National Borders, Conflict and Peace

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CESIFO WORKING PAPER NO. 2860
CATEGORY 2: PUBLIC CHOICE
NOVEMBER 2009

CESifo *Working Paper No. 2860*

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Abstract

This paper reviews the economics approach to conflict and national borders. The paper (a) provides a summary of ideas and concepts from the economics literature on the size of nations; (b) illustrates them within a simple analytical framework where populations fight over borders and resources, and may form non-aggression pacts, military alliances, and political unions; and (c) discusses extensions and directions for further research.

JEL Code: D74, F02, H10, H56.

Keywords: wars, alliances, conflict technology, defense, economies of scale, heterogeneity costs, secessions, size of nations.

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November 2009

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1 Introduction

Conflict and defense have historically played a central role in the determination of national borders. Historians and political scientists have extensively studied "how wars made states, and vice versa" (Tilly 1992, p. 67), emphasizing that "modern states were largely built as military enterprises" (Colomer 2007, p. 33).[1] Security concerns have influenced philosophical discussions of the ideal size of a political system since classical times, when Plato wrote that "the number of citizens must be sufficient to defend themselves against the injustice of their neighbors" (*The Laws,* Book V).[2]Machiavelli claimed that "the cause of the disunion of republics is usually idleness and peace; the cause of union is fear and war" (*Discourses on Livy*, II, 2), echoing a view often referred to as "Sallust's Theorem" (Wood 1995; Evrigenis 2008) after the Roman historian Gaius Sallustius Crispus, who linked the internal cohesion of the Roman Republic before the destruction of Chartage to "fear of the enemy" (*metus hostilis*).

In modern times, military threats and opportunities have been singled out as key factors in the formation of political unions and federations (e.g.,

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[1]See also Bean (1973) and Tilly (1975). For a recent discussion of the literature on warfare and modern state formation from a political-science perspective see Spruyt (2007).

[2]The philosophical and political literature on the size of political systems is discussed in Dahl and Tufte (1973).

Riker 1964), such as the United States, Switzerland, and Germany, whose borders, as Otto von Bismarck famously stated in 1862, were to be decided "not by speeches and the decisions of majorities [...] but by iron and blood."

In recent decades - especially after the end of the Cold War - dramatic breakups of countries and increasing demand for separatism have renewed interest in the formation and redrawing of national borders, not only among historians and political commentators, but also within the field of political economics. A new analytical literature has been developed, providing formal models where national borders are not taken as given, but are the endogenous outcomes of decisions by agents who interact with each other while pursuing their goals under constraints. Contributions to this literature include Alesina and Spolaore (1997, 2003), Alesina, Spolaore and Wacziarg (2000, 2005), Bolton and Roland (1997), Bordignon and Brusco (2001), Ellingsen (1998), Goyal and Staal (2004), Le Breton and Weber (2003), and others; overviews are provided by Bolton, Roland and Spolaore (1996) and Spolaore (2006).

Several of these contributions have focused on peaceful border redrawing through voting or unilateral secessions in the absence of conflict. A small but growing number of studies, however, has begun to introduce conflict and security considerations explicitly in the theoretical framework, therefore linking the economic literature on endogenous national borders to the expanding literature on the economics of conflict and peace, which is the subject of this Handbook. In particular, international conflict and defense are at the center of the analysis of national borders in Alesina and Spolaore (2005, 2006) and Spolaore (2004), and are also modeled by Wittman (2000). A formal analysis of civil conflict and secessions has been developed by Spolaore (2008).[3]

This line of work is related to other areas of research, such as the formal study of conflict by international-relations scholars (e.g., Powell 1999), and the economic analysis of military alliances, pioneered by Olson and Zeckhauser (1966). However, unlike more traditional studies, which have typically taken the identity of states engaging in conflict as given, a central objective of the new political-economy literature on nations is to endogenize (explain) sovereign states themselves, and to study how their number, size, and shape are affected by conflict, defense and security.

Section 2 overviews some key ideas and questions about the relation between conflict and the size of nations.[4] Section 3 presents a simplified model

[3] A related literature has focused on the implications of internal distributional conflict for the organization of jurisdictions (e.g., Wärneryd, 1998).

[4] In this chapter we use "nation" as equivalent to "sovereign state," as commonly un-

that illustrates decisions over military spending, economies of scale in security, and incentives to form alliances and political unions. Section 4 discusses various topics on conflict and national borders in light of contributions from the political economics literature. Section 5 comments on directions for further research.

2 Conflict, Defense, and the Size of Nations: an Overview

2.1 The Fundamental Trade-off

What determines the number and size of nations? From an economics perspective, a fruitful starting point is the consideration of benefits and costs associated with a larger national size. A central role for states is the supply of public goods to their citizens: a legal and justice system, security and crime prevention, public health, protection against catastrophic events (such as earthquakes and hurricanes), and so on. Providing public goods comes with economies of scale. Typically, public goods, unlike private goods, are non-rival in consumption: each citizen can benefit from them without reducing the benefits for other citizens. Even when the costs of publicly provided goods go up with the size of population (say, because of congestion or increasing administrative costs), some components of these costs are independent of the number of users. In general, publicly provided goods are cheaper per person when more taxpayers pay for them. Empirically, the share of government spending over total income is decreasing in population: states with smaller populations tend to have proportionally larger governments (for a discussion, see Alesina and Spolaore, 2003, chapter 10).

Defense and security have historically been among the most important public goods provided by governments. Because of economies of scale, in principle larger country can provide cheaper and more effective security to their citizens. Empirically, the relationship between defense spending and country size is complex for various reasons, including the existence of international alliances and the fact that some larger countries may provide defense

derstood in English when speaking of inter*national* relations or the United *Nations*.

for smaller countries, as the United States within NATO. At the same time, larger, more powerful states may obtain additional economic and political benefits from their leading position.[5]

In summary, all things considered, the provision of public goods - including defense and security - is associated with actual or potential benefits of scale.

A larger size, however, comes with costs as well as benefits. Some of these costs may be due to coordination and congestion problems that arise when states become larger. More importantly, an expansion of national borders may raise political costs, stemming from higher heterogeneity in larger communities. In particular, an expansion of national borders is likely to bring about more heterogeneity of preferences for public policies and types of governments across different groups of citizens. As borders include more heterogeneous populations - with different cultures, values, norms, habits, languages, religions, ethnicities - disagreements over the fundamental characteristics of the state are more likely to emerge and harder to reconcile. Being part of the same country implies sharing jointly-supplied public goods and policies in ways that cannot always satisfy everybody's preferences. At the same time, diversity may also generate direct economic benefits through learning, specialization, and exchange of ideas. Successful societies manage to minimize the political costs of heterogeneity while maximizing the benefits from a diverse pool of preferences, skills, and endowments. Nonetheless, all other things being equal, heterogeneity of preferences over government policies and political costs tend to increase as states become larger and expand their borders.

On balance, there is a trade-off between economies of scale and heterogeneity of preferences over public policies. Such trade-off has played a central role in the economic literature on the size of nations (e.g., in Alesina and Spolaore 1997, 2003; Le Breton and Weber 2003; Wittman 2000). When economies of scale become more prominent compared to heterogeneity costs, larger political systems are more likely to emerge. In contrast, a drop in the benefits from size or an increase in heterogeneity costs will bring about political disintegration.

This trade-off has immediate implications for the relation between con-

[5] A further complication arises if the returns from foreign aggression are also increasing in a country's size - for instance, in its capital stock, as in Thomson's (1976) classic analysis of optimal defense spending and taxation.

flict and national borders. In a more bellicose world, when external threats loom large and security concerns are paramount, larger and more centralized political unions have an advantage in terms of defense provision. Conversely, a reduction in international conflict, all other things being equal, will lower the incentives to form larger political unions (Alesina and Spolaore 2005, 2006 and Spolaore, 2004).

2.2 A Few Questions

The trade-off between economies of scale in defense and heterogeneity costs provides a useful framework to study the relationship between international conflict and the size of nations. However, it is only the first step towards a theoretical and empirical exploration of this topic. The costs and benefits of defense and military power are difficult to model and elusive to measure. They depend on strategic interactions among political actors within and across countries, and entail complex relations with political, economic, and institutional variables. While several insights have been gained on these issues, the analytical study of conflict, defense and national borders is only in its infancy, and key questions have only recently begun to be addressed with the tools of modern economic analysis. Here is a selective summary of these questions.

(a) *Military power, economies of scale in defense, alliances and political unions.* Defense and military power are not standard public goods. Their costs and benefits depend not only on their provision within a given sovereign state, but also on other states' supplies, and, more generally, on strategic interactions within and across national borders. For example, small states can enter into various forms of decentralized military alliances, or merge into a centralized political union. How do economies of scale in defense and security differ across different institutional arrangements? How does the possibility of forming decentralized alliances affect the incentives for political unification?

(b) *Endogenous political disintegration and international conflict.* While conflict and defense affect the number and size of nations, changes in national borders conversely influence the patterns of conflict and defense. In the long run, conflict, defense, and national borders are all jointly-determined

endogenous variables, and the change of these variables over time must be studied within a general equilibrium setting. For example, what happens to defense spending and observed conflict following the breakup of larger political units, which perhaps occurred in direct response to changes in the perceived importance of conflict and security?

(c) *Conflict, democracy, and openness: implications for the number and size of nations.* The costs and benefits of defense and military power may depend on democratic constraints and international openness, as suggested by an extensive literature on the "liberal peace," which can be traced back to Montesquieu (1748) and Kant (1795) (e.g., see Oneal and Russett, 1999). At the same time, the literature on the formation and breakup of nations has stressed the role of variables such as democratization and economic globalization, in addition to conflict and security. Nonetheless, the links among conflict, democracy, openness and the size of nations remain relatively unexplored. Do democratization, globalization and lower international conflict go hand in hand with the creation of smaller states? Does the formation of larger political unions is associated with dictatorial rulers, barriers to trade, and a more bellicose world? Could we have multiple equilibria in these variables? How would societies transition from one equilibrium to the other over time?

(d) *Civil conflict and secessions.* As mentioned above, while political integration may bring about economies of scale in defense and better protection against external threats, an expansion of borders also tends to raise heterogeneity costs within each country. An important question is whether such heterogeneity is associated with a higher likelihood of civil conflict over domestic policies, or even disagreement over borders themselves (e.g., separatist wars). A related question is whether a reduction in international conflict may increase confrontation within each state. While there is an extensive literature on civil and ethnic conflict, much work still needs to be done to understand the links between civil conflict, external threats, separatism, and the endogenous formation of nations.

These questions will motivate the following sections. Some of the issues under (a) will be illustrated within a simple model in Section 3, while the questions under (b), (c) and (d) will be discussed with reference to the literature in Section 4.

3 Conflict, Alliances, and Political Unions

We now present a simple analytical framework to organize ideas and illustrate the basic logic of military spending decisions, economies of scale in security, and incentives to form alliances and political unions.

3.1 The Basic Setting

Consider a world with three homogeneous populations (A, B, and C) of equal size (normalized to one). Each population is located at a vertex of an equilateral triangle of length equal to R (Figure 1). The segment R measures the territory located between each pair. T_i denotes the total amount of territory controlled by each population i, so that:

$$T_A + T_B + T_C = 3R \tag{1}$$

[INSERT FIGURE 1 HERE]

The territory between each pair of populations i and j is valuable to them because it contains resources (land and other inputs) that can be used by either i or j to produce output.[6] Each unit of territory produces one unit of output. However, in order to control some territory populations must spend resources to build their military capabilities (weapons). Output can be used either for consumption (C_i) or to build weapons (W_i). Hence, population i 's consumption C_i is equal to the territory it controls T_i minus its military spending W_i:[7]

$$C_i = T_i - W_i \tag{2}$$

[6] To keep the analysis simple, we assume that the territory located between populations i and j is of no value to the the third population $k \neq i, j$, or, equivalently, that population k is unable or unwilling to control any fraction of territory between populations i and j. Therefore, $0 \leq T_i \leq 2R$ for $i = A, B, C$. An economic interpretaion of this restriction is that production in each territory requires specific inappropriable inputs that only the local populations possess. A different interpretation is that the "territory" between two populations is a metaphor for a more general set of "common issues" under dispute between those two populations, along the lines of the model in Spolaore and Wacziarg (2009b).

[7] Notice that all variables are in per capita terms, as population size is normalized to one.

In the presence of conflict and appropriation, the territory located between populations i and j is divided between them in proportion to their military strength. Specifically, if population i's weapons are W_i and population j's are W_j, population i's share of territory will be

$$P(W_i, W_j) = \frac{W_i}{W_i + W_j} \tag{3}$$

$P(W_i, W_j)$ is an instance of a *contest success function*, increasing in i's weapons W_i and decreasing in j's weapons W_j. $P(W_i, W_j)$ can be interpreted as the probability that population i would win complete control over the territory, should a war erupt between i and j. For simplicity, we assume that no actual war occurs, but that the territory is divided "under the shadow of power": each population controls a share of territory equal to what it could *expect* to win in case of war. In other terms, when there is conflict and appropriation, the border between populations is determined by their relative military power. For example, if population i has twice as many weapons as population j, it will control 2/3 of the territory between i and j, while population j will control the remaining 1/3, and the border between the two populations will be at a distance $\frac{2R}{3}$ from population i and at a distance $\frac{R}{3}$ from population j.

This technology of conflict is a special case of a ratio contest success function in which population i's probability of success is a function of $\frac{W_i}{W_j}$ (Tullock, 1980).[8] The function could be generalized to allow for a higher marginal impact of investment in weapons: $P(W_i, W_j) = \frac{W_i^m}{W_i^m + W_j^m}$,with $m \geq 1$. As shown by Skaperdas (1998) in a different setting, the parameter m has implications for alliance formation. In general, a higher m would strengthen the incentives to form alliances and unions. Here we abstract from this effect and assume $m = 1$.[9]

[8] An alternative specification, also used in the formal literature, is the logistic or difference function, where population i's probability of success is a function of $W_i - W_j$. For discussions of alternative specifications see Hirshleifer (1989) and Garfinkel and Skaperdas (2007).

[9] In Skaperdas (1998) $m > 1$ is indeed *necessary* for the formation of stable alliances. In our setting this is not the case, because of different assumptions about conflict over

How much territory will each population control? How much will each population consume? We are now ready to consider equilibrium outcomes under different institutional arrangements. First, we derive equilibria when the three populations form three independent sovereign states, and each state acquires and defends its territory on its own. Then, we study how equilibria differ under various forms of cooperation, such as (a) a non-aggression pact between two states, (b) a military alliance, and (c) a full political union.

3.2 Military Spending, Borders, and Consumption under Alternative Institutional Arrangements

Three independent states

Assume that each population forms its own independent state. Each state i invests in its own weapons W_i, taking the weapons of the other two states j and k as given. We assume that a state's military capabilities are used to set the borders with both enemies simultaneously.[10] Each state i chooses W_i to maximize its population's consumption, given by

$$C_i = R\frac{W_i}{W_i + W_j} + R\frac{W_i}{W_i + W_k} - W_i \tag{4}$$

The Nash-equilibrium levels of military spending are:

$$W_A^{in} = W_B^{in} = W_C^{in} = \frac{R}{2} \tag{5}$$

resources between pairs of populations and institutional characteristics of allliances and unions. Garfinkel (2004a, 2004b) also studies models of alliance formation and conflict where stable alliances may form when $m = 1$. In her analyses, though, a crucial role is played by conflict over resource redistribution *within* alliances. We will return to the issue of internal conflict at the end of this chapter and in the next section.

[10] This assumption is reasonable given that no actual wars take place in our model, but borders are set "under the shadow of power." If borders were determined by actual wars, taking place simultaneously between all pairs of states, we would have to specify how each state were to divide its military capabilities between its two fronts. In the symmetric case of three independent states, each state would divide its weapons equally between the two fronts, and the results would be unchanged. We will abstract from these complications in the rest of the analysis, and always assume that a state's military power can be used against all its enemies simultaneously (a form of economies of scope in defense).

In this symmetric equilibrium, all states are equally powerful, and each state obtains half a share of the territory under dispute with each of its two neighbors. Hence, each population controls a territory of size R, produces R units of output, consumes half of those units, and uses the other half to build weapons. In this equilibrium with three independent states consumption per capita is

$$C_A^{in} = C_B^{in} = C_C^{in} = \frac{R}{2} \tag{6}$$

Clearly, military spending is a net loss for each population, as it diverts valuable resources from consumption. The three populations would be better off if they could commit to full disarmament ($W_A^{in} = W_B^{in} = W_C^{in} = 0$), while dividing the world territory equally and peacefully among themselves. Then, they would obtain the same land distribution as they get under conflict, but enjoy twice as much consumption (R rather than $\frac{R}{2}$). Unfortunately, this first-best outcome is not a Nash equilibrium: in the absence of some external commitment technology, the three states cannot credibly commit to global (multilateral) disarmament. In the rest of the chapter we will rule out any multilateral cooperation, but will consider different scenarios for bilateral cooperation.

Non-aggression pact

Consider the possibility of a credible non-aggression pact between two states (to fix ideas, A and B). That is, suppose that only states A and B can credibly commit *not* to use force against each other, and to divide the territory located between them peacefully and equally (so that each will obtain $\frac{R}{2}$). At the same time, they continue to use their individual military capabilities to set territorial disputes with the third state (C). In other words, A and B can form a non-aggression pact, but *not* an active military alliance (each is on its own against state C). Then, each state $i = A, B$ chooses its W_i to maximize:

$$C_i = \frac{R}{2} + R\frac{W_i}{W_i + W_C} - W_i \tag{7}$$

while state C maximizes:

$$C_C = R\frac{W_C}{W_C + W_A} + R\frac{W_C}{W_C + W_B} - W_C \tag{8}$$

The Nash-equilibrium levels of weapons are:

$$W_A^{na} = W_B^{na} = \frac{2R}{9} \tag{9}$$

and

$$W_C^{na} = \frac{4R}{9} \tag{10}$$

In equilibrium all three states spend less on weapons than they would have in the absence of this bilateral non-aggression pact. Not surprisingly, the reduction is especially dramatic for A and B: without the pact each of them would have spent $\frac{R}{2}$ in defense (half of their output), rather than $\frac{2R}{9}$. In this equilibrium, interestingly, A and B are weaker than C, and, as a result, each of them controls *less* territory than in the previous equilibrium (C has twice as many weapons as each of the two other states, and hence it controls 2/3 of the territory located between A and C, and 2/3 of the territory between B and C) On net, the pact is a good deal for A and B. The loss of territory to C is more than offset by the gain in terms of lower military spending, and consumption in the two countries is higher than it would be without the pact:[11]

$$C_A^{na} = C_B^{na} = \frac{R}{2} + \frac{R}{3} - \frac{2R}{9} = \frac{11R}{18} > C_A^{in} = C_B^{in} = \frac{R}{2} \tag{11}$$

In sum, a bilateral non-aggression pact allows significant net savings in defense spending, although at the cost of less effective protection against external aggression.

Military alliance

We now consider the case when, in addition to entering a non-aggression pact with each other, A and B can credibly commit to *join* forces against C, while still maintaining their independence.[12] Specifically, we suppose

[11] C also gains when A and B form a non-aggression pact between themselves: it obtains a larger extent of territory while also saving in weapons relative to the previous equilibrium. ($W_C^{na} = \frac{4R}{9} < W_C^{in} = \frac{R}{2}$).

[12] Here we abstract from the possibility that the two states can commit to join forces against a third state, but are unable to commit *not* to attack each other. The issue of intra-alliance (or, later, intra-state) conflict is an important one, and we will turn to it later.

that (i) military spending remains decentralized across states: each state autonomously decides its own level of military spending and pays for it, but (ii) control over territory is determined by the aggregate military power of the *alliance* relative to the third state. Therefore:

$$C_A = \frac{R}{2} + R\frac{W_A + W_B}{W_A + W_B + W_C} - W_A \tag{12}$$

$$C_B = \frac{R}{2} + R\frac{W_A + W_B}{W_A + W_B + W_C} - W_B \tag{13}$$

$$C_C = 2R\frac{W_C}{W_A + W_B + W_C} - W_C \tag{14}$$

Each state continues to choose its weapons taking the weapons of the other two states as given. In particular, each ally takes the other ally's weapons as given, and does not internalize the benefits that its own weapons provide to the other ally. Weapons in equilibrium are

$$W_A^{al} = W_B^{al} = \frac{R}{9} \tag{15}$$

$$W_C^{al} = \frac{4R}{9} \tag{16}$$

The aggregate level of military spending within an alliance ($W_A^{al} + W_B^{al} = \frac{2R}{9}$)

is the same as the sum of the weapons of the two states when they only form a non-aggression pact. Hence, a military alliance provides the same protection against C that each state provided for itself when it was part of a mere non-aggression pact. However, such military power is now obtained with a lower level of military spending *per capita*. This is a clear instance of *economies of scale* in defense and security. Consequently, consumption is higher in an active military alliance than in a non-aggression pact:

$$C_A^{al} = C_B^{al} = \frac{R}{2} + \frac{R}{3} - \frac{R}{9} = \frac{13R}{18} > C_A^{na} = C_B^{na} = \frac{11R}{18} \tag{17}$$

Notwithstanding such economies of scale, the alliance still provides only imperfect protection against C. Even though each state can rely on the size and resources of two populations, aggregate military power is "undersupplied." This is an example of the well-known issue of free riding within decentralized

military alliances, as each member fails to internalize the overall benefits that its military spending provides to the whole alliance (Olson and Zeckhauser, 1966). In order to internalize the full benefits and costs of military spending, the two populations would have to form a centralized political union. We consider such an institutional arrangement next.

Political union

Finally, suppose that populations A and B form a full political union, where decisions over military spending are centralized. The union's military capabilities W_U are decided jointly by the two populations in order to maximize their aggregate consumption, and their costs are shared equally within the union. That is, W_U is chosen to maximize:

$$C_A + C_B = 2[\frac{R}{2} + R\frac{W_U}{W_U + W_C}] - W_U \tag{18}$$

while state C maximizes:

$$C_C = 2R\frac{W_U}{W_U + W_C} - W_C \tag{19}$$

The Nash-equilibrium outcomes are

$$W_U^* = W_C^* = \frac{R}{2} \tag{20}$$

Now the whole union controls a territory of size $2R$ (all territory between A and B, half the territory between A and C, and half the territory between B and C). This means that the union provides as much protection against foreign aggression as an independent state (in the absence of a non-aggression pact or a decentralized alliance). But now this protection is provided at *half the cost per capita*: $\frac{W_U}{2} = \frac{R}{4}$ rather than $W_A^{in} = W_B^{in} = \frac{R}{2}$.If the two populations share costs and benefits from military power equally, each population consumes

$$C_A^{pu} = C_B^{pu} = R - \frac{R}{4} = \frac{3R}{4} \tag{21}$$

This level of consumption $C_A^{pu} = C_B^{pu}$ is higher than in *any* of the other three arrangements (in contrast, population C's consumption is the same as in the

case when it is one of three fully independent states).[13]

In sum, in this setting a political union provides *cheaper* protection to its citizens than they would get from a smaller sovereign state, and *better* protection than they would get from a decentralized alliance.

3.3 Trade-off between Benefits of Scale in Defense and Heterogeneity Costs

We have seen that, in the presence of conflict and appropriation, cooperation in security reduces the need for expensive military capabilities and/or spreads their costs over a larger number of people. The largest gains are obtained by forming a full political union, while more modest gains are associated with a non-aggression pact or a decentralized alliance. Nonetheless, even though a centralized defense is the most effective form of protection against external threats, these defense benefits may not come for free. As we have mentioned in Section 2, at the center of the literature on endogenous national borders is the idea that forming a political union may entail substantial political costs. When they form a political union, populations A and B may face a loss of utility from sharing a common government, foreign policy, tax system, and so on, insofar as preferences over public policies differ across the two populations. In general, whether a political union is formed will depend on the trade-off between economies of scale in defense and heterogeneity costs. Suppose that utility for each population i is

$$U_i = C_i + G_i \tag{22}$$

where C_i is private consumption (as before), and G_i is the utility from the services of a public good ("the government"). When population i is politically

[13] The fact that a political union provides a higher level of consumption to its members relative to the other arrangements should not be viewed as a necessary implication of the *definition* of a political union. Even though the political union indeed maximizes aggregate consumption of its members, it takes the behavior of state C as given, and, therefore, does not fully internalizes the effects of its decisions over C's behavior. In principle, a union could end up lowering its members consumption (relative to alternative arrangements) if state C were to react to the union's formation by increasing its military spending to such an extent that it would offset the other two populations' gains from forming a union. This could happen, for instance, if C were to obtain much higher gains from conflict than either A or B - in other words, if the gains from conflict were to be greatly asymmetric across populations. We do not pursue these alternative specifications here.

independent, it can choose its favored type of government, providing utility G^h. When forming a union with the other population, each population must compromise and accept a less preferred type of government, providing utility $G^l < G^h$.[14] The difference between G^h and G^l captures heterogeneity costs H:

$$H \equiv G^h - G^l \tag{23}$$

In equilibrium, total utility in a union is

$$U_A^{pu} = U_B^{pu} = \frac{3R}{4} + G^l = \frac{3R}{4} + G^h - H \tag{24}$$

while utility in the case of full independence is

$$U_A^{in} = U_B^{in} = \frac{R}{4} + G^h \tag{25}$$

When non-aggression pacts and decentralized alliances are not available, and the only choice available to the two populations is between full independence and political union, a union will be formed if and only if $U_A^{pu} = U_B^{pu} > U_A^{in} = U_B^{in}$ - i.e., if and only if the heterogeneity costs are smaller than the net gains from political unification in terms of higher consumption:[15]

$$H < C_i^{pu} - C_i^{in} = \frac{R}{4} \tag{26}$$

By contrast, if we assume that the two populations can choose whether to form a political union *or* a decentralized alliance, the condition for a political union becomes much more stringent:[16]

[14] In the literature on endogneous borders preferences over different types of government have often been given a spatial interpretation (for a discussion see Alesina and Spolaore, 2003, chapters 2 and 3; and Spolaore, 2006). For example, within our model we could assume that each population prefers to locate the state's "capital" as close as possible to its own vertex (A or B), and that the capital of a political union is located at its geographical center, half way between A and B.

[15] For simplicty, we abstract from other benefits from political unions, such as economies of scale in the provision of non-defense public goods. H could re-interpreted as heterogeneity costs net of those additional benefits.

[16] We abstact from heterogeneity costs in decentralized alliances. In principle, political costs may also arise in a decentralized alliance, but they are likely to be much smaller, as each population keeps full independence, chooses its weapons autonomously, and pays for them.

$$H < C_i^{pu} - C_i^{al} = \frac{R}{36} \tag{27}$$

This implies that international changes that facilitate the formation of decentralized alliances will bring about the breakup of political unions with higher heterogeneity costs (high H) or less at stake in terms of defense and security (low R). In contrast, political unions with lower heterogeneity costs (low H) or more at stake in case of conflict (high R) will stick together even when decentralized alliances become feasible.

Heterogeneity costs and domestic conflict

A very important issue is the extent to which alliances or political unions actually succeed at eliminating conflict among their own members. In the analysis above we have abstracted from the possibility that populations may continue to use military force against each other even after they join an alliance or a political union. Clearly, the net benefits from forming a union would be affected if populations had to invest additional valuable resources to affect domestic outcomes in their favor. Such costs from internal conflict over resources or public policies could be viewed as additional heterogeneity costs from forming a union. For example, suppose that government policies within the political union are decided by a "domestic contest" between the two populations, where population A invests D_A units of output to build its own domestic-conflict capabilities, while B invests D_B, and A's probability of winning the contest is $\frac{D_A}{D_A + D_B}$. Assume that each population obtains utility G^h if it wins the contest, but utility $G^h - 2H$ if the other population wins the contest and imposes its own preferred government policies. If no resources are invested in domestic-conflict capabilities by either population, each population has a $1/2$ chance to have its preferred policies chosen, and, in expectation, it obtains utility from government service equal to $G^l = G^h - H$. Then, in the absence of domestic-conflict activities, the overall utility from a political union is

$$U_A^{pu} = U_B^{pu} = \frac{3R}{4} + G^h - H \tag{28}$$

as in the analysis above, when we assumed no domestic conflict. In contrast, when both populations invest in domestic-conflict capabilities, overall utility will be lower, because of lower consumption. Each population within the

union maximizes

$$U_i = \frac{D_i}{D_i + D_j} G^h + (1 - \frac{D_i}{D_i + D_j})(G^h - 2H) + \frac{3R}{4} - D_i \tag{29}$$

which implies equilibrium investment in domestic-conflict capabilities equal to

$$D_A^* = D_B^* = \frac{H}{2} \tag{30}$$

Hence, overall utility in a political union *with* domestic conflict is

$$U_A^{pudc} = U_B^{pudc} = \frac{3R}{4} + G^h - \frac{3H}{2} \tag{31}$$

That is, domestic conflict *multiplies* the losses from heterogeneity. In our example, heterogeneity costs equal to H in the absence of domestic conflict become 50% larger ($\frac{3H}{2}$) as a consequence of domestic conflict. This implies that, for a given level of preference heterogeneity, a political union subject to internal conflict would be formed only for *higher* returns from international military power (in our setting, a higher R).

In sum, both international conflict and domestic conflict affect the incentives to form a political union. To keep things simple, we have modeled the two effects separately: the extent of domestic conflict is not directly influenced by the extent of international conflict, and vice versa. In more complex settings, though, a larger external threat may directly affect the extent of internal conflict within a political union. More generally, in this section we have illustrated the logic of the trade-off between economies of scale in security and heterogeneity costs within a very simple framework, abstracting from several variables and channels that may affect the relation between conflict and national borders. We will discuss some of those effects and extensions in the rest of this chapter.

4 The Political Economics of Conflict, Peace and National Borders

In this section we discuss the connections between conflict and national borders in light of recent political-economy contributions. In particular, we

consider analyses that have focused on systemic effects when conflict and national borders are determined endogenously; the role of democratization and international economic integration; and the political economy of civil conflict and secessions.

4.1 International Conflict and the Number and Size of Nations

The relationship between international conflict and national borders is studied by Alesina and Spolaore (2005, 2006). In those papers the equilibrium number and size of nations is influenced by the need for government to protect the interests of its citizens in a bellicose world. Larger national states emerge when national military power is more important in the settlement of international disputes. In contrast, a reduction in the importance of international conflict lowers the incentives to form larger political unions, and brings about the formation of smaller, more numerous states.

Nonetheless, a decrease in the importance of military force may not reduce the total number of violent conflicts in the world. When borders are formed endogenously, a lower role for defense and security, by bringing about the creation of more numerous states, can paradoxically increase the number of observed instances of international conflict in the world. This is because, even if the use of force is less likely in each specific international dispute, the higher number of states raises the probability that some of those states may engage in conflict with each other.

Alesina and Spolaore (2006) show that a lower probability of having to use force in international relations increases the number of nations in equilibrium, and can lead to an increase in the number of international interactions that are resolved by force. Whether the total number of international conflicts increases or decreases will depend on the average size of nations before political disintegration. The actual number of international conflicts will decrease only if the average size of nations before the breakup is already sufficiently small. In contrast, the breakup of larger political unions tends to be associated with an increase in the number of observed conflicts. A similar effect is derived for defense spending per capita, which may increase in a world of smaller countries even as military power becomes less important in

the settling of international disputes, therefore reducing or even eliminating a "peace dividend" in terms of lower defense spending per capita.

Alesina and Spolaore (2005) study a more complex setting in which states may engage in open wars, which entail direct costs in terms of havoc and destruction, in addition to the costs of weapons, or may settle international disputes through peaceful bargaining, where each state's bargaining position depends on its relative investment in military capabilities. Different regions may choose to remain independent or to join their neighbors in centralized political unions. In equilibrium, the probability that wars occur and the returns to defense spending are endogenously determined. Improvements in the enforcement of national control rights over resources will reduce the need for defense and force, and may therefore cause breakups of nations, possibly leading to more wars in equilibrium.

4.2 Conflict, Democracy, and National Borders

The connection between democracy and conflict is at the center of an extensive literature in international relations and political economy. Specifically, as already mentioned in Section 2, this relation is part of the liberal peace view that democracy and trade should reduce the risk of international conflict. Nonetheless, the links among democratization, conflict, and the size of nations are relatively unexplored.

The trade-off between costs and benefits of national size depends not only on the degree of heterogeneity of preferences but also on the political regime through which preferences are turned into policies. Rent-seeking dictators that are less concerned with the preferences of their subjects may pursue expansionary policies leading to the formation of inefficiently large countries and empires. In contrast, democratization raises the importance of citizens' diverse preferences over public policies, therefore leading to more demand for political autonomy and independence (Alesina and Spolaore, 1997).[17]

In addition, as documented in the vast literature on the "democratic peace," dictators tend to be more willing than democratic governments to engage in military conflict against their neighbors (for example, see Oneal and Russett 1999, Bueno de Mesquita et al. 1999, and, for a critical view,

[17] For a discussion of the relation between democratization and the size of countries see also Lake and O'Mahony (2004).

Gowa 2000). Then, democratization may lead to secessions and formation of smaller countries for two reasons: because it raises the importance of heterogeneity costs, and because it reduces the benefits from military power.

An original theory of the shape and size of nations in a world of rent-seeking Leviathans was provided by David Friedman (1977), who argued that national borders in such a world would maximize the wealth of rulers. Alesina and Spolaore (1997), in their formal analysis of endogenous national borders, compare democratic outcomes (when borders are determined by majority voting) with equilibrium outcomes when the number and size of nations is determined by Leviathans who maximize their rents (as in Friedman's theory).[18] In Alesina and Spolaore's framework Leviathans face a "no-insurrection" constraint: in order to continue their rule, Leviathans must maintain a fraction δ of the population above a minimum level of welfare. The parameter δ can be interpreted as a measure of democratic responsiveness. An undemocratic dictator can ignore the preferences of most subjects ($\delta < 1/2$). As δ increases, Leviathans become more concerned with larger sectors of the populations, and gain relatively smaller rents when they extend borders, because they must compensate a larger fraction of the population for higher heterogeneity costs. In general, democratization (a higher δ) will be associated with smaller states in a world of rent-maximizing Leviathans. Alesina and Spolaore (2003, chapter 7, and 2006) have extended this analysis to study how democratic constraints interact with international conflict in a world of Leviathans, and have shown that democratization has a smaller effect on borders at higher levels of conflict, while conflict has a smaller effect on borders at higher levels of democracy. In other words, in a very bellicose world democratization is less important in reducing the size of nations, while in a more democratic world, international conflict is less important in determining national borders.

4.3 International Openness, Conflict and Peace, and Political Disintegration

The relation between international openness and national size has received significant attention in the literature. Less attention though has been given

[18] Economic analyses of the expansion of empires were also provided by Findlay (1996) and Grossman and Mendoza (2004).

to the connection between openness and national borders in a world of conflict and appropriation, when conflict, trade and borders are all endogenous variables and affect each other in equilibrium.

Analyses of the size of nations have pointed out that the trade-off between benefits and costs of national size is also a function of the degree of international economic integration (Alesina and Spolaore 1997, 2003; Alesina, Spolaore and Wacziarg 2000, 2005; see also Wittman 2000 and Hiscox 2003). Relevant economic size may or may not coincide with the political size of a state as defined by its national borders. Larger states mean larger domestic markets when political borders imply barriers to international exchange. In contrast, market size and political size would be uncorrelated in a world of perfect free trade in which political borders imposed no costs on international transactions. If market size matters for economic performance, small countries can prosper in a world of free trade, while a large size is more important economically in a world of protectionism. Empirically, the effect of size on economic performance tends to be higher for countries that are less open, and the effect of openness is much larger for smaller countries (Alesina, Spolaore and Wacziarg 2000, 2005; Spolaore and Wacziarg, 2005). As international economic integration increases, the benefits of a large national size are reduced, and political disintegration becomes less costly. Conversely, smaller countries tend to benefit from more international openness. Therefore, economic integration and political disintegration go hand in hand (Alesina, Spolaore and Wacziarg, 2000).

As in the case of democratization, an additional effect of international trade on the incentives to form larger nations emerges if economic integration also reduces international conflict between trading partners, as argued by the supporters of the liberal peace hypothesis (economic contributions on the empirics of trade and conflict include, for instance, Polacheck 1980 and Martin, Mayer and Thoenig 2008).

A study of the interconnections among economic integration, international conflict, and the size of nations is provided in Spolaore (2004). When conflict interacts with trade, multiple equilibria in conflict, openness and size of political units are possible. Other things being equal, smaller countries tend to be more open and less likely to engage in conflict. At the same time, in a world of high openness and low conflict, political size will matter less, therefore justifying smaller states in equilibrium. In another equilibrium, though, the world could be formed by larger political units, with less international economic integration and a more prominent use of force in the

resolution of international disputes. In such a world of higher conflict and more protectionism, there would be higher benefits associated with larger domestic markets and economies of scale in defense and security. This, in turn, will induce people to form larger political units in equilibrium. Then, for given fundamentals in terms of productive and conflict technology and preferences, alternative geopolitical outcomes are possible. In more recent decades, the world has moved towards higher political decentralization, relatively lower international conflict, and higher international economic integration. However, this analysis suggests that this same world, with the same fundamentals, could take a different path, with fewer political, military and economic blocs, less open and more hostile to each other. In sum, the study of endogenous national borders suggests that either development could be self-fulfilling, and that international coordination of strategies and expectations may play a crucial role in the determination of long-run outcomes.

4.4 Civil Conflict, External Threats, and Secessions

Civil and ethnic conflicts have been extensively studied by sociologists and political scientists (e.g., Horowitz 1985; Fearon and Laitin 2003) and, increasingly, by economists (e.g., Collier 2001; Montalvo and Reynal-Querol 2005). While most of these studies consider conflict within given borders, a few have explicitly focused on ethnic conflict, reconfiguration of borders, and political partitions. In particular, Sambanis (2000) finds that, in general, partitions do not seem to prevent recurrence of ethnic war, and writes that "[e]ven if this solution reduces the incidence of internal war, it will almost certainly increase the incidence of international war," an observation which is consistent with the predictions of the models of international conflict discussed above. For a general discussion from an international-relations perspective see also Fearon (2004). In addition, some researchers have begun to investigate the effects of post-conflict partition on economic and policy outcomes, including the provision of public goods; for instance, Swee (2009) studies the effects of the partition which ended the Bosnian War on the post-war local provision of schooling.

An issue that is especially relevant from the perspective of this chapter is the relation between external threats and internal national cohesion. As mentioned in the Introduction, the idea that conflict with foreigners reduces

or eliminates domestic conflict has a long historical pedigree, going back to classical times.[19] Does a higher likelihood of conflict with foreign enemies reduce the extent of domestic conflict? If it does, through what mechanisms? More broadly, what are the implications of the relations between international conflict, civil conflict, and the formation of alliances and political unions? Analyses of alliance formation in formal models of conflict and appropriation (both within and across alliances) are provided by Garfinkel (2004a, 2004b), who also studies the relation between external threats and domestic conflict (Garfinkel 2004c). A theoretical analysis of the interaction between inter–group and intra-group conflict is provided by Münster (2007).

A contribution more specifically focused on endogenous national formation in the presence of civil conflict is Spolaore (2008), who provides a formal analysis of borders when secessions are the direct outcome of civil conflict between two regions within a unified country. Spending on civil-conflict capabilities and the probability of secession are endogenous variables, which depend on (a) the incentives to secede and (b) the incentives to *oppose* secession attempts. Such incentives, in turn, depend on our familiar set of factors: heterogeneity costs, economies of scale in the provision of public goods, and the relative size of the two regions (a larger region, or "center" and a smaller region, or "periphery"). In particular, Spolaore (2008) shows that separatist conflict tends to be more intense when the two regions are of roughly equal size, consistently with the empirical literature on civil and ethnic conflict (e.g., see Horowitz 1985 and Collier 2001). In this context, external threats do not necessarily reduce the intensity of separatist conflict within a country. While external threats reduce the periphery's incentives to secede, they also strengthens the center's incentives to resist the periphery's secession. This effect may lead to more diversion of resources towards civil conflict in the aggregate. Finally, the possibility of civil conflict over government policies after borders have been determined (as in the stylized model at the end of Section 3) reduces both the incentives to secede in the smaller region and the benefits from union in the larger region. In fact, the perspective of civil conflict over government policies may even induce a "secession of the center." This is consistent with the general point that civil conflict tends

[19] For example, as already mentioned, For example, Sallust in *The War with Jugurtha* wrote: "before the destruction of Carthage the people and senate of Rome together governed the republic peacefully and with moderation. There was no strife among the citizens either for glory or for power; fear of the enemy (*metus hostilis*) preserved the good morals of the state." (cited in Wood 1995, p. 177; see also Evrigenis 2008).

to magnify heterogeneity costs and to increase the probability of secessions.

5 Directions for Further Research

An economics approach to conflict, peace and national borders provides insights that complement the understanding obtained from more traditional historical and political studies. Part of the value added from formal economic analysis is the ability to model complex decisions and interactions in relatively simple and stark ways, highlighting the logic of key mechanisms and effects. In this spirit, most of the political-economy analyses have been conducted using stylized theoretical models.

A priority now is to bring these hypotheses and insights to the data, and link the theoretical framework more closely with the historical record. This is not an easy step, given the difficulty of collecting the relevant data and, perhaps more importantly, of identifying causal relations when almost every key variable is endogenous. Systematic empirical analyses of the connections between conflict and endogenous national borders are still to be developed, building on the vast empirical literature on the determinants of conflict and wars.

An especially difficult task is to measure relevant heterogeneity of preferences and characteristics across individuals, regions, and populations. Valuable information is provided by measures of ethnolinguistic fractionalization, introduced in the economic literature by Mauro (1995), but such variables proxy only imperfectly for the extent and intensity of preference heterogeneity that are likely to affect the determination of national borders.[20] More recent economic contributions have considered direct measures of long-term cultural and historical distances across populations. Spolaore and Wacziarg (2009a) have introduced a novel way to measure the effects of long-term cultural and historical relatedness on economic outcomes, by exploiting the information from genetic distance among human populations. Desmet et al. (2007) have provided an interesting empirical analysis of the connection between genetic distance and cultural distance, measured by different answers to a series of questions from the World Value Survey, and have argued that

[20] For a recent theoretical and empirical analysis of the origins of ethnolinguistic diversity see Michalopoulos (2008).

such measures can be used as proxies for preference heterogeneity, and hence can shed insights on the stability of national borders within Europe.

A recent empirical contribution directly focused on the determinants of conflict and wars is Spolaore and Wacziarg (2009b), who show that populations that are more closely related genetically - and hence, on average, culturally and historically - are *more* likely to engage in interstate conflict and wars, even after controlling for a wide range of geographic measures, measures of linguistic and religious distance, and other factors that affect interstate conflict, including trade and democracy. These findings as consistent with a theoretical framework in which the degree of relatedness between populations has a positive effect on their conflict propensities because closely related populations, on average, tend to share common traits and preferences, to interact with each other more, and to care about a larger set of common issues. Spolaore and Wacziarg (2009b) also document that (i) the effect of relatedness are robust to controlling for trade and democracy variables, and (ii) the effects of trade and democracy on conflict hold even after controlling for relatedness. These estimates provide evidence against the premise that closely related populations fight less with each other, and show that the pacifying effects of bilateral trade and democracy survive when controlling for measures of historical and cultural relatedness. This line of investigation may have implications for the relation between civil conflict and heterogeneity within countries. More generally, the availability of these novel measures of long-term relatedness, and the emerging evidence of robust links between such measures and economic and political outcomes (including conflict and war), point to a promising area for future research, with the potential to illuminate several issues and questions discussed in this chapter. An especially relevant extension would be to study the determinants and effects of conflict - both within and across states - taking into account not only how relatedness affects conflict, but also how conflict and relatedness together affect the endogenous formation of national borders, and vice versa.

In sum, only the very first steps have been taken towards a systematic theoretical and empirical analysis of conflict, peace and national borders from an economics perspective. This whole set of topics constitutes a fascinating and promising area for future research.

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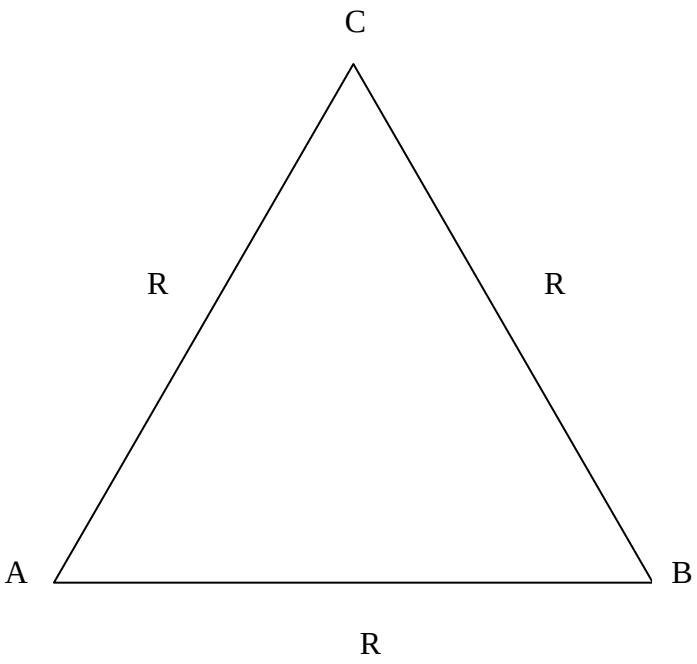

Figure 1

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