

# Clash of Brothers in a Contagious World: Wars to Avoid Diffusion

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## Abstract

Does sharing the same religion, civilization or racial proximity lead to more peaceful relations between countries? This paper argues that cultural similarity can actually cause wars, which occur to combat diffusion. These wars occur between a democracy and a dictatorship. This new theory of war combines the models of Acemoglu and Robinson (2006) and Fearon (1995), and shows that cultural similarity can lead to more warfare when old elites are afraid of losing their position to a newly inspired citizenry, as these elites try to destroy the external source of inspiration. The microfoundation for inspiration is derived from revealed information about the income level under given institutions. The revealed information is assumed to increase with cultural proximity. The paper presents a game-theoretic model, as well as statistical analysis on all the wars of the last two centuries. In the statistical analysis, I use genetic proximity, religious similarity, civilizational similarity and similar values from the World Values Survey to measure cultural proximity. I confirm the hypothesis with all of these measures that cultural similarity causes wars in the presence of institutional difference.

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# 1 Introduction

On Christmas Day in 1914 British and German soldiers climb out of their trenches and join together in Christmas carols. Can this unusual event point to something fundamental about wars that we have so far overlooked? Can cultural similarity (such as sharing the same religion or civilization) make two countries more likely to wage war? I will describe a mechanism how it can. It involves two culturally-similar countries that have opposing political institutions - such that one is a dictatorship and the other a democracy. In this case, the dictator will seek to eliminate the democracy, lest the dictator's citizens learn democratic ideals from their brothers. The model that I build to explore this mechanism helps explain four primary stylized facts in international relations simultaneously: wars are rare between two democracies (democratic peace); yet democracies overall are just as war-prone as dictatorships; wars are more likely to occur between countries close by; and institutionally similar countries (e.g. democracies) are clustered together in space.

The driving idea behind the model is to consider two identity dimensions simultaneously. One dimension is cultural and the other is institutional. Which country-pair will be the most war-prone? At first blush, countries which are similar in their domestic characteristics all seem less likely to fight each other. Two democracies are less likely to fight each other (e.g. Doyle 1986, Maoz and Russett 1993, Oneal and Russett 1997, Doyle 2005), similar degree of financial openness (Gartzke 2007), or human rights records (e.g. Peterson and Graham 2011), even voting patterns in the United National General Assembly (Gartzke 1998) reduce war incidence. However, I argue that the country-pair with institutional difference and cultural *similarity* is most war-prone. Huntington (1996) derived a clash of culturally different countries because he merged *both* institutions and less malleable features such as language, history, religion and customs into 'civilization' (p.43).<sup>1</sup> As Table 1 shows, I predict those dyads to be the most war prone which share an unchangeable characteristic (same culture)<sup>2</sup> but differ on a changeable one (institutions) whenever there is a threat of contagion along the latter dimension (high domestic pressure) in the dyad. The theory's predictions are contrary to structural realists (who expect

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<sup>1</sup>For him, the "central characteristics of the West, those which distinguish it from other civilizations" (p.69) include social pluralism and representative bodies (pp.70-1). He did however distinguish between the adoption of economic institutions (modernization: industrialization, urbanization, increasing levels of literacy, education, wealth and social mobilization) and that of political institutions coupled with culture (westernization).

<sup>2</sup>When I talk about cultural similarity, I mean similarity in religion, value systems and/or traditions that makes economic and social policies have similar outcomes, have a desire for the same type of public good and/or enhances communication. Religious similarity is a good example or Huntington's civilizational similarity. Ethnic and linguistic similarity should also capture some effects.

no pattern)<sup>3</sup> evolutionists (who expect all ‘ethnically close’ dyads to be equally likely to go to war as they may have more issues to fight over),<sup>4</sup> liberal similarists or republican liberals (who expect all ‘regime different’ to be equally likely to go to war),<sup>5</sup> constructivist similarists (who expect all ‘ethnically distant’ to be more likely to go to war)<sup>6</sup> and clash-of-civilizationists (who expect ‘ethnic distant’ (and ‘regime different’) to go to war).<sup>7</sup> The theory in this paper can be said to be of ‘constructive realist’ flavor as realist-minded elites reconstruct identity rationally using hard power. It is an attempt to rigorously integrate identity into a realist model.

## TABLE 1 ABOUT HERE

The model analyzes wars in the shadow of regime change. I will use the terms ‘institutions’ and ‘democracy/dictatorship’ interchangeably but institutions could also mean communism, sharia or other systems. Using a simplified Acemoglu-Robinson (2000, 2001, 2006) framework, the revolutionary threat in a dictatorship ebbs and flows and the elite may democratize in order to gain credible commitment to redistribute income. The war lessens domestic pressure on the old elite by eliminating the outside inspirational and informational source for the domestic opposition, thereby reducing the opposition’s bargaining power.

The enhanced bargaining power for the opposition only leads to a war when the elite would lose power without the war. Otherwise, a peaceful bargaining solution between the two countries exists. This peaceful solution disappears when domestic pressure is high enough to cause democratization without a war, because after democratization the citizens cannot commit to redistribute to the newly powerless old elite. This means that there is a discontinuous fall in the elite’s utility function at the values of domestic pressure where they would need to give up power, which can be greater than the costs of war.<sup>8</sup>

How does a democracy in  $B$  enhance the power of the democratic opposition in  $A$ ? By answering this question we seek micro-foundations for inspiration and soft power.<sup>9</sup> I derive

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<sup>3</sup>For instance, Waltz 1979, Mearsheimer 2001.

<sup>4</sup>For this approach see Spolaore and Wacziarg 2012

<sup>5</sup>For instance, Moravcsik 1997.

<sup>6</sup>In political economy, Tabellini 2008, Bisin and Verdier 2001 also fall into this category. In international relations constructivism is difficult to categorize here, but Wendt 1999 argues that states can see each other as enemies, rivals, and friends. The theory here can be thought of adding microfoundations to this claim.

<sup>7</sup>Huntington 1993, and (1996) are the most famous citations here.

<sup>8</sup>For previous applications of the commitment problem see Powell 1999, Garfinkel and Skaperdas 2000, Powell 2006 and Garfinkel and Skaperdas 2007 (Part 5). In my model the commitment problem does not arise from growth directly but through information revelation: picking a policy that leads to a certain growth rate reveals valuable information to culturally similar countries, which the domestic opposition can count on.

<sup>9</sup>For soft power, see Nye 1990 and Nye 2004. This paper shows how soft power can be a soft problem rather than leads to wars.

the mechanism behind inspiration between two culturally-similar countries from revealed information about the income level under the same economic policies. The mere knowledge (or perception) of having a culturally-similar democratic neighbor already raises the income expectations of the citizenry if they rose up to take power, since they know that the other country will have started to experiment with policies. This makes them more likely to revolt and less likely to accept concessions from an autocratic elite. But in this case, the elite may find it more beneficial to start a war rather than yield power to the citizens through democratization. Income realizations under the policy are not only uncertain but correlated between  $A$  and  $B$ , and the correlation coefficient increases with cultural similarity.

The theory describes both war-proneness and hostility-seeking. The outcome variable is roughly war or peace, or more precisely enmity ('clash') or peaceful coexistence. Elites will sometimes try to choose enmity without a physical war for the rally-around-the-national-flag effect (e.g. Mueller 1973). North Korea tried a hot war in 1950 as Kim Il-sung felt to be an 'incomplete dictator' without the South (Halberstam 2007, p.48). Since then its provocations (e.g. Cheonan sinking in 2010) are probably not aimed at starting a real war, just at keeping a cold-war atmosphere. Yet enmity can be a slippery slope as nationalism may spiral out of control and lead to a real war.<sup>10</sup> The mechanism should be particularly applicable when different institutions compete in a region along one another, each with the potential to outperform the other. A good current is how China reacted to the gradual opening in Myanmar. When Myanmar abolished its central propaganda authority, the Chinese authorities attempted to censor the news of this. But no such attempt can succeed fully. Chinese citizens who grabbed hold of the information expressed envy, but also debated whether China was ready for a similar step.<sup>11</sup> Other internet users criticized the Chinese government for not acting similarly.<sup>12</sup> No doubt Myanmar's political path will be monitored closely.

TABLE 2 ABOUT HERE

TABLE 3 ABOUT HERE

A simple look at the data seems to confirm that the culturally-similar but institutionally-different dyads are the most war-prone. Tables (2) and (3) show this and also the fact that

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<sup>10</sup>See Jervis 1976 for a spiral of hostility and Baliga and Sjoström 2012 for how even cheap talk can co-ordinate actors on mutual hostility.

<sup>11</sup>[http://www.bbc.co.uk/zhongwen/simp/world/2013/01/130125\\_burma\\_censorship\\_dissolve.shtml](http://www.bbc.co.uk/zhongwen/simp/world/2013/01/130125_burma_censorship_dissolve.shtml), retrieved: 1/25/2013.

<sup>12</sup><http://www.chinese.rfi.fr/%E4%B8%AD%E5%9B%BD/20130126>

cultural similarity has a larger positive impact on war when it is coupled with institutional difference.<sup>13</sup> At first blush, these results could be due to omitted variable bias. Thus in my regressions, I control extensively for usual variables and geography (distance, contiguity (land and/or sea), colonial contiguity, same region), and the effect of cultural similarity is unchanged. In addition, the results hold up for specific questions from the World Values Survey about political attitudes toward institutions, and many of these questions are not correlated with physical proximity. I also perform placebo analysis with unrelated World Values Survey questions, as well as a number of robustness checks, by changing dependent and independent variables, specifications, fixed/random effects, lags/no lags and address potential endogeneity issues, and the results remain the same.

On the theoretical side, Walt (1996) and Owen (2010) are related,<sup>14</sup> although there are a number of differences. Walt is less general (he only considers the aftermath of revolutions) and argues that diffusion is much less of a phenomenon than my model assumes (pp.41-2), while he does emphasize that actors overestimate its importance. I argue that diffusion may occur rarely exactly because actors realize its possibility and may try to avoid it (by starting hostility/a war). Owen shows how what he calls the clash of different ‘ideas’ (e.g. communism, fascism, liberalism) helps explain a multitude of wars over the last five centuries.<sup>15</sup> In contrast, in my theory, the source of conflict in Owen is forcible regime promotion rather than fear of peaceful diffusion. Finally, I apply game theory and bargaining to clarify the circular logic of transnational regime contest leading to transnational ideological polarization, which in turn leads to transnational regime contest (p.71); and test the ideas with statistical regressions rather than case studies or simple correlations. Interestingly, even though Owen observes that most ‘forcible regime promotions’ occur in a country’s backyard, I find that in fact his inference is wrong because this is only due to culturally-close dyads being clustered together.<sup>16</sup>

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<sup>13</sup>The tables use ‘war’ (defined as a hostility level of 4 or above, i.e. involving use of force), as a measure against religion and civilization. Using the hostility measure or other cultural measures yields very similar results.

<sup>14</sup>Also related are Saideman 2001 and Saideman and Ayres 2008, which shows how domestic political incentives played a role in irredentism with ethnic groups divided by borders.

<sup>15</sup>Owen’s mechanism is similar to mine, but he argues the conflict is triggered by a revolution that can have demonstration effects (pp.38-9) abroad and is therefore attacked, rather than the country with ‘regime crisis’ attacking.

<sup>16</sup>Nevertheless, it is worth noting that Owen builds a striking dataset of 209 cases over the last five centuries where forcible regime promotion played a part, suggesting that connecting diffusion networks and war is an important idea. Furthermore, by definition, Owen’s ‘forcible regime promotion’ could not include wars where the objective was annihilation.

## 2 Culture and Institutions

According to my theory, culture and institutions have opposing impacts on war-proneness: cultural distance diminishes, institutional distance enhances war-proneness. Therefore it is important to give more precise definitions to both terms. The main difference is based on durability: culture is less readily shapable by political actors. There is of course a gray area between informal institutions and cultural norms that is hard to classify, yet the distinction between the two should be useful to gain insights.

What is cultural similarity and which part of culture matters for my mechanism? Let us start with a broad definition of culture. Geertz (1973) defines culture by focusing on the role of symbols. For him culture is as a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about and attitudes toward life.

In particular, I focus focus on political culture: beliefs and values about politics. Following Almond and Verba 1963, I define political culture as a “particular distribution of patterns of orientation toward political objects among the members of a nation” (p.13), which includes knowledge, beliefs, feelings, judgments and opinions about politics (p.14).<sup>17</sup> Almond and Verba (1963) investigate how political culture differs in the US, the UK, Germany, Italy, and Mexico. They describe three archetypes of political culture. The first one, parochial culture, is characterized by passive and distant citizens. The second one, the subject culture, involves citizens who are aware, but have little scope for dissent. In the third one, the participant culture, citizens are both aware and active.

Are there meaningful differences in political culture among countries? Inglehart and Welzel (2010) argue that there are. Some illustrative evidence is found in specific questions of the World Values Survey. According to conventional wisdom, Confucian societies often value loyalty and authority, so could be classified as subject, whereas Western societies are more likely to be participant. By only looking at democratic countries, we can make sure respondents express preferences more or less unconstrained. To the question ‘Did/Would you sign a petition’<sup>18</sup> the

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<sup>17</sup>By political objects, Almond and Verba (1963) mean (1) roles and structures such as legislative bodies, (2) incumbents of such roles such as particular monarchs, (3) particular decisions, policies and their enforcement (p.14).

<sup>18</sup>Question asked between 2005-7. Exact question: “V96.- Now I’d like you to look at this card. I’m going to read out some different forms of political action that people can take, and I’d like you to tell me, for each one, whether you have actually done any of these things, whether you might do it or would never, under any circumstances, do it. Signing a petition. ” Possible answers: “1 Have done, 2 Might do, 3 Would never do, -1 Dont know, -2 No answer, -3 Not applicable, -4 Not asked in survey, -5 Missing; Unknown”

proportion of “Would never do” was 10.4% in France, 8.5% in Britain, 13.9% in Italy, 5.5% in the US; higher in Spain (30.0%) and Latin America (33.1% in Argentina, 62.7% in Chile); higher in Eastern Europe (46.7% in Poland, 33.8% in Slovenia, 59.1% in Bulgaria), as well as in Confucian societies (71.9% in Taiwan, 81.2% in Thailand, an exception is South Korea with 22.8%). The percentage of those who think it would be good or very good to have a strong leader<sup>19</sup> is 33% in France, 28% in Britain, 14% in Italy; 47% in South Korea; 60% in Taiwan and 24% in Japan). In response to whether the respondent had recently attended peaceful/lawful demonstrations<sup>20</sup> 20.6% of French, 54.1% of Britons, 12.8% of Dutch, 11.3% of Americans said yes, while only 2.9% of Japanese, 11.2% of South Koreans and 7.4% of Taiwanese did so.

A basic cultural element that non-Western anti-democratization activists embrace is anti-individualism. For instance, in nineteenth-century Russia political thinkers fell into two categories: Westernizers and Slavophiles. The Westernizers saw Russia as a backward version of the West, and while they urged retaining some Russian characteristics, they essentially wished to copy countries like France and Britain. In contrast, the Slavophiles believed Russian culture was different from the individual Western way of thinking. The ‘sobornost’ concept captured their view, which can be translated as ‘spiritual community of many living people’.

I build on Inglehart and Welzel’s (2005) research in capturing the content of political culture. In the quantitative test of the theory I use both the rational-secular values and the self-expression values for my analysis. These concepts are developed by Inglehart and Welzel based on factor analysis of public responses to questions on social and political values. These two dimensions tap important values, explaining 71 percent of total cross-national variation (p.49).

Although rational-secular and self-expression values go beyond political values to capture broader social values, they also reflect the essence of political values. The first dimension, secular-rational values has traditional values as its opposing pole. Traditional values emphasize the importance of religion, and deference to the authority of God, fatherland and family, emphasize social conformity and rarely discuss politics (p.52). The traditional pole could be paired up with

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<sup>19</sup>Question asked between 2005-7. Exact question: “V148.- I’m going to describe various types of political systems and ask what you think about each as a way of governing this country. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country? Having a strong leader who does not have to bother with parliament and elections” Possible answers: “Possible answers: 1 Very good, 2 Fairly good, 3 Bad, 4 Very bad, -1 Dont know, -2 No answer, -3 Not applicable, -4 Not asked in survey, -5 Missing; Unknown”

<sup>20</sup>Question asked between 2005-7. Exact question: “V102.- Have you or have you not done any of these activities in the last five years? ((Read out and code one answer for each) action): Attending peaceful/lawful demonstrations.” Possible answers: “1 Have done, 2 Not done, -1 Dont know, -2 No answer, -3 Not applicable, -4 Not asked in survey, -5 Missing; Unknown”

Almond and Verba's parochial culture. The self-expression versus survival dimension "taps a syndrome of tolerance, trust, emphasis on subjective well-being, civic activism, and self-expression that emerges in postindustrial societies with high levels of existential security and individual autonomy." (p.52). Survival values emphasize economic and physical security and people feel threatened by foreigners, ethnic diversity, non-traditional gender roles. Survival values sound like the subject culture, while a participant culture would combine rational-secular and self-expression values. Later I will also work with specific questions about patterns of orientation toward political institutions in general, and democracy in particular.

Not only Almond and Verba's different political culture concepts, but Huntington's civilization zones also correlate with both rational-secular values and survival-self-expression values to a large extent. Cultural zone membership is especially important in shaping traditional/secular-rational values (p.83). Overall, cultural zone membership alone explains 59 percent of the variance of the two value dimensions.

After seeing that political culture is about orientations toward politics, now let us turn to institutions. I will use the Northian (North 1990) definition of institutions: "institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction." Thus an important difference between culture and institutions is that institutions can be changed/adopted by humans, whereas culture evolves. Yet informal institutions constitute a gray area. Beliefs and values that are hard to change belong to culture in this paper, whereas in thick definitions of institutions such as Huntington's (1968) institutions as "behavioral manifestation of the moral consensus and mutual interest" (p.10) and Greif's (2006) "system of social factors that conjointly generate a regularity of behavior." When it comes to norms, a useful way to decide whether they form a part of institutions or culture is to ask whether society attaches emotions to the norm. For instance, if the existence of the British House of Lords is perceived by society as valuable in itself then any British learning of political institutions should take the House of Lords as given.

Just like with culture, under institutions I mean political institutions, thus rules of the political game as designed by society. Put simply, political institutions tell us how power is distributed in a society, while culture tells us the preferences of the members of society.

How do culture and institutions come together? Almond and Verba (1963) argue that the parochial culture is congruent with traditional political institutions, the subject culture with centralized authoritarian institutions and the participant culture with what North and Weingast

(2012) would call open-access order. Inglehart and Welzel (2005) provide quantitative evidence that political regimes only become stable if they are in line with people's beliefs and values. This is known as the congruence hypothesis (Sheafer and Shenhav 2012).

However, the congruence hypothesis leaves much room for uncertainty. What would happen if an incongruent culture and institutions were combined? Would economic growth be positive but not impressive, or maybe even negative? The congruence hypothesis neglects to answer this question, and actors can only glean this information if such an experiment is indeed played out. History shows that before such an experiment, public debate is often between 'copy-ers' and 'unique-ers'. For instance, in Russia in the 1840s, there were Westernizers who wished to copy Western European political institutions, and Slavophiles, who thought Russian culture based on communal solidarity would prevent Western ideas to flourish.

After distinguishing between institutions and culture, let us look deeper into the channels through which political culture matters. Let us imagine a 2x2 matrix. Along one dimension, we have the feasibility of copying, and the expected success of copying. Along the other dimension we have events: institutional change (revolution) and the post-revolutionary period. Cultural similarity affects all four cells of the matrix.

Let us start with the feasibility column. This concept is basically about mutual understanding and interpretation. For instance, Liebes and Katz (1993) found that people of different cultural background constructed different meanings after watching *Dallas*. Communication theorists talk of hybridity (Kraidy 2002) to express ideas that communication occurs in a local context. Talking about cultural fusion, Norris and Inglehart (2009) emphasize how California cuisine for instance merges Asian, Mediterranean and Latin American cooking with local farmers' market produce. An example from the political realm is early 20th-century Thailand. Following the Chinese Revolution of 1911 that overthrew China's imperial dynasty, the Thai king Wachirawut drummed up nationalism against Thailand's Chinese minorities, seeing in them "the harbingers of a popular republicanism profoundly threatening to the dynastic principle" (Anderson 1983, p.100).

Feasibility matters for both the revolution and the post-revolutionary period. First consider the revolution. For instance, if it is the middle classes that need to fight for the revolution then if those middle classes have no group consciousness then the revolution cannot be copied. Second, feasibility also matters for the period after the revolution would succeed. For instance, if the middle classes take power in order to implement an Islamist regime containing Sharia

law then if those middle classes are not Muslim, they will not be able to understand how to implement such a regime. As another example, the Egyptian is apparently looking at their Pakistani counterpart for inspiration about strategies to run the country.<sup>21</sup> Cultural distance thus makes the diffusion of institutional ideas more laborious and less thus less feasible: in 1845 liberal Russian circles needed to publish a ‘Dictionary of Foreign Words’ in order to be able “to discuss the concepts as well as to define their meaning” (Rapport 2009, p.102).

The expected success of copying also matters. It is possible that the revolution and the post-revolution are both feasible to copy, but there is little information contained in them. Maybe the middle classes could organize the revolution in Bosnia in 1848, copying their French counterpart’s strategy, but because French political culture excludes massacring thousands of protesters, whereas Bosnian political culture allows it, the critical mass of revolutionaries may not gather. Furthermore, there can be skepticism about how well the French institutional system fits with Bosnian political culture. Hard times could be coming when liberalism survives in France but a coup would occur in Bosnia. Appointing cronies might be prohibited by French political culture but not the Bosnian. Diamond (1997) talks about social value and prestige when analyzing which societies copy innovations. His example is the “horrendously cumbersome” kanji writing system in Japan (p.248), which has resisted replacement by more efficient alphabets due to its prestige.

All in all, political culture interacts with political institutions. This means that social learning should be stronger among countries whose culture shares features that reveal the most information about how well those institutions would fare in the country. My empirical results will find that the expected success of copying plays a greater role than shared understanding of political concepts.

### 3 Game-Theoretic Model

#### 3.1 Setup

Let us have two countries,  $A$  and  $B$ . For simplicity, we only have three actors altogether: elite of  $A$  ( $A_E$ ), citizens of  $A$  ( $A_C$ ), and citizens of  $B$  ( $B_C$ ), each aggregated into a representative actor. We assume that by the start of the game  $B_C$  has taken power over in  $B$  (e.g. Communists in

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<sup>21</sup>Economist article, from Aug 3rd 2013, downloaded Aug 8th 2013. Available at: <http://www.economist.com/news/middle-east-and-africa/21582564-generals-who-deposed-muslim-brotherhood-are-keener-power-they-let>

1917, American liberals in 1776), but in  $A$  it is still the old elite that rules. Institutions in the model simply tell us who (which group's representative agent) is in power and gets to pick their country's policy in a given period  $t$  ( $I_A(t) \in \{A_E, A_C\}, I_B(t) = B_C$ ).

In each period the three actors need to divide up a resource worth  $S_A + S_B + g(p_A, A, t) + g(p_B, B, t)$  among themselves, where  $S_A$  and  $S_B$  capture the size of the two countries, while growth  $g(p, \cdot, t)$  denotes the extra income achieved in a country in period  $t$  given some policy. So utilities are given by:

$$\begin{aligned} V_{A_E} &= \sum_{s=t}^{\infty} \beta^{s-t} p_A(t), \\ V_{A_C} &= \sum_{s=t}^{\infty} \beta^{s-t} p_C(t) = \sum_{s=t}^{\infty} \beta^{s-t} (S_A + S_B + g(p, A, t) + g(p, B, t) - p_A(t) - p_B(t)), \\ V_{B_C} &= \sum_{s=t}^{\infty} \beta^{s-t} p_B(t) \end{aligned}$$

The common discount factor is  $\beta$ .

The important assumption about policy is that each country has a single policy to pick over which  $A_E$  and  $A_C$  have opposing preferences. The original Acemoglu-Robinson (2006) model builds on the Meltzer-Richard (1981) framework,<sup>22</sup> whereby the decision is over a linear tax rate (with lump-sum redistribution). Since the elite's representative agent is richer (or more productive) than the citizens', he would opt for less redistribution. But when it comes to international conflict this kind of issue indivisibility may not always be over fiscal policy between the rich and the poor, so our framework is more general. There is a growing literature on how a single public good should be decided over and the further apart preferences are in a given country, the less it will be supplied and the more likely secession will be (e.g. Alesina and Spolaore 1997, Alesina, Baqir and Easterly 1999). Thus  $g(p_A, A, t)$  may capture how much public good is produced in  $A$  with policy  $p_A$  (e.g. one ethnic group may be better at providing education). It is possible therefore that distributional conflict in one country is along a different dimension than in the other. In that case there is little social learning going on but this is also exactly the case when the two countries are different in preferences, so are culturally distant.

In case of an interstate war the distribution of material power is equal to relative sizes  $S_A$  and  $S_B$ , so that the war leads to the destruction of  $A$  with probability  $\frac{S_B}{S_A+S_B}$  and that of  $B$

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<sup>22</sup>Which in turn builds on (Romer, 1975). Distortionary taxation arises from labor-leisure choice of agents of different productivity and preferences satisfy the single crossing property over the redistributive tax rate.

with probability  $\frac{S_A}{S_A+S_B}$ . The winner takes over all resources of the loser, as is standard in the literature.<sup>23</sup> We normalize the size of  $A$  to 1 without loss of generality. However war is costly:  $I_A$  needs to pay  $\frac{c_A}{1-\beta}$  and  $I_B = B_C$  needs to pay  $\frac{c_B}{1-\beta}$  in a war regardless of outcome ( $c_A$  and  $c_B$  are the amount of resources getting destroyed in a war). We allow for a bargaining solution by assuming  $B$  can make any transfer to  $A$  at the start of each period.

In the original Acemoglu-Robinson framework the domestic interaction is determined by the threat of revolution (de facto power of  $A_C$ ) which ebbs and flows. Let this be captured through  $1 - \mu$ , the amount of total income destroyed through the revolution, which at any time  $t$  may be high or low. This parameter captures how easy it is to organize collective action. It is modeled as being  $\mu_H \in (0, 1)$  with probability  $h$  and  $\mu_L = 0$  with probability  $1 - h$  (i.e. no threat). After a revolution, all income in the economy is forever taken over by the citizens but as  $1 - \mu$  is destroyed,  $\frac{1-\mu}{1-\beta}$  is the cost of revolution.  $\mu(t) \in \{\mu_H, 0\}$  is therefore a measure of domestic pressure at time  $t$  in  $A$ .

Now let us add  $\gamma$  ( $\gamma \geq 0$ ) as a measure of cultural proximity between  $A_C$  and  $B_C$ . It captures how much the presence and leadership of  $B_C$  enhances the de facto power of  $A_C$ . Thus if  $B_C$  is alive in period  $t$  and there is high revolutionary pressure in  $A$  in  $t$  then the cost of revolution is not  $1 - \mu_H$  but  $1 - \mu_H - \gamma$  (assume  $\mu_H + \gamma < 1$ ), thus revolution becomes less costly as citizens gain additional de facto (bargaining) power through having a democratic neighbor. For simplicity, in case of low revolutionary pressure ( $\mu_L = 0$ ), the citizens would still get 0 after a revolt even with a democracy next door.

What are the microfoundations for  $\gamma$ ? An interesting and deep mechanism is when  $\gamma$  captures information revelation about income levels, which can be a rational reason for ‘inspiration’ (other mechanisms are derived in the appendix). There is uncertainty surrounding policy choice outcomes and  $B_C$ ’s realization can reveal information about this to  $A_C$ . A country with a Confucian system achieving high growth under a given policy (e.g. Lee’s Singapore) may reveal more to Deng Xiaoping about what a similar policy would achieve in China than to Fidel Castro in Cuba. And even if the same policy under the same institutions would achieve the same outcome in Iran as in Singapore, social learning is much harder with cultural distance: Deng Xiaoping could send tens of thousands of Chinese to learn Lee Kuan Yew’s policy but the Venezuelans may have to learn Chinese first and Venezuelans can be also assumed to be less

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<sup>23</sup>In the conflict literature we usually think about dividing up the resource. However if we want to ground the analysis here in the Meltzer-Richard (1981) framework where issue indivisibility is over linear taxation, this condition simply says that whoever is the winner will determine policy (alone) in the newly acquired country.

keen to spend a long time in a country with such a foreign culture.<sup>24</sup>  $\gamma$  captures the expected value of  $g(A_C)$  knowing that  $B_C$  will survive into the next period arising from better growth expectations for some policy with which  $B_C$  have already experimented:

$$\gamma = E[g_A(p^*(A_C, I_B), A, t) | I_B(t+1) = B_C] - E[g_A(p^*(A_C, I_B), A, t) | I_B(t+1) = \emptyset].$$

How does war cut down  $\gamma$  from the opposition's de facto bargaining power? The simplest interpretation of the model is that the elite in one country eliminates the other physically in a war. However, even if this does not happen, a war can still force the citizens of the first country to focus on the fact that they are nationals of their country rather than citizens along the cross-national identity dimension. A lot of research in social psychology<sup>25</sup> suggest people are social creatures and are prone to promptly set up in-group and out-group categories. In sociology and political science it is an old idea that conflict with an outside group solidifies ingroup cohesion (Coser 1956, Simmel 1955).<sup>26</sup> Gellner 1983 Snyder 2000 and de Figueiredo and Weingast 1999 argue rational elites provoke nationalism to strengthen their position, and Schrock-Jacobson 2012 shows on a large- $n$  dataset that nationalism can lead to interstate war. Bueno de Mesquita and Dickson 2008 argues that terrorist groups attempt to provoke outsiders to gain support from their own people.

A second reason why enmity may cut down on information flowing from  $B_C$  to  $A_C$  even without eliminating  $B_C$  is by making information transmission more difficult. For instance, if because of the negativity extremely democratic citizens either leave the country or will not reveal this piece of information about themselves<sup>27</sup> then there will be a lower probability that the success of  $B_C$ 's economic policy will be revealed. Furthermore citizens of  $B_C$  may themselves not visit country  $A_C$  or it may be burdensome for members of  $A_C$  to keep up relations with members of  $B_C$ .

Why would  $A_C$  be willing to believe  $B_C$  is the enemy if the elite  $A_E$  starts a (maybe propaganda) war? The literature argues that because the fear is rational (de Figueiredo and Weingast

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<sup>24</sup>Indeed, (Simmons, Dobbin and Garrett, 2006) find that social learning is an important channel of diffusion, this arises endogenously in our model.

<sup>25</sup>Seminal studies include Sherif et al. 1961 and Tajfel and Turner 1979.

<sup>26</sup>Some recent field experiment evidence is in Gilligan, Pasquale and Samii (2011), Bellows and Miguel 2009 and Blattman 2009.

<sup>27</sup>War could lead to what Van Evera (2001) calls minority-oppressing as opposed to minority-respecting nationalism. Enmity could encourage this minority-oppressing nationalism, reducing communication between  $A_C$  and immigrants from  $B_C$  so  $A_C$  would expect to know less about the policy outcome of  $B_C$ .

1999) as long as there is some probability that  $B_C$  may indeed be a danger.<sup>28</sup> The mechanism described in the paper should therefore be stronger if there was a history of  $A$  on  $B$  conflict especially with past horrors for which  $B_C$  did not apologize (van Evera 2001) so that elites find it easier to alienate  $A_C$  and  $B_C$ . Similarly, it is easier given the lack of ‘truth squads’: a strong free press and free universities which regards mythbusting as a mission (van Evera 2001) or when the ‘marketplace of ideas’ can be easily captured (Snyder and Ballentine 2001). Furthermore, a war against an outside enemy could make it more acceptable to round up individuals who may sympathize with the outside country thereby shifting the median citizen.

The timing of the stage game of  $\Gamma(\infty)$  in period  $t$  is as follows. International-level decisions are made first, then domestic-level decisions occur. Due to the logic of backward induction this means international decisions have domestic reasons. There is an international stage, where wars are going to take place if the bargaining range is empty. Then domestic allocative decisions in countries alive are made, followed by a potential revolt. The outcome of the domestic policy decisions (income) are then realized and revealed. Finally if a regime had been overthrown in this period, the new agent can pick a policy, the results of which are then realized and revealed.

- Either  $A_E$  or  $A_C$  is in power in  $A$  ( $I_A(t) \in [A_E, A_C, \emptyset]$ ),  $B_C$  is either alive or not: ( $I_B(t) \in [B_C, \emptyset]$ ).  $I_A$  gets  $S_A$ ,  $I_B$  gets  $S_B$  units of resources (based on size)
- The shock  $\mu(t)$  ( $\in \{\mu_L, \mu_H\}$ ) is realized in  $A$  (no shock in  $B$ ). The triple consisting of the shock  $\mu(t)$ , the agent in power in  $A$  and  $B$  build the state vector:  $\{\mu(t), I_A(t), I_B(t)\}$ .
- International interactions:
  - $B_C$  (if alive) can make any positive transfer  $\tau$  to whoever is in power in  $A$ .<sup>29</sup>
  - Whoever is in power in  $A$  ( $I_A$ ) can attack  $B_C$ .
  - $B_C$  (if alive) can attack.
- Domestic interactions:
  - Whoever is in power in  $A$  may transfer political power to the other domestic actor ( $A_E$  may democratize in order to avoid a revolution).

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<sup>28</sup>Glaeser 2005 argues that ethnic hatred is aroused through hate stories spread by the elite so that citizens wish to pauperize an ethnic group, which they can do through voting for the elite-favored redistribution policies.

<sup>29</sup>The exact bargaining protocol is unimportant here, this closed rule with one round of proposals is the easiest choice. If an efficient Coasian bargaining solution exists, we want it to occur. with  $A$ 's agent in power making the first offer so that he can extract all the bargaining surplus (see e.g. Schelling 1960, Fearon 1995, Powell 1999). If the bargaining range is empty, one of the sides will attack.

- Agents in power make domestic decisions: whoever is now in power in  $A$  ( $I_A$ ) makes an allocative decision  $p_A$  (offer), while if alive,  $B_C$  chooses policy  $p_B$ .
- The citizens’ representative agent  $A_C$  decides whether to revolt or not.
- (in the stochastic version of the game)  $g_A(p_A, A, t)$  is revealed and so is  $g_B(p_B, B, t)$  if  $B_C$  is alive.
- If there was a revolt,  $I_A$  picks  $p'_A$  and (in the stochastic version of the game)  $g_A(p'_A, A, t)$  is revealed.

We justify this timing structure because the success of  $B$  should reveal additional information to  $A_C$  even if  $B_E$  picked the exact same policy as  $A_C$ .<sup>30</sup>

Note that what the war does is cutting domestic pressure on  $A_E$  by  $\gamma$ , which leads to a lower transfer to  $A_C$ , while the flow costs of war are  $c_A$  and  $c_B$ . We assume:

**Assumption 1.**  $\gamma < c_A + c_B$ .

This assumption says that the war’s costs exceed its benefits. This is the standard ‘war is costly’ assumption.<sup>31</sup> We will analyze the game under this assumption and show that they can occur even with it.

## 3.2 Modeling Social Learning

Now I will derive  $\gamma$  through social learning. This is probably the most profound and mathematically most interesting mechanism, however it should not be the only one.<sup>32</sup>

Now let us derive:

$$\gamma = E[g(A_C)|I_B(t+1) = B_C] - E[g(A_C)] = E[g(A_C)|I_B(t+1) = B_C].$$

To understand the mechanism of the model, this subsection can be skipped.

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<sup>30</sup>Another way of justifying this is to consider the commitment problem. Assume there are investment projects that only pay off if a country is run by  $A_C$  or  $B_C$  but not in one run by  $A_E$  because only then can the policy be guaranteed to be the same (good for the investment project) in both periods. The additional information from observing  $B_C$  can then come from payoffs from these projects.

<sup>31</sup>Wars in Jackson and Morelli (2007) arise when this assumption does not hold, so that war is a positive-sum enterprise for the ‘politically-biased’ leaders.

<sup>32</sup>Other mechanisms that can contribute here could be emigration or altruism. First, emigration: since the individuals who would leave  $A_C$  for  $B_C$  are the most productive, the domestic pressure on  $A_E$  falls by less than the economy’s income loss, making immigration a pain for  $A_E$ . Another mechanism is altruism, whereby citizens of  $B_C$  transfer money and resources to  $A_C$  whenever that raises  $A_C$ ’s expected utility - which only happens in periods with high domestic pressure.

We assume that different policies lead to different income levels under different cultural systems.<sup>33</sup> We will make a host of non-essential unrealistic assumptions to keep the model sharp and clean. First, we are assuming that the country's income level given a policy  $p_A$  only depends on culture, but not on institutions:  $g(p_A, A_C) = g(p_A, A_E)$ . So it is the information  $A_C$  gets from  $B_C$ 's adopted policy that makes citizens abroad valuable, therefore no matter whether that information will be bad or good, the ex ante expected income rises for  $A_C$  *knowing* that  $B_C$  will be there and will have started 'experimenting' with the expected ideal policy of  $A_C$ . If that policy is confirmed to work,  $A_C$  will be able to adopt it, while if it is shown not to work,  $A_C$  will be able to choose a different policy.

Next we assume that growth  $g_A(p_A)$  and  $g_B(p_B)$  are random variables that can take up only two values:  $g^H(p_A, A, t)$  or  $g^L(p_A, A, t)$  and  $g^H(p_B, B, t)$  or  $g^L(p_B, B, t)$ . We also assume that only the variance of policies differ:  $E[g_I(p_I, t)] = E[g_I(p'_I, t)] = 0, \forall p_A, p'_A \in [0, 1], I \in \{A, B\}$ . and that  $g_I(p_I) \forall I \in \{A, B\}$  is a martingale over time:  $E[g(p_I, t+1)|g(p_I, 1), \dots, g(p_I, t)] = g(p_I, t)$ , where  $g(p_I, t)$  is finite  $\forall t$ . So the democratic relative only conveys information in the time period of the revolt. We will assume that policies within countries are uncorrelated, so if  $g(p_B)$  is revealed to be bad then  $g(p_B - \epsilon)$  still has the same expected value.

Let the correlation coefficient between  $g_A(p, t)$  and  $g_B(p, t)$  be  $C(p, t) \geq 0$  and constant across policies and time ( $C(p, t) = C$ ). Let  $\pi(p, A, t) = \text{Prob}(g_A(p, t) = g^H(p, A, t))$  and  $\pi(p, B, t)$  be the prior probabilities that growth is high at time  $t$  for policy  $p$  in  $A$  and  $B$ , while  $\tilde{\pi}(p, A, t)$  is the posterior probability conditional on growth being high in  $B$  for the same policy  $p$ :  $\tilde{\pi}(p, A, t) = \text{Prob}(g_A(p, t) = g^H(p, A, t)|g_B(p, t) = g^H(p, B, t))$ .

**Lemma 1.** *The posteriors relative to the priors are given by:*

$$\tilde{\pi}(p, A, t) - \pi(p, A, t) = \frac{C}{\pi(p, B, t)} \sqrt{\pi(p, A, t)(1 - \pi(p, A, t))} \sqrt{\pi(p, B, t)(1 - \pi(p, B, t))}.$$

The lemma says the information from high growth next door is greater when there is higher correlation between the two growth rates, when there is greater uncertainty over the growth rate of  $A$  and less over that of  $B$ . Note that uncertainty is greatest when  $\pi(p, A, t) = \frac{1}{2}$ . Therefore if  $B$  is expected to have a high growth rate with a very high probability ( $\pi(p, B, t)$  is high) then  $B$  is less valuable to reveal information (in fact  $\lim(\tilde{\pi}(p, A, t) - \pi(p, A, t)) \rightarrow 0$  as  $\pi(p, B, t) \rightarrow 0$ ). It is not a high expected growth rate that makes  $B$  poisonous for  $A_E$  but an uncertain growth

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<sup>33</sup>The approach is related to Mukand and Rodrik (2005) and Brender and Drazen (2007), who both have a one-country model.

rate that ex post carries a lot of information for  $A_C$ .

If  $B_C$  is alive then after the revolt  $A_C$  will have already had time to observe the outcome of  $B_C$ 's policy. As  $B_C$  cannot commit ex ante to pick any  $p_B$  to prevent war, he will simply have picked  $p_B = 1$ . Thus having  $B_C$  next door reveals information about good growth strategies (or even about what not to try). Note that the flipside is not true:  $A_E$  will not want to keep  $B_C$  to prove it to  $A_C$  that they are bad at being in power. For instance, North Korea is not deliberately maintained to scare the world away from being nostalgic about communism. The reason is that if  $B_C$  produces a bad outcome by a policy thought to be optimal by  $A_C$ , that helps  $A_C$  because they know now better which policy does *not* work. In our sharp framework,  $A_C$  picks  $p_A = 1 - \epsilon$  in the bad case and ends up with the same expectations as at the start of the game (expects to produce 1).

The production of  $B_C$  is only revealed if it is not killed off in an attack by  $A_E$ . Given the success of the policy chosen by  $B_C$ ,  $A_C$  can expect the same policy to be more effective. The expected probability of  $B_C$  being beneficial to  $A_C$  is thus  $\pi(p, B, t)$ . Therefore if  $B_C$  is not killed off then the expected total income in  $A$  under the rule of  $A_C$  is equal to:<sup>34</sup>

$$v_{A_C} = 1 + \pi(p, B, t) \left( (\tilde{\pi}(p, A, t) - \pi(p, A, t))(g^H(p, A, t) - g^L(p, A, t)) \right),$$

plugging in Lemma 1 we get

$$v_{A_C} = 1 + C \sqrt{\pi(p, A, t)(1 - \pi(p, A, t))} \sqrt{\pi(p, B, t)(1 - \pi(p, B, t))} \left( g^H(p, A, t) - g^L(p, A, t) \right),$$

instead of 1. Thus  $B_C$  is overall more useful for  $A_C$  if cultural similarity is higher so that policies have similar outcomes and if there is greater uncertainty over  $p = 1$  in either  $A$  or  $B$ .

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<sup>34</sup>

$$\begin{aligned} v_{A_C} = 1 + \pi(p, B, t) & \left( (\tilde{\pi}(p, A, t)g^H(p, A, t) + (1 - \tilde{\pi}(p, A, t))g^L(p, A, t)) \right) \\ & + (1 - \pi(p, B, t)) \left( (\pi(p, A, t)g^H(p, A, t) + (1 - \pi(p, A, t))g^L(p, A, t)) \right), \end{aligned}$$

and use  $\pi(p, A, t)g^H(p, A, t) + (1 - \pi(p, A, t))g^L(p, A, t) = 0$ .

Therefore:<sup>35</sup>

$$\gamma = C\sqrt{\pi(p, A, t)(1 - \pi(p, A, t))}\sqrt{\pi(p, B, t)(1 - \pi(p, B, t))}\left(g^H(p, A, t) - g^L(p, A, t)\right).$$

Thus  $\gamma$  inspirational-leadership support to  $A_C$  is increasing in the correlation of policy outcomes (and cultural connections and communication between  $A_C$  and  $B_C$ ). And interestingly  $\gamma$  is higher the higher the uncertainty about policy outcomes either in  $A$  or  $B$  is.

A good current example of the mechanism described here is how China reacted to the gradual opening in Myanmar. When Myanmar abolished its central propaganda authority, the Chinese authorities attempted to censor the news of this. But no such attempt can succeed fully. Chinese citizens who grabbed hold of the information expressed envy, but also debated whether China was ready for a similar step.<sup>36</sup> Other internet users criticized the Chinese government for not acting similarly.<sup>37</sup> No doubt Myanmar's political path will be monitored closely.

### 3.3 Analysis

We will look for the Markov Perfect Equilibrium (MPE) of the infinitely-repeated game. The broad logic here is that commitment problems can be solved either through yielding power to the domestic opposition through institutional reform or through destroying the outside entity that helps the domestic opposition. Let us have a look at how  $A_E$  behaves when revolutionary pressure is high in the present ( $\mu(t) = \mu_H$ ). If revolutionary pressure is instead low then  $A_E$  should never start a war since it can always wait until  $\mu(t) = \mu_H$  to do so and expects to pay a discounted cost of war.

The elite considers starting a war against the alternative of either democratization or transfers. Which of the latter two is possible depends on whether the citizens  $A_E$  can be bought off with transfers to prevent a revolution.

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<sup>35</sup>Observe that in high periods of revolt pressure (when collective action can get organized),  $A_C$  would demand at least

$$\frac{\mu_H + C\sqrt{\pi(p, A, t)(1 - \pi(p, A, t))}\sqrt{\pi(p, B, t)(1 - \pi(p, B, t))}\left(g^H(p, A, t) - g^L(p, A, t)\right)}{1 - \beta} = \frac{\mu_H + \gamma}{1 - \beta}$$

instead of  $\frac{\mu_H}{1 - \beta}$ .

<sup>36</sup>[http://www.bbc.co.uk/zhongwen/simp/world/2013/01/130125\\_burma\\_censorship\\_dissolve.shtml](http://www.bbc.co.uk/zhongwen/simp/world/2013/01/130125_burma_censorship_dissolve.shtml), retrieved: 1/25/2013.

<sup>37</sup><http://www.chinese.rfi.fr/%E4%B8%AD%E5%9B%BD/20130126>

**Lemma 2.** *If  $\mu_H$  is low enough that  $A_C$  can be bought off with transfers without the presence of  $B_C$ :  $\mu_H \leq 1 - \beta(1 - h)$ , i.e. the ‘commitment constraint’ is not binding, then the utility of  $A_E$  from war is:*

$$V_{A_E}^w(\mu = \mu_H) = \frac{1 - \mu_H}{1 - \beta} - \frac{c_A + c_B}{1 - \beta}. \quad (1)$$

Proof in the appendix.

Lemma 2 has a simple interpretation: after a war the expected utility to be divided up between  $A_E$  and  $A_C$  is  $\frac{1}{1-\beta} - \frac{c_A+c_B}{1-\beta}$  and  $A_C$  is given just enough of this to be brought to the level of its outside option, the revolt:  $\frac{\mu_H}{1-\beta}$ , while the rest goes to  $A_E$ .  $c_B$  appears because  $B_C$  would always be willing to transfer this much to  $A_E$  to avoid war, thus it is an opportunity cost of war from the point of view of  $A_E$ .<sup>38</sup>

We start by realizing when war will never occur. First if democratization needs to follow a successful war because  $\mu_H$  is high enough that the commitment constraint binds:  $\mu_H \geq 1 - \beta(1 - h)$  then war should never take place as  $A_E$  gains nothing (and nor does  $B_C$ ) since his utility from democratization is:

$$V_{A_E}^d(\mu = \mu_H) = 0,$$

since forever  $A_C$  will take the whole unit resource. This payoff would be  $V_{A_E}^d(\mu = \mu_H) = -\frac{c_A+c_B}{1-\beta}$  with a war.

The second instance when war does not occur is when the the commitment constraint is not binding even with  $B_C$  present:  $\mu_H + \gamma \leq 1 - \beta(1 - h)$ . In this case  $A_E$  needs to compare giving transfers to  $A_C$  or starting a war against  $B_C$ .  $A_E$  starts a war if  $V_{A_E}^p \leq V_{A_E}^w$ <sup>39</sup> or:

$$\frac{1 - \mu_H - \gamma}{1 - \beta} \leq \frac{(1 - \mu_H) - (c_A + c_B)}{1 - \beta}$$

or

$$\gamma \geq c_A + c_B,$$

which in view of the standard war-is-costly assumption (Assumption 1) never happens. In other words, if the commitment constraint is not binding then war will never occur.

This is quite a striking result: as long as  $A_E$  can avoid democratization, it will not attack  $B_C$ . The reason is a simple efficiency of transfers arguments: we have allowed all relevant transfers

<sup>38</sup>With more precision we should write the two equations as  $V_{A_E}^w = \frac{1-\mu_H}{1-\beta} - \frac{c_A}{1-\beta}$  and  $V_{A_E}^p(\mu = \mu_H) = \frac{1-\mu_H-\gamma+\tau}{1-\beta}$  with  $\tau$  being the transfer from  $B$  which takes on a maximal  $c_B$  value.

<sup>39</sup>It is straightforward to derive  $V_{A_E}^p$  like in Lemma (2). Exactly a  $\frac{\mu_H+\gamma}{1-\beta}$  amount of income needs to be guaranteed to  $A_C$ .

between actors, thus  $A_E$  will always be able to transfer some resource to  $A_C$  and  $B_C$  to  $A_E$  to avoid war. Thus we have allowed efficient bargaining and as a straight consequence overall efficiency holds up.

FIGURE 1 ABOUT HERE

However when the question is between democratization and war, commitment problems enter the scene. The source of war is that there is a discontinuity in the utility of  $A_E$  as a function of  $\mu_H$  and the discontinuity occurs where the commitment constraint starts to bind. Once we start increasing  $\mu_H$  then up until the point where the commitment constraint becomes binding, transfers still yield a positive utility to  $A_E$  since in all low periods it can keep the whole unit resource. Therefore at the point where the commitment constraint starts to bind<sup>40</sup>, it would keep  $\frac{\beta(1-h)}{1-\beta} > 0$  (as long as  $h < 1$ ), yet a further increase yields 0 as in democracy the citizens would never have any incentive to redistribute anything to the old elite.

The commitment problem arises because after democratization the citizens cannot credibly commit to ever redistribute any income to the old elite. In the original Acemoglu-Robinson (2006) model, the elite has no way of getting around this discontinuity.<sup>41</sup> Here however at a cost of  $\frac{c_A+c_B}{1-\beta}$ ,  $\mu_H + \gamma$  can be cut to  $\mu_H$  so that if  $\frac{c_A+c_B}{1-\beta}$  is less then the discontinuous jump and  $\mu_H$  again leads to the slackness of the commitment constraint, a war is efficient from the perspective of  $A_E$ .

All this means that we have the following Markov Perfect Equilibria:

**Proposition 1.** *The (essentially unique) MPE of the infinite game  $\Gamma(\infty)$  is as follows. Whenever  $\mu = \mu_L$  or  $A_C$  is in power, no war or democratization occurs, whoever is in power in  $A$  keeps the whole resource and no transfers between  $A$  and  $B$  occur. Whenever  $\mu = \mu_H$  and  $A_E$  is in power, the equilibrium is as follows:*

- *If the commitment constraint **never binds**, not even with  $B_C$  present ( $\mu_H + \gamma \leq 1 - \beta(1 - h)$ ) or  $B_C$  is not present and the commitment constraint is not binding ( $\mu_H \leq 1 - \beta(1 - h)$ ) then there is no war or regime change, **redistribution** of  $\hat{\mu}_{H\gamma} = \frac{\mu_H + \gamma}{1 - \beta(1 - h)}$  from  $A_E$  to  $A_C$  occurs with transfers from  $B_C$  to  $A_E$  up to  $\frac{c_B}{1 - \beta}$ .*
- *If the commitment constraint **only binds with  $B_C$  present** ( $\mu_H \leq 1 - \beta(1 - h)$ ) and  $\mu_H + \gamma \geq 1 - \beta(1 - h)$ ) then:*

<sup>40</sup> $\mu_H = 1 - \beta(1 - h)$  or  $\mu_H + \gamma = 1 - \beta(1 - h)$  depending on the regime of  $A$ .

<sup>41</sup>They do add the possibility of repression in a later version of their workhorse model.

– If  $B_C$  is present and war is better than democratization for  $A_E$  ( $V_{A_E}^w \geq V_{A_E}^d$ ).<sup>42</sup>

$$\mu_H \leq 1 - (c_A + c_B),$$

then there is **war** to avoid democratization, after war there is redistribution.

– Otherwise there is **democratization**.

- If the commitment constraint **always binds**,  $\mu_H \geq 1 - \beta(1 - h)$ , even without  $B_C$  present then there is **democratization** to avoid a revolution.

We see mathematically what we have discussed verbally, that there is a number of conditions that need to be satisfied jointly for war to happen. War only occurs if and only if:

- first, it is *needed to avoid* democratization (necessary)
- second, it *can indeed avoid* democratization (sufficient)
- third, it is *not too costly*.

$A_C$  is thus better off with  $B_C$  around as long as its presence actually tip the balance into democratization. War and democratization are substitutes.

## FIGURE 2 ABOUT HERE

Solving the model has led us to our main result. Increasing cultural proximity  $\gamma$  will eventually lead to either war or regime change (democratization). At low levels, however, having a culturally similar  $B_C$  is effective to give some support (larger transfers from  $A_E$ ) to  $A_C$ , to influence dictatorships where domestic democratizing pressure is still low. Then as  $A_C$  gets closer to gaining power (higher  $\mu$ ), a high  $\gamma$  becomes detrimental, leading to war. It is not surprising then that countries that are challenging the US today such as Iran are the ones where democratic pressure is high, while more peaceful Saudi Arabia (where repression keeps democracy a much more distant prospect) has become a reliable US ally. Yet if war is too costly or the domestic pressure  $\mu$  has reached a very high level, a culturally-close democratic neighbor can be effective by tipping the regime into democracy (think of the revolutions of 1989).

Additional comparative statics can be derived with respect to the other variables. A high discount factor  $\beta$  (long shadow of the future) makes wars more likely as the commitment problem

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<sup>42</sup>  $\frac{(1-\mu_H)-(c_A+c_B)}{1-\beta} \geq 0$

worsens. Similarly, a low frequency of high pressure  $h$  makes wars more likely. Citizens know today there is a one-off opportunity to overthrow the elite and thus are difficult to be bought off. This could help explain why new weakly-institutionalized democracies are war prone (Mansfield and Snyder, 2005): after a regime change, the group which had just lost power has a one-off opportunity to gain that power back, which is again a new explanation.

### 3.4 Empirical Predictions

There are three primary hypotheses to test. The main hypothesis is that when coupled with institutional difference, cultural similarity makes a country pair more war-prone. A second hypothesis is that this is a primary channel through which identity matters, so dyads characterized by institutional difference and cultural similarity are the *most* war-prone out of all possible dyads. A third hypothesis is that the channel through which identity matters is domestic pressure arising from information revelation about potential growth under a different institutional system. We measure domestic pressure by excess growth rates in culturally similar but institutionally different countries for each country in each year. My third hypothesis is therefore that this new measure of domestic pressure increases the coefficient on the interaction of institutional difference and cultural similarity.

## 4 Statistical Analysis

Next I test the hypotheses implied by my theory. The main hypothesis is that in the presence of institutional difference, cultural similarity makes a country pair more hostile and more war-prone. The second hypothesis is a stronger version of this: that social learning from a culturally-close democracy is a primary channel through which identity matters, so dyads characterized by institutional difference and cultural similarity are the *most* hostile and *most* war-prone out of all possible dyads. I will find substantive evidence for both hypotheses. Nevertheless, the standard caveats apply as in any paper using dyadic war regressions.

To gain additional support for my mechanism, I test a third hypothesis too, that the channel through which institutional difference and cultural similarity matter is through information revelation about growth. I show that cultural similarity only has a war-proneness heightening impact in the presence of institutional difference when the culturally similar and institutionally different countries exhibit higher GDP growth rates than does the given country.

## 4.1 Data Description

I use the COW MID data for conflict incidence,<sup>43</sup> as is standard in the literature, to which I add a dataset in which I put together different measures of culture. In the MID data, the unit of observation is a country-pair in any given year (between 1816-2009) and I do not restrict attention to politically-relevant dyads<sup>44</sup> since geography is a main factor that I want to distinguish. This means that the base dataset has 1,891,886 observations.<sup>45</sup> For data collection, the paper uses EUGene.<sup>4647</sup>

The main dependent variable is hostility level, which ranges from 0 (no conflict) to 5 (war with at least 1000 battle deaths). This is because the theory predicts clashes as well as wars, assuming that once a government seeks enmity in rhetoric, hostility might lead to war. Thus the primary dependent variable is hostility, and a second dependent variable is a binary measure whether there is use of force (4 to 5 on hostility level). War is a rare event, only 0.7% of the (all) dyad-years experience a hostility level of 4 or 5.

The key variable in my analysis is cultural proximity. I compiled a ‘cultural similarity dataset’ consisting of 26 variables that ranges from broad civilizational measures to fine-grained questions about political culture in the World Values Survey.

I have five broad cultural similarity variables. The first two are based on a genetic distance variable from Spolaore and Wacziarg (2012), who define such a variable between two populations (frequency of allele differences), and show that genetically more related populations are more likely to fight (yet they have no hypothesis over an institutional interaction).<sup>48</sup> This variable is naturally a little difficult to interpret, but it has been shown to capture cultural similarity in attributes such as trust (e.g. Desmet et al. 2007), and fortunately at the 200-year horizon, this variable is largely invariant, so we need not worry about reverse causation. Spolaore and Wacziarg (2009 and 2012) calculate four measures of genetic distance.<sup>49</sup> The main measure captures the time which two populations have spent apart (since splitting).<sup>50</sup> I use the measure

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<sup>43</sup>For the Correlates of War project, see: [www.correlatesofwar.org](http://www.correlatesofwar.org)

<sup>44</sup>A politically-relevant dyad is one in which the two countries are either contiguous or one of them is defined to be a major power.

<sup>45</sup>I am thankful for the help I received with setting up a research account on Odyssey at Harvard Research Computing.

<sup>46</sup>Bennett, D. Scott, and Allan Stam. 2000. ‘EUGene: A Conceptual Manual.’ *International Interactions* 26:179-204. Website: <http://eugenesoftware.org>

<sup>47</sup>Tables are generated using the StarGazer package by Marek Hlavac.

<sup>48</sup><http://sites.tufts.edu/enricospolaore/files/2012/08/War-and-Relatedness.pdf>

<sup>49</sup>They use a genetic distance measure of 42 populations, which they match to almost all of the 1,120 ethnic groups in Alesina et al. 2003 listed for countries.

<sup>50</sup>The longer this time, the more random mutations there are, so the greater is the genetic distance. The

$F_{ST} - weighted$ , which takes all groups into account in the two countries and creates a distance weighted by population share. Cavalli-Sforza, Menozzi and Piazza 1994 also provide a slightly different measure of distance, Nei's distance,  $Nei - weighted$  is calculated the same way and we can use it as a different proxy. I construct two proximity measures out of the genetic distance measure: I divide 1 by the distance or alternatively I multiply the distance measure by minus one.

The third measure is a binary indicator whether the two countries share the same religion. The measure is from Jonathan Fox's *Religion and State Project*<sup>51</sup> with levels 'Christian', 'Muslim' and 'other'. Although the variable does not parse out other religions, Christianity and Islam are the two biggest religions in the world, Huntington's clash of civilizations (1996) in the post-Cold War world is widely thought to be manifested by Christian-Muslim wars, and the civilizational variable below has more categories.

A fourth broad cultural measure is also religious proximity. However in order to have more variation than in the binary measure, I constructed something similar to a fractionalization index but between countries. Taking Jonathan Fox's data on religions I calculated the probability of a random draw of two individuals belonging to the same big religion. The religions I work with are again Christianity and Islam. Therefore if one country is 75% Christian and 25% Muslim, while another one is 100% Other, the variable takes up 0. If both are 75% Christian and 25% Muslim, then the variable takes up  $0.75^2 + 0.25^2 = 0.625$ . This measure is therefore more fine-grained and continuous than the previous one.

The final broad cultural measure is whether the main groups in the two countries belong to the same civilization. I code this variable based on the nine civilizations according to Huntington 1996, Map 1.3.<sup>52</sup> When a country is ambiguous ('cleft countries', like Kenya and Nigeria between Islamic and African), the major civilization is coded, and a separate minor civilization is also coded. A separate variable is created which captures all country pairs with the property that the minor civilization in one of them is the same as the major civilization in the other (therefore at least one of the countries is required to be a cleft country for this variable to take on 1).

The remaining 21 cultural proximity measures come from the World Values Survey. The advantage of the WVS measures is that they capture more closely the political culture concept based on beliefs and values that my theory assumes. However there is also a downside to using

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variable is 0 if and only if the allele distribution in the two populations is the same.

<sup>51</sup><http://www.religionandstate.org/>, Fox 2008, version 1.2.2, EMAJREL variable

<sup>52</sup>The nine levels are: Western, Latin American, African, Islamic, Sinic, Hindu, Orthodox, Buddhist and Japanese.

these measures due to data availability. The problem is that some values have demonstrably shifted slightly over a few decades (Inglehart and Welzel 2005). In addition, and the sample of countries for which these measures are available is limited: it ranges from 22 (first wave) to 65 (fourth wave). Since the overlap is not perfect, I use all five waves separately. The first wave was conducted in 1981-4, the second in 1989-93, the third in 1994-9, the fourth in 1999-2004, the fifth in 2005-8. I construct the similarity variables by calculating minus the absolute difference between two countries' value scores in each of the waves.

Two cultural measures from the World Values Survey are the two main aggregate indices, rational-secular and self-expression values. Rational-secular values de-emphasize religiosity, patriotism, authority, obedience and familism, while traditional values emphasize all these. Self-expression values emphasize freedom, expression, non-conformity, self-direction and trust, while survival values downplay them. As rational-secular values tap into ideals about the community while self-expression values reflect ideals about the individual (Welzel 2006), the theory predicts that cultural similarity along the rational-secular dimension should be more predictive of conflict than self-expression values.

To get a more fine-grained test of political culture as the driving force I collected all the questions that ask about political culture in general and especially about attitudes toward institutions (all questions are in the appendix). I divide these questions into two categories. The first category is about society's values over different institutional systems or political actions. They ask about how much respondents value protecting the freedom of speech, having a strong leader who does not have to bother with parliament and elections, how much they think using violence to pursue political goals is never justified, how important they think maintaining order in the nation is. One question also asks about the importance of God, which can have political ramifications in certain periods (e.g. Islamism nowadays). Answers to these questions should reasonably have an impact upon the expected success of a revolution as well as that of democracy.

The second category of specific World Values Survey questions aims to disentangle the channel of mutual understanding from different outcome expectations. Unlike in the previous category, now I collect questions that asks the respondents what they think to be essential characteristics of democracy. Thus, for instance if someone in country *A* thinks the army taking over if the government is incompetent is essential for democracy, they are less likely to understand and thus copy country *B*'s democracy if a coup in that country is not possible. The specific questions about how essential some features of democracy are: religious authorities interpret

the laws, people choose their leaders in free elections, the army takes over when the government is incompetent, civil rights protect people, the economy is prospering, criminals are severely punished and women have equal rights.

The final category of specific World Values Survey questions are placebo questions. Using these questions, the hypotheses should not be confirmed. Some questions have nothing to do with political institutions, such as whether adventure is important for the respondent, whether the government should reduce environmental pollution or whether leisure or work is what makes life worth living for. Another question asks about the importance of politics to the respondent. Since a person can find politics very important but have authoritarian values, or not care about politics but have democratic values, this question should not confirm my hypotheses.

Two final placebo questions are about nationalism. One asks whether the respondent would be willing to fight for their country, another whether they see themselves as a citizen of their country. Nationalism could be an important competing hypothesis: maybe rather than the threat of diffusion, leaders of two countries fight to reunite the nation under their own rule. Yet in this case since the two parties fight for national union, leaders should count on and drum up national feelings, so if the national mechanism was at work, similar answers to these questions would confirm my hypotheses. Alternatively, it is easy to imagine that one of the countries is illegitimate from a national point of view, in which case opposing answers would confirm my hypothesis. However I find neither is the case.

The institutional variable is proxied by the Polity score,<sup>53</sup> which measures the extent to which a country in a given year is judged to be democratic, and ranges between -10 and 10. I use two variants of this score. First, I take the absolute value of the difference in the Polity IV scores of the two countries. Second, I define democracies as having a Polity score of 7 or higher, as is standard in the literature, and construct a binary variable for institutional difference that captures whether there is exactly one democracy in the country pair. The results are robust to changing this threshold to 9.

Focusing on only the democracy-dictatorship relationship should mean a tougher test for the theory, which is a general theory of differences in political institutions. This is because many dictatorship-dictatorship wars will be regarded as having the same regimes even though they might be different. For instance, the Iraq-Iran war (1980-88) or the Ethiopian-Somali war (2006-09) should be covered by the theory as a competition between a religious institutional

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<sup>53</sup><http://www.systemicpeace.org/polity/polity4.htm>

setup with Islamic law and a secular dictatorship, yet would not show up in the empirical results as correctly predicted conflicts.

I am controlling for a number of usual variables: I include a time trend, the peace years since the last war, major power status for both countries, bilateral exports between the two countries separately, and whether they have an alliance (entente)<sup>54</sup>. It is particularly important to control for geographic variables accurately so that we do not confuse culture with physical distance. I constructed a variable capturing whether the two countries are in the same big physical region (5 levels), I included physical distance (between capitals), contiguity on land, as well as colonial contiguity from the COW dataset.

Summary statistics can be seen in the tables below. You might be worried that there are few dyads which are culturally similar but institutionally different and therefore my results might be driven by outliers. This is not the case however. Institutionally similar countries seem to cluster among culturally close ones but not too strongly. In fact, there are 119,860 country-pair years with institutional difference (defined by *justone*) in the closest quartile, 120,392 in the next quartile, 125,604 in the second-to-bottom and 124,140 in the least similar ones. Therefore there appears to be a negative relationship between cultural similarity and institutional difference as suspected, but the tendency is not overwhelming.

TABLE 4 ABOUT HERE

TABLE 5 ABOUT HERE

TABLE 6 ABOUT HERE

TABLE 7 ABOUT HERE

## 4.2 Data Analysis

I start the data analysis with the broad cultural measures: racial proximity, religion and civilization. As a first look at the data, let us see how cultural similarity, institutional difference and war incidence are distributed. For this, the four quartiles of the  $F_{ST} - dominant$  distance are calculated<sup>55</sup> (so that we have a fourth of the closest-related dyads, for instance). From Table (8), you can see that indeed more related populations have more wars: the furthest quartile's

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<sup>54</sup>Coded 3 in the MID database, the closest alliance type.

<sup>55</sup>The quartiles based on the  $F_{st} - dominant$  variable are: 244.85; 699.96; 1118.16.

dyads have a war incidence of 0.09%, while the closest quartile’s dyads have one of 1.92%. Similarly average hostility level rises gradually from 0.005 to 0.097 as we move toward the most culturally-similar quartile. The institutional difference variable shows a stable, or if anything, a roughly opposite pattern: a genetically most distant dyads are likely to experience regime difference (exactly one democracy as measured by Polity IV) 41.43% of the time on average, while the closest dyads do so only 39.61% of the time. Nevertheless the average war years for countries with a regime mismatch rise from 0.03% for the distant quartile through 0.79% and 0.80% to 2.42% for the closest quartile.<sup>56</sup> Therefore even though dyads in the closest quartile are a little less likely to have a regime mismatch, close-quartile dyads still experience regime-mismatch wars about 100 times more. Also note that when we restrict attention to dyads with regime mismatch, mean war incidence *falls* from 0.09% to 0.03% for distant countries and *rises* from 1.92% to 2.42% for close countries. Therefore it seems that regime mismatch wars indeed are more likely if and only if the dyad is culturally close.

Results are similar for the other variables (e.g. recall tables (2) and (3)). For instance, sharing a civilization means an average of 0.121 hostility when there is exactly one democracy, while not sharing means an average of 0.048 (the grand average of hostility is 0.043). For the dyads where there is not exactly one democracy (no democracy or two democracies), same civilization means an average of 0.07 (< 0.121) and different civilization means an average of 0.039 (< 0.043), the difference thereby being half as large. The most hostile indeed seem to be the institutionally-different and culturally-close dyads. The religion measure yields the exact same results qualitatively.

#### TABLE 8 ABOUT HERE

After this preliminary analysis, let us run regressions and ascertain that it is not omitted variables that drive these results. The first specification that I run is:

$$W_{ijt} = g(\beta X_{ijt} + \beta_C C_{ij} + \beta_I I_{ijt} + \beta_{CI} C_{ij} I_{ijt} + \eta_{ijt}).$$

The default regression is when the dependent variable is hostility level with OLS ( $g(x) = x$ ). In the second case it is war with  $g(\cdot)$  being the logit link.  $X_{ijt}$  includes time invariant controls,  $I_{ijt}$  is institutional distance  $C_{ij}$  is the (time invariant) cultural proximity and  $\eta_{ijt}$  is the error term. Because of the importance of geographic and cultural proximity, which are both time

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<sup>56</sup>Similarly average hostility level rises from 0.001 to 0.107.

invariant, I cannot cleanly run fixed-effects regressions, although some modified versions are explored below. I can however use random effects, by clustering on country-pairs, which I will do after the OLS regressions.

First I check whether introducing the institutional difference variable and then the cultural proximity variable leads to a statistically better model, through a nested ANOVA test, using the *Fst*-distance-weighted variable. The models are logit random effects models with war being the dependent variable, errors are clustered on dyads. Introducing institutional difference leads to a Chi-squared value of 612.09, the F-test is significant at 0.001, introducing cultural proximity gives a Chi-squared of 10415, again significant at 0.001. This means that introducing interactions of my additional variables makes them jointly significant.

The first regressions (Table 11) are simple OLS regressions where the dependent variable is maximum hostility level in the dyad in a given year. I run five specifications, one for each cultural variable. You can see that the interaction of absolute democratic difference interacted with cultural proximity is positive for all values and highly significant as expected, although standard errors in these kinds of tests may be deflated. It is also notable that the both-democratic dyad variable is not significant in two cases (civilization, shared religion) and even has a positive sign once (shared religion). Since I am working with interactions, it is also important to emphasize that cultural proximity by itself is usually negative, although the effect is small. This means that when two countries have the same polity score, cultural proximity usually decreases war-proneness slightly, although not for minus genetic distance, and generally *t*-values on the single term are lower (and not significant for same religion) than on the interaction term.

My main hypothesis holds true. It predicts that cultural similarity causes wars when there is institutional difference. This means that there is an overall significant positive effect of cultural similarity (i.e.  $\beta_C + \beta_{CI}I_{ijt}$  is positive) when evaluated at high values of institutional difference  $I_{ijt}$ . We can see that in all five specifications evaluating the impact of increasing cultural proximity at high levels of absolute polity difference (15-20) always yields a positive coefficient. For instance, changing the religion to the same religion with polity difference at (20) adds on average 0.017 points of hostility.

How much is this effect (0.017 for religion) substantively? It is quite large as average hostility is 0.043. And larger than ‘democratic peace’ as ‘both democracy’ has an impact of lowering hostility by 0.011 on average.<sup>57</sup>

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<sup>57</sup>Actually when we leave out cultural similarity and institutional difference, the impact of ‘both democratic’ is much larger -0.068. This means that the three variables (cultural similarity, institutional difference and their

The second hypothesis also holds up. It says that the most war-prone out of all possible dyad types is the one that combines cultural similarity with institutional difference. You have seen that a culturally-similar but institutionally-different dyad is more hostile than a culturally as well as institutionally different one. I only need to show that it is also more hostile than an institutionally as well as culturally similar one. This result holds up for all five cultural measures. The second hypothesis is thereby confirmed. For instance, changing religion when the two dyads share institutions decreases hostility by 0.003. But changing institutions (+20 difference) with the same religions increases hostility by 0.06. Changing institutions (+20 difference) with religious difference adds only 0.04, and changing religion to ‘same’ at high institutional difference (first hypothesis) adds 0.017.

Next I change the dependent variable to *War* (Table 13), defined as a hostility level of at least 4 (use of force) and estimate a logit model. I consider two specifications. The first is a simple model, in the second I include a lagged dependent variable to try to make sure that we are not picking up war length but rather new wars. The positive impact of cultural proximity impact at high democratic difference levels holds up again,<sup>58</sup> and the second hypothesis is again confirmed as well.

Substantively the logistic regressions give the following quantities. Using the religion variable we get that changing religion to the same one when there is an absolute Polity Score difference of 20 has an impact of an increase of about 7% ( $\exp(0.167-0.1)$ ) of the probability of war. The genetic distance’s impact is even bigger. Increasing genetic proximity (div) by a standard deviation (0.05) increases the probability of war by 11% ( $\exp((2.94-0.86)*0.05)$ ). Using the alternative (minus) genetic distance gives an estimate of as much as 80% ( $\exp((1.6+1.5)*0.19)$ ).

### 4.3 Robustness

Since dyadic country-regressions have numerous statistical deficiencies, I will show now how my results are robust to different specifications, variables and other concerns.

In a probably less adequate specification I include country fixed effects to make sure it is not country-specific characteristics that drive our results. The problem with this is that any time-invariant feature needs to be excluded to avoid perfect multi-collinearity, which means that all geographic distance terms need to be excluded, as well as the culture term on its own - all

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interaction) explain much of the democratic peace results.

<sup>58</sup>The interaction term with shared religion turns negative but the overall positive effects of cultural similarity and institutional difference remain.

these are absorbed by the country fixed effects. I include absolute polity difference as well as its interaction with cultural proximity (all five measures). All interactions are highly significant and positive.

I also check for running a random effects model. The results remain the same: interaction terms are all significantly positive and at high levels of institutional difference cultural proximity leads to on average more hostility. The institutionally-different culturally-similar dyad is also the most hostile. Also the interaction term mostly has much higher  $t$ -values as the non-interacted cultural similarity and institutional difference.

Next I change the institutional variable measure. I take the binary variable that defines ‘exactly one democracy’. Again both hypotheses hold up. The results are robust to changing the definition of ‘exactly one democracy’ to a Polity score cut-point of 6 or 10 (original is 7).

Next I take sub-components of the polity score. Looking at these subscores also helps us see which aspect of democracy seems to be driving our results. It is the case that competitiveness of participation and political competition both yield results that work for four out of the five cultural variables. However, the results hold up perfectly for executive constraints and competitiveness of executive recruitment (in each case we again calculate absolute differences). These little differences should not be surprising and give evidence that the executive in power starts the hostility or the war if they feel that their power is under threat.

To make sure that I am not capturing reverse causation (institutional differentiation as a result of wars, although for some reason only in culturally similar countries), I run the regressions with a positively lagged war (dependent) variable as well (the dependent variable is one period ahead of the independent ones). All results hold up.

In the next specification I change the dependent variable to *Fatal* which captures how many fatalities the two sides have suffered in any given year (if any). Results under all five cultural estimates hold up of the baseline model. The same is true of changing the dependent variable to ‘highest action’.

Next I check for non-linearities in the data. Including squared terms for both cultural similarity (tested for all five measures) as well as absolute Polity score difference we get varying significance levels. In particular, sometimes the cultural variable’s interaction with the squared Polity difference seems more significant than the interaction of the levels. Therefore I tested the regressions with using the squared versions of cultural similarity and institutional difference (separately), and all baseline results hold up no matter which measure we use. The fact that

the squared version of the absolute Polity scores may be more significant could strengthen the theory in the sense that larger democratic differences lead to proportionally more hostility, rather than small differences driving the results. As the dependent variable *hostility* is ordinal, I also run ordinal logit regressions. For two cultural variables the results disappear. However this specification also becomes robust in all five cases once I use specific subscores of the Polity score (constraint on the executive, participation), which should capture institutions more precisely.

You should also be worried about endogeneity issues, which are particularly difficult to handle here. As a first step to deal with the issue we run the regressions without including any of the obviously endogenous explanatory variables: trade flows and ally membership. Both hypotheses hold up.

As a further test on endogeneity, could it be that some particular uncapturable feature of a dyad makes the country-pair more war-prone throughout human history and then war makes for more cultural similarity? To test this I change the dependent variable to ‘cultural similarity’ and see whether more war-prone dyads over the last 200 years have become more culturally similar. Genetic proximity evolves slowly, however it is easy to think of a few countries that changed religion (e.g. Christianity in South Korea) or civilization (e.g. due to population movements (Germans in Eastern Europe) or genocide, (Armenians in Turkey)). The effect of this should be small over the 2-century frame, however, if it was a problem for my regressions, it should always mean that war should lead to *more* cultural similarity (e.g. through rape, occupation, population transfers). However there is no sign of this. If anything, there is the opposite effect: regressing cultural similarity on geographic variables and war/hostility leads to three negative relationships out of the four significant ones. Only minus genetic similarity shows a significant positive relationship.

A surprising finding in Bueno de Mesquita (1981) was that allies are more likely to fight each other than non-allies. Restricting the sample to allies, we find that both hypotheses hold up. Furthermore, the coefficient on the ally variable in my basic regressions is consistently negative and highly significant. Therefore Bueno de Mesquita could have been capturing the mere fact that culturally-similar countries are more likely to become allies and also to fight more wars.

Next when I restrict the sample to dyads where the minor civilization in one country is the major civilization in the other, the results weaken considerably (in two out of five cases not even the first hypothesis is confirmed and significance levels drop for the rest). This means that the

results are not driven by two unrelated cultural groups sharing a country,<sup>59</sup> which then leads to a war of the majority with the mother-civilization of the unrelated minority. Therefore it is indeed culturally-similar groups, not just dyads, that seem to wage war.

Another worry is that given that in dyadic regressions it is easy to find statistically significant relationships, is it not possible we are capturing just noise? The answer to this is that note how consistently the relationship that we are capturing is not just significant but goes in the same direction. As a placebo test, I run the regressions with using other variables to interact cultural similarity with instead of the polity difference, for which I have no immediate predictions: major power, peace years, same region. In no case do I get a consistent direction or significance levels.

A main worry is that cultural similarity is just mismeasured geographic proximity. Despite the proxies, this could be the case. Looking at correlation coefficients we see that cultural variables' correlation varies from -0.13 to -0.46 with distance, from 0.11 to 0.2 with land contiguity and from 0.17 to 0.49 with same region. Generally, the divided genetic distance covaries the least while the minus genetic distance and the same civilization correlate the most.

#### TABLE 9 ABOUT HERE

To have a closer look at geography, I consider only those country pairs which do *not* share the same region: the results actually strengthen ( $p$ -values fall). There are five big regions defined in the COW project:<sup>60</sup> Europe, the Middle East, Africa, Asia and the Americas. Compared to the unrestricted sample,  $p$ -values fall for the interaction term of the baseline specification, with all of them retaining their positive sign. This is robust to changing the dependent variable to wars (and robust to including lags). Similarly, results are stronger for non-contiguous dyads than for contiguous ones.

What does the fact that the results are stronger for dyads not sharing the same region say about geography and culture? It should indeed mean that the positive interaction on cultural similarity and institutional difference should not come from badly measured geographic distance. If cultural similarity was being driven by some residual measure of how easy it is to project power then presumably the mismeasurement should be greater for countries closer around. Instead the results appear to arise from instances such as the US, New Zealand and Australia involved in European wars such as the Second World War. The example of South Africa in 1914 is telling.

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<sup>59</sup>See Saideman 2001.

<sup>60</sup>The variable we use is 'home region' from the Correlates of War project and Eugene.

There was a strong desire to defend Britain, arising from “an ethnic and cultural unity with Great Britain”, so much so that and even the Boers rallied (Audoin-Rouzeau and Becker 2002).

One worry might be that if the theory is better at explaining inter-regional conflict, it captures a relatively rare event. There are two reasons why this is not true. First, although the average number of wars occurring among countries belonging to the same region is higher (0.021) than among those belonging to different ones (0.004), since there are many more inter-regional dyads, there are still 5109 inter-regional conflictual dyad years, compared to 8185 intra-regional conflictual dyad years. Second, it is not the case that we are *only* explaining non-local conflicts, just explaining them better. And when I run the regressions with *distance* as a third interacting variable, I get negative triple interactions for four out of five cases (the only exception is civilization), so that as I investigate country pairs further apart the impact of the positive interaction term diminishes. This seems to suggest that the theory is best to explain dyads sitting near the edges of regions.

Furthermore even for countries in the same region the results actually still hold up when I restrict attention to subscores of the Polity variable (Competitiveness of Participation, Competitiveness of Executive Recruitment, Regulation of Chief Executive Recruitment, Openness of Executive Recruitment). These subscores should be a better comparison of democratic qualities so that we compare like with like.

Next let us turn to which periods the theory explains the best, again focusing only on the interaction’s sign. First, by restricting attention to either the nineteenth or twentieth (and the first eight years of the twenty-first) century means that the results hold up almost perfectly. Similarly, the results hold up almost perfectly for the Post-Cold War period, for which Huntington predicted the clash of civilizations. If I restrict attention to between 1990 and 1996, the Post-Cold War period before Huntington, the results of a clash of brothers hold up perfectly. Furthermore the results do not appear to be driven by simply a Cold-War era domino theory as the main hypothesis actually does not hold up for religion and civilization. Furthermore, one period that is particularly well-explained by the theory is 1849-79, which is interesting since Owen (2010) argues that the Second wave of international polarization ends in 1850. This suggests the theory of social learning is indeed even more general than Owen’s research would suggest.

#### TABLE 10 ABOUT HERE

The fact that the results of the statistical analysis are largely unchanged by focusing on different time periods also shows that they are not driven by colonial geography (e.g. France’s

former colony forced into war against Britain).

To make sure the mechanism of the theory is in line with the statistical results, I run regressions in which I test democratization. Recall that regime change should occur under the same conditions as wars, just under higher domestic pressure. Therefore by changing the dependent variable to be the Polity score of the first country, lagged one period ahead, the interaction term should once again be positive. The only adjustment is that instead of absolute Polity score difference as the institutional measure, I use the simple difference: country 2's Polity score minus country 1's Polity score. Therefore if a culturally-close country 2 is more democratic, I should find that country 1 will also become more democratic in the next period. This is indeed what I find.

#### 4.4 Wars Including Domestic Pressure

Next I test the third hypothesis through a novel variable,  $D_{ijt}$ . For each country in each year, I have a measure calculated as the average excess growth rate (averaged over the previous 5 years) in culturally-similar but institutionally-different countries based on the FST cultural proximity (division). The results are robust to using the other cultural measures. For institutional difference I again use the absolute difference in Polity scores. As neither this nor the cultural similarity variable can take on negative values, negative domestic pressure can only come from higher growth at home than abroad on average. Unfortunately, as GDP growth is only available from 1950 we need to restrict our attention to post-WWII data. This is still more than half of the data however, with 996810 observations.

I introduce domestic pressure in an interaction term with both absolute polity score difference and cultural similarity. The specification is:

$$W_{ijt} = g(\beta_X X_{ijt} + \beta_C C_{ij} + \beta_I I_{ijt} + \beta_D D_{ijt} + \beta_{CI} C_{ij} I_{ijt} + \beta_{CD} C_{ij} D_{ijt} + \beta_{DI} D_{ijt} I_{ijt} + \beta_{CDI} C_{ij} D_{ijt} I_{ijt} + \eta_{ijt}).$$

As you can see in table D the results confirm the hypothesis. First of all, the coefficient on the interaction of cultural similarity and institutional difference is still positive but its  $t$ -value falls, while the triple interaction term cultural similarity - institutional difference - domestic pressure (in country 1, calculated from divided genetic distance) is positive in all cases and domestic pressure has a positive impact on hostility when there is institutional difference and also cultural proximity. This is robust to using the variable domestic pressure in country 2

instead of country 1. When using the other measures of domestic pressure, I get mixed results. However whenever either cultural proximity or domestic pressure is measured by one of the genetic distance variables, which has the most detail then the triple interaction is always positive, as is the overall effect of similarity. Thus it could be that using interactions with two cruder measures is too much.

Next the theory also predicts that it is domestic pressure in one of the states that leads to conflict. Therefore the state that initiates the conflict should be the one that has internal domestic pressure. Although we should be careful with this measure because of first-strike advantage and because the theory only hostility-seeking first rather than war initiation,<sup>61</sup> it is nevertheless interesting to evaluate the data using initiation as a dependent variable. All five triple interactions are positive and the impact of similarity is always positive. Furthermore, when I use domestic pressure calculated from the point of view of the other country and use war initialization three out of five triple interaction terms turn negative and the overall impact of cultural similarity also becomes negative in these cases. Therefore you can see some evidence that the conflict is initialized by the country with the domestic pressure. So the third hypothesis seems to be confirmed too.

The results in this section are also quite robust. First note that the theory predicts that domestic pressure  $\mu$  needs to be manageable with transfers instead of democratization in case of a war. Since I assume the war either physically or mentally eliminates the culturally-similar enemy, a more correct measure of this pressure is when I do not take country 2 into account when calculating domestic pressure for country 1 in the country 1-2 dyad. I first calculate the domestic pressure (genetic distance) not as a mean of the surrounding culturally-similar but institutionally-different countries' excess growth rates but the sum of those. This is a little different measure because now a lot of culturally-similar institutionally-different countries having very similar growth rates does not mean that a single high neighboring growth rate would not cause higher domestic pressure. The results are robust to this measure too. Then I calculate this sum without including the present country 2, and the results are robust still: positive interaction with domestic pressure having a positive impact overall.

Second, is it not possible that it is not domestic pressure whose effect we are picking up but simply differential growth? If a country is growing at a slow rate, indicating a crisis, maybe it is a juicy target for other countries around? However this explanation ignores why it is only a juicy

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<sup>61</sup>Hostility seeking can then lead to a spiral that leads to war, initiated by either parties.

target for institutionally different and culturally similar countries. Indeed if I run the regressions taking a simple difference of the growth rates of the two countries in the dyad (averaged over five years as before) instead of domestic pressure, the results disappear: four out of five triple interactions turn negative.

Third as placebo tests, I should find no effect of raising domestic pressure if there is not combined institutional difference and cultural similarity. This is indeed true. If there is only institutional difference domestic pressure raises war-proneness in a single one of the five cases. If there is only cultural similarity, domestic pressure raises war-proneness only in three out of the five cases. If neither is present, in four cases does domestic pressure raise war-proneness but even those with varying significance levels.

Fourth, I also check for non-linearities. Since we have interaction terms we check it by comparing two models, a baseline one (logit with wars) and the one that includes squared terms for both cultural proximity and institutional difference, interacted with both cultural proximity and institutional difference. Although a chi-squared test of 193.85 is significant, it is nowhere as high as when including variables on their own. Actually the BIC criterion favors the simpler model. This becomes even more apparent once we include domestic pressure. There the Chi-squared value is again significant but relatively low at 231.08 and not just the BIC, but also the AIC criterion favors the simpler model.

Finally, again I restrict attention to geographically close dyads. Interestingly, now that we are accounting for domestic pressure, the results hold up almost perfectly if we take only contiguous (land) or same-region dyads. Let us start with the contiguous dyads. This means that we are eliminating much of geography's confounding effects. Recall that running the model without the domestic pressure term gave mixed results with the interaction of institutional difference and cultural similarity becoming negative for some cultural variables. However once I include the domestic pressure variable, the triple interaction is always positive and highly significant and big enough that evaluating a marginal change in cultural closeness again raises the average hostility level given institutional difference (evaluated at a maximal 20 Polity-score difference) and high domestic pressure (evaluated at 0.1). The same region dyads give similar results, with all institution-culture double interactions positive and the triple interaction with domestic pressure positive too. The only exception is the civilization where the double interaction has a negative sign but that sign is overwhelmed by the positive sign of the triple interaction.

## 4.5 World Values Survey

Next I turn to the more fine-grained analysis using the data from the World Values Survey. I start with the aggregate indicators. First I run regressions including either only the rational-secular values or the self-expression values. As predicted, the results are stronger for the rational-secular values, as in four out of five specifications the first two hypotheses are confirmed, it fails only in the case of the second wave. In the second wave, the interaction's coefficient is positive but not high enough to overwhelm a negative coefficient on cultural similarity alone. In contrast, the results disappear if I measure self-expression values on their own.

As rational-secular values de-emphasize patriotism, you might be afraid that cultural similarity only causes wars when both countries are low on rational-secular values. There are two reasons why this is not so. First, we should still explain why cultural similarity causes wars in the presence of institutional differences only. Second, I run a robustness check where I restrict attention to country-pairs where the first country (arbitrarily chosen) has an above-average rational-secular value.<sup>62</sup> The results hold up except for the case of the third wave.

Next I run regressions by including both the rational-secular and the self-expression similarity indicators. I measure cultural similarity by simultaneously increasing rational-secular as well as self-expression value similarity by the same amount. Therefore adding cultural similarity in the presence of institutional difference means that war-proneness increases by the coefficients on rational-secular and self-expression values, the coefficient on their interaction, the coefficients on each one's interaction with institutional difference as well as that on the triple interaction (rational-secular values, self-expression values, institutional difference). The results hold up for four out of five cases, the only one that fails is the first wave with its paltry 22 countries.

Now I turn to the data on individual questions. I start with two questions where I collected the proportion of a specific answer (both from the fourth wave 1999-2004). The first one asks: "How important is God in your life" (F063), and participants needed to use a scale of 1 to 10. I took the average of these responses. The second question asks how good the surveyed person judges "[h]aving a strong leader who does not have to bother with parliament and elections." The answering options are 'very good', 'good', 'bad' and 'very bad'.<sup>63</sup> I created two variables

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<sup>62</sup>As the values are standardized, this cut-off is 0. Which countries are chosen depends on which wave I am looking at.

<sup>63</sup>The complete wording is: "I'm going to describe various types of political systems and ask what you think about each as a way of governing this country. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country?", data from: <http://www.wvsevsdb.com/wvs/WVSanalyzeQuestion.jsp>

from this question. The first is simply the proportion of participants replying ‘very good’. The second adds up ‘very good’ and ‘good’. Both questions are answered by participants in 50 countries.

When using the three WVS question cultural measures based on these two variables, the first two hypotheses again hold up perfectly. I need to run a robustness check since these cultural variables were collected in the late 1990s and although they change slowly, they might be unsuitable for early years. When restricting data to the post-1989 period, the results hold up completely. It might be interesting to note that countries which are more religious are no more likely to fight, whereas countries which find it good or very good to have a strong leader not bothering with parliament and elections are less likely to fight. I have no hypothesis why this might be so.

Next I use all my questions about political culture to try to tease out what part of culture plays the crucial role of institutional diffusion. I build a cultural similarity variable between two countries by taking average responses (missing values and don’t knows discarded) and calculating the absolute difference between them, and finally multiplying this value by minus one. The questions were drawn from different waves all in the late twentieth, early twenty-first century. It would be ideal if we had surveys from earlier years as well. However given that cultural values evolve slowly, the countries where respondents are most likely to give a certain kind of answer to a question are the countries where a survey a hundred years before would have most likely found a similar response. In addition, I also examine the hypotheses on the restricted sample when questions were asked.

First, I find that social learning is more about agents understanding each other but valuing different institutional setups than by cultural distance diminishing understanding. The results show that using any of the five questions about the importance of the freedom of speech, of a strong leader, of political violence, of maintaining order and of god, the results hold up for each of these questions. By contrast, the results do not always hold up perfectly when considering questions about what respondents perceive to be essential characteristics of democracy. In particular the results hold up for the following: whether the respondents deem is an essential characteristic of democracy that people choosing their leaders in free and fair elections, that the army takes over when the government is incompetent, that the economy is prospering or that criminals are severely punished. The signs are correct but not significant for whether the respondent thinks religious authorities interpreting the laws to be essential for democracy. The

results do not hold up for whether civil rights protecting people's liberty, or whether women have equal rights. Thus there is some evidence that understanding democracy matters, but the results for different value systems seem stronger.

I have also included placebo questions for which my hypotheses should not hold up. Indeed the coefficients on the importance of politics, the importance of adventure and risk taking, whether it is leisure or work that makes life worth living and the willingness to fight for the country are of the wrong sign. For the questions, whether the government should reduce environmental pollution, and whether the respondents sees themselves as a citizen of their country, the coefficients' signs are correct but are not significant. In sum, the placebo tests indeed confirm that only elements of political culture which reflect attitudes toward institutions matter.

Next, the different questions also allows me to consider what elements of political culture are important for my mechanism and how they change over time. This is an interesting question to consider, but we should be aware of my approach's limitations too. Recall that the questions are not time-varying, so I am assuming that the same country is the most likely to have certain responses in 1800 as in 2000. Although this approach is imperfect, looking at serial correlations is encouraging. For two variables data from all five waves over roughly 25 years are available and the auto-correlation between the first and the fifth wave is 0.97 (for the 'God is important' variable), and 0.96 respectively (for the willingness to fight for the country). This means that a rough predicted correlation of  $0.96^8 = 0.72$  or  $0.97^8 = 0.78$  between values in 1800 compared to values in 2000. A further caveat is that as I restrict my sample, I have fewer countries to work with in each period.

I have divided the time period analysis into five periods based on Huntington (1991). He writes there have been three waves of democratization with reverse waves in between (p.16). The first wave included mostly Protestant countries between 1828-1926, the first reverse wave occurred from 1922-42, with a return to traditional forms of authoritarian rule or to mass-based totalitarianism, reflecting the rise of communist, fascist and militaristic ideologies. The second wave occurred between 1943-62, in the framework of the Cold War and decolonization from 1958-75, mostly in developing countries, often including the military and bureaucratic authoritarianism. Finally the third wave started in 1974, caused by changes in the Catholic church, in US policy, demonstration effects, economic modernization and decreasing legitimacy of authoritarian regimes.

The first period I consider is the 'classical age' corresponding to the first wave: 1815-1922.

Based on my results, in this age, two cluster of values mattered: enlightened liberal values and traditional religious values. The results hold up for questions about protecting the freedom of speech, political violence, people choosing leaders in free and fair elections, civil rights protection, criminals punished and women's rights. Traditional values show religion also mattered: the importance of god and whether democracy includes religious authorities interpreting laws. By contrast, questions about strong leaders, maintaining order, economic prosperity and the army taking over did not come matter.

The second period is the age of 'totalitarian upheaval', in which I include the first reverse wave, the second wave and the second reverse wave: 1922-73. I conducted the analysis separately for these short periods but they seem to yield similar results. This is the period characterized by the insecurity of the Great Depression, the rise of totalitarian regimes and the military tensions of the Cold War. Thus moving away from liberal values, values about strong leaders, maintaining order, the army taking over when the government is incompetent, the economy prospering started to matter. In addition, some classical liberal values such as protecting the freedom of speech, and people choosing their leaders in free and fair elections continued to matter, but others such as civil rights protection lost their function. Religious questions also stopped playing a role.

The final period is Huntington's third wave starting in 1974, which is a period of 'classical revival'. I analyze both the main third wave period (1974-92) and the subsequent period (1993-2007) when maybe even a third reverse wave may have started. This classical revival age means that enlightened liberal values such as the protection of the freedom of speech, people choosing their leaders in free and fair elections, the protection of civil rights and women's rights matter again, and more mundane values from the age of 'totalitarian upheaval' matter less: maintaining order, the army taking over, the economy prospering all matter less. Religion also surges again, with both the importance of god and religious authorities interpreting laws playing an important part. One question from the totalitarian upheaval age keeps playing a part, like the one about strong leaders.

It therefore seems that following a more idealistic nineteenth-century social learning, realpolitik considerations took over in the time of the emergence of communism, fascism and mass-based politics, which then turned back toward idealism. What accounts for these changes? A tentative answer may be found in restricting the sample to between 1922-29. In this pre-Great Depression period, strong leaders, and the military taking over when the government is

competent started to matter, thus it was not necessarily the Great Depression that changed people's value rankings (logically, the economic values did not matter in the 1922-9 period yet). One speculative possibility is that the carnage of the First World War changed perspectives. Concentrating on the period leading up to 1914 (1900-14) I indeed get that this period still fits in well with the classical first wave cultural values of protecting the freedom of speech (although free and fair elections and civil rights do not confirm the hypothesis in this period), whereas maintaining order and the army taking over did not yet matter. Therefore the First World War could possibly have disillusioned fighters for classical liberal values.

The reverse side of the question is, what caused the revival of classical values for transmitting democracy around 1974? Following speculatively the logic above, notice that this is around the time when the youngest people among those with a political voice are the ones who did not experience the Second World War personally. For them an idealist thinking might be more natural.

Beyond this global analysis, I should also consider that different regions of the world may be transmitting conflict through different cultural variables even in the same year. This is no problem as long as some values are dominating globally. Nevertheless, for additional evidence, I restrict my attention to only Europe. Earlier periods involve overwhelmingly European countries, however especially during the third wave, Europe might be different from the rest of the world. Did Europe also undergo a 'classical revival'? Examining the post-1973 years in Europe confirms this result. As is logical, the religious values in this continent do not confirm the hypothesis. But the classical liberal values of use of political violence, civil rights protection and women's rights all confirm the theory, while strong leaders, order and the army taking over are not important.

The fact that some questions are available for multiple of the five waves of the World Values Survey allows me to conduct the analysis using dyad fixed effects. These regressions make sure that it is not particular characteristics of country-pairs that drive my results. Only one question, the one about the importance of god is available for all five waves, so I use this question in my fixed effects regressions. The results hold up, although the significance levels on the cultural similarity variable and the interaction drop.

Another advantage of the specific questions is that they are uncorrelated with geography. Unlike my broader cultural measures, like civilization and religion, calculating pairwise correlations between similarity in question answers and distance or contiguity results in a wide variety

of numbers, some negative, some positive, some around 0. This should serve as more evidence that it is not physical proximity that is driving the results.

I am also running regressions on the flipside predictions of the theory: democratization. The same variables that lead to war should also lead to democratization. Following the literature, here in the regressions I also add the fragmentation variables and Polity scores of both countries, as well as GDP levels and GDP growth for country pairs for which that data is available (second half of the twentieth century). The dependent variable is change in the polity score (lagged forward) of the first country, and the institutional difference variable is defined in terms of how more democratic the second country is.

The results of democratization confirm the war analysis. For the whole sample, the value questions hold up, as well as most of the understanding questions. For the first wave, again classical liberal values matter, protecting the freedom of speech and civil rights as well as the religious questions. Interestingly, in this analysis the strong leader and the army taking over are also confirming the theory. For the 1923-73 upheaval years, a strong leader, maintaining order, the army taking over and the economy prospering matter just as in the war analysis, liberal questions such as people choosing their leaders in free and fair elections and civil rights take the back seat. In the third wave starting in 1974 some liberal values such as freedom of speech are confirming the hypotheses, although interestingly civil rights and free and fair elections are not among them. Religious values also confirm, while strong leader, political violence, order and the economy are not confirming, just as in the war case.

In sum, the results hold up using more fine-grained cultural measures from the World Values Survey. This happens to both the main factors behind the variation in culture according to the survey, as well as with survey questions asking about democratic and religious values. I have also used some placebo specifications to show that only specific patterns of orientation toward political institutions play the role specified by my theory.

## 4.6 Summary

I have found evidence for all of my three hypotheses. Cultural similarity increases war-proneness and hostility when coupled with institutional difference, even after using the usual controls, in with many geographic variables. I also found the most war-prone dyad to be the one with institutional difference and cultural similarity. Finally, domestic pressure measured through information revelation from institutionally-different but culturally-similar nations, contributes

to war-proneness in the presence of cultural similarity and institutional difference. However, the usual caveats apply as in any paper using the MID data. Nevertheless, my results were robust to changing specifications, variables, and adding non-linearities.

I have also used the World Values Survey data to find more specific measures of political culture that is driving my theory. In addition, similarity in answers to these cultural questions are often not correlated with physical proximity, so I could show that cultural proximity is not a mismeasurement of physical closeness. Finally, I could also use non-political culture measures as well as political culture measures unrelated to institutions as placebo tests.

Finally, using a new measure of domestic pressure I also found evidence of a type of a rally-round-the-flag effect since the war initiator indeed appears to be the country with the domestic pressure. The mixed evidence in the literature so far could be because it has not been considered that countries are targeted specifically.

## 5 Conclusions

I have argued that cultural similarity causes wars and hostility. This is because when coupled with institutional difference, a dictator will want to eliminate a culturally-close democracy to stem social learning. Using a bargaining framework with three agents, I built a rational model to test this idea. Then I turned to statistical analysis, finding evidence not only for cultural similarity increasing war-proneness and hostility when coupled with institutional difference, but also that the most war-prone country pairs are the ones with institutional difference and cultural similarity. My results are robust to controlling for geography extensively, changing specifications, variables, and adding non-linearities. The results are somewhat stronger for dyads which are not in the same region or do not share a border. This could be welcome as a main task is to disentangle cultural similarity's impact from geographic variables. Unmeasurable geographic variables are presumably more important in close proximity, so the result that interregional warfare has more robust evidence is encouraging.

The theory and the evidence should help policy-makers think differently about wars and in particular realize that soft power (the appealing nature of democracy to a culturally-similar dictatorship's public) can have a darker side as a source of inefficient wars.

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## A Tables and Figures

	CULTURALLY CLOSE	CULTURALLY DISTANT
REGIME SAME	peace Britain-France	peace Britain-Portugal
REGIME DIFFERENT	war/regime change Britain-Germany	peace Britain-Russia

Table 1: The model’s predictions cross-sectionally during the First World War. In the case of culturally-close but institutionally-distant pairs of countries regime change should occur if domestic pressure is very high and war should occur if it is high but manageable, while peace occurs if it is low.

	SAME CIV	DIFFERENT CIV
REGIME SAME	peace 1.33%	peace 0.76%
REGIME DIFFERENT	war 2.28%	peace 0.92%

Table 2: The model’s predictions and empirics with ‘same civilization’ (binary): average war probabilities, mean war probability: 0.83%

	SAME REL	DIFFERENT REL
REGIME SAME	peace 1.08%	peace 0.73%
REGIME DIFFERENT	war 1.38%	peace 0.82%

Table 3: The model’s predictions and empirics with ‘same religion’ (binary): average war probabilities, mean war probability: 0.83%

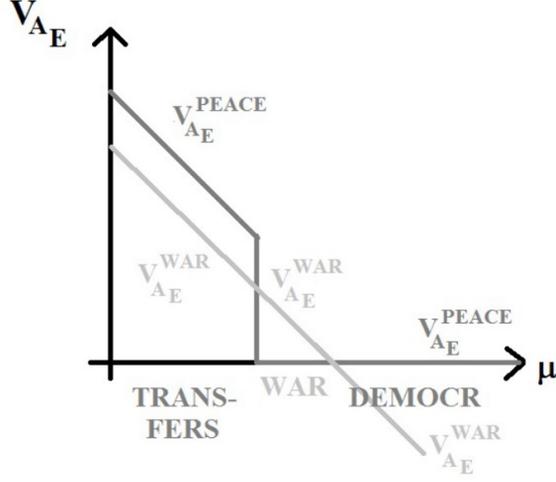


Figure 1: Under the assumption that war is costly (Assumption 1) we have that for low levels of domestic pressure  $V_{A_E}^{WAR} = V_{A_E}^{PEACE} - \frac{c_A - c_B}{1-\beta} + \frac{\gamma}{1-\beta} < V_{A_E}^{PEACE}$ . However when the commitment constraint starts to bind,  $V_{A_E}^{PEACE}$  jumps discontinuously down, while  $V_{A_E}^{WAR}$  is still continuous, making it possible that there is a mid-region between democratization and transfers where war occurs.

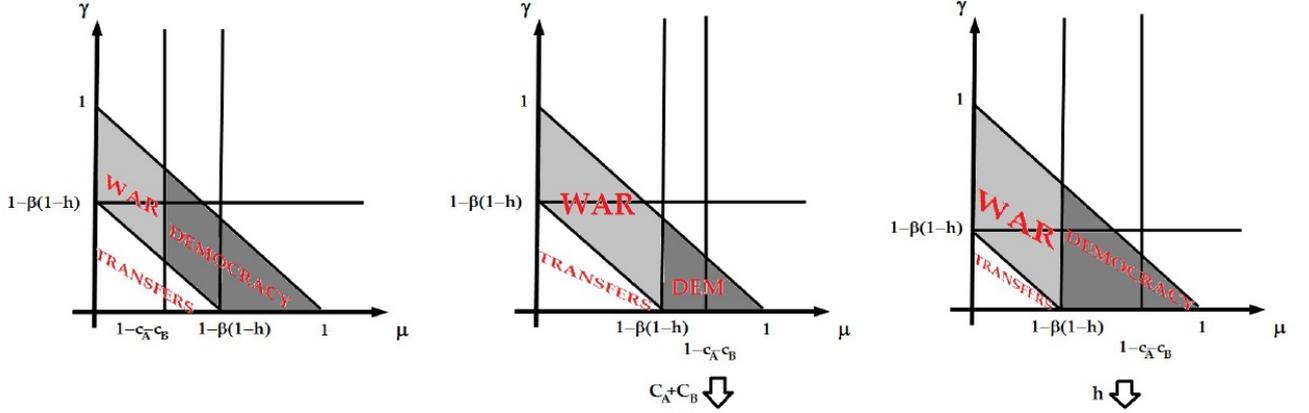


Figure 2: Outcomes and some comparative statics

## B Proofs and Extensions

### B.1 Proof of Lemma 1

Transform  $g_A(p, t)$  and  $g_B(p, t)$  to get  $a = \frac{g_A(p, t) - g^L(p, A, t)}{g^H(p, A, t) - g^L(p, A, t)}$  and  $b = \frac{g_B(p, t) - g^L(p, B, t)}{g^H(p, B, t) - g^L(p, B, t)}$  to get two Bernoulli random variables. Notice that the correlation coefficient between  $a$  and  $b$  is still  $C$  (since  $cov(c_1x + c_2, c_3y + c_4) = c_1c_3 \cdot cov(x, y)$  for  $c_1, c_2, c_3, c_4$  constants). Then  $a$  and  $b$  both take on 1 and 0 with  $E[a] = \pi(p, A, t)$  and  $E[b] = \pi(p, B, t)$ .  $ab$  takes on 1 and 0 too, and  $\text{Prob}(ab = 1) = \text{Prob}(g_A(p, t) = g^H(p, A, t), g_B(p, t) = g^H(p, B, t)) = \tilde{\pi}(p, A, t)\pi(p, B, t)$ , where the last equation follows from Bayes' rule.

Then writing out  $C$ :

$$C = \frac{\text{cov}(a, b)}{\sqrt{\text{var}(a)}\sqrt{\text{var}(b)}} = \frac{E[ab] - E[a]E[b]}{\sqrt{\text{var}(a)}\sqrt{\text{var}(b)}} = \frac{(\tilde{\pi}(p, A, t) - \pi(p, A, t))\pi(p, B, t)}{\sqrt{\pi(p, A, t)(1 - \pi(p, A, t))}\sqrt{\pi(p, B, t)(1 - \pi(p, B, t))}}$$

or

$$\tilde{\pi}(p, A, t) - \pi(p, A, t) = C\sqrt{\pi(p, A, t)(1 - \pi(p, A, t))}\sqrt{\frac{1}{\pi(p, B, t)} - 1}.$$

## B.2 Proof of Lemma 2

We use backward induction. After a (victorious) war, how much will  $A_E$  need to transfer to  $A_C$  to avoid a revolution? With a revolution the utility of  $A_C$  would be:

$$V_{A_C}^r(\mu = \mu_H) = \frac{\mu_H}{1 - \beta}, \quad (2)$$

so  $A_E$  needs to give a transfer  $\hat{\mu}_H$  today to  $A_C$  which brings  $A_C$  to an expected utility of  $\frac{\mu_H}{1 - \beta}$ . Is  $A_E$  able to do this?

The maximum transfer that  $A_E$  can offer is  $\hat{\mu}_H = S_A = 1$ . If  $A_C$  accepts this then he knows that  $A_E$  is not able to commit to give any transfer at all in non-revolutionary periods, which means:

$$V_{A_C}^p(\mu = \mu_H) = \frac{1}{1 - \beta} - \frac{\beta(1 - h)}{1 - \beta}, \quad (3)$$

where in a proportion of  $1 - h$  periods  $A_C$  gets nothing and in the rest they get everything.<sup>64</sup> Since no more than  $S_A = 1$  can be transferred to the citizens, buying the citizens off is not always possible. Whenever the citizens cannot be bought off with transfers ( $V_{A_C}^r(\mu = \mu_H) \geq V_{A_C}^p(\mu = \mu_H)$ ) we say that the ‘commitment constraint’ is binding:

$$\frac{\mu_H}{1 - \beta} \geq \frac{1}{1 - \beta} - \frac{\beta(1 - h)}{1 - \beta}, \quad (4)$$

or

$$\mu_H \geq 1 - \beta(1 - h), \quad (5)$$

Note that when the commitment constraint is not binding, the minimum amount of transfer to avoid a revolution is  $\hat{\mu}_H = \frac{\mu_H}{1 - \beta(1 - h)}$ ,<sup>65</sup> so that the higher is the probability of having high revolutionary

<sup>64</sup>This follows similar logic to Powell 2006: we are looking for an upper bound and the elite is willing to redistribute all to the citizens today to avoid a revolution but cannot credibly commit doing so in the future too.

<sup>65</sup>This is not simply  $\mu_H$  because the citizens know that they have some de facto power in the future  $h$  share of the time. The elite wants to give the citizens so much transfers  $\tau$  to get the citizens’ utility to  $\frac{\mu_H}{1 - \beta}$ , knowing that (we are looking at MPE’s) he will give the same  $\tau$  in any high period in the future:  $\frac{\tau}{1 - \beta} - \frac{\beta(1 - h)\tau}{1 - \beta} = \frac{\mu_H}{1 - \beta}$ , from which:  $\tau = \frac{\mu_H}{1 - \beta(1 - h)}$ . If there is no future high period ( $h = 0$ ), this transfer is logically  $\frac{\mu_H}{1 - \beta}$ , if there are

pressure in the future, the lower this transfer needs to be because there is a higher chance in the future that  $A_C$  will demand transfers again. We can call this  $\hat{\mu}_H$  amount a sort of dynamic revolutionary pressure.

Now let us turn to the war. In a war the total resource sized  $S_A + S_B$  is taken over by probability  $\frac{S_A}{S_A+S_B}$ . In the victorious case  $\hat{\mu}_H$  needs to be transferred to  $A_C$  in high periods. From the point of view of  $B$ , the whole resource  $S_A + S_B$  is taken over with probability  $\frac{S_B}{S_A+S_B}$ , leading to expected utility  $S_B - \frac{c_B}{1-\beta}$ . Therefore the maximum amount of transfer from  $B$  to  $A_E$  to avoid a war is  $\frac{c_B}{1-\beta}$ .

Note that if the commitment constraint is not binding the war yields a net expected utility:

$$V_{A_E}^w(\mu = \mu_H) = \frac{S_A}{S_A + S_B}(S_A + S_B) \left( (1 - \hat{\mu}_H) + \beta \frac{h(1 - \hat{\mu}_H) + (1 - h)1}{1 - \beta} \right) - \frac{c_A + c_B}{1 - \beta}, \quad (6)$$

This can be rearranged to (using  $S_A = 1$ ):

$$V_{A_E}^w(\mu = \mu_H) = \frac{1}{1 - \beta} - \frac{(1 - \beta(1 - h))\hat{\mu}_H}{1 - \beta} - \frac{c_A + c_B}{1 - \beta}, \quad (7)$$

which has a nice interpretation: the first term is giving all of the unit resource to  $A_E$  forever; the second term is how much is expected to be needed to be given to  $A_C$  in order to avoid a revolution (if  $h = 1$  this term is  $\frac{-\hat{\mu}_H}{1-\beta}$  since it is given every period, if  $h = 0$  the term is  $-\hat{\mu}_H$  because it is given only in this period); the third term is the cost of war. This war cost is the combined cost of war  $c_A + c_B$ , which is just an accounting trick: we are taking the opportunity cost  $c_B$  into consideration here, since this is the amount of transfer  $B_C$  would be willing to make to  $A_E$  to avoid being attacked. Substituting in for  $\hat{\mu}_H$  yields:

$$V_{A_E}^w(\mu = \mu_H) = \frac{1 - \mu_H}{1 - \beta} - \frac{c_A + c_B}{1 - \beta}. \quad (8)$$

### B.3 Subgame Perfect Nash Equilibria instead of Markov Perfect Nash Equilibria

Since many of our results depend on commitment problems, it could be a legitimate concern that this commitment problem only arises because we focus on past-independent MPE and once we extend our horizon to the larger set of subgame perfect equilibria, where infinite punishment strategies are allowed, we should lose the possibility of war. Nevertheless, results are not driven by the restricted equilibrium concept. Indeed punishment is allowed in SPNE, however the elite still cannot commit to redistribution perfectly because if it deviates, punishment cannot occur immediately as it deviates in low revolutionary periods.

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always high periods in the future then it is  $\mu_H$ .

The structure of the MPE resembles that of the SPE with different cutpoints. Mathematically a deviation to no redistribution in the low revolutionary period yields:

$$V_{AE}^{dev}(\mu = \mu_L) = 1 + \beta(1-h) + \beta^2(1-h)^2 + \beta^3(1-h)^3 + \dots = \frac{1}{1 - \beta(1-h)},$$

where the flow of payments only keeps on going through period  $n$  if there are  $n$  consecutive low periods. Now for incentive compatibility, if the elite redistributes  $\tau_H$  in high periods and  $\tau_L$  in low periods that should yield a higher utility than  $V_{AE}^{dev}(\mu = \mu_L)$  in low periods:

$$1 - \tau_L + \beta \frac{h(1 - \tau_H) + (1 - h)(1 - \tau_L)}{1 - \beta} \geq \frac{1}{1 - \beta(1 - h)}, \quad (9)$$

with the other incentive compatibility constraint (for citizens to avoid revolution) being:

$$\tau_H + \beta \frac{h\tau_H + (1 - h)\tau_L}{1 - \beta} \geq \frac{\mu_H}{1 - \beta}. \quad (10)$$

Now what we need for war to be possible is that there exists a pair  $\tau_H, \tau_L$  that satisfies (9) and (10) but for parameters of  $\mu_H$  and  $\gamma$ , no pair of transfers exists which satisfy (9) but does not satisfy:

$$\tau_H + \beta \frac{h\tau_H + (1 - h)\tau_L}{1 - \beta} \geq \frac{\mu_H + \gamma}{1 - \beta}. \quad (11)$$

To see that we can find such a case, assume that we cannot. That means that for a given pair of transfers that are incentive compatible for the elite, we cannot set  $\mu_H + \gamma$  high enough for it not to satisfy:

$$\tau_H + \beta \frac{h\tau_H + (1 - h)\tau_L}{1 - \beta} \geq \frac{\mu_H + \gamma}{1 - \beta}. \quad (12)$$

Let us try doing this. To minimize the incentive for the elite to deviate set  $\tau_L$  as low as possible since in high periods it will not deviate anyways, so we can have  $\tau_H = 1$ . Then  $\tau_L$  should be given by:

$$\frac{(1 - \beta + \beta(1 - h))(1 - \tau_L)}{1 - \beta} = \frac{1}{1 - \beta(1 - h)}, \quad (13)$$

or or:

$$\tau_L = \beta(1 - h). \quad (14)$$

Now plug these values  $\tau_H$  and  $\tau_L$  in to the citizen revolution-avoiding (commitment) constraint:

$$1 + \beta \frac{h + (1 - h)\beta(1 - h)}{1 - \beta} \geq \frac{\mu_H + \gamma}{1 - \beta}, \quad (15)$$

which means that

$$1 - \beta + \beta(h + (1 - h)^2\beta) \geq \mu_H + \gamma, \quad (16)$$

where the left-hand side is less than 1 since  $h + (1 - h)^2\beta$  is less than 1 because  $(1 - h)^2\beta$  is less than  $1 - h$ . So we can in fact always find a  $\mu_H$  and  $\gamma$  so that  $\mu_H \leq 1 - \beta + \beta(h + (1 - h)^2\beta) < \mu_H + \gamma$ . Therefore war will be a possibility in the model.

Therefore extending the analysis to SPNE changes the cut-off points and gives more commitment power to the elite (transfers in low periods may be positive  $\tau_L \geq 0$ ), which makes both democratization and war less likely but for a smaller range of values we still have the equilibrium structure described in the case of MPE's.

## B.4 Extension: Two-Sided Inspiration

So far we have considered only inspirational links between one culturally close elite  $A_E$  and opposition  $B_C$ , however it is natural to think that enhanced domestic pressure can go both ways: during the early Cold War, both democrats in the Soviet Union  $A_C$  and communists in the West  $B_E$  could look to the other country for inspiration and information. Extending the model shows us two results. First, the one-sided MPE described above remains unchanged with adding a domestic level to  $B$  as long as the commitment constraint in  $B$  is not binding (so that redistribution solves the issue) or regime change in  $B$  is unavoidable (commitment constraint binds even with  $A = A_C$ ), therefore the result is quite general. Second when war can solve both  $A_E$ 's and  $B_C$ 's commitment problem<sup>66</sup> war becomes easier:  $\mu_H^A + \mu_H^B \leq 2 - (c_A + c_B)$  as the combined cost of war  $\frac{c_A + c_B}{1 - \beta}$  is now covered by not one benefit term<sup>67</sup> but two.<sup>68</sup>

With two-sided inspiration our standard benefits-not-greater-than-costs assumption modifies to:

### Assumption 2.

$$\gamma_A + \gamma_B < c_A + c_B$$

Let us start with  $\mu^A(t) = \mu_H^A$  and  $\mu^B(t) = \mu_H^B$ , when pressure is high in both countries. The commitment constraint is not binding in  $A$  if  $\mu_H^A + I(B = B_E)\gamma_C \leq 1 - \beta(1 - h_A)$  and similarly, it is not binding in  $B$  if  $\mu_H^B + I(A = A_E)\gamma_E \leq 1 - \beta(1 - h_B)$ , where  $I(\cdot)$  is just the indicator function used for notational simplicity. In this case redistribution is possible in both countries. The minimal amounts of redistribution to avoid revolutions are  $\hat{\mu}_H^A = \frac{\mu_H^A}{1 - \beta(1 - h_A)}$  and  $\hat{\mu}_H^B = \frac{\mu_H^B}{1 - \beta(1 - h_B)}$  respectively.

<sup>66</sup>  $\mu_H^A \leq 1 - \beta(1 - h_A)$  but  $\mu_H^A + \gamma_A \geq 1 - \beta(1 - h_A)$  and  $\mu_H^B \leq 1 - \beta(1 - h_B)$  yet  $\mu_H^B + \gamma_B \leq 1 - \beta(1 - h_B)$

<sup>67</sup>  $V_{A_E}^w - V_{A_E}^p = \frac{1 - \mu_H^A}{1 - \beta}$

<sup>68</sup>  $(V_{A_E}^w - V_{A_E}^p) + (V_{B_C}^w - V_{B_C}^p) = \frac{(1 - \mu_H^A) + (1 - \mu_H^B)}{1 - \beta}$

A war yield the usual expected benefits, except for now let us not account for the opportunity cost of receiving a transfer from abroad ( $-c_B$ ) in  $A_E$ 's value function. Then:

$$V_{A_E}^w = p \frac{1}{p} \left( \frac{1 - \hat{\mu}_H^A}{1 - \beta} + \beta \frac{(1 - h_A) \hat{\mu}_H^A}{1 - \beta} \right) - \frac{c_A}{1 - \beta},$$

where the second term again reflects the capital gain whenever  $\mu^A(t) = \mu_L^A$  and:

$$V_{B_C}^w = (1 - p) \frac{\frac{1}{p}}{\frac{1-p}{p}} \left( \frac{1 - \hat{\mu}_H^B}{1 - \beta} + \beta \frac{(1 - h_B) \hat{\mu}_H^B}{1 - \beta} \right) - \frac{c_B}{1 - \beta},$$

, where  $B_C$  gains a territory of size  $\frac{1}{p}$  instead of size  $\frac{1-p}{p}$  if he wins, which happens with probability  $1 - p$ . These expressions again can be simplified to:

$$V_{A_E}^w = \frac{1 - \mu_H^A}{1 - \beta} - \frac{c_A}{1 - \beta},$$

and

$$V_{B_C}^w = \frac{1 - \mu_H^B}{1 - \beta} - \frac{c_B}{1 - \beta},$$

since both  $A_E$  and  $B_C$  need to give just enough to their domestic opposition to avoid a revolt.

Therefore once again we can see that if no commitment problem is present, war is never an equilibrium-path outcome, since  $V(A_E)^w + V(B_C)^w < V(A_E)^p + V(B_C)^p$ :

$$\frac{2 - \mu_H^A - \mu_H^B}{1 - \beta} - \frac{c_A + c_B}{1 - \beta} < \frac{2 - \mu_H^A - \mu_H^B}{1 - \beta} - \frac{\gamma_A + \gamma_B}{1 - \beta},$$

where the inequality arises from the war-is-costly assumption.

War only happens if it helps solve at least one of the commitment problems. The case with one-sided inspiration earlier was exactly the case when  $B$ 's domestic conflict could be ignored because the commitment constraint there was not binding, so reanalyzing that case is futile. Let us turn instead directly to the case where the commitment constraint is binding in both countries. It is easy to see that if a war would still lead to regime change in *both* countries, again it is suboptimal and will not occur. How about the case when a war saves  $A_E$  from democratization but not  $B_C$  (from a coup)? This is the case when  $\mu_H^A \leq 1 - \beta(1 - h_A)$  but  $\mu_H^A + \gamma_A \geq 1 - \beta(1 - h_A)$  and  $\mu_H^B \geq 1 - \beta(1 - h_B)$ . Then  $V_{A_E}^w + V_{B_C}^w \geq V_{A_E}^p + V_{B_C}^p$  becomes  $\frac{(1 - \mu_H^A + 0) - (c_A + c_B)}{1 - \beta} \geq 0$ , which is the same condition  $\mu_H^A \leq 1 - c_A + c_B$  that we had for war in the one-sided case. Therefore the one-sided equilibrium describes the conditions fully when the domestic conflict in  $B$  is such that war is either not necessary to solve it (redistribution solves it) or war is not sufficient to solve it (regime change in unavoidable).

Finally, let us look at the case when both commitment problems can be solved by a war:  $\mu_H^A \leq$

$1 - \beta(1 - h_A)$  but  $\mu_H^A + \gamma_A \geq 1 - \beta(1 - h_A)$  and  $\mu_H^B \leq 1 - \beta(1 - h_B)$  yet  $\mu_H^B + \gamma_B \leq 1 - \beta(1 - h_B)$ .  
 War happens if  $V_{AE}^w + V_{BC}^w \geq V_{AE}^p + V_{BC}^p$  or:

$$\frac{((1 - \mu_H^A) + (1 - \mu_H^B)) - (c_A + c_B)}{1 - \beta} \geq 0$$

or

$$\mu_H^A + \mu_H^B \leq 2 - (c_A + c_B).$$

## C World Values Survey Questions

Valuing Institutional Systems:

- Question about free speech (E10): *I will read you some goals which different people consider more or less important for this country. Could you please tell me how important you consider each one of these goals to be: would you say it is very important, important, not very important or not at all important for this country? Protecting freedom of speech.* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Very important; 2 Important; 3 Not very important; 4 Not at all important. Available: 3rd wave
- Question about strong leader (E114): *I'm going to describe various types of political systems and ask what you think about each as a way of governing this country. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country? Having a strong leader who does not have to bother with parliament and elections.* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Very good; 2 Fairly good; 3 Bad; 4 Very bad. Available: 3rd, 4th, 5th waves
- Question about political violence (E198): *E198. Here's one more statement. How strongly do you agree or disagree with it?. 'Using violence to pursue political goals is never justified'.* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Strongly agree; 2 Agree; 3 Disagree; 4 Strongly disagree. Available: 3rd, 5th waves
- Question about maintaining order in the nation (E007): *I will read you some goals which different people consider more or less important for this country. Could you please tell me how important you consider each one of these goals to be: would you say it is very important, important, not very important or not at all important for this country? Maintaining order in the nation.* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Very important; 2 Important; 3 Not very important; 4 Not at all important. Available: 3rd wave

- Question about importance of God (F063) *How important is God in your life? Please use this scale to indicate- 10 means very important and 1 means not at all important.* Possible answers:-5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Not at all important; 2 2; 3 3; 4 4; 5 5; 6 6; 7 7; 8 8; 9 9; 10 Very important. Available: all (1st-5th) waves

Subjective Understanding of Institutions. All questions read: *Many things may be desirable, but not all of them are essential characteristics of democracy. Please tell me for each of the following things how essential you think it is as a characteristic of democracy. Use this scale where 1 means 'not at all an essential characteristic of democracy' and 10 means it definitely is 'an essential characteristic of democracy' ((Read out and code one answer for each)):* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Not an essential characteristic of democracy; 2 2; 3 3; 4 4; 5 5; 6 6; 7 7; 8 8; 9 9; 10 An essential characteristic of democracy. Available: 5th wave. Questions:

- Religious authorities interpret the laws (E225)
- People choose their leaders in free elections (E226)
- The army takes over when government is incompetent (E228)
- Civil rights protect people's liberty against oppression (E229)
- The economy is prospering (E230)
- Criminals are severely punished (E231)
- Women have the same rights as men (E233)

Placebo Questions not pertaining to the mechanism:

- Importance of politics (A004): *For each of the following aspects, indicate how important it is in your life. Would you say it is: Politics* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Very important; 2 Rather important; 3 Not very important; 4 Not at all important. Available: 2nd-5th waves
- Adventure and risks are important (A195): *Now I will briefly describe some people. Using this card, would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you? (Code one answer for each description): Adventure and taking risks are important to this person; to have an exciting life.* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer;

-1 Dont know; 1 Very much like me; 2 Like me; 3 Somewhat like me; 4 A little like me; 5 Not like me; 6 Not at all like me. Available: 5th wave

- Government should reduce environmental pollution (B003): *I am now going to read out some statements about the environment. For each one read out, can you tell me whether you agree strongly, agree, disagree or strongly disagree? (Read out each statement and code an answer for each) The Government should reduce environmental pollution, but it should not cost me any money.* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Strongly agree; 2 Agree; 3 Disagree; 4 Strongly disagree. Available: 2nd, 4th, 5th waves
- Leisure (C008): *Which point on this scale most clearly describes how much weight you place on work (including housework and schoolwork), as compared with leisure or recreation? A Its leisure that makes life worth living, not work B Work is what makes life worth living, not leisure* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Its leisure that makes life worth living, not work; 2 2; 3 3; 4 4; 5 Work is what makes life worth living, not leisure. Available: 3rd, 4th, 5th waves
- Willingness to fight for the country (E012): *Of course, we all hope that there will not be another war, but if it were to come to that, would you be willing to fight for your country?* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 0 No; 1 Yes; 2 Depends. Available: all (1st-5th) waves
- Feel like citizen (G021): *People have different views about themselves and how they relate to the world. Using this card, would you tell me how strongly you agree or disagree with each of the following statements about how you see yourself? ((Read out and code one answer for each) statement): I see myself as citizen of the [country] nation.* Possible answers: -5 Missing; Unknown; -4 Not asked in survey; -3 Not applicable; -2 No answer; -1 Dont know; 1 Strongly agree; 2 Agree; 3 Disagree; 4 Strongly disagree. Available: 5th wave

## D Statistical Tables

Variable	n	Min	q <sub>1</sub>	$\tilde{x}$	$\bar{x}$	q <sub>3</sub>	Max	#NA
hostility	1600718	0	0	0	0.0	0	5	291168
war	1600718	0	0	0	0.0	0	1	291168

Table 4: Summary Statistics

Variable	n	Min	q <sub>1</sub>	$\tilde{x}$	$\bar{x}$	q <sub>3</sub>	Max	#NA
absolute polity difference	1412542	0	2	6	7.6	14	20	479344
exactly one democracy	1412542	0	0	0	0.4	1	1	479344
both democratic	1412542	0	0	0	0.1	0	1	479344
abs diff: executive constraint	1417402	0	1	2	8.2	4	6	474484
abs diff: political competition	1413722	0	1	4	9.4	8	9	478164
abs diff: competitiveness of participation	1891886	0	0	2	20.2	4	5	0
abs diff: competitiveness of executive recruitment	1891886	0	0	1	19.6	3	3	0

Table 5: Summary Statistics

Variable	n	Min	q <sub>1</sub>	$\tilde{x}$	$\bar{x}$	q <sub>3</sub>	Max	#NA
genetic distance (div)	1346984	0.0	0.0	0.0	0.0	0.0	1.0	544902
genetic distance (minus)	1346984	0.0	0.6	0.7	0.7	0.9	1.0	544902
same religion	1311042	0.0	0.0	0.0	0.5	1.0	1.0	580844
shared religion	732516	0.0	0.1	0.2	0.3	0.5	1.0	1159370
same civilization	1376420	0.0	0.0	0.0	0.2	0.0	1.0	515466

Table 6: Summary Statistics

Variable	n	Min	q <sub>1</sub>	$\tilde{x}$	$\bar{x}$	q <sub>3</sub>	Max	#NA
sameregion	1891886	0	0	0	0.2	0	1	0
distance	1891886	0	2223	4381	4515.6	6438	12347	0
contiguity on land	1642080	0	0	0	0.0	0	1	249806
colonial contiguity	1642080	1	6	6	5.9	6	6	249806

Table 7: Summary Statistics

	Cultural Proximity	Mean War	Mean Hostility	Mean Regime Mismatch	Mean War when Regime Mismatch	Mean Hostility when Regime Mismatch
1st Quar-tile	0.09%	0.005	41.43%	0.03%	0.001	
2nd Quar-tile	0.76%	0.038	41.07%	0.79%	0.037	
3rd Quar-tile	0.76%	0.040	39.32%	0.80%	0.041	
4th Quar-tile	1.92%	0.097	39.61%	2.42%	0.107	
Grand Total	0.7%	0.037	39.17%	0.94%	0.044	

Table 8: Wars and Hostility with respect to Cultural Proximity (measured through genetic proximity)

	gen dist (div)	gen dist (-)	same rel	shared rel	same civ	distance	land contig	same region
genetic distance (div)	1.00	0.15	0.06	0.06	0.14	-0.13	0.11	0.17
genetic distance (minus)	0.15	1.00	0.20	0.23	0.33	-0.46	0.20	0.49
same religion	0.06	0.20	1.00	0.76	0.35	-0.15	0.13	0.35
shared religion	0.06	0.23	0.76	1.00	0.40	-0.18	0.11	0.29
same civ	0.14	0.33	0.35	0.40	1.00	-0.27	0.19	0.41
distance	-0.13	-0.46	-0.15	-0.18	-0.27	1.00	-0.34	-0.56
land contig	0.11	0.20	0.13	0.11	0.19	-0.34	1.00	0.28
same region	0.17	0.49	0.35	0.29	0.41	-0.56	0.28	1.00

Table 9: Pairwise correlations

Cont	Genetic Dist (div)	Genetic Dist (minus)	Same Religion	Shared Religion	Same Civil
After 1900	0.046814	0.000002	0.000963	0.002045	0.00364
Before 1901	-0.021404	0.000002	0.002485	0.00205	0.001995
After 1989	-0.002562	0.000007	0.010252	0.017594	0.002266
1946-89	0.062819	0.000001	-0.001246	-0.004393	-0.000469
1914-45	0.006561	-0.000004	-0.001819	0.004127	0.013367
1880-1913	-0.065371	0.000002	-0.000635	0.000554	0.004532
1849-79	-0.027228	0.000001	0.003175	0.005678	0.000488
1815-48	-0.036038	0.000007	0.01508	0.003628	-0.001907
After 2000	-0.052626	0.002001	0.001108	0.000291	0.003673
1990-96	0.012882	0.028768	0.010795	0.018113	0.001883
1946-62	0.106995	-0.002776	-0.003917	-0.011171	-0.005791

Table 10: Time Breakdown: coefficient on the interaction term of cultural similarity with institutional difference.

OLS, dependent variable: hostility level  
cultural similarity: 1 genetic proximity:  $F_{ST}$  divided, 2 genetic proximity: minus  $F_{ST}$ , 3 same  
religion, 4 shared religion, 5 same civilization

	<i>Dependent variable:</i>				
	cwhost				
	(1)	(2)	(3)	(4)	(5)
same region	0.031*** (0.001)	0.025*** (0.001)	0.030*** (0.001)	0.032*** (0.002)	0.040*** (0.001)
distance	-0.0001 (0.0002)	0.001*** (0.0002)	-0.00003 (0.0002)	-0.0002 (0.0003)	-0.0004** (0.0002)
contiguity on land	-0.498*** (0.007)	-0.492*** (0.007)	-0.500*** (0.008)	-0.567*** (0.010)	-0.510*** (0.007)
colonial contiguity	-0.026*** (0.001)	-0.026*** (0.001)	-0.026*** (0.001)	-0.026*** (0.001)	-0.027*** (0.001)
contiguity	-0.168*** (0.001)	-0.167*** (0.001)	-0.168*** (0.002)	-0.189*** (0.002)	-0.170*** (0.001)
both democratic	-0.010*** (0.002)	-0.015*** (0.002)	-0.011*** (0.002)	-0.004 (0.003)	-0.004*** (0.002)
cultural similarity	-0.231*** (0.011)	0.010*** (0.004)	-0.003** (0.001)	-0.033*** (0.004)	-0.048*** (0.002)
abs polity diff	0.002*** (0.0001)	-0.005*** (0.0003)	0.002*** (0.0001)	0.003*** (0.0002)	0.002*** (0.0001)
cult sim*abs pol diff	0.047*** (0.002)	0.009*** (0.0003)	0.001*** (0.0001)	0.003*** (0.0004)	0.004*** (0.0002)
Constant	0.463*** (0.026)	0.257*** (0.027)	0.394*** (0.027)	0.007 (0.044)	0.517*** (0.025)
Observations	1, 140, 638	1, 140, 638	1, 109, 282	609, 396	1, 167, 588
R <sup>2</sup>	0.069	0.069	0.068	0.080	0.068
Adjusted R <sup>2</sup>	0.069	0.069	0.068	0.080	0.068

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 11: OLS estimates; controlling for year, peace years, major power 1, major power 2, bilateral imports 1, bilateral imports 2, ally (entente), same region, distance, land contiguity, colonial contiguity, contiguity, both democratic; dependent variable: hostility level

Country fixed effects, dependent variable: hostility level  
cultural similarity: 1 genetic proximity:  $F_{ST}$  divided, 2 genetic proximity: minus  $F_{ST}$ , 3 same religion, 4 shared religion, 5 same civilization

	<i>Dependent variable:</i>				
	cwghost				
	<i>OLS</i>				
	(1)	(2)	(3)	(4)	(5)
both democracy	-0.040*** (0.002)	-0.070*** (0.004)	-0.039*** (0.002)	-0.036*** (0.002)	-0.041*** (0.002)
democ diff	-0.001*** (0.0001)	-0.002*** (0.0002)	-0.001*** (0.0001)	-0.011*** (0.0002)	-0.0001 (0.0001)
cultural prox * inst diff	0.007*** (0.0001)	0.007*** (0.0003)	0.003*** (0.0001)	0.00000*** (0.00000)	0.056*** (0.001)
Constant	-2.058*** (0.033)	-2.636*** (0.055)	-2.015*** (0.034)	-2.063*** (0.033)	-1.959*** (0.033)
Observations	1, 167, 588	609, 396	1, 109, 282	1, 140, 638	1, 140, 638
R <sup>2</sup>	0.049	0.061	0.048	0.050	0.048
Adjusted R <sup>2</sup>	0.048	0.060	0.047	0.049	0.048

*Note:*

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

Table 12: controlling for year, peace years, major power 1, major power 2, bilateral imports 1, bilateral imports 2, ally (entente), same region, distance, land contiguity, colonial contiguity, contiguity, both democratic

Logit Regressions, dependent variable: logit war  
cultural similarity: 1 genetic proximity:  $F_{ST}$  divided, 2 genetic proximity: minus  $F_{ST}$ , 3 same  
religion, 4 shared religion, 5 same civilization

	<i>Dependent variable:</i>				
	logit_war				
	(1)	(2)	(3)	(4)	(5)
same region	0.591*** (0.027)	0.342*** (0.028)	0.536*** (0.031)	0.675*** (0.032)	0.613*** (0.028)
distance	-0.103*** (0.007)	-0.052*** (0.007)	-0.102*** (0.007)	-0.053*** (0.008)	-0.101*** (0.007)
contiguity on land	-1.468*** (0.061)	-1.405*** (0.062)	-1.453*** (0.062)	-1.327*** (0.066)	-1.506*** (0.062)
colonial contiguity	-0.090*** (0.009)	-0.087*** (0.009)	-0.089*** (0.009)	-0.047*** (0.010)	-0.093*** (0.009)
contiguity	-0.595*** (0.013)	-0.602*** (0.013)	-0.595*** (0.013)	-0.581*** (0.014)	-0.608*** (0.013)
both democratic	-1.042*** (0.066)	-1.135*** (0.066)	-1.084*** (0.067)	-0.978*** (0.081)	-1.039*** (0.066)
cultural similarity	-0.855*** (0.233)	1.545*** (0.123)	0.167*** (0.040)	-0.527*** (0.085)	-0.090** (0.039)
abs polity diff	0.035*** (0.002)	-0.033*** (0.009)	0.040*** (0.003)	0.037*** (0.003)	0.036*** (0.002)
cult sim*abs pol diff	0.147*** (0.019)	0.080*** (0.011)	-0.005 (0.003)	0.031*** (0.007)	0.007* (0.004)
Constant	-7.786*** (0.541)	-10.857*** (0.571)	-8.405*** (0.550)	-8.394*** (0.648)	-7.595*** (0.546)
Observations	1, 140, 638	1, 140, 638	1, 109, 282	609, 396	1, 167, 588
Log likelihood	-44, 576.250	-44, 226.330	-44, 234.580	-32, 524.040	-45, 216.440
Akaike Inf. Crit.	89, 186.510	88, 486.660	88, 503.160	65, 082.080	90, 466.880

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 13: controlling for year, peace years, major power 1, major power 2, bilateral imports 1, bilateral imports 2, ally (entente), same region, distance, land contiguity, colonial contiguity, contiguity, both democratic

Interacting Domestic Pressure, OLS, dependent variable: hostility level

From left to right cultural similarity variable: same civilization, shared religion, same religion, minus genetic distance (FST weighted), divided genetic distance (FST weighted); dependent variable: hostility level

	<i>Dependent variable:</i>				
	cwhost				
	<i>OLS</i>				
	(1)	(2)	(3)	(4)	(5)
cultural similarity	-0.031*** (0.001)	-0.027*** (0.003)	-0.004*** (0.001)	0.00000 (0.00000)	-0.204*** (0.008)
abs polity diff	0.002*** (0.0001)	0.003*** (0.0001)	0.002*** (0.0001)	-0.004*** (0.0002)	0.002*** (0.0001)
dom pressure 1	0.319* (0.186)	0.389 (0.355)	0.522** (0.211)	-0.440 (0.471)	0.449*** (0.167)
cult sim*abs pol diff	0.0004** (0.0002)	0.002*** (0.0003)	0.001*** (0.0001)	0.00000*** (0.00000)	0.045*** (0.001)
cult sim*dom pr1	-0.016 (0.388)	0.542 (0.917)	-0.509 (0.351)	0.0003 (0.0002)	-4.887*** (1.323)
abs pol diff*dom pr1	-0.046*** (0.018)	-0.077** (0.033)	-0.055*** (0.021)	0.033 (0.047)	-0.035** (0.016)
cult sim*abs pol diff*dom pr1	0.155*** (0.042)	0.033 (0.089)	0.080** (0.034)	-0.00002 (0.00002)	0.662*** (0.126)
Constant	-0.640*** (0.056)	-1.487*** (0.095)	-0.784*** (0.058)	-0.997*** (0.057)	-0.728*** (0.057)
Observations	755, 436	417, 657	724, 911	745, 927	745, 927
R <sup>2</sup>	0.053	0.064	0.054	0.056	0.055
Adjusted R <sup>2</sup>	0.053	0.063	0.054	0.056	0.055

*Note:*

\* $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

Table 14: controlling for year, peace years, major power 1, major power 2, bilateral imports 1, bilateral imports 2, ally (entente), same region, distance, land contiguity, colonial contiguity, contiguity, both democratic