Influence of diversity, democracy and trade on conflicts

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Abstract

In this paper I propose a framework and literature background which finds the links between the probability of conflict on the one side and diversity and trade on the other. The hypotheses of the latter link state that trading with a democracy should decrease the probability of a conflict as well as being a participant of the trade agreement. As for diversity it is estimated at three levels: ethnic, linguistic and religious fractionalization. I assume that while ethnic and linguistic fractionalization increase the probability of a conflict, religious one decreases. However, the reverse trend is seen in the «threat level»: there religious fractionalization increases the respective probability.

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1 Introduction

For each given country ethnicity is a fact each citizen has to live with. But countries choose the economic policy which heavily depends on the ethnic composition. In democracies it leads to the practice when politicians focus attention of the citizens not on the quality of the proposed economic programs but on the ethnic affiliation of a competitor. In places where there are no actual elections dictators use the so-called «divide and rule» policy. So, ethnic fractionalization seems to effect negatively on economic outcomes: it's not that good when citizens think about ethnicity of a governor and not about whether he is corrupted or not, whether he cares about national security, medicine and education. But what about the influence of linguistic and religious fractionalization on the probability of a conflict? My paper tries to tackle this issue.

One more question I am interested in is the dependence of conflict and trade. In particular the influence of democracy and participation in a trade agreement on the possible violent actions. The related literature ranges from political science to political economy. The question of the impact of trade on war is an old and a controversial one among political scientists (see Barbieri and Schneider, 1999; Kapstein, 2003, for recent surveys). From a theoretical point of view, the main debate is between the «trade promotes peace» liberal school and the neo-Marxist school which argues that asymmetric trade links lead to conflicts. The main difference between these two positions comes from the opposing view they have on the possibility of gains from trade for all countries involved. My paper tries to give the link between all these issues.

The paper is organized as follows. Section 2 presents the main strands of literature this paper contributes to. Section 3 describes the sources of data which is needed in order to realize this research proposal. Finally, Section 4 describes empirical strategies, main hypotheses and the intuition behind them.

2 Literature Review

The paper mainly contributes to two strands of literature: diversity and trade.

First, the influence of diversity on economic outcomes dates back to the seminal papers of Easterly and Levine (1997) and Alesina (1997). The first one claims that explaining cross-country differences in growth rates requires not only an understanding between of why countries choose different public policies. Their paper shows that ethnic diversity helps explain cross-country differences in public policies and other economic indicators. In the case of Sub-Saharan Africa, economic growth is associated with low schooling, political instability, underdeveloped financial systems, distorted foreign exchange markets, high government deficits, and insufficient infrastructure Africa's high ethnic fragmentation explains a significant part of most of these characteristics. The second paper builds a model which links heterogeneity of preferences across ethnic groups in a city to the amount and type of public goods the city supplies. Results show that the shares of spending

on productive public goods (education, roads, sewers and trash pickup) in the U.S. cities (metro areas and urban counties) ethnic fragmentation, even after controlling for other socioeconomic and demographic determinants. So, ethnic conflict is an important determinant of local public finances. Moreover, there are recent findings about favoritism. Thus, De Luca et al. (2016) found the evidence of ethnic favoritism, i.e., preferential public policies targeted at the political leader's ethnic group. In a panel dataset of 2,022 ethnographic regions from 139 countries with annual observations from 1992 to 2012, they use nighttime light intensity as output measure to capture the distributive effects of a wide range of policies. The authors find robust evidence for ethnic favoritism: the political leaders' ethnographic regions enjoy 10% higher nighttime light intensity. They further found that ethnic favoritism is a global rather than Sub-Saharan African phenomenon, which is present in poor as well as rich countries; that political institutions have a weak effect on ethnic favoritism; that ethnic favoritism is most prevalent in ethnically fractionalized and segregated countries with long established polities; and that ethnic favoritism does not contribute to sustainable development. The paper of Hodler and Raschky (2014) tests the presence of regional favoritism. In particular, they use satellite data on nighttime light intensity and information about the birthplaces of the countries' political leaders. In their panel of 38,427 subnational regions from 126 countries with yearly observations from 1992 to 2009, they found that subnational regions have more intense nighttime light when being the birth region of the current political leader. They argue that this finding provides evidence for regional favoritism. The authors further explore the dynamics and the geographical extent of regional favoritism and show that regional favoritism is most prevalent in countries with weak political institutions and poorly educated citizens. Beyond this, foreign aid inflows and oil rents tend to fuel regional favoritism in weakly institutionalized countries, but not elsewhere. While we have an evidence of negative influence of ethnic and regional fractionalization, it is not that evident about religious fractionalization. Thus, Alesina et al. (2003) state that while ethnic and linguistic fractionalization are associated with negative outcomes in terms of quality of government, religious fractionalization is not; in fact, if anything, this measure displays a positive correlation with measures of good governance; this is because measured religious fractionalization tends to be higher in more tolerant and free societies, like the United States, which in fact displays on the of the highest level of religious fractionalization.

Second, there is a wide ranging debate about the impact of bilateral trade on the frequency of war between country pairs. Many find a negative relationship (see, e.g. Polachek, 1980; Oneal and Russet, 1999). However, some recent studies have found a positive relationship (Barbieri, 2002). These papers, however, do not test models in which trade and war are both endogenous. The paper which I mostly cite in this work (Martin et al., 2008) is the first to derive theoretically the two-sided effect of trade on peace (positive for bilateral trade and negative for multilateral trade) and to empirically test this prediction. The paper states that even in a model where trade increases welfare and war is Pareto dominated by peace, higher trade flows may not lead to more peaceful relations. Indeed, what matters ultimately is the geographical structure of trade and

its balance between bilateral and multilateral openness. Bilateral trade, because it increases the opportunity cost of bilateral war, deters bilateral war. Multilateral trade openness, because it reduces this opportunity cost with any given country, weakens the incentive to make concessions during negotiations to avert escalation and therefore increases the probability of war between any given pair of country. From this point of view, an increase in trade between two countries pacifies relations between those but increases the probability of conflict with third countries. Aside of this, one more finding is important for this particular paper: there is as empirical link that proves that democracies trade more with democracies (Erikson et al., 2009).

3 Data

Diversity

In order to tackle different issues and for the sake of robustness check data on diversity comes from two different sources.

First, Alesina et al. (2003) distinguish three types of fractionalization: ethnic, linguistic and religious. All three types of fractionalization authors calculate as $Fract_j = 1 - \sum_{i=1}^{N} s_{ij}^2$. The authors claim that a major obstacle in distinguishing between ethnic and linguistic variables is that language is part of the criterion used by ethnologists and anthropologists to define the concept of ethnicity. This is true, for example, in Africa, where racial or physical criteria are seldom used to define ethnic groups. This is not the case, however, in Latin America, where characteristics typically used to distinguish between ethnic groups are racial in nature. The authors do not solve the problem to the full extent but suggest to compile a separate variable for linguistic fractionalization in isolation of any racial or physical characteristics. The variable «language», is based exclusively on data from Encyclopedia Britannica, 2001, which reports the shares of languages spoken as «mother tongues», generally based on national census data. While due to common sense in different countries language or racial characteristics define the number of ethnic groups. Thus, data on Bolivia involves the following groups: Blancos (10.13%) , Aymara (30.38%), Quechua (30.38%), Mestizos (25.32%) and others groups (indigenous and Afro, 3.80%) and is based on racial factor. On the other hand, data for some European countries such as Belgium, Luxembourg and Switzerland largely reflects languages (for example, the "ethnicity" we have identified in Switzerland include: German 65%, French 18%, Italian 10%, other Swiss 6% and Romanisch 1%). The data for religious fractionalization covers 294 different religions in 215 countries.

Second, James Fearon (2005) distinguish between ethnic and cultural diversity. Ethnic fractionalization is measured as $F \equiv 1 - \sum_{i=1}^{n} p_i^2$, where p_i is the share of the ethnic group in a country. While cultural fractionalization is measured as $F \equiv 1 - \sum_{i=1}^{n} \sum_{j=1}^{n} p_i p_j r_{ij}$, where r_{ij} is a resemblance factor which is zero when two groups' languages come from completely different families (like Indo-European and Altaic) and it is equal to one when two groups speak exactly the same language. The main plus of this system of division is the fact that «ethnic fractionalization»

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is constructed not on case by case basis (where sometimes race and sometimes language identify group identity) but in a more complicated and structural way defined in the paper. However, the cultural fractionalization directly includes linguistic similarities which make it difficult to disentangle some pecularities of national charcter not dependent on the language. Beyond this, it is constructed in a way such that if the groups in the country speak structurally unrelated languages, their cultural fractionalization index will be the same as the ethnic fractionalization index F. The more similar are the languages spoken by the different ethnic groups, the more will the cultural measure be reduced below the value of F for the country. But anyway it is a good proxy for the indexes used by Alesina et al. (2003).

Conflict

In this division the data sources mostly follow ones presented in the paper of Martin et al. (2008). The data sources are described for the main variables of interest or those which is difficult to obtain.

The data is taken from the COW project[2]: a very large array of data sets related to armed conflicts over the last century. The principal dependent variable is the occurrence of an militarized interstate dispute (further MID) between two countries. This data set is available for the years 1816–2001, but only years 1950–2000 are taken into consideration because this is the period for which r principal explanatory variables, bilateral and multilateral trade over income ratios, are available on a large scale. Each MID is coded with a hostility level ranging from 1 to 5 (1 = No militarized action, 2 = Threat to use force, 3 = Display of force, 4 = Use of force, and 5=War). In the COW project, war is defined as a conflict with at least 1000 deaths of military personnel. By this standard, fewer than 100 interstate wars have been fought since 1815. At the country pair level of analysis, the number of pairs of states at war is naturally larger, since in multi-state wars, each state on one side would be paired with every state on the other. Even so, the small number of warring country pairs inhibits the creation of truly robust estimates of war determinants. Consequently, it is common in the empirical literature to analyse the causes of MIDs using a broader definition: display of force, use of force, and war itself. Examples of display of force (level 3 of an MID) include a decision of mobilization, a troop or ship movement, a border violation, or a border fortification. These are government-approved and unaccidental decisions. Examples of use of force (level 4 of an MID) include a blockade, an occupation of territory, or an attack. It is assumed that MID_{ijt} should be equal to 1 (and 0 otherwise) if an MID of hostility level 3, 4, or 5 occurs at date t between countries i and j.

Bilateral trade is constructed from two different data sets. The first one is the data set assembled by Katherine Barbieri[3], which uses mostly information from the IMF since World War II and from the League of Nations international trade statistics and various other sources including individual countries before World War II. Her data spans over the 1870–1992 period. This data

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[2]http://cow2.la.psu.edu/
[3]http://people.cas.sc.edu/barbierk/databases.html

set could be completed for the post-World War II period using the IMF DOTS database (the same primary source as Barbieri, 2002, for this period). Income data come from three different sources. The primary source is the Penn World Tables (6.2). These data are complemented by two different sources, Barbieri (2002), which assembles a data set for the 1948–1992 period, and the World Bank's WDI database for 1960–2000. Variables accounting for bilateral trade impediments or facilitating factors (distance, contiguity, and colonial links) come from the CEPII bilateral distance database [4]. On the same site can be found a data set of geographical characteristics of different countries used to obtained areas here. The dummy for regional trade agreements includes all agreements listed in Baier and Bergstrand (2004), each under their different time-varying membership configurations. GATT/WTO membership dates were obtained from the WTO web site[5].The democracy index for each country comes from the Polity IV database, and we use the composite index that ranks each country on a 10 to +10 scale in terms of democratic institutions (the country is considered to be democratic if it has a positive coefficient). Military expenditures and alliances come from the COW project web site.

4 Empirical strategy and hypotheses

Democracy and Trade

Following Martin et al. (2008) the main regression of interest estimates the probability of military interstate disputes MID_{ijt} between countries i and j at time t estimated by the logit model:

$$Pr(MID_{ijt}) = \gamma_0 + \gamma_1 \text{controls}_{ijt} + \gamma_2 ln\Big(\frac{m_{ijt}}{E_{it}} + \frac{m_{jit}}{E_{jt}}\Big) + \gamma_3 ln\Big(\sum_{h \neq j,i}^{R} \frac{m_{iht}}{E_{it}} + \frac{m_{jht}}{E_{jt}}\Big); \qquad (1)$$

where m_{ijt} is the value of import from country i to country j at time t,
E_{it} is the value of GDP of country i at time t;
control variables exclude political regime since it is included in other form into the regression.

The specification is mainly driven by gravity equation. Assessing the impact of trade openness on trade, the authors use the the simple arithmetic average of bilateral import flows over GDP as a measure of bilateral openness. For multilateral trade openness is used the arithmetic average of total imports of the two countries excluding their bilateral imports divided by their GDPs.

The set of control variables which authors (Martin et al., 2008) claim to be of particular interest for evaluation of MID are:

- year dummies (to control for the overall potential co-evolution of MIDs and international trade over time)

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[4]www.cepii.fr/anglaisgraph/bdd/distances.htm
[5]http://www.wto.org/

- a set of 20 different dummies equal to 1 when the country pair was in MID in t 1, t 2, ... t 20 (crucial because the effect of a military conflict on trade flows can be long lasting)

- the index of similarity of language

- the existence of a preferential trade area

- the number of GATT/WTO members in the country pair

- a control for country pairs which had a colonial relationship and a control for those with a common colonizer

- the sum of areas of the two countries (in log) (it is introduced as large countries are typically countries with important minorities that can be the source of conflicts with neighbouring nations. Large countries may also be more difficult to defend, making them potential targets to frequent attacks. Larger countries are also naturally less open to trade)

- political regime

The main outcome of the paper is that γ_2 should be less than zero and γ_3 should be more than zero. As stated in the literature review the main motivation behind this result is the fact that bilateral trade, because it increases the opportunity cost of bilateral war, decreases probability of bilateral war. Multilateral trade openness, because it reduces this opportunity cost with any given country, weakens the incentive to make concessions during negotiations to avert escalation and therefore increases the probability of war between any given pair of country.

Moreover, in the review it was stated that democratic countries trade more with democracies (Erikson et al., 2009).

Hypothesis 1: Trading with a democracy should decrease the probability of having MID.

That is after adding in the regression (1) interaction terms with democracy the coefficients γ_2 and γ_3 should increase in comparison with (1) in absolute value.

$$Pr(MID_{ijt}) = \gamma_0 + \gamma_1 \text{controls}_{ijt} + \gamma_2 ln\Big(\frac{m_{ijt}}{E_{it}} + \frac{m_{jit}}{E_{jt}}\Big) + \gamma_3 ln\Big(\sum_{h\neq j,i}^{R}\frac{m_{iht}}{E_{it}} + \frac{m_{jht}}{E_{jt}}\Big)+$$

$$+ \gamma_4 ln\Big(\frac{m_{ijt}}{E_{it}} + \frac{m_{jit}}{E_{jt}}\Big)Dem_{ijt} + \gamma_5 ln\Big(\sum_{h\neq j,i}^{R}\frac{m_{iht}}{E_{it}} + \frac{m_{jht}}{E_{jt}}\Big)Dem_{ijt}; \qquad (2)$$

where Dem_{ijt} equals 1 if both countries at time t are Democracies and 0 otherwise.

The intuition behind the hypothesis is that now the part of the effect is shifted to the interaction terms which by theory are assumed to be positive. In the specification (1) trading democracies offset this effect to some extent but now they are absent so in the magnitude effect should be

higher. In addition to more trade with democracies, they are less prone to violence (Levy, Razin, 2004).

Hypothesis 2: Being a participant of trade agreement decreases the probability of MID.

$$Pr(MID_{ijt}) = \gamma_0 + \gamma_1 \text{controls}_{ijt} + \gamma_2 ln\Big(\frac{m_{ijt}}{E_{it}} + \frac{m_{jit}}{E_{jt}}\Big) + \gamma_3 ln\Big(\sum_{h \neq j,i}^{R} \frac{m_{iht}}{E_{it}} + \frac{m_{jht}}{E_{jt}}\Big) +$$

$$+ \gamma_4 ln\Big(\frac{m_{ijt}}{E_{it}} + \frac{m_{jit}}{E_{jt}}\Big) Agr2_{ijt} + \gamma_5 ln\Big(\sum_{h \neq j,i}^{R} \frac{m_{iht}}{E_{it}} + \frac{m_{jht}}{E_{jt}}\Big) Agr1_{ijt}; \qquad (3)$$

where $Agr2_{ijt}$ equals 1 if both countries are Democracies and 0 otherwise and $Agr1_{ijt}$ equals 1 if either country is a Democracy and 0 otherwise.

That is γ_4 is expected to have a positive sign, γ_5 is expected to have a negative sign but less in magnitude with γ_3 from (1) and γ_4 is expected to be more in magnitude in comparison with γ_3 from (1).

The intuition behind is that participation in a trade agreement impose some restrictions that make the participants trade and not participate in conflicts. Moreover, there is a striking evidence in the recent papers that free trade agreements do actually increase members' international trade: the effect of FTAs on trade flows is quintupled (Baier and Bergstrand, 2007).

Diversity

The main regression of interest estimates the probability of military interstate disputes MID_{ijt} between countries i and j at time t estimated by the logit model:

$$Pr(MID_{ijt}) = \gamma_0 + \gamma_1 \text{controls}_{ijt} + \gamma_2 Ethnic_{ijt} + \gamma_3 Linguistic_{ijt} + \gamma_4 Religious_{ijt}; \qquad (4)$$

where $Ethnic_{ijt}$ measures the sum of fractionalization indexes in ethnicity for countries i and j at time t ($Linguistic_{ijt}$ and $Religious_{ijt}$ are defined respectively). The set of control variables is the same as in the section «democracy and trade», excluding index of the similarity of language since other proxies are used.

Hypothesis 3: High ethnic and linguistic fractionalization increase the probability of MID between countries, while high religious fractionalization will decrease it.

The result is supported by the evidence presented in the literature review. Thus, Alesina et al.(2003) state that while ethnic and linguistic fractionalization are associated with negative outcomes in terms of quality of government, religious fractionalization is not. So, it is naturally to assume that it will affect the probability of MID in the same direction.

It is important to stress that in this and all specifications above MID_{ijt} should be equal to 1 (and 0 otherwise) if an MID of hostility level 3, 4, or 5 occurs at date t between countries i and j. Remember, that hostility level is ranging from 1 to 5 (1 = No militarized action, 2 = Threat

to use force, 3 = Display of force, 4 = Use of force, and 5=War). Let's look at this division from another side.

Hypothesis 4: High religious fractionalization will increase the probability of threat. That is if MID_{ijt} is defined as 1 (and 0 otherwise) if an MID of hostility level 2 or 3 occurs at date t between countries i and j.

$$Pr(Threat_{ijt}) = \gamma_0 + \gamma_1 \text{controls}_{ijt} + \gamma_2 Ethnic_{ijt} + \gamma_3 Linguistic_{ijt} + \gamma_4 Religious_{ijt}; \quad (5)$$

The intuition behind is as follows. Fox (1997) argues that religious issues are only important in a minority of ethnic conflicts between groups of different religions. In the majority of these conflicts, religious issues play at most a marginal role. However, religious issues do play an important role in a significant minority of cases. So that these cases are not enough for actual conflict but are more than enough for threat.

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