

Trade, Conflicts, and Political Integration: Explaining the Heterogeneity of Regional Trade Agreements*

Vincent Vicard[†]
Paris School of Economics
University Paris I Panthéon-Sorbonne

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Abstract

Regional trade integration takes increasingly different forms around the world. This paper proposes a theoretical model of regional integration in an insecure world, explaining the determinants of regional trade agreements (RTAs). Conditions under which regional integration takes place are found to differ according to the form of RTAs. Both interstate insecurity and trade openness affect differently incentives to create RTAs, according to the level of political or institutional integration they entail. Countries more subject to interstate disputes and naturally more opened to trade are more likely to create politically integrated regional agreements, such as common markets or custom unions. On the contrary, international insecurity deters less integrated agreements implying a weak institutional framework, such as preferential or free trade agreements. These theoretical predictions are confirmed empirically.

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[†]Address: Centre d'Economie de la Sorbonne, 106-112, Bd de l'Hôpital, 75647 Paris Cédex 13, France. Tel and Fax numbers: (0033) 144 078 211/247. E-mail: vincent.vicard@malix.univ-paris1.fr.

I Introduction

Regional trade agreements (RTAs) are an increasingly important feature of the international trading system - as of September 2006, 156 RTAs notified to the WTO under Enabling Clause and GATT Art. XXIV were in force. Their form however greatly differs throughout the world. They range from the simple exchange of preferences on a limited number of products to the elimination of almost all tariff barriers and, beyond, the harmonization of standards and rules on services, intellectual property rights and competition. Existing literature provides no theory to explain these differences. The usual classification, derived from Balassa (1961), sorts RTAs from the least integrated to the more integrated, as a step by step approach to economic union, through free trade area, custom union and common market. The implicit assumption behind is that more integrated arrangements provide a deeper trade integration.¹ Empirical evidence of a larger effect of more integrated RTAs on intra-zone trade are however lacking (Ghosh and Yamarik, 2004; Vicard, 2006), as are historical illustrations of gradual regional integration processes - custom unions are mostly created directly as such whereas free trade agreements almost never evolve into custom unions.

It suggests that determinants of different forms of RTAs have to be found elsewhere. In this respect, an important and rather ignored facet of regionalism is the security issue.² In an insecure world, where interstate conflicts threaten gains from trade, RTAs can serve as a regulation mechanism, reducing the probability that disputes escalate into war and thus the risk of trade disruption. Indeed, regional economic integration is likely to favor peace because it requires the creation of common institutions facilitating the negotiation and implementation of common rules. These institutions are precisely designed to avoid or manage disputes over economic issues; more broadly they are likely to favor the peaceful resolution of interstate conflicts. Though, the regional institutional frameworks greatly differ according to the kind of RTAs that are created. Accordingly, the depth of a regional agreement can be defined in relation with the level of political integration it entails.

In an international system where no institution or third party can enforce property rights at the supranational level, gains from trade may be damaged because of interstate conflicts. Trade specialization and greater trade dependence thus involve risks. The demand for an insurance mechanism, securing the continuity of trade relationships in the

¹In his seminal paper, Balassa (1961) however also mentions social integration, but he dismisses this second criteria.

²Historically, several regional integration processes, such as the European Union - the preamble to the Paris Treaty of 1951 establishing the European Coal and Steel Community “*resolved to substitute for age-old rivalries the merging of their essential interest; to create, by establishing an economic community, the basis for a broader and deeper community among peoples long divided by bloody conflicts.*” -, and Mercosur, however refer explicitly to security concerns (World Bank, 2000).

future, should therefore increase with the level of trade integration. In addition, since interstate disputes occur under the threat of military force, and can thus lead to trade disruption (Glick and Taylor, 2005; Martin et al., 2005), the shadow of conflict may have a significant influence on the design of international economic policies. Trade and security issues are thus intertwined and their interplays should shape the decision of creating a RTA and its form. This paper addresses the question of the endogenous formation of RTAs, and provides a first investigation on the determinants of the different forms taken by regional integration.

The decision to form a RTA is investigated both theoretically and empirically. We develop a theoretical model of regional integration in the shadow of conflict, based on the recent political economy literature on political (dis)integration. It shows how, because large countries benefit from a market size advantage (Alesina et al., 2000) or a scale advantage in defense (Alesina and Spolaore, 2006), international trade openness or international insecurity determine the number and size of countries. In our framework, economic and political boundaries are not inevitably similar: governments can decide to enlarge their market size, by forming a RTA, whereas defense policy remain national. Trade and security issues are thus simultaneously introduced in a model of political integration.³

Conditions under which regionalism endogenously takes place for given level of trade openness and interstate insecurity are derived. We find that countries will accept to depend more on a given partner only if the trade related gains from integration are not overwhelmed by larger potential costs related to an increased dependency on a given trading partner under RTA. The effect of international insecurity and globalization on incentives to create a RTA are thus found to depend on the impact of RTAs on dispute escalation to war probabilities. So in that framework, RTAs can be differentiated according to their ability to reduce the likelihood of interstate dispute escalation to war, i.e. according to the level of political or institutional integration they entail. Besides their effect on tariffs, our model thus explicitly emphasizes the role of RTAs as a regulating mechanism for interstate relations. This paper is the first attempt to investigate the determinants of the form taken by RTAs.

Two implications of the model are then tested empirically: (i) countries undergoing many interstate disputes create deeply integrated RTAs, such as custom union or common market, whereas the opposite is true concerning shallow agreements (preferential arrangements or free trade agreements); (ii) globalization, through a reduction in physical barriers to trade, favors more the creation of deep RTAs than shallow RTAs. This paper thus pro-

³Spolaore (2004) distinguishes two different policy areas which however both take place at the national level. He thus investigates the impact of the interplays between security and economic factors on the size distribution of countries.

vides empirical evidence that determinants of RTA creation between two countries differ according to the kind of RTA that is created.

The remainder of the paper is constructed as follows. The next section reviews the related literature and some stylized facts. In section 3 we present the theoretical model of regional integration in an insecure international system and derive endogenously conditions under which regional integration will take place. Section 4 presents data and econometric results related to the effect of RTAs on war and the determinants of each kind of RTA. The last section concludes the paper.

II Stylized facts and related literature

Regional integration not only provides trade preferences, but also works as a regulating mechanism for economic and more broadly interstate relations. As underlined by Anderson and van Wincoop (2004), economic integration has more to do with domestic policies (regulation, norms, property rights, infrastructures...) than direct trade policy instruments (tariffs, quotas...).⁴ The harmonization and implementation of such policies at the regional level require the creation of common institutions and, eventually, the provision of public goods at the regional level. It thus entails some degree of supranationalism, limiting State sovereignty.

These supranational institutions are precisely designed to negotiate rules and manage economic relations between member countries. More largely, they are able to deal with interstate conflicts, either through institutions avoiding the politicization of conflicts (dispute settlement mechanisms,...) or by creating rooms for discussion between political leaders and high level civil agents. By favoring the early settlement of disputes or a peaceful resolution of conflicts, institutions created along with regional trade integration are likely to provide a positive externality in terms of national security and to reduce the risk of dispute escalation to war (Bearce and Omori, 2005; Haftel, 2007).

Though, the institutional framework and its degree of supranationalism greatly differ according to the kind of RTA. Creating a custom union (CU) requires to agree on a common external tariff and revenue distribution between state members. A common market (CM) requires more complete political institutions to agree on a broader set of issues (harmonization of regulation and standards, free movement of goods and factors,...)⁵, whereas a free trade agreement (FTA) or a preferential arrangement (PA) involve a weak

⁴They argue that, out of an overall border barrier of 44%, tariffs and non-tariffs barriers to trade represent only 8%.

⁵See, for instance, Alesina and Wacziarg (1999) for a detailed mapping of policy areas carried out at the EU level, and Bouzas and Soltz (2000) concerning the institutional framework of MERCOSUR.

institutional framework and a limited political integration.⁶ According to this political integration criteria, two categories of RTAs can be distinguished: custom unions and common markets on the one hand, and preferential arrangements and free trade agreements on the other. Only the former implies the creation of a significant institutional framework likely to provide a security externality, by favoring the peaceful resolution of conflicts and reducing probabilities of dispute escalation to war. The latter involves no or few political or institutional integration.

A quick look at the data suggests that determinants of different kind of RTAs are different. Politically integrated RTAs seem to be created directly as CU, and, eventually to evolve into CM. Indeed, out of the 17 custom unions created worldwide since 1948, 13 have been created directly as such, without any intermediate step such as a PA or a FTA. And out of the three remaining, two actually experienced a gradual integration, implying the creation of a PA or a FTA prior to the customs union, but on a short period of time (7 years for the Andean Customs Union and 5 years concerning the CARICOM). Only the WAEMU has been preceded during a significant period of time by a rough PA before adopting common external tariffs in 1998. Two of these CU turned into a common market (Benelux and EU). The third common market in force is an exception as its creation has been preceded by bilateral FTA between each member of the EFTA and the EEC, but some of them entered the EU and others (Switzerland) did not enter the EEA. The last exception comes from another kind of particular agreements, namely bilateral FTA provisioned in association agreements between the EU and membership candidate countries (Stabilization and Association process and European Neighborhood Policy), and leading to membership to the EU. All remaining FTA and PA (170 FTA and 26 PA) did not evolve into any deeper agreement in terms of political integration.⁷

Again, two large categories of RTAs emerge: PA and FTA on the one hand and CU and CM on the other. These stylized facts seems to rule out the idea of a graduate process of economic integration, such as suggested by the traditional classification of RTAs. It calls for another explanation for the different forms taken by regional integration. At first glance, differentiating RTAs according to their level of political integration seems to be relevant.

⁶The ASEAN free trade agreement provides an illustrative example, with weak regional institutions in order to limit any supranationalism (Best, 2005). Pomfret (1997) also emphasizes how the will to limit political integration has been incidental to the creation of NAFTA.

⁷In terms of number of country pair covered, FTA are not overwhelming because it is mostly bilateral agreements. For instance, the EU-25 covers 300 country pairs, i.e. more than all 160 bilateral FTA. In addition, WTO rules forbid to developed countries the creation of PA. Only developing countries are entitled under Enabling Clause to form such agreements.

III A model of regional integration in the shadow of conflict

The literature on political integration focuses on the question of country formation by citizens in regions. Instead, we are interested here in the formation of regional trading agreements by independent countries, i.e. how states can share common economic boundaries while retaining independent political boundaries (defense policy). Indeed, the argument provided by Alesina et al. (2000) of a trade-off between gains from large market size and heterogeneity costs of political integration is also relevant when countries create a RTA and a regional market. On the other hand, defense policy remains a national prerogative. Embedding, at the same time, trade and security issues in a model of political integration enables to discriminate economic and political integration and to explain the different forms of RTAs.

I build on the framework developed by Alesina and Spolaore (2005) to construct a model of regional integration, in which a discrete number of countries interact in an insecure world. Governments have to choose their defense capabilities and whether or not to enter a RTA, given that:

- entering a RTA means the removal of restrictions to trade with other members and thus provides productivity gains for the population, but entails heterogeneity costs;
- countries face interstate disputes over resources or production, and those are resolved either peacefully or through war;
- war disrupts trade with the opponent.

As in Alesina and Spolaore (2003, p.116), “*a country is defined as an independent political unit in which (1) defense is completely and credibly centralized, (2) a unified government takes decisions over bargaining and war strategies, and (3) the net returns from conflict are distributed across its citizens*”. While retaining an independent national security policy, countries can decide to create a RTA with a partner, thus benefiting from a larger domestic market, i.e. an area free of barriers to trade. As usual in the literature on political integration, entering a RTA entails heterogeneity costs k , “*due to the necessity of keeping together individuals with different interests, preferences, culture, and history*” (Alesina et al., 1995). Indeed, economic integration implies common policies and the provision of some public goods at the regional level, which move away actual policies from individual ideal/preferences in each country.

Because, at the supranational level, no institution holds the monopoly of legitimate violence and can properly enforce property rights, countries face appropriation possibilities on a part R of their income ($0 < R < Y_i$). Disputes over income distribution are resolved

either peacefully or through war according to the conflict game outcome. A dispute occurs between any two neighboring countries with probability $\frac{\rho}{4}$.

The model is a 3-stages game: (1) countries first decide whether or not to form RTA, (2) then they vote on their defense spending, and finally (3) uncertainty about dispute location and escalation probabilities are revealed and conflicts are resolved. This timing appears relevant because forming a RTA takes time and is meant to last a long time; building defense capabilities is also a medium term process, but is less time consuming; and disputes occur and are resolved in the short term. The model has no time dimension.

The government of each country i chooses whether or not to form a RTA and the amount of resources devoted to defense spending d_i ($0 < d_i < Y_i$) to maximize national utility, defined by the following equation:

$$U_i = Y_i - \Phi_{ij} k + \sum_{j \neq i} \mathbb{R}_{ij} - d_i \quad \forall i, j \quad (1)$$

where Y_i is national income, Φ_{ij} is a dummy variable which equals 1 if countries i and j form a RTA, and \mathbb{R}_{ij} is the expected net return from conflict.⁸

In order to keep the model tractable, the world is assumed to be divided into four countries distributed out of two continents, East and West (see figure 1). The cost of forming a RTA between Eastern and Western countries is assumed to be prohibitive, because of wide differences in national preferences. A RTA can thus be created on each continent. On the other hand, each country shares a border with two other countries and can thus undergo international conflicts with each of them.

[Figure 1 about here.]

1 War and peace: the conflict game

The conflict game is based on a rationalist explanation of war, i.e. war occurs because some factors make state leaders unable to reach *ex ante* a mutually advantageous arrangement on conflict issues. Indeed, as far as destructions are involved, the use of armed force to resolve disputes is a second best outcome and is always Pareto dominated by a negotiated settlement. The question is then to understand what prevents leaders to find and/or implement a bargaining solution. Fearon (1995) argues that only three arguments fit a rationalist definition of war: asymmetries of information on resolve or military capabilities with incentives to misrepresent them, commitment problems, and issue indivisibility. The

⁸Each country is considered as a unified agent. We thus abstract from any non-unitary actor issue. Considering how the form of government could affect national decisions could be an interesting extension of the model.

model of conflict below, adapted from Alesina and Spolaore (2005), relies on the second argument: wars occur because state leaders are unable to credibly commit to hold their position.

Consider two countries i and j evolving in an anarchic world, i.e. where no supranational institution or third party can enforce law. A part R ($0 < R < Y_i$) of their national income is potentially subject to appropriation activities. It is worth noting that any conflict issues affecting national utility could be at stake, either on resource, rent sharing or ideology. A dispute may be settled through bargaining or through war. If both countries choose to fight, the distribution of payoffs depends on the relative military strength of opponents and each country undergoes war costs. A traditional ratio contest success function defines how the valuable pie $2R$ is distributed in case of military fight (Hirschleifer, 1988). When both countries choose the fighting strategy, payoffs are the followings:

$$\begin{aligned}\mathbb{R}_{ff}^i &= 2R \frac{d_i}{d_i + d_j} - C_{ij} \\ \mathbb{R}_{ff}^j &= 2R \frac{d_j}{d_i + d_j} - C_{ji}\end{aligned}\quad (2)$$

where d_i (d_j) is country i 's (j 's) military spending and C_{ij} stands for war costs.⁹ War costs are symmetric, i.e. $C_{ij} = C_{ji}$ (see below).

When both countries choose to bargain, the pie subject to appropriation $2R$ is distributed according to the Nash bargaining solution. As in Alesina and Spolaore (2005), the war outcome is chosen as disagreement point, i.e. country i receives a fraction $b_{ij} = \frac{d_i}{d_i + d_j}$ of the valuable pie $2R$ when the dispute is settled peacefully.¹⁰

As far as war is costly, the war outcome is always Pareto dominated by the bargaining outcome. In absence of any other specification, the dominant strategy is (bargain, bargain). But as Grossman (2004) outlines, a peaceful negotiated settlement is credible only if none has incentives to deviate, i.e. each opponent is left better off with the status quo than if he starts a war. In this respect, if a military advantage of attacking exists, and if that advantage exceeds the cost of war, none can credibly commit not to deviate. This first striker advantage, denoted E , could materialize through a higher probability of winning or smaller war damages. Its width is determined by factors such as military technology or geography. It is assumed that E is the same for all countries and that the country choosing

⁹ $\frac{d_i}{d_i + d_j}$ can be understood either as the probability of victory or as the proportion of the pie country i won in the event of war, when states are risk neutral. The former interpretation is privileged here.

¹⁰ We have: $b_{ij} = \max\left(2R b_{ij} - 2R \frac{d_i}{d_i + d_j} + C_{ij}, 2R(1 - b_{ij}) - 2R \frac{d_j}{d_i + d_j} + C_{ji}\right)$ s.t. $2R b_{ij} \geq 2R \frac{d_i}{d_i + d_j} - C_{ij}$, $2R(1 - b_{ij}) \geq 2R \frac{d_j}{d_i + d_j} - C_{ji}$.

to bargain when its opponent attacks undergoes a mirroring cost of equal magnitude. Strategy sets and outcomes are summarized in table 1.

[Table 1 about here.]

So in a situation where the first striker advantage is sufficiently large, i.e. if $E > C_{ij}$, the Pareto-optimal strategy, where both countries choose to bargain, is not a Nash-equilibrium. Given the opponent strategy, a country has incentives to deviate and strike first. In this case, it is straightforward to show that the only Nash equilibrium is (fight, fight). Otherwise ($E < C_{ij}$), both (bargain, bargain) and (fight, fight) profiles are Nash equilibriums.

Using refinements introduced by Bernheim et al. (1987) on coalition of players¹¹, a unique coalition-proof Nash equilibrium emerges in each situation: depending on the level of the first striker advantage E relative to the cost of war C_{ij} , a unique coalition-proof Nash-equilibrium exists; the strategy profile outcome is (bargain, bargain) if $E < C_{ij}$, and (fight, fight) if $E > C_{ij}$.

Assuming E to be a random variable revealed after decisions on defense spending have been made, we can derive a probability of dispute escalation to war, noted $\pi_{ij} = \text{prob}(E > C_{ij})$. A dispute ends up in war with probability π_{ij} and is settled peacefully with probability $1 - \pi_{ij}$.

Expected net return from conflict between two countries i and j can now be computed. It depends on the probability of dispute occurrence ρ , the probability of dispute escalation to war π_{ij} and the revenue subject to appropriation R as follows:

$$\mathbb{R}_{ij} = \frac{\rho\pi_{ij}}{4} \left[2R \frac{d_i}{d_i + d_j} - C_{ij} - R \right] \quad (3)$$

2 Trade, income, and regional integration

Alesina et al. (2000) show that per capita income and growth rate are positively related to country size and openness to trade, and negatively related to country size multiplied by openness, i.e. smaller countries benefit more from trade openness than larger countries. Their argument is that larger countries enjoy a larger market size free of barriers to trade, which is more beneficial when trading with the rest of the world is difficult, i.e. when the global regime of trade is less free. This argument is just as much relevant concerning

¹¹It states that if a coalition of player can reach higher payoffs in a given Nash equilibrium compared to others, this equilibrium will prevail. Separately, each player should still not have incentives to deviate.

regional trade integration. Indeed, creating a RTA enlarges the domestic market to the aggregate size of all partner countries.

National income is modeled so as to reflect this relation. It is positively related to the ability of a country to trade, either inside its domestic or regional market or with the rest of the world. Trade entails costs related to geographical, technological or political obstacles. Trade costs are noted $\theta = (1 - \tau)(1 - \varphi)$, where $0 \leq \tau \leq 1$ represents physical barriers to trade and $0 \leq \varphi \leq 1$ political trade barriers (tariffs, harmonization of rules and standards...). θ is exogenous ($\theta = 0$ means global free trade). When a RTA is created, trade inside the large market does not bear the latter costs ($\varphi^{\text{RTA}} = 0$). Countries are assumed to trade with themselves. Country sizes are normalized to 1. Hence, national income is defined by:

$$Y_i = \varphi(1 - \tau)(1 + \Phi_{ij}) + (1 - \tau)(1 - \varphi)S_W \quad (4)$$

where S_W is the number of trading partners of country i , including itself ($S_W = 4$ when peace prevails).¹² In this setting, trade is mutually beneficial. Since globalization reduces transport costs, national income increases with globalization (larger θ).

3 Trade, conflict and regional integration

In line with empirical evidence of a large and persistent effect of war on bilateral trade (Glick and Taylor, 2005; Martin et al., 2005), war is assumed to disrupt trade with opponent.¹³ War thus reduces national income Y_i because the country loses one trading partner.

From equation (4), it follows:

$$C_{ij} = \begin{cases} (1 - \tau) & \text{if countries } i \text{ and } j \text{ belong to the same RTA} \\ (1 - \tau)(1 - \varphi) & \text{otherwise} \end{cases} \quad (5)$$

The opportunity cost of war is thus larger inside a RTA than between countries that are not members of the same agreement: $C_{ij} < C_{ij}^{\text{RTA}}$. It follows from this result that the probability that a dispute ends up in war is smaller inside a RTA than outside a RTA. Noting $\pi = \text{prob}(E > C_{ij})$ and $\pi^{\text{RTA}} = \text{prob}(E > C_{ij}^{\text{RTA}})$, we have $\pi_{ij} > \pi_{ij}^{\text{RTA}}$. A peaceful resolution of disputes is thus more likely when opponents belong to the same RTA.

Equilibrium defense spending and gains from appropriative activities can now be de-

¹²Ruta (2005) shows that such a simple model of trade yields similar results than the model of trade in intermediate goods developed by Alesina et al. (2000).

¹³Without loss of generality, direct war costs, which are assumed to be symmetric, are ignored.

rived for each configuration of RTA. Country i 's government chooses its level of defense spending to maximize the expected net return from conflict. We obtain:

$$d_i = \frac{R\rho}{4} \quad (6)$$

Proof in appendix A.

The “net expected gain from conflict” is defined as the net gains from appropriative activities when a dispute occurs on the appropriable income R . From equation (3), (5) and (6), it equals for all countries j bordering country i :

$$\mathbb{R}_i = \sum_{j \neq i} \mathbb{R}_{ij} = \begin{cases} \frac{-\rho}{4}(1-\tau)[(1-\varphi)\pi + \pi^{\text{RTA}}] & \text{if country } i \text{ belongs to a RTA} \\ \frac{-\rho\pi}{2}(1-\tau)(1-\varphi) & \text{else} \end{cases} \quad (7)$$

Regional integration thus affects income through two channels: trade and appropriative activities. These gains from integration should exceed related heterogeneity costs. Conditions under which regional integration will take place can now be derived. A RTA will be created between country i and j ($\phi_{ij} = 1$) if they both strictly prefer regional integration to independence, i.e. $U_i^{\text{RTA}} > U_i^{\text{ind}}$ and $U_j^{\text{RTA}} > U_j^{\text{ind}}$.

Result 1 *Country i and j will prefer regional integration to economic independence if and only if*

$$\frac{\rho}{4}(1-\tau)[(\pi - \pi^{\text{RTA}})(1-\varphi) - \pi^{\text{RTA}}\varphi] + (1-\tau)\varphi > k \quad (8)$$

Proof in appendix A.

Obviously, incentives to create a RTA depend negatively on the heterogeneity costs of integration k . The impacts of the level of international insecurity ρ , and the level of global trade openness, τ and φ , are less straightforward. The effect of an increase in international insecurity (higher ρ) will be contingent upon the pacifying effect of regional integration. If the gains from reduced escalation to war probability under RTAs ($(\pi - \pi^{\text{RTA}})(1 - \varphi)$) outweighs the potential losses due to larger income threatened by conflict ($\varphi\pi^{\text{RTA}}$), then an increase in international insecurity will increase gains from integration and thus, everything else equal, incentives to create a RTA. Otherwise, a more insecure world will decrease incentives to create a RTA.

Testable implication 1 *Incentives to create a RTA increase in international insecurity ($\frac{\partial \text{prob}(\phi_{ij}=1)}{\partial \rho} > 0$) if regional integration reduces significantly dispute escalation to war ($(\pi - \pi^{\text{RTA}})(1 - \varphi) > \varphi\pi^{\text{RTA}}$). Otherwise, the opposite is true ($\frac{\partial \text{prob}(\phi_{ij}=1)}{\partial \rho} < 0$).*

The intuition behind is that in a more insecure world, countries would create a RTA only if it favors the peaceful resolution of conflicts and offers a significant guarantee against the risk of trade disruption related to war. A country will accept to be more dependent on a partner only if the trade related gains from regional integration are not offset by the larger potential cost of war. To the extent that different RTAs have different effects on dispute escalation to war probabilities, dispute occurrence will affect differently incentives to create each kind of RTAs.

Globalization also has an ambiguous effect on incentives to regional integration. On the one hand, a decrease in political barriers to trade at the multilateral level (i.e. a lower φ), such as tariffs cut under WTO, unambiguously reduces gains from regional integration. It is worth noting that such channel of globalization, by preventing the creation of RTA, could increase the actual number of wars. Indeed, the probability that an international war actually occurs is endogenous to the model, as it depends on the configuration of the world. Let Ω be this probability; by definition we have:

$$\Omega = \frac{\rho}{2} [\phi_{ij}\pi^{\text{RTA}} + (2 - \phi_{ij})\pi] \quad (9)$$

In fact, a reduced level of global political barriers to trade $\varphi' < \varphi$, by preventing the formation of RTAs ($\phi'_{ij} = 0$) could lead to a higher probability of observing an actual war, $\Omega' > \Omega$.

On the other hand, globalization through a decrease in physical barriers to trade affects differently gains from regional integration. Again, if regional integration reduces significantly the probability of dispute escalation to war ($(\pi - \pi^{\text{RTA}})(1 - \varphi) > \varphi\pi^{\text{RTA}}$), then a decrease in physical barriers to trade unambiguously promotes regionalism, because it increases gains from integration arising both from trade and conflicts. Otherwise, the effect is lower or even negative, because conflict related gains from integration decrease in τ .

Testable implication 2 *Globalization through a decrease in physical barriers to trade (lower τ) promotes more strongly the creation of RTAs when regional integration reduces significantly the probability of dispute escalation to war $(\pi - \pi^{\text{RTA}})(1 - \varphi) > \varphi\pi^{\text{RTA}}$.*

Our theoretical model thus puts forward that determinants of regional integration differ according to the kind of RTA considered. The effect of both trade openness and international insecurity on incentives to create a RTA are found to be contingent on the ability of RTAs to significantly prevent disputes to escalate into war. In this setting, RTAs may be differentiated according to their ability to regulate interstate relations.

The literature suggests two channels through which regional trade integration may affect the probability of interstate wars: trade (Barbieri, 2002; Oneal and Russett, 1999; Martin et al., 2005) and institutions created along with regional integration (Bearce and Omori, 2005; Haftel, 2007). While the former is not likely to differ among RTAs (Vicard, 2006), the latter does greatly. Indeed, as discussed above, the level of institutional or political integration associated to regional trade integration differ largely across categories of RTAs. More integrated RTAs create a significant regional institutional framework, only able to favor the peaceful resolution of disputes and to avoid their escalation to war. Hence, in the theoretical framework developed herein, the depth of a RTA can be defined in terms of political integration, i.e. in relation with its ability to manage conflicts. Deep RTAs would be those creating significant political institutions and thus providing significant security externality, whereas shallow RTAs would not.

Testing determinants of RTA creation defined in equation (8) thus requires a preliminary step. First, we need to assess which kinds of RTAs actually reduce probabilities of war occurrence. Then, we will be able to test implications of our theoretical model, by estimating equation (8) on two different samples of RTAs, that international insecurity ρ and trade globalization φ are expected to affect differently.

IV Econometrics

In this section, I test empirically implications (1) and (2) of the theoretical model, which suggest that incentives to create a RTA between two countries are:

- positively related to propensity to interstate disputes concerning deep RTA;
- negatively related to propensity to interstate disputes concerning shallow RTA;
- negatively related to the level of physical barriers to trade concerning deep RTA, but less so or even positively for shallow RTA.

Though, we need first to investigate the effect of different kinds of RTAs on the likelihood of war occurrence.

1 The effect of regionalism on war

The preliminary step of this empirical analysis is to investigate the pacifying effect of different kind of RTA on interstates relations. As explicitly modeled in the theoretical section, war results from a two-stage process, namely dispute initiation and dispute escalation to war. A war cannot occur unless a dispute arises beforehand. Using a simple

probit model to estimate the conditional probability of war (π in the theoretical model) could thus yield results subject to a selection bias. The probability of existence of a dispute (ρ) between two given countries should be taken into account. Once a conflict emerges, it is likely that the process driving its evolution greatly differs from the one explaining its initiation. Different factors could therefore have different impacts depending on the stage of the conflict process. For instance, neighboring countries are likely to face more disputes and also to be more prone to escalate them to war, because sharing a common border makes the use of armed force easier. Using a wide definition of conflicts, including diplomatic and economic disputes, Kinsella and Russett (2002) show that determinants of conflict onset and escalation differ and that the effect of some of them are nonmonotonic on the whole range of the conflict process.

Moreover selection effects have to be modeled because the escalation process is observed only if a dispute occurred. Unobserved variables, such as commitment, resolve or willingness to take risk, could therefore affect differently escalation and initiation process, or could be disclosed at different stages of the conflict process. As Fearon (1995) emphasizes, asymmetries of information are particularly relevant for explaining war occurrence. State enters disputes with few information on opponent's commitment or resolve. But this information is disclosed along the conflict process and could therefore influence later stages. The degree of asymmetric information therefore differs according to the stage of the conflict process. And information disclosed when a dispute is initiated is likely to influence its escalation process.¹⁴

The probability of war is estimated for each dyad-year using a censored probit accounting for selection.¹⁵ It allows to jointly model conflict initiation and escalation and to account for the impact of each factor on different stages of the conflict process. Two equations are thus jointly estimated, one explaining the dispute initiation and the second the dispute escalation to war. Consider y_1 and y_2 , two latent (unobserved) variables, representing the difference in utility levels from dispute initiation and dispute escalation to war respectively. The model estimated is derived from a standard bivariate probit model:

$$\begin{aligned} y_1 = \beta_1 X_1 + \epsilon_1 \quad \text{and} \quad dispute &= \begin{cases} 1 & \text{if } y_1 > 0 \\ 0 & \text{if } y_1 \leq 0 \end{cases} \\ y_2 = \beta_2 X_2 + \epsilon_2 \quad \text{and} \quad war &= \begin{cases} 1 & \text{if } y_2 > 0 \\ 0 & \text{if } y_2 \leq 0 \end{cases} \end{aligned} \tag{10}$$

where $X_{1,2}$ are vectors of explanatory variables, $\beta_{1,2}$ vectors of parameters, and errors

¹⁴Econometrically speaking, error terms of conflict initiation and escalation equations could be correlated, which creates room for selection bias.

¹⁵The likelihood function is derived from a bivariate probit and accounts for selection.

terms ϵ_1 and ϵ_2 are assumed to be independent from $X_{1,2}$ and to follow $E(\epsilon_1) = E(\epsilon_2) = 0$, $Var(\epsilon_1) = Var(\epsilon_2) = 1$, and $Cov[\epsilon_1, \epsilon_2] = \rho$. The action to escalate a dispute into war can however not be observed unless a dispute occurs. Hence, the log-likelihood function is based on unconditional probabilities associated with the three possible outcomes (Greene, 2003, p.713): no dispute ($dispute = 0$), a dispute emerges but does not escalate to war ($dispute = 1$ and $war = 0$), and the dispute escalates into war ($dispute = 1$ and $war = 1$).

1.1 Data

What we are interested in in this paper is the degree of political integration incorporated in each kind of trade agreement. Therefore we do not consider their relative ability to foster trade among member countries but the actual negotiation and implementation of trade agreements. RTAs whose dispositions have never been really implemented are thus excluded. The data set collects all regional (i.e. three or more parties) trade arrangements which take the form of Preferential Trading Arrangement (PA), Free Trade Area (FTA), Customs Union (CU), Common market (CM), or Political Agreement (PoA)¹⁶, in force at least a certain period of time between 1948 and 2001. Bilateral agreements as well as non reciprocal agreements are thus excluded from our study.¹⁷ This restriction is imposed for at least two reasons: the institutional framework of bilateral trade agreements is limited and likely to differ from regional agreements, and it is difficult to compute all bilateral agreements and especially their depth on a long time span as ours.¹⁸ The definition of RTAs adopted here is thus close to what Ethier (1998) calls geographical regionalism. Information on trade agreements have been assembled from notifications to the WTO¹⁹, Foroutan (1993, 1998), Langhammer and Hiemenz (1990), Frankel (1997), Machlup (1977) and other public sources. Unless otherwise mentioned in our sources, an agreement is assumed to be in force at the date defined in the treaty and, if not available, once the agreement has been signed and ratified. It should, however, be noted that this does not necessarily mean that all provisions of the agreement have been fully implemented. Four

¹⁶Based on WTO, a PA is defined as agreements among three or more parties in which reciprocal preferences are exchanged to cover a limited range of the parties' trade in goods (partial in scope); a FTA is defined as agreements among three or more parties in which reciprocal preferences are exchanged to cover a large spectrum of the parties' trade in goods; a CU is defined as a RTA with a common external tariff in addition to the exchange of trade preferences; a CM is defined as a RTA allowing free movements of factors (goods, capital and workers); and a PoA is defined as an organizations aiming at liberalizing trade among its members but falling short of providing for tariff preferences inherent in a CU, FTA or PA.

¹⁷Exceptions are the inclusion of CU between EU and Malta, Cyprus and Turkey, and CU between Slovakia and Czech Republic, and the Closer Economic Relations agreement between Australia and New-Zealand.

¹⁸Moreover, contrary to RTAs, bilateral arrangements are signed between distant countries, less likely to undergo any interstates conflicts, and are thus less relevant in our purpose. We shall return to this in the final section.

¹⁹http://www.wto.org/english/tratop_e/region_e/region_e.htm

dummy variables are defined and coded 1 if both countries in the dyad are members of the same RTA during the year considered: PoA, PA, FTA and deep RTAs, which aggregates CM and CU. Deep RTAs are those involving a more complete political integration and the provision of public goods in common. Our data set reports 57 RTAs over the period 1948-2001, of which 8 are coded as PoA, 17 PA, 12 FTA, 17 CU and 3 CM (see Appendix B1 for a detailed list).

The main dependent variable is the occurrence of a Military Interstate Disputes (MID) between two states in a given year. This variable is coded from the COW database (Bremer et al., 1996) and accounts for all interstates disputes on the 1948-2001 period involving the display or the use of armed force, i.e. a MID of hostility level 3 (display of force), 4 (use of force) or 5 (war) in the COW.²⁰

Qualitative data provided by databases on armed conflicts, such as MID used as our explained variable, imply that actors, duration, geographical location and intensity of each conflict have been defined by researchers. Thus, only rare events such as wars can be considered. But to assess the dispute initiation process, we need to measure conflicts of lower intensity, not reported in such data sets. An alternative type of data is available: events data which account for a broader range of interstates relations. Events data are reported, by trained students or automatically by computers, on a day by day basis from newspapers or wire services and coded by actor, target, as well as action form and date. Data on daily events have the great advantage of providing information whatever the intensity of the underlying event. In comparison to armed conflict databases, if assessing the evolution of a given conflict is hardly feasible, such data enable to measure the occurrence of a dispute a given year, which is what we are interested in the present analysis. Indeed, we want to assess, when a dispute occurs, whether it is settled peacefully or ends up in war. Events data compiled by Kinsella and Russett (2002) and available on their website²¹ are used to measure the occurrence of a dispute exceeding a certain threshold defined as *strong verbal hostility*.²² They overlap data from three events databases, the Conflict and Peace Data Bank (COPDAB), the World Event/Interaction Survey (WEIS) and the Protocol for the Assessment of Nonviolent Direct Action (PANDA), to construct a dummy variable coded 1 if a dispute occurs for any dyad-year over the 1950-1992 period.²³ Table 2 provides event

²⁰War is restrictively defined as a MID involving at least 1000 deaths of military personnel. Most studies of war use a wider definition of military conflicts as we do, which do not include the MID level 2 (threat to use force). More information is available from COW website: <http://cow2.la.psu.edu/>.

²¹<http://www.yale.edu/unsy/democ/democ1.htm>

²²See Kinsella and Russett (2002, p.1054-1055) for more details on databases used and the operationalizing of the minimum conflict intensity threshold. Schrodt and Gerner (2000) present limitations related to the use of events data. Thanks to the use of events exceeding a certain intensity in our analysis, much of the biases they identify are limited.

²³196 cases exhibit a MID but no dispute. We follow Kinsella and Russett (2002) and treat them as

categories coded as disputes and their equivalent on the widely used Goldstein (1992) scale, which rates events between -10 and +10 according to the level of conflict or cooperation they embed. Only events classified at least as conflictual as categories "Cancel or postpone planned events" and "Charge; criticize; blame; disapprove" are coded as a dispute. Out of the 201,627 dyad-years for which such events data are available in our basic specification, 12,047 experience a dispute, of which 1007 escalate into MID.

[Table 2 about here.]

Trade data are from the database assembled by Katherine Barbieri²⁴, who uses mostly information from the IMF and the League of Nations international trade statistics. Her data cover the 1870-1992 period. It is completed by Martin et al. (2005) up to 2001 using the IMF DOTS database. Income data also comes from Martin et al. (2005), and are assembled from Katherine Barbieri and the World Bank WDI database.

Other control variables are described below. Geographic data are from CEPII²⁵, and military data are from the COW project. The composite democracy indicator is taken from Polity IV²⁶. It measures openness/closedness of political institutions on a -10 / +10 scale (10 means high democracy). Finally, UN vote correlation is taken from "The Affinity of Nations: Similarity of State Voting Positions in the UN General Assembly" computed by Erik Gartzke²⁷.

1.2 Econometric results

Results are presented in table 3. Specification (1) displays the basic model. It includes the 4 variables of RTA membership and two basic determinants of war: the number of peaceful years between the two countries in the dyad to account for time dependency, which is common in this literature, and the log of the distance between the main cities of the two countries, as a proxy of the opportunity of armed conflicts. More integrated RTA are, however, also those likely to increase the more intra-regional trade. In order to disentangle pacifying effect of regionalism going through the trade channel or through the political integration channel, trade interdependence should be controlled for. The choice of trade variables follows Martin et al. (2005), which is the more theoretically grounded and comprehensive paper on the relationship between trade and war. Their argument is

measurement errors, due to the fact that events data sets rely on major news media and do not cover accordingly all regions of the world. The dummy variable is thus recoded as if a dispute occurred.

²⁴See http://sitemason.vanderbilt.edu/site/k5vj7G/new_page_builder_4

²⁵<http://www.cepii.fr/francgraph/bdd/distances.htm>

²⁶<http://www.cidcm.umd.edu/inscr/polity/>

²⁷<http://www.columbia.edu/~eg589/>

that bilateral trade deters conflict escalation to war whereas multilateral trade openness fosters war occurrence. Hence, both a proxy for bilateral trade interdependence (the log of the mean of bilateral trade flows in percentage of GDP), and another for multilateral trade dependence (the log of the mean of multilateral (excluding bilateral) imports in percentage of GDP) are included, as well as a dummy for dyad experiencing zero trade flows (both exports and imports).²⁸ Martin et al. (2005) also add interaction variables between distance and their two variables of interest, which are deemed to account for the dyadic difference in dispute occurrence, that they do not explicitly measure. The methodology adopted here does, so these interaction terms are ignored in the estimation of the escalation process. In order to remove the potential contemporaneous effect of war on bilateral and multilateral trade, trade variables are lagged 5 years. Martin et al. (2005) indeed show that a 5-years lag is enough to remove any contemporaneous reverse effect of war on trade.²⁹ Results tend to confirm the ambiguous effect of trade on war, but the mechanism appears slightly different. Bilateral trade does reduce escalation to war probabilities, as well as the number of disputes, but multilateral openness fosters dispute initiation. By raising the domestic economy dependency on external trade, openness would render country more sensitive to foreign decisions and increases dispute occurrence. Other control variables have the expected sign: the number of peaceful years in the dyad reduces the probability of war escalation as well as the number of disputes, and distance reduces the probability of escalation to war. Surprisingly, more distant countries seem to undergo more disputes, which we attribute to a multicollinearity issue due to the inclusion of interaction variables.³⁰ Results confirm our theoretical finding that deeper RTAs, i.e. those implying significant political integration, are those exerting a pacifying effect, out of any trade effect.

[Table 3 about here.]

Specification (2) includes a control variable for countries sharing a common border, which is likely to affect war occurrence, trade relations and RTA membership. As expected, contiguity increases both the number of disputes and the probability of escalation to war. Results remain similar, except that the coefficient on distance becomes insignificant.

²⁸These are not missing values but country pairs for which no trade is reported. Martin et al. (2005) interpret this variable as a control for trade fixed costs.

²⁹RTA membership is obviously not affected by any contemporaneous effect of military conflict, because it takes time to negotiate and implement an agreement. Using panel fixed effect or instrumental variable econometric models to control for endogeneity potentially arising from omitted variables likely to affect simultaneously war and RTA membership, as Martin et al. (2005) do concerning war and trade, is not possible here because too few dyads enter both war and RTA over our time period and exogenous determinants of RTA membership are not available.

³⁰Without these interaction terms, distance is found to significantly reduce dispute occurrence, and its effect on escalation probabilities remains negative but insignificant. Their omission renders coefficients on trade variables particularly sensitive to alternative specifications. Results on RTA membership remain globally similar.

In specification (3), a proxy for the democratic status of states in the dyad is added. More democratic countries are indeed likely to be at the same time less prone to escalate conflicts into war, and more prone to form a RTA. Its omission could bias the coefficient on RTA membership upward. Then, in specification (4) controls for cultural, historical and diplomatic affinities between countries are included. These are the UN general assembly vote correlation, a dummy for pairs ever in a colonial relationship and another for countries sharing a common colonizer. Countries sharing affinities are more likely to be part of the same RTA, to trade more and to be less warlike, whereas countries sharing common colonial history would exhibit more unresolved conflict issues. As expected, more democratic countries are less likely to escalate a dispute into war, but they undergo more disputes. Sharing political affinities significantly reduce disputes between states, but has no effect on escalation to war probabilities. On the other hand, countries sharing colonial linkage face significantly more disputes. Finally, controls for country size, - a bigger territory is more difficult to defend and is exposed to more opponents, but a big country is also less open to trade and is particular with respect to regional integration, as it often implies asymmetric integration -, and countries sharing a common defense alliance are included in specification (5). Big countries in fact initiate significantly more disputes, but no effect is recorded on the escalation stage. Sharing an alliance appears to have a nonmonotonic effect on war occurrence, as it reduces escalation probabilities but fosters dispute initiation.

Turning to our variables of interest, only deep RTA membership has a significant effect on conflict escalation along all alternative estimations. As expected, its coefficient on probabilities of escalation to war is negative and significant, at the 5% level in the more complete specification (5). Deep RTAs thus reduce probabilities of war, by preventing disputes to escalate into war. This effect is however slightly counterbalanced by the fact that countries pertaining to such agreements initiate significantly more disputes. This result is in line with the argument that countries use conflicts as an instrument in international relations, and substitute lower level conflicts to armed conflicts (Boehmer et al., 2001). On the contrary, FTA and PA membership are found to have no significant effect on war. Finally, PoA yield a positive and significant coefficient concerning dispute initiation. An explanation would be that countries facing lots of disputes, propensity that we do not control for, select into forming a PoA.

The results of this section clearly confirm that only the institutional framework provided by deep RTAs significantly reduces escalation to war probabilities. Two categories of agreements could thus be distinguished according to their ability to prevent dispute escalation to war: deep RTAs (CU and CM) provide significant security externality whereas shallow agreements (PA and FTA) do not.

2 The formation of Regional Trade Agreements

Having defined the different categories of RTAs, determinants of their formation can now be investigated. Equation 8 relates the probability of RTA formation to international insecurity, physical and political barriers to trade, and heterogeneity costs of integration, i.e. geographical as well as cultural proximity of countries. Based on our theoretical model, the probability of RTA formation between two countries i and j at time t is estimated using a probit model:

$$Pr(RTA_{ijt} = 1) = \beta_0 + \beta_1 \rho_{ijt} + \beta_2 \tau_{ijt} + \beta_3 Controls_{ijt} + \epsilon_{ijt} \quad (11)$$

Equation 11 is estimated separately for deep and shallow RTA. From, implications (1) and (2), we expect $\beta_1 > 0$ for deep RTA and $\beta_1 < 0$ for shallow RTA, and $\beta_2 > 0$ for deep RTA and $\beta_2^{shallow} < \beta_2^{deep}$.

Controls added are first a proxy for heterogeneity costs, i.e. proximity which is approximated by the distance between the most populated cities of the two countries and common border for its geographic part, and income level similarity (the log of the difference of income per capita) and dummies for common language and common colonizer for its cultural and historical part; we also include variables accounting for the economic size of partner countries: the average GDP of countries in the dyad and the absolute difference in GDP. Finally, year dummies are added.

Events data described in the previous section are used to compute a proxy for dispute propensity. The interstate dispute variable is defined as the dispute propensity between countries i and j over a 10 years period, lagged nine years to both prevent any simultaneity bias and take into account the time needed to negotiate an agreement. Following our theoretical model, we use two variables to measure trade openness: political barriers to trade at the multilateral level are measured by the average tariffs level for a sample of 28 countries³¹; and physical barriers to trade are approximated by the average of multilateral trade (exports plus imports minus bilateral trade flows) as a share of GDP.

As Baier and Bergstrand (2004) underline, endogeneity should be considered in our modeling strategy, because past RTA membership could impact current economic fundamentals of members. To deal with this endogeneity issue, three strategies are implemented.

- First, the variables of similarity of income per capita, average GDP and GDP dif-

³¹Argentina, Australia, Austria, Belgium, Canada, Chile, Denmark, Finland, France, Germany, Greece, Hong Kong, Indonesia, Ireland, Italy, Japan, Luxembourg, Malaysia, Netherlands, New Zealand, Norway, Philippines, Spain, Sweden, Switzerland, Thailand, United Kingdom, and United States. Data are assembled by Gwartney and Lawson (2005) from World Bank (Various issues) and other sources (see <http://www.freetheworld.com> for details).

ference are lagged. Their 1960 value is used, which is a trade-off between data availability and length of the lag. This reduces our sample of countries, because several countries were not independent in 1960.

- Concerning our proxy for dispute propensity, a different strategy is implemented, in order to consider its evolution over time. An IV probit model is estimated, where dispute occurrence is determined endogenously, thanks to the use of exogenous instrumental variables.³² Theory in international relations gives us exogenous instrumental variables: the ratio of military capabilities (i.e. the ratio of lower to higher capacity index) and the major power status of countries in the dyad are highly correlated to dispute occurrence but not directly related to RTA membership. This former indicator is compiled by the COW project from six indicators: military expenditure, military personnel, energy consumption, iron and steel production, urban population, and total population. It is commonly used in political science to assess the relative national military capabilities.³³
- Finally, multilateral trade openness is also likely to be affected by past RTA membership. However, no appropriate instrumental variables are available, because standard geographical determinants of trade openness also affect RTA formation. Our variable measuring the natural openness of countries is lagged in 1960 to remote any effect of past RTA membership on current openness. Our proxy for political barriers to trade is exogenous to the dyad, so it is not affected by past RTA membership. The inclusion of year dummies controls for any global reduction of physical barriers to trade over time.

The probability of RTA between two countries is estimated every five years between 1980 and 2000.³⁴ Because the traditional Sargan test is not applicable in our econometric specification, a Smith-Blundell test (with the probexog program) and a Wald test of exogeneity are implemented to test for the exogeneity of our model and the relevance of our two stages probit IV econometric specification. Both strongly confirm the need to account

³²Another advantage of IV econometric models is that they also deal with measurement error of the endogenous explanatory variable, which is, as explained above, also valuable in our case.

³³More information is available from COW website: <http://cow2.1a.psu.edu/>

³⁴The data set includes 87 countries: Argentina, Australia, Austria, Belgium, Benin, Bolivia, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Congo, Costa Rica, Czech Republic (Czechoslovakia in 1960), Democratic Republic of the Congo, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Finland, France, Gabon, Germany (German Federal Republic in 1960), Greece, Guatemala, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Ivory Coast, Japan, Jordan, Liberia, Madagascar, Malaysia, Mali, Mauritania, Mexico, Morocco, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Senegal, Somalia, South Africa, South Korea, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Thailand, Togo, Tunisia, Turkey, United Kingdom, United States of America, Uruguay, Venezuela, and Yugoslavia.

for endogeneity (first stage estimates are provided in Appendix C).

2.1 Results

Results are reported in table 4. For the sake of completeness, specifications (1) and (2) report results of simple probit estimation for, respectively, pooled RTAs and when deep and shallow RTAs are differentiated. Specification (3) presents estimation results when dispute propensity is instrumented in order to account for endogeneity. Dispute propensity is then found to be significantly and strongly negatively associated to shallow RTAs and positively to deep RTAs, in accordance with our theoretical model. Countries experiencing lots of interstate disputes will agree to enter a RTA, and thus accept greater dependence on a given trading partner, only if it also creates institutions reducing risks of trade disruption and securing gains from trade. On the other hand, shallow agreements are created between countries whose trade relationship is not threatened by interstate conflicts.

In addition, the level of physical barriers to trade also has a different effect according to the kind of RTA created. Countries naturally more open to trade are more likely to create deep RTAs, whereas the opposite is true concerning shallow RTAs. Countries more integrated to the world trading system, i.e. facing less physical barriers to trade, have the incentive to create RTAs involving a large institutional framework. This is in line with North (1990, p.34), which states that *"the greater the specialization and the number and variability of valuable attributes, the more weight must be put on reliable institutions that allow individuals to engage in complex contracting with a minimum of uncertainty about whether the terms of the contract can be realized"*. A broader supranational institutional framework therefore allows member countries to be more dependent on international trade. On the other hand, remote countries, which face more barriers to trade and are naturally less integrated to the world trading system, tend to form shallow RTAs. Moreover, the average multilateral tariff level is negatively related to both deep and shallow RTA formation, but more strongly with the former. This means that reducing global political barriers to trade fosters all kinds of regionalism, but more strongly deep integration.

Concerning other control variables, they globally exhibit the expected sign. Any form of regionalism is deterred by heterogeneity among countries. More distant countries, as well as countries whose income level is dissimilar, are significantly less likely to form any RTAs, whereas adjacency increases only incentives to create shallow RTAs. Geographic proximity therefore seems to be captured by distance for deep RTAs, and by the common border dummy for shallow RTAs. Sharing a common colonizer has no significant effect on incentives to integrate. Sharing a common official primary language favors the creation of shallow RTAs, but it is surprisingly negatively related to the probability to form a deep

RTAs. Concerning the size distribution of partner countries, as expected incentives to integrate increase with the economic size of member states, and, for shallow regionalism, the less unequal the size distribution.

[Table 4 about here.]

Two additional control variables, not directly derived from the model, are added in the last specification of table 4, because they are likely to affect both RTA formation and dispute occurrence: the level of democracy and a dummy variable for countries sharing a common defense alliance. Some empirical evidences show that more democratic countries are more likely to create RTAs (Mansfield et al., 2002). On the other side, democratic status is also likely to affect dispute occurrence. Its omission could thus bias results. In addition, it is likely that citizens from democratic countries share common preferences, which reduces heterogeneity costs of political integration. Similarly, sharing a common defence alliance could affect both RTA membership and the way conflicts are settled. Results strongly confirm that sharing a defence alliance fosters the probability for two countries to form any RTAs. Concerning democracy, dyads exhibiting on average more democratic institutions have a higher probability to form a deep RTA, whereas shallow RTAs are less likely in democratic dyads. Disentangling different forms of regionalism is thus particularly important to understand how domestic institutions affect the formation of such international agreements. This seems logical in the sense that entering a deep RTA involves to share some common supranational institutions or public goods. To give up such a part of the national sovereignty is possible only between similar countries in terms of political system, type of government and origin of the legitimacy. This constraint is less binding concerning shallow RTAs, in which more autocratic regimes can retain more independent power while benefiting from gains from trade. The inclusion of these two additional controls does not significantly alter previous results. Interestingly, the positive coefficient on the common colonizer dummy turns significant for all kind of agreements.

In this complete (and preferred) specification, results strongly, and significantly at the 1% level, confirm theoretical predictions: countries more subject to interstate disputes and naturally more opened to trade create deep RTAs, whereas the opposite is true concerning shallow RTAs.

2.2 Robustness check

In order to check the robustness of our results, several alternative specifications of the model are ran. First, to test for any sample bias due to the presence of the EU member countries, which belong to Western Europe, an historically particularly integrated region,

the preferred specification (4) is re-estimated on a restricted sample, excluding Western European country pairs. Results are presented in the first columns of table 5. Our main results remain qualitatively unchanged. In the deep RTA case, the significance of the coefficient on dispute propensity is however reduced, which arises because excluding Western European country pairs largely reduces the number of dyads having a deep RTAs. Hence, our results are robust to the exclusion of the historically and geographically most integrated region of the world, Western Europe.

The sample is then restricted to the year 2000. This specification is thus closer to the model estimated by Baier and Bergstrand (2004), focusing on cross-country variation in RTA membership. Time variation in RTA membership is not accounted for, and the evolution of global tariffs is hence not included in the model. The instrumented variable, dispute propensity, is computed over the whole period. Specification (6) in table 5 presents the results. Overall, results are consistent with previous findings. Dispute propensity again affects strongly and negatively shallow regionalism but positively deep regionalism, with coefficients significant at the 1% level. However, lagged trade openness is found to strongly foster the formation of deep as well as shallow RTAs. In this specification, lagged trade openness is a proxy for both natural openness to trade and the degree of liberalization of the world trade system. As in preceding specifications, this effect is however stronger for deep than for shallow regionalism. Coefficients on other control variables remains qualitatively similar.

Finally, the definition of RTAs used so far could induce a selection bias, because it restricts the sample of agreements included in the dependent variable. Specification (6) is re-estimated using a wider definition of trading agreements, including all bilateral trade agreements (see appendix B for a list of bilateral agreements included). Moreover, a dummy for countries ever in a colonial relationship is added. The inclusion of this variable was impossible before because, according to the initial definition of RTAs adopted in this paper, no such country pairs entered a regional agreement. Results, provided in specification (7) in table 5, confirm previous findings. Results are thus robust to alternative definition of the dependent variable, such as a wider definition of trading agreements adopted in specification (7).

[Table 5 about here.]

V Conclusion

This paper is the first to investigate, both theoretically and empirically, why RTAs take different forms around the world. By introducing simultaneously military and trade issues in a model of political integration, this paper sheds light on the interplays between security and economic forces in the formation of RTAs. It puts forward that defining the depth of regional integration in relation with the level of political integration it entails is necessary to understand the determinants of the forms taken by regionalism. Results emphasize that different kinds of RTAs have different determinants. Countries more subject to interstate disputes and naturally more opened to trade are more likely to create politically integrated regional agreements, such as common markets or custom unions. On the contrary, international insecurity deters less integrated agreements implying a weak institutional framework, such as preferential or free trade agreements. Besides their potential effect on trade, analyzing RTAs as regulating institutions in a world where no supranational institution enforces property rights is therefore particularly relevant. In order to remain sustainable, greater national dependence on external trade requires guarantees on the continuity of access to world markets, i.e. that interstates conflicts would not lead to the disruption of economic flows. Such regulation is typically the purpose of institutions, such as those created with the more integrated RTAs.

These results have important implications concerning the nexus between multilateralism and regionalism. Indeed, the positive security externality of deep RTAs highlighted in this paper suggests that institutions created along with regional integration are a prerequisite to market integration, which could doubtfully be provided at the multilateral level. Regionalism and multilateralism would therefore be complementary as far as the former encourages countries to put less emphasis on matters of security and to be more dependent on international trade. Our results are thus in line with Ethier (1998), who relates the recent surge of regionalism to multilateral trade liberalization, and argues that multilateral and regional trade integration are mutually reinforcing. Deep regionalism, as defined here, is also a means to alleviate globalization pressures on national sovereignty, by mediating the necessary harmonization of domestic standards, regulations or tax policies at an intermediate level, in-between national and global. This question would be an interesting extension of the present work.

Appendix A: Proofs

Defense spending:

Each country chooses its level of defense spending while taking into account defense spending of its potential opponents, its neighbors. Thus, without RTAs, the Nash equilibrium defense spending are:

$$\begin{aligned}
 d_1^* &= \max_{d_1} \left\{ \frac{\rho}{4} \left[2R \frac{d_1}{d_1 + d_2^*} - \pi(1 - \tau)(1 - \varphi) + 2R \frac{d_1}{d_1 + d_4^*} - \pi(1 - \tau)(1 - \varphi) - R \right] - d_1 \right\} \\
 d_2^* &= \max_{d_2} \left\{ \frac{\rho}{4} \left[2R \frac{d_2}{d_2 + d_1^*} - \pi(1 - \tau)(1 - \varphi) + 2R \frac{d_2}{d_2 + d_3^*} - \pi(1 - \tau)(1 - \varphi) - R \right] - d_2 \right\} \\
 d_3^* &= \max_{d_3} \left\{ \frac{\rho}{4} \left[2R \frac{d_3}{d_3 + d_2^*} - \pi(1 - \tau)(1 - \varphi) + 2R \frac{d_3}{d_3 + d_4^*} - \pi(1 - \tau)(1 - \varphi) - R \right] - d_3 \right\} \\
 d_4^* &= \max_{d_4} \left\{ \frac{\rho}{4} \left[2R \frac{d_4}{d_4 + d_1^*} - \pi(1 - \tau)(1 - \varphi) + 2R \frac{d_4}{d_4 + d_3^*} - \pi(1 - \tau)(1 - \varphi) - R \right] - d_4 \right\}
 \end{aligned}$$

whose first order conditions give:

$$\begin{aligned}
 \frac{d_2}{(d_1 + d_2)^2} + \frac{d_4}{(d_1 + d_4)^2} &= \frac{d_1}{(d_2 + d_1)^2} + \frac{d_3}{(d_2 + d_3)^2} = \\
 \frac{d_4}{(d_3 + d_4)^2} + \frac{d_2}{(d_3 + d_2)^2} &= \frac{d_1}{(d_4 + d_1)^2} + \frac{d_3}{(d_4 + d_3)^2} = \frac{2}{\rho R}
 \end{aligned}$$

The solution is:

$$d_1^* = d_2^* = d_3^* = d_4^* = \frac{\rho R}{4}$$

With RTA³⁵, the Nash equilibrium defense spending are defined by:

$$\begin{aligned}
 d_1^* &= \max_{d_1} \left\{ \frac{\rho}{4} \left[2R \frac{d_1}{d_1 + d_2^*} - \pi^{\text{RTA}}(1 - \tau)(1 - \varphi) + 2R \frac{d_1}{d_1 + d_4^*} - \pi(1 - \tau)(1 - \varphi) - R \right] - d_1 \right\} \\
 d_2^* &= \max_{d_2} \left\{ \frac{\rho}{4} \left[2R \frac{d_2}{d_2 + d_1^*} - \pi^{\text{RTA}}(1 - \tau)(1 - \varphi) + 2R \frac{d_2}{d_2 + d_3^*} - \pi(1 - \tau)(1 - \varphi) - R \right] - d_2 \right\} \\
 d_3^* &= \max_{d_3} \left\{ \frac{\rho}{4} \left[2R \frac{d_3}{d_3 + d_2^*} - \pi^{\text{RTA}}(1 - \tau)(1 - \varphi) + 2R \frac{d_3}{d_3 + d_4^*} - \pi(1 - \tau)(1 - \varphi) - R \right] - d_3 \right\} \\
 d_4^* &= \max_{d_4} \left\{ \frac{\rho}{4} \left[2R \frac{d_4}{d_4 + d_3^*} - \pi^{\text{RTA}}(1 - \tau)(1 - \varphi) + 2R \frac{d_4}{d_4 + d_1^*} - \pi(1 - \tau)(1 - \varphi) - R \right] - d_4 \right\}
 \end{aligned}$$

The solution is:

$$d_1^* = d_2^* = d_3^* = d_4^* = \frac{\rho R}{4}$$

³⁵Because opportunity costs are equal on each continent, only two world configurations are possible: one without regional integration and one with one RTA on each continent. For opportunity costs differing on each continent, a world with only one RTA could take place.

The decision to form a RTA:

Regional integration is strictly preferred to independence if $U_{RTA} > U_{ind}$. From equation 1, we know that gains from regional integration arise from 3 sources: market size, conflict and relative defense spending. Those gains should balance heterogeneity costs from integration k , such that:

$$(Y_i^{RTA} - Y_i^{ind}) + (\mathbb{R}_i^{RTA} - \mathbb{R}_i^{ind}) - (d_i^{RTA} - d_i^{ind}) > k$$

Substituting together with equation (4), (6) and (7), regional integration is preferred to independence if and only if:

$$\frac{\rho}{4} [\pi_{ij}(1 - \tau)(1 - \varphi) - \pi_{ij}^{RTA}(1 - \tau)] + (1 - \tau)\varphi > k$$

Appendix B: Regional Trade Agreements

[Table 6 about here.]

Appendix C: First stage regressions

[Table 7 about here.]

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1	4
W	E
2	3

Figure 1: A 4 countries / 2 continents world

Table 1: Conflict game outcomes

		Ctry j	
		Bargain	Fight
Ctry i	Bargain	$(2R_{\frac{d_i}{d_i+d_j}} ; 2R_{\frac{d_j}{d_i+d_j}})$	$(2R_{\frac{d_i}{d_i+d_j}} - C_{ij} - E ; 2R_{\frac{d_j}{d_i+d_j}} - C_{ji} + E)$
	Fight	$(2R_{\frac{d_i}{d_i+d_j}} - C_{ij} + E ; 2R_{\frac{d_j}{d_i+d_j}} - C_{ji} - E)$	$(2R_{\frac{d_i}{d_i+d_j}} - C_{ij} ; 2R_{\frac{d_j}{d_i+d_j}} - C_{ji})$

Table 2: Events and Goldstein scale

Event category	Goldstein
Request action; call for	-0,1
Explicit decline to comment	-0,1
Urge or suggest action or policy	-0,1
Comment on situation	-0,2
Deny an accusation	-0,9
Deny an attributed policy, action, role or position	-1,1
Grant asylum	-1,1
Make complaint (not formal)	-1,9
Cancel or postpone planned events	-2,2
Charge; criticize; blame; disapprove	-2,2
Issue formal complaint or protest	-2,4
Give warning	-3
Denounce; denigrate; abuse	-3,4
Halt negotiation	-3,8
Turn down proposal; reject protest, demand, threat	-4
Refuse; oppose; refuse to allow	-4
Reduce routine international activity; recall officials	-4,1
Detain or arrest person(s)	-4,4
Threat without specific negative sanction stated	-4,4
Issue order or command, insist, demand compliance	-4,9
Expel organization or group	-4,9
Order person or personnel out of country	-5
Nonmilitary demonstration, walk out on	-5,2
Reduce or cut off aid or assistance; act to punish/deprive	-5,6
Threat with specific negative nonmilitary sanction	-5,8
Ultimatum; threat with negative sanction and time limit	-6,9
Threat with force specified	-7
Break diplomatic relations	-7
Armed force mobilization, exercise, display; military buildup	-7,6
Noninjury destructive action	-8,3
Nonmilitary destruction/injury	-8,7
Seize position or possessions	-9,2
Military attack; clash; assault	-10

Source: Goldstein (1992)

Table 3: Impact of RTAs on war: Censored Probit model

Model:	(1)		(2)		(3)		(4)		(5)	
Dependent variable:	MID	Dispute	MID	Dispute	MID	Dispute	MID	Dispute	MID	Dispute
Deep RTA membership	-0.68 ^b	0.44 ^a	-0.72 ^a	0.43 ^a	-0.46 ^c	0.25 ^a	-0.54 ^b	0.40 ^a	-0.53 ^b	0.35 ^a
	(0.28)	(0.09)	(0.28)	(0.08)	(0.26)	(0.09)	(0.27)	(0.10)	(0.26)	(0.08)
FTA membership	0.22	-0.31 ^b	0.21	-0.33 ^b	0.36	-0.43 ^a	0.21	-0.10	0.27	-0.09
	(0.26)	(0.13)	(0.28)	(0.13)	(0.30)	(0.15)	(0.30)	(0.15)	(0.29)	(0.14)
PA membership	-0.00	0.02	-0.11	-0.05	-0.08	0.02	-0.11	0.24 ^a	0.00	0.03
	(0.12)	(0.06)	(0.11)	(0.05)	(0.12)	(0.05)	(0.13)	(0.05)	(0.13)	(0.06)
PoA membership	0.06	0.31 ^a	0.04	0.21 ^c	0.05	0.27 ^b	0.08	0.38 ^a	0.00	0.39 ^a
	(0.21)	(0.11)	(0.21)	(0.12)	(0.21)	(0.11)	(0.24)	(0.13)	(0.27)	(0.12)
Nbr of peaceful years	-0.01 ^a	-0.00 ^a	-0.01 ^a	-0.00 ^a	-0.01 ^a	-0.00 ^a	-0.01 ^a	-0.00 ^a	-0.01 ^a	-0.00 ^a
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ln distance	-0.16 ^b	3.04 ^a	-0.05	3.38 ^a	-0.02	3.59 ^a	-0.02	2.74 ^a	-0.07	2.14 ^a
	(0.06)	(0.51)	(0.05)	(0.51)	(0.06)	(0.52)	(0.07)	(0.44)	(0.11)	(0.48)
Bil. trade dependence (t-5) (ln mean bil. imports / GDP)	-1.53 ^a	-9.67 ^a	-1.51 ^a	-10.84 ^a	-0.82 ^c	-11.89 ^a	-0.12	-10.16 ^a	0.28	-8.40 ^a
	(0.45)	(1.84)	(0.43)	(1.82)	(0.42)	(1.89)	(0.43)	(1.54)	(0.41)	(1.75)
Multil. trade dependence (t-5) (ln avg multi. import/ GDP)	-0.03	1.12 ^b	0.06	1.38 ^a	0.09	1.42 ^a	0.20	2.10 ^a	0.11	1.96 ^a
	(0.17)	(0.45)	(0.15)	(0.44)	(0.15)	(0.44)	(0.14)	(0.44)	(0.11)	(0.41)
Zero trade dummy (t-5)	0.34 ^a	-0.42 ^a	0.38 ^a	-0.41 ^a	0.29 ^b	-0.29 ^a	0.14	-0.27 ^a	0.10	-0.20 ^a
	(0.13)	(0.03)	(0.12)	(0.03)	(0.13)	(0.03)	(0.16)	(0.03)	(0.15)	(0.03)
Contiguity			0.34 ^a	0.45 ^a	0.27 ^b	0.51 ^a	0.38 ^b	0.63 ^a	0.44 ^a	0.38 ^a
			(0.12)	(0.07)	(0.12)	(0.07)	(0.16)	(0.07)	(0.15)	(0.07)
sum of democracy indexes					-0.47 ^a	0.29 ^a	-0.43 ^a	0.22 ^a	-0.41 ^a	0.22 ^a
					(0.07)	(0.03)	(0.08)	(0.03)	(0.08)	(0.03)
UN vote correlation							0.20	-0.95 ^a	0.28	-1.10 ^a
							(0.20)	(0.05)	(0.31)	(0.05)
Colonial relationship							-0.17	0.35 ^a	-0.23	0.54 ^a
							(0.13)	(0.10)	(0.18)	(0.08)
Common colonizer							0.01	0.10 ^b	-0.06	0.15 ^a
							(0.11)	(0.05)	(0.12)	(0.05)
sum ln areas									-0.01	0.13 ^a
									(0.04)	(0.01)
Common defense alliance									-0.40 ^b	0.54 ^a
									(0.17)	(0.05)
Multil. trade dependence * ldis t-5		1.59 ^a		1.73 ^a		1.83 ^a		1.52 ^a		1.24 ^a
		(0.23)		(0.23)		(0.23)		(0.20)		(0.22)
Bil. trade dependence * ldis t-5		-0.24 ^a		-0.27 ^a		-0.27 ^a		-0.34 ^a		-0.26 ^a
		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)
Observations	150924		150924		143894		131273		128535	
Uncensored Obs.	10137		10137		9210		8025		7904	
Log likelihood	-32435.7		-32250.1		-29315.6		-24475.9		-23001.0	
Wald test of indep.equations	5.48 ^b		7.45 ^a		6.85 ^a		2.46		1.11	

Note: Robust standard errors adjusted for intragroup correlation in parentheses. a, b and c respectively denote significance at the 1%, 5% and 10% levels. Intercept and time dummies not reported.

Table 4: Probability of a RTA between two countries

Model: Dependent variable:	Probit			IV Probit		IV Probit	
	(1) all RTAs	(2) Shallow RTAs	Deep RTAs	Shallow RTAs	Deep RTAs	Shallow RTAs	Deep RTAs
Propensity to dispute	-0.49 ^a (0.17)	-0.43 ^b (0.21)	-0.04 (0.27)	-4.85 ^a (0.35)	1.69 ^c (0.90)	-5.77 ^a (0.35)	3.11 ^a (0.87)
Multil. trade (1960)	0.01 (0.10)	-0.39 ^a (0.10)	2.19 ^a (0.26)	-0.39 ^a (0.08)	2.15 ^a (0.26)	-0.31 ^a (0.08)	1.88 ^a (0.29)
Multi. Tariffs	-0.10 ^a (0.01)	-0.08 ^a (0.01)	-0.21 ^a (0.02)	-0.05 ^a (0.01)	-0.20 ^a (0.02)	-0.07 ^a (0.01)	-0.16 ^a (0.02)
ln distance	-0.29 ^a (0.04)	0.03 (0.05)	-1.34 ^a (0.09)	-0.10 ^b (0.04)	-1.25 ^a (0.11)	-0.02 (0.05)	-0.99 ^a (0.12)
Contiguity	0.68 ^a (0.15)	0.87 ^a (0.16)	-0.03 (0.24)	1.40 ^a (0.19)	-0.31 (0.25)	1.45 ^a (0.20)	-0.30 (0.25)
Diff. GDP per cap. (1960)	-0.21 ^a (0.02)	-0.19 ^a (0.02)	-0.13 ^a (0.04)	-0.12 ^a (0.02)	-0.12 ^a (0.04)	-0.05 ^b (0.02)	-0.12 ^b (0.06)
Common language	0.08 (0.09)	0.27 ^a (0.09)	-0.49 ^b (0.23)	0.46 ^a (0.08)	-0.61 ^a (0.23)	0.19 ^b (0.08)	-0.84 ^a (0.20)
Common colonizer	-0.18 (0.15)	-0.19 (0.16)	0.62 ^b (0.31)	0.05 (0.14)	0.48 (0.31)	0.29 ^b (0.14)	1.58 ^a (0.35)
Avg. GDP (1960)	0.27 ^a (0.04)	0.15 ^a (0.04)	0.48 ^a (0.09)	0.36 ^a (0.04)	0.30 ^b (0.12)	0.46 ^a (0.03)	-0.13 (0.13)
Diff. GDP (1960)	-0.18 ^a (0.03)	-0.16 ^a (0.03)	-0.01 (0.06)	-0.16 ^a (0.03)	0.00 (0.05)	-0.17 ^a (0.03)	0.10 (0.06)
Sum of democracy indexes						-0.39 ^a (0.06)	2.60 ^a (0.37)
Common defence alliance						0.81 ^a (0.11)	0.62 ^a (0.18)
Observations	12445	12445	12445	12445	12445	11698	11698
Log pseudolikelihood	-3856.5	-3434.3	-604.4	2996.4	5726.1	3182.7	5760.9
Wald test of exogeneity				65.6 ^a	3.9 ^b	50.0 ^a	9.5 ^a
Smith-Blundell test of exogeneity				128.6 ^a	11.2 ^a	156.3 ^a	22.8 ^a

Note: Robust standard errors adjusted for intragroup correlation in parentheses. a, b and c respectively denote significance at the 1%, 5% and 10% levels. Time dummies and intercept are not reported.

Table 5: Probability of a RTA between two countries (IV Probit)

Model: Dependent variable:	Western European dyads excluded (5)		Year 2000 (6)		Year 2000 and bil. RTAs (7)	
	Shallow RTAs	Deep RTAs	Shallow RTAs	Deep RTAs	Shallow RTAs	Deep RTAs
Propensity to dispute	-5.62 ^a (0.33)	1.97 ^c (1.18)	-10.59 ^a (0.61)	4.69 ^a (1.31)	-8.41 ^a (0.70)	4.69 ^a (1.31)
Multil. trade (1960)	-0.25 ^a (0.08)	0.65 ^b (0.33)	0.21 ^a (0.07)	1.06 ^a (0.23)	0.37 ^a (0.08)	1.06 ^a (0.23)
Multi. tariffs	-0.05 ^a (0.01)	-0.13 ^a (0.02)				
In distance	-0.08 (0.06)	-0.59 ^a (0.11)	0.06 (0.05)	-0.96 ^a (0.09)	-0.24 ^a (0.04)	-0.96 ^a (0.09)
contiguity	1.56 ^a (0.23)	0.07 (0.38)	1.41 ^a (0.22)	-0.11 (0.27)	0.91 ^a (0.20)	-0.11 (0.27)
Diff. GDP per cap. (1960)	-0.08 ^a (0.02)	0.02 (0.07)	-0.13 ^a (0.02)	0.07 (0.05)	-0.16 ^a (0.02)	0.07 (0.05)
Common language	0.17 ^b (0.08)	-0.55 ^b (0.23)	0.30 ^a (0.08)	-0.62 ^a (0.19)	0.09 (0.08)	-0.62 ^a (0.19)
Common colonizer	0.25 ^c (0.13)	1.89 ^a (0.32)	0.10 (0.12)	2.20 ^a (0.31)	-0.10 (0.14)	2.20 ^a (0.31)
Colonial relationships					0.50 ^c (0.25)	
Avg. GDP (1960)	0.47 ^a (0.04)	-0.22 ^b (0.11)	0.53 ^a (0.04)	-0.12 (0.10)	0.70 ^a (0.04)	-0.12 (0.10)
Diff. GDP (1960)	-0.17 ^a (0.03)	0.01 (0.06)	-0.17 ^a (0.02)	-0.03 (0.05)	-0.27 ^a (0.03)	-0.03 (0.05)
Sum of democracy indexes	-0.29 ^a (0.05)	0.65 ^a (0.22)	-0.37 ^a (0.07)	2.27 ^a (0.34)	-0.29 ^a (0.06)	2.27 ^a (0.34)
Common defence alliance	0.83 ^a (0.12)	1.34 ^a (0.27)	0.72 ^a (0.11)	0.53 ^a (0.17)	0.50 ^a (0.10)	0.53 ^a (0.17)
Observations	11200	11200	3347	3347	3347	3347
Log pseudolikelihood	3097.1	5873.2	2659.5	3587.6	2359.0	3587.6
Wald test of exogeneity	61.4 ^a	4.2 ^b	88.4 ^a	12.5 ^a	65.1 ^a	12.5 ^a
Smith-Blundell test of exogeneity	156.3 ^a	22.8 ^a	84.0 ^a	9.4 ^a	79.5 ^a	9.4 ^a

Note: Robust standard errors adjusted for intragroup correlation in parentheses. a, b and c respectively denote significance at the 1%, 5% and 10% levels. Intercept not reported.

Table 7: First stage estimates

Dependent variable: Second stage dependent variable:	Propensity to dispute	
	rtad	rtal
Major power status	0.22 ^a (0.014)	0.22 ^a (0.014)
Ratio of military capabilities	0.05 ^a (0.008)	0.02 ^c (0.010)
Avg multi. trade (1960) (ln avg multi. import/GDP)	-0.01 ^c (0.009)	-0.01 ^c (0.009)
Multi. Tariffs	0.00 (0.000)	0.00 (0.000)
Ln distance	-0.02 ^a (0.004)	-0.02 ^a (0.004)
Contiguity	0.16 ^a (0.030)	0.17 ^a (0.030)
Diff. GDP per cap. (1960)	0.00 (0.002)	0.00 (0.002)
Common language	0.05 ^a (0.009)	0.05 ^a (0.009)
Common colonizer	0.02 (0.016)	0.02 (0.015)
Avg. GDP (1960)	0.04 ^a (0.004)	0.04 ^a (0.004)
Diff. GDP (1960)	-0.01 ^b (0.002)	-0.01 ^a (0.003)
Intercept	-0.03 (0.045)	-0.01 (0.045)
Nbr of observations	12445	12445

Note: Robust standard errors adjusted for intragroup correlation in parentheses. a, b and c respectively denote significance at the 1%, 5% and 10% levels. Time dummies are not reported.