-0.000764 (0.00648)
UN vote correlation(t-4)				-0.885*** (0.212)	-0.584* (0.334)	-0.0426*** (0.0125)
Sum of democracy indexes				0.0955 (0.123)	-0.174 (0.252)	0.00772 (0.00737)
# other wars in t				0.239*** (0.0118)	0.257*** (0.0161)	0.0642*** (0.000917)
ln distance to nearest war in t				0.0574 (0.0918)	-0.0964 (0.133)	-0.00778* (0.00430)
Sum ln areas				0.152*** (0.0296)		
Alliance active in t				0.138 (0.157)	0.287 (0.333)	0.00224 (0.0194)
Common language(d)				0.418*** (0.160)		

Colonial relationship(d)				0.163		
				(0.259)		
Common colonizer(d)				0.0690		
				(0.209)		
#GATT members in dyad				-1.735**	-2.690**	-0.0397*
				(0.690)	(1.252)	(0.0213)
N	6504	3665	126295	126295	5747	126295
Pseudo-R^2	0.163	0.172	0.325	0.560	0.368	
Sample	Contiguous Pairs	Contiguous Pairs and <1000km	Full	Full	Full	Full
Time dummies	No	No	Yes	Yes	Yes	Yes
Dyadic war lags	No	No	Yes	Yes	Yes	Yes
Estimation	Logit	Logit	Logit	Logit	FE logit	FE LPM

Notes: Standard errors clustered by country pairs are reported in parentheses with ***, **, and *, respectively denoting significance at the 1%, 5% and 10% levels. Time dummies and lagged MIDs(10 years) are not reported. Column 1:contiguous pairs reported only. Column 2: proximate countries only. Column3: Full sample with limited set of variables. Column 4: Full sample with full set of controls. Column 5: full sample with country pair fixed effects logit model. Column 6:full sample with country pair fixed effects linear probability model (LPM). MID=militarized interstate dispute

Table 3: Instumental Variable Regressions: Pooled LPM

	Dependent Variable: MID		
	Model 1	Model 2	Model 3
FTA(d)	-0.146***	-0.152***	
	(0.0503)	(0.0573)	
CU(d)	-0.0772*	-0.0932**	
	(0.0404)	(0.0454)	
RTA(d)			-0.110***
			(0.0312)
PTFTA	0.0391***	0.0377***	0.0353***
	(0.00992)	(0.0104)	(0.00945)
PTCU	0.0269**	0.0255**	0.0218**
	(0.0108)	(0.0115)	(0.0100)
Peace	0.0000716	0.0000747	0.0000748
	(0.0000604)	(0.0000604)	(0.0000603)
ln distance	-0.0197***	-0.0207***	-0.0198***
	(0.00474)	(0.00497)	(0.00505)
Contiguity(d)	0.283***	0.283***	0.284***
	(0.0384)	(0.0383)	(0.0384)
zero trade(t-4)(d)	0.00569*	0.00564*	0.00543
	(0.00340)	(0.00339)	(0.00344)
UN vote correlation(t-4)	0.0574***	0.0577***	0.0560***
	(0.0113)	(0.0114)	(0.0114)
Sum of democracy indexes	0.00564	0.00639	0.00543
	(0.00548)	(0.00567)	(0.00571)
# other wars in t	0.0491***	0.0491***	0.0491***
	(0.00455)	(0.00455)	(0.00455)
ln distance to nearest war in t	0.00274	0.00258	0.00243

	(0.00294)	(0.00295)	(0.00293)
Sum ln areas	-0.00478***	-0.00477***	-0.00485***
	(0.000948)	(0.000953)	(0.000964)
Alliance active in t	-0.0116	-0.0106	-0.00892
	(0.0110)	(0.0111)	(0.0105)
Common language(d)	0.0197***	0.0191**	0.0191**
	(0.00764)	(0.00766)	(0.00767)
Colonial relationship(d)	-0.00147	-0.00144	-0.000757
	(0.0303)	(0.0304)	(0.0302)
Common colonizer(d)	-0.0148	-0.0145	-0.0136
	(0.00998)	(0.0100)	(0.00980)
#GATT members in dyad	0.00938**	0.00977**	0.00986**
	(0.00395)	(0.00395)	(0.00392)
N	126295	126295	126295
Pseudo-R^2	0.287	0.287	0.287
Time dummies	Yes	Yes	Yes
Dyadic War lags	Yes	Yes	Yes
Estimation	IV Pooled LPM	IV Pooled LPM	IV Pooled LPM
Weak Indentification Tests			
WID(Kleibergen_Paap Wald rk Fstat)	57.32	49.11	184.94
WID (Cragg-Donald F-stat)	3162.77	2426.35	7891.73
OID (Sargan test)			0.490
p-value (OID)			(0.4838)

Notes: Standard errors clustered by country pairs are reported in parentheses with ***, **, and *, respectively denoting significance at the 1%,
5% and 10% levels. All regressions show second-stage IV estimates and include time dummies and lagged MIDs(10 years) which are not reported. The instruments used in model 1 are: (i) the number of FTAs signed with third countries at time t-4 by the two countries in each dyad and (ii) the number of custom union agreements signed with third countries at time t-4 by the two countries in the dyad. In model 2 we use the lagged versions at (t-5) of the instruments mentioned in model 1. WID are the weak identification tests which report both the Cragg-Donald F-statistic and the Kleibergen_Paap Wald rk Fstat. These tests confirm that the instruments used are strong since they exceed the Stock- Yogo relevant critical values. The Sargan overidentification (OID) test also indicates that the instruments are valid.