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Domestic Political Survival and International Conflict: Is Democracy Good for Peace?

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We build a game-theoretic model where aggression can be triggered by domestic political concerns as well as the fear of being attacked. In the model, leaders of full and limited democracies risk losing power if they do not stand up to threats from abroad. In addition, the leader of a fully democratic country loses the support of the median voter if he attacks a non-hostile country. The result is a non-monotonic relationship between democracy and peace. Using Polity data, we classify countries as full democracies, limited democracies, and dictatorships. For the period 1816–2000, Correlates of War data suggest that limited democracies are more aggressive than other regime types, including dictatorships, and not only during periods when the political regime is changing. In particular, a dyad of limited democracies is more likely to be involved in a militarized dispute than any other dyad (including "mixed" dyads, where the two countries have different regime types). Thus, while full democratization might advance the cause of peace, limited democratization might advance the cause of war. We also find that as the environment becomes more hostile, fully democratic countries become more aggressive faster than other regime types.

Key words: Schelling's dilemma, Limited democracy, Democratic peace

JEL Codes: D74, D78

1. INTRODUCTION

The idea that democracy promotes peace has a long history. Thomas Paine argued that monarchs go to war to enrich themselves, but a more democratic system of government would lead to lasting peace: "What inducement has the farmer, while following the plough, to lay aside his peaceful pursuit, and go to war with the farmer of another country?" (Paine, 1985 p. 169). Immanuel Kant agreed that if "the consent of the subjects is required to determine whether there shall be war or not, nothing is more natural than that they should weigh the matter well, before undertaking such a bad business" (Kant, 1795, 1903, p. 122). More recently, the democratic

peace hypothesis has influenced the "neoconservative" view of international relations (Kaplan and Kristol, 2003). U.S. policy makers of different political persuasions have invoked it in support of a policy to "seek and support the growth of democratic movements and institutions in every nation and culture."[1] But some anecdotal observations seem to support a more "realist" viewpoint. For example, after the breakup of Yugoslavia, democratic reforms were followed by war, not peace. When given a chance in the legislative elections of 2006, the Palestinians voted for Hamas, which did not have a particularly peaceful platform. Such anecdotes suggest that democratization does not always promote peace. Even fully democratic countries such as the U.S. sometimes turn aggressive: under perceived threats to the homeland, the democratically elected President George W. Bush declared war on Iraq.

We develop a simple game-theoretic model of conflict based on Baliga and Sjöström (2004). Each leader can behave aggressively or peacefully. A leader's true propensity to be aggressive, his "type", is his private information. Since actions are strategic complements, the fear that the other leader might be an aggressive type can trigger aggression, creating a fear spiral we call "Schelling's dilemma" (see Schelling, 1960; Jervis, 1976, 1978; Kydd, 1997). Unlike Baliga and Sjöström (2004), we assume a leader may be removed from power. Whether a leader can stay in power depends on the preferences of his citizens, the political system, and the outcome of the interaction between the two countries. The political system interacts with Schelling's dilemma to create a non-monotonic relationship between democracy and peace.

Like the leaders, citizens have different types. By hypothesis, the median type prefers to live in peace. This imposes a "dovish bias" on a dyad of two full democracies (whose leaders can be replaced by their median voters). Thus, a dyadic democratic peace is likely to obtain. However, when facing a country that is not fully democratic, the median voter may support aggression out of fear and may replace a leader who is not aggressive enough. (For example, Neville Chamberlain had to resign after appeasing Hitler.) This gives rise to a "hawkish bias". Thus, in a fully democratic country, a dovish bias is replaced by a hawkish bias when the environment becomes more hostile. In contrast, a dictator is not responsive to the preferences of his citizens, so there is neither a hawkish nor a dovish bias. Accordingly, a dyad of two dictators is less peaceful than a fully democratic dyad, but a dictator responds less aggressively than a democratically elected leader to increased threats from abroad.

In the model, the leader of a *limited* democracy risks losing power if hawks in his population turn against him. For instance, the German leaders during World War I believed signing a peace agreement would lead to their demise (Asprey, 1991, pp. 486–487, 491). Conversely, the support of the hawkish minority trumps the opposition of more peaceful citizens. Thus, a limited democracy experiences a hawkish bias similar to a full democracy under threat from abroad but never a dovish bias. On balance, this makes limited democracies more aggressive than any other regime type. In a full democracy, if the citizens feel safe, they want a dovish leader, but if they feel threatened, they want a hawkish leader. In dictatorships and limited democracies, the citizens are not powerful enough to overthrow a hawkish leader, but the leader of a limited democracy risks losing power by appearing too dovish. This generates a non-monotonic relationship between democracy and peace.

Our empirical analysis reassesses the link between democracy and peace using a flexible semiparametric functional form, where fixed effects account for unobserved heterogeneity across country dyads. We use Polity IV data to classify regimes as dictatorships, limited democracies or full democracies. Following the literature on the democratic peace hypothesis, we define a

1. The quote is from President George W. Bush's second inaugural address. President Clinton, in his 1994 State of the Union address, noted that "the best strategy to ensure our security and to build a durable peace is to support the advance of democracy elsewhere. Democracies do not attack each other."

conflict as a militarized dispute in the Correlates of War data set. The data, which span over the period 1816–2000, contain many military disputes between limited democracies. In the nineteenth century, Britain had a Parliament, but even after the Great Reform Act of 1832, only about 200,000 people were allowed to vote. Those who owned property in multiple constituencies could vote multiple times.[2] Hence, Britain is classified as a limited democracy for 58 years and becomes a full democracy only after 1879. France, Italy, Spain, and Germany are also limited democracies at key points in the nineteenth and early twentieth centuries. These countries, together with Russia and the Ottoman Empire, were involved in many militarized disputes in Europe and throughout the world. For much of the nineteenth century, Britain and Russia had many skirmishes and outright wars in the "Great Game" for domination of Central Asia (Hopkirk, 1990). France is also involved in many disputes and is a limited democracy during the Belgian War of Independence and the Franco-Prussian War. Germany is a limited democracy at the start of the First World War.

Over the full sample, the data strongly support a dyadic democratic peace hypothesis: dyads consisting of two full democracies are more peaceful than all other pairs of regime types. This is consistent with previous empirical studies (Babst, 1972; Levy, 1988; Maoz and Russett, 1993; Russett and Oneal, 2001). Over the same period, limited democracies were the most aggressive regime type. In particular, dyads consisting of two limited democracies are more likely to experience militarized disputes than any other dyads, including "mixed" dyads where the two countries have different regime types. These results are robust to changing the definitions of the three categories (using the Polity scores) and to alternative specifications of our empirical model. The effects are quantitatively significant. Parameter estimates of a linear probability model specification, suggest that the likelihood that a dyad engages in a militarized dispute falls roughly 35% if the dyad changes from a pair of limited democracies to a pair of dictatorships. We also find that if some country j faces an opponent which changes from a full democracy to another regime type, the estimated equilibrium probability of conflict increases most dramatically when country j is a full democracy. This suggests that as the environment becomes more hostile, democracies respond more aggressively than other regime types, which is also consistent with our theoretical model.

A more nuanced picture emerges when we split the data into subsamples. Before World War II, the data strongly suggest that limited democracies were the most conflict prone. It is harder to draw conclusions for the post World War II period, when very few countries are classified as limited democracies, and full democracies have very stable Polity scores. The Cold War was a special period where great power wars became almost unthinkable due to the existence of large nuclear arsenals (Gaddis, 2005). Did the weakening and demise of the Soviet Union bring a return to the pre-1945 patterns? Although the time period is arguably short, in the post-1984 period, it does seem that dyads of limited democracies are again the most prone to conflict.

It is commonly argued that a process of democratization, *e.g.* in the Middle East, will lead to peace (Bush, 2003). But both theory and data suggest that the relationship between democracy and peace may be complex and non-monotonic. Replacing a dictatorship with a *limited* democracy may actually *increase* the risk of militarized disputes. Even if a dictatorship is replaced by a *full* democracy, this may not reduce the risk of militarized disputes if the region is dominated by hostile non-democratic countries. In the data, only dyads consisting of *two* full democracies are peaceful. Democratic countries such as Israel and India, with hostile neighbours, do not enjoy a low level of conflict.

2. The infamous "rotten borough" of Old Sarum sent two representatives to Parliament. In 1831, it had only 11 eligible voters, all of whom were landowners living elsewhere. See Paine (1985); Thorne (1986).

The paper is organized as follows. Related literature is discussed in the next section. The theoretical model is presented in Section 3. Section 4 describes the empirical results. Section 5 concludes.

2. RELATED LITERATURE

Theoretical and empirical work in economics and political science has investigated the relationship between political systems and war. Jackson and Morelli (2007) formalize the idea that leaders start wars when their preferences are sufficiently biased away from their citizens' preferences. Levy and Razin (2004) provide a theory of the democratic peace based on incomplete information. They assume the representative citizen is less well informed about the benefit of concessions than the leader and show that democratically elected leaders are more likely to reveal information truthfully. In Bueno De Mesquita et al. (1999), political leaders must bribe key supporters to stay in power when foreign policy fails. A dictator has to bribe fewer supporters and is therefore more likely to go to war than a democratically elected leader. On the other hand, in order to avoid being replaced, a leader may "gamble for resurrection" with an aggressive foreign policy (Downs and Rocke, 1994; Bueno De Mesquita and Silverson, 1995; Hess and Orphanides, 1995). Fearon (1994) assumes leaders suffer "audience costs" if they back down during a war of attrition. If audience costs are higher in democracies, then democracies are more committed to a conflict and may be more reluctant to enter into one. Tangeras (2008) assumes that leaders have private information about the probability of winning a war. Democratically elected leaders are more reluctant to start a war because they will lose power if the war ends badly. According to Leeds (1999), democratic leaders are more able to commit to honouring agreements and thus more able to cooperate.

These theories provide underpinnings for the democratic peace hypothesis, but it is not obvious how they can be extended to explain the non-monotonicity we find in the data. For example, a natural extension of Fearon (1994) model would be to assume the audience costs of limited democracies lie between those of dictatorships and full democracies, but this would not produce non-monotonicity. Similarly, if the leader of a limited democracy has less biased preferences than a dictator, then the Jackson and Morelli (2007) model would predict that limited democracies go to war less often than dictatorships.

Our theory incorporates an important feature of Bueno De Mesquita et al. (1999): the support for the leader's action is derived from heterogeneous preferences among the citizens. In our model, leaders of full and limited democracies suffer audience costs (as in Fearon, 1994) if they are dovish when the opposing leader is hawkish; in addition, a leader of a full democracy faces audience costs (from the median voter) if he is hawkish against a dovish opponent; a dictator faces no audience costs at all. The result is a non-monotonic relationship between democracy and peace.

Mansfield and Snyder (2005) argue that increased nationalism can cause conflict during a period of transition when a regime is being democratized. However, in our baseline empirical model, dyads of limited democracies are the most conflict ridden even when controlling for regime transitions (using Mansfield and Snyder's, 2005, transitional dummies). This suggests that limited democracies are not only prone to conflict during periods of transition.

Several articles have investigated the hypothesis that dyads consisting of countries with similar regime types, and thus perhaps "shared values" are relatively peaceful. Peceny, Beer and Sanchez-Terry (2004) classify autocratic regimes as personalist, military and single-party dictatorships and find evidence that dyads consisting of two autocracies of the same type are relatively peaceful. Bennett (2006) analyses plots of conflict probabilities for dyads with different Polity scores. He finds that the hypothesized relationship between similarity and peace holds

for dyads with either very high or very low Polity scores, but not in the intermediate range. This is consistent with our finding that dyads of two limited democracies (which have intermediate Polity scores by definition) are relatively conflict prone. However, it is challenging within Bennett's pooled logit specification to formally test for non-monotonicity and to assess robustness within higher-order parametric specifications because the functional form is bidimensional and marginal effects are non-linear functions of explanatory variables. In addition, his specification cannot include dyadic fixed effects. Our dummy variable non-parametric approach has dyad-specific fixed effects, and non-monotonicity can be assessed through simple tests on coefficients. Unlike Bennett's continuous specification, we define limited democracies by cut-off Polity scores, but we verify the robustness of our results by varying the cut-off points.

Other authors have analysed limited democracies along other dimensions and found reasons for why such regimes might experience conflicts. Fearon and Laitin (2003) find that limited democracies are more prone to civil wars, as insurgencies are more likely to succeed in weaker political regimes. Epstein et al. (2006) find that political transitions from limited democracies to other political regimes are harder to explain than political transitions of autocracies and full democracies.

Determining the underlying motives behind conflicts, based on a subjective reading of history, will always leave scope for disagreement. Our theoretical model, building on Baliga and Sjöström (2004), assumes that conflicts can be sparked by *fear* ("Schelling's dilemma"). Historians have uncovered many examples of such "fear spirals".[3] For example, Thucydides (1972, 1.23, p. 49) argued that the Peloponnesian War was caused by "the growth of Athenian power and the fear which this caused in Sparta." The period that preceded World War I was characterized by mutual distrust and fear (Sontag, 1933; Tuchman, 1962; Wainstein, 1971). A spiral of fear was evident during the Cold War arms race (Leffler, 1992). The India–Pakistan arms race is a current example of escalation fuelled by mutual distrust, and Bobbitt (2008, p. 10) suggests a similar logic will continue to operate in the wars of the twenty-first century: "We think terrorists will attack; so they think we think the terrorists will attack; so they think we shall intervene; so they will attack; so we must." Nevertheless, there is disagreement about the number of large-scale wars that can be said to have been triggered by fear (see Van Evera, 1999; Reiter, 2000). Reiter (1995) argues that leaders who understand the spiraling logic can prevent conflict by communicating. Baliga and Sjöström (2004) verify that, in theory at least, cheap talk can sometimes prevent a conflict, but it cannot always do so. Our current model assumes that leaders are partly motivated by domestic political concerns and may behave hawkishly in order to maintain political support. Thus, fear is not the only reason for starting a war, and the argument by Reiter (1995) that World War I was not a pure fear spiral is consistent with our model:

> Domestic politics in a number of nations set the stage for war, though some . . . have gone further to argue that Germany sought war . . . to shore up the threatened domestic political order at home (Reiter, 1995, p. 22).

3. A SIMPLE MODEL OF SCHELLING'S DILEMMA

3.1. *Basic assumptions*

There are two countries, $i \in \{1, 2\}$. Each country i has a leader, leader i, and a continuum of citizens. The two leaders play a game that is similar to the arms race game of Baliga and Sjöström

3. O'Flaherty and Sethi (2010) argue that fear spirals can explain (changes in) murder rates in U.S. cities.

(2004). Each leader can choose an *aggressive* (hawkish) strategy A or a *peaceful* (dovish) strategy P. The aggressive strategy may represent building new weapons, preparing for war, or attacking the other country. Each citizen has a *cost type*, a cost of aggression c, drawn from a distribution F with support $[\underline{c}, \bar{c}]$. We assume F is continuous, strictly increasing and concave. The median cost type is denoted c^{med}, so $F(c^{\text{med}}) = 1/2$. Each leader i has a cost type c_i, which is independently drawn from the same distribution F. Each leader's type is his private information. Everything else is common knowledge. To study the pure impact of political institutions on the incentive to go to war, we assume that there is no *ex ante* difference between the two countries: the distribution F is the same in both.

The pay-off for a citizen of country i who has cost type c is given by the following matrix, where the row represents the choice of his own leader (leader i), and the column represents the choice of the other leader (leader j).

	A	P
A	$-c$	$\mu - c$
P	$-d$	0

(1)

Thus, if leader i chooses A, the type c citizen of country i suffers the cost c (whatever leader j does). In addition, if leader j chooses P when leader i chooses A, each citizen of country i derives a benefit μ. Conversely, if leader i chooses P when leader j chooses A, each citizen of country i suffers a cost d. If both leaders choose P, pay-offs are normalized to 0. Notice that μ and d are not type-dependent.

The parameter μ can be interpreted as the gain from being on the offensive, while the parameter d represents the loss from being on the defensive. For example, if the aggressive strategy A is to attack, then μ might represent a "first mover advantage", net of any cost imposed on the aggressor by the international community, while d is the opponent's cost of being attacked. If instead A represents developing a new missile, then μ might represent the utility gain from increased bargaining power, net of the cost of sanctions brought about by a missile test, while d represents the corresponding loss of bargaining power for the opponent. We assume $0 < \mu < d$, so the marginal incentive to choose A is highest when the opponent chooses A. This "strategic complementarity" captures the intuition, fundamental to "Schelling's dilemma", that conflicts can escalate. We are interested in how political systems mitigate or aggravate the tendency towards escalation.

A citizen of cost type c is a *hawkish type* if $c < \mu$. For the hawkish citizen, A is a dominant strategy because $-c > -d$ and $\mu - c > 0$. The fraction of citizens who are hawks is $F(\mu)$. A citizen of cost type c is a *dovish type* if $c > d$. For the dovish citizen, P is a dominant strategy because $-d > -c$ and $0 > \mu - c$. Notice that a dove is an extreme pacifist who wants his leader to be peaceful *even when the opponent is aggressive*. The fraction of citizens who are doves is $1 - F(d)$. A citizen of cost type c is a *coordination type* if $\mu < c < d$. For the coordination type, the best response to A is A, and the best response to P is P. Coordination types capture the idea that behaviour may be driven by fear: although they prefer the outcome PP to the outcome AA, they want their leader to choose A if they fear the opponent will choose A. The fraction of citizens who are coordination types is $F(d) - F(\mu)$.

Assumption 1 $0 < \underline{c} < \mu < c^{\text{med}} < d < \bar{c}$.

Assumption 1 implies that the median citizen is a coordination type. Thus, if the representative (median) citizen in each country could directly choose either A or P, the resulting game

would be a coordination game with two Nash equilibria AA and PP. We will assume that PP is the *risk-dominant* equilibrium of this game, in the sense that the representative citizen thinks the gain from choosing P when the opponent is peaceful ($c^{\text{med}} - \mu$) exceeds the loss from choosing P when the opponent is aggressive ($d - c^{\text{med}}$). [4]

Assumption 2 $c^{\text{med}} - \mu > d - c^{\text{med}}$.

War is often thought of as a prisoner's dilemma where, in our terminology, all decision makers are dominant strategy hawks. See the discussion of the Peloponnesian War by Nye (2007), pp. 18–19), the discussion of World War I by Snyder (1971), Snyder and Diesing (1977) for other historical examples, and Axelrod (1984) for a general discussion.[5] More recent contributions, such as Baliga and Sjöström (2004), allow coordination types as well. Here, we go one step further and also allow the existence of pacifistic doves, who do not favour going to war even if they are sure the other country will attack. However, the generalization is modest: our final assumption states that the doves do not outnumber the hawks.

Assumption 3 $F(\mu) > 1 - F(d)$.

In our model of political regimes, the influence of a group of citizens will be proportional to its size. By Assumption 3, hawks will be more likely to be pivotal than doves. More generally, the relative importance of hawks and doves could be derived from a model where different citizens have different ability to influence or coerce others. A "political bias" akin to Jackson and Morelli (2007) would result if hawks had disproportionate political power. Our current model is simpler, and in view of the previous literature (which emphasizes hawks and, sometimes, coordination types), Assumption 3 does not seem unreasonable.

3.2. *Political regimes*

After the two leaders have chosen their strategies, each citizen decides whether or not to support his leader. The decision is retrospective, as in Barro (1973) and Ferejohn (1986). In effect, the citizen acts as a "principal" who rewards or punishes the "agent" (the leader). Thus, a citizen of country i supports leader i if and only if leader i's action was a best-response to leader j's action *according to the citizen's own preferences* (as given by the matrix (1)).

Following Bueno De Mesquita et al. (1999), a political system is characterized by a *critical fraction of support* $\sigma_i^* \leq \frac{1}{2}$. This is defined as the fraction of the citizens of country i that must support leader i in order for him to stay in power. The value of staying in power is the "rents from office", denoted $R > 0$. Our theory assumes that all political regimes generate the same R in order to focus on the impact of political *institutions* on the incentives to go to war.[6] To rule out

4. The concept of risk dominance is familiar from the global games literature (Carlsson and van Damme, 1993). In global games, types are highly correlated, a reasonable assumption if the uncertainty concerns the value of a contested resource such as a piece of land. Chassang and Padró-i-Miquel (2009) and Chassang and Padró-i-Miquel (2010) use this approach to study conflict. In contrast, we assume that types are independent, a reasonable assumption if types represent idiosyncratic preference shocks (private costs and benefits from going to war). As shown in Section 3.3, Assumption 2 implies the democratic peace when types are independent.

5. More recent theories of war emphasize that a player may prefer to fight a war rather than making concessions, if concessions lead to adverse shifts of power (Fearon, 1995, 1996; Powell, 2006).

6. Debs and Goemans (2008) argue that the cost of losing power differs across regime types, and they find evidence that these costs influence the probability of conflict. Conconi, Sahuguet and Zanardi (2008) link term limits on democratic leaders to the probability of war. These arguments are complementary to ours.

"corner" equilibria, where even the most aggressive leaders (cost type $\underline{c}$) choose P, we assume $R < \mu - \underline{c}$.[7]

If both leaders choose the same action, then each leader is supported by his median citizen. That is, each leader has the support of at least half the population, which is *sufficient* to remain in power in any political regime (as the critical fraction satisfies $\sigma_i^* \leq 1/2$). Suppose instead that the two leaders miscoordinate, say Leader 1 chooses A and Leader 2 chooses P. Then, neither leader is supported by his median citizen. Indeed, Leader 1 is supported by a fraction $F(\mu) < 1/2$ of his citizens (the hawks), while Leader 2 is supported by a fraction $1 - F(d) < 1/2$ of his citizens (the doves). Leader 1 remains in power if $F(\mu) \geq \sigma_1^*$, and Leader 2 remains in power if $1 - F(d) \geq \sigma_2^*$.

Assumption 3 implies $1 - F(d) < F(\mu)$. It follows that the regime of country i belongs to one of three categories, depending on the size of σ_i^*. First, if $\sigma_i^* > F(\mu)$, then miscoordination always causes leader i to be replaced. In other words, the support of the median citizen is *necessary* for leader i to remain in power. Such a regime is a *full democracy*. Second, at the other extreme, if $\sigma_i^* \leq 1 - F(d)$, then leader i stays in power whatever happens. Such a regime is a *dictatorship* or *autocracy*. The third and final case is the intermediate situation, where $1 - F(d) < \sigma_i^* \leq F(\mu)$. In this case, leader i loses power if he chooses P while the opponent chooses A, but he stays in power otherwise. Since this regime type is intermediate between dictatorship and full democracy, we label it *limited democracy*.

In a full democracy, since the median voter is a coordination type, leader i enjoys rents from office if and only if he matches the action of the opponent. Therefore, if country i is a full democracy, leader i's pay-off matrix is

	A	P
A	$R - c_i$	$\mu - c_i$
P	$-d$	R

(2)

where c_i is his own cost type. (The row represents leader i's own choice, the column leader j's choice.) In a limited democracy, leader i can stay in power except when he chooses P and the opponent chooses A. Therefore, if country i is a limited democracy, then leader i's pay-off matrix is

	A	P
A	$R - c_i$	$R + \mu - c_i$
P	$-d$	R

(3)

If country i is a dictatorship, then leader i gets R whatever happens. Thus, R does not influence his behaviour and can be dropped, so dictatorial leader i's pay-off matrix is simply given by the matrix (1), where $c = c_i$ is his own cost type.

3.3. *Equilibrium*

Country i's *regime type* is denoted $T_i \in \{\text{De}, \text{Di}, \text{Li}\}$, corresponding to full democracy (De), dictatorship (Di), and limited democracy (Li). Leader i knows the regime type of country j but

7. There is a unique, interior, equilibrium as long as F is concave and $R < \mu - \underline{c}$. If F is concave but $R > \mu - \underline{c}$, then equilibrium for a dyad of two full democracies will be at a "corner", where even the most aggressive type plays P, because large rents from office trump all other concerns. This is an extreme version of the "democratic peace". Leaders of other regime types could still play A, however, so replacing one of the democracies by a different regime would increase the probability of conflict.

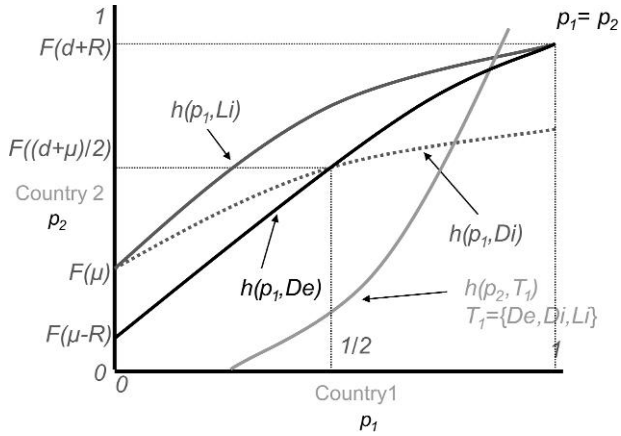

FIGURE 1
Hawkish limited democracies

not the cost type of leader j. The two leaders move simultaneously. Leader i's optimal decision depends on his own cost type, his own regime type, and the probability p_j that leader j plays A.

First, if country i is a dictatorship, then the pay-offs of leader i are given by the matrix (1). Hence, leader i prefers A if

$$-c_i + (1-p_j)\mu \geq -dp_j. \tag{4}$$

The leader of country i must follow a cut-off strategy, playing A if and only if $c_i \leq \mu + (d-\mu)p_j$. Therefore, the probability that leader i chooses A is $p_i = h(p_j, \mathrm{Di})$, where

$$h(p_j, \mathrm{Di}) \equiv F(\mu + p_j(d-\mu)). \tag{5}$$

The function $h(\cdot, \mathrm{Di})$ can be thought of as a dictator's best-response function.

Second, if country i is a limited democracy, then leader i's pay-offs are given by the matrix (3). Hence, leader i prefers A if

$$R - c_i + (1-p_j)\mu \geq -p_j d + (1-p_j)R, \tag{6}$$

which is true if and only if $c_i \leq \mu + p_j(d-\mu) + p_j R$. Therefore, the probability that leader i chooses A is $p_i = h(p_j, \mathrm{Li})$, where

$$h(p_j, \mathrm{Li}) \equiv F(\mu + p_j(d-\mu) + p_j R). \tag{7}$$

This is the best-response function for the leader of a limited democracy.

Third, if country i is a full democracy, then leader i's pay-offs are given by the matrix (2). Hence, leader i prefers A if

$$p_j R + (1-p_j)\mu - c_i \geq -p_j d + (1-p_j)R, \tag{8}$$

which is true if and only if $c_i \leq \mu + p_j(d-\mu) + p_j R - (1-p_j)R$. Therefore, the probability that leader i chooses A is $p_i = h(p_j, \mathrm{De})$, where

$$h(p_j, \mathrm{De}) \equiv F(\mu + p_j(d-\mu) + p_j R - (1-p_j)R)). \tag{9}$$

This is the best-response function for the leader of a full democracy.

Since F is concave, the best-response functions $h(p_2, T_1)$ and $h(p_1, T_2)$ are concave and intersect only once. The intersection represents the unique Bayesian Nash equilibrium in the game between the two leaders. In equilibrium, leader i chooses A with probability p_i. Our assumptions guarantee that $0 < p_i < 1$. There is a conflict between countries i and j if at least one leader chooses A. Thus, the probability of conflict is $w_{ij} = p_i + (1 - p_i)p_j$, which is increasing in p_i and p_j. For a pair of regime types $T_i, T_j \in \{\text{De}, \text{Di}, \text{Li}\}$, we denote the equilibrium probability of conflict by $w_{T_i T_j}$.

The equilibrium, for various regime types, is illustrated in Figure 1. Leader 1's probability of playing A is given on the horizontal axis and leader 2's on the vertical axis. Notice that $h(p_1, \text{Li}) > h(p_1, T_2)$, for any $T_2 \in \{\text{De}, \text{Di}\}$ and any $p_1 \in (0, 1)$. That is, for any p_1, Leader 2 is more likely to choose A if country 2 is a limited democracy rather than some other regime type.

Figure 1 reveals that turning country 2 into a limited democracy shifts leader 2's best-response curve up. Since leader 1's best-response curve $h(p_2, T_1)$ is upward sloping, in the new equilibrium *both* leaders will be strictly more likely to choose A. For example, if country 2 changes from a dictatorship to a limited democracy, the best-response function changes from $h(p_1, \text{Di})$ to $h(p_1, \text{Li})$, and the fear spiral will produce higher levels of both p_1 and p_2. Thus, we have the following result (which does not require Assumption 2):

Proposition 1 (Hawkish Limited Democracy). *Replacing any other regime type in country i with a limited democracy increases the equilibrium probability of conflict, whatever the regime type in country j.*

We can interpret this proposition in terms of Schelling's dilemma. Since F is strictly increasing, $R > 0$ and $d > \mu$, the best-response function of leader i is always increasing in p_j. That is, actions are strategic complements. First, suppose both countries are dictatorships, so domestic political support is irrelevant. For a hawk (with cost type less than μ), A is the dominant strategy. Eliminating his dominated strategy P, we conclude that A is played with at least probability $F(\mu)$. After this first round of elimination of dominated strategies, P becomes dominated for some other types. Specifically, consider any type c_i such that

$$c_i < \mu + F(\mu)(d - \mu). \tag{10}$$

Using inequality (4), this type of dictator must play A, knowing that p_j (the probability the opponent plays A) is at least $F(\mu)$. Eliminating P for all types (of both dictators) such that inequality (10) holds makes P dominated for yet more types. This process of elimination of dominated strategies or "fear spiral" causes more and more high-cost (peaceful) types to play A. This is Schelling's dilemma (see Baliga and Sjöström, 2004).[8]

Now suppose the regime in country i changes from dictatorship to limited democracy. The leader of a limited democracy is ousted if he plays P when the opponent plays A. To see how this "hawkish bias" reinforces Schelling's dilemma, again notice that a hawkish type of leader j

8. If F is not concave, there may be multiple Bayesian Nash equilibria, but Schelling's dilemma still applies: dominant strategy hawks choose A, causing other types to choose A, etc. Since actions are strategic complements, there would be a "lowest" and a "highest" equilibrium in terms of probability of aggression (cf. Vives, 2001). Replacing any other regime type with a limited democracy increases the probability of conflict both at the lowest and highest equilibrium. In this sense, the theory can be extended to the case of multiple equilibria. The theory can also be generalized along the lines of Xue (2006) to allow sequential moves. Suppose A is an irreversible act, such as the test firing of a missile or an actual invasion. In equilibrium, the most hawkish types are the first to choose A, creating a "dynamic" fear spiral.

surely plays A, so $p_j \geq F(\mu)$. But now, the second round of elimination of dominated strategies involves more types. Specifically, consider any type c_i of leader i such that

$$c_i < \mu + F(\mu)(d - \mu) + F(\mu)R. \tag{11}$$

Using inequality (6), this type must play A, knowing that $p_j \geq F(\mu)$. Thus, in the second round, we eliminate P for all types such that inequality (11) holds. Comparing the inequalities (11) and (10), we find that P is eliminated for more types in a limited democracy. The difference is due to the term $F(\mu)R$, which represents the rents from office the leader of a limited democracy loses if he plays P when leader j plays A. By the same argument, in each "round" of elimination, more types eliminate P when country i is a limited democracy (and by strategic complementarity, the same holds for country j). This exacerbates Schelling's dilemma.

Now suppose the regime in country i changes from limited democracy to full democracy. After this transition, P can be eliminated by *fewer* types in each round of elimination of dominated strategies. This is due to the rents from office the leader of a full democracy loses if he plays A when leader j plays P. Therefore, in each round, *fewer* types eliminate P when country i is a full democracy (and by strategic complementarity, the same holds for country j). This mitigates Schelling's dilemma.

Having identified the least peaceful dyad in Proposition 1, we now consider, which dyad is most peaceful. Clearly, by Proposition 1, we may focus on dyads that do not include any limited democracy. It can be checked that $h(p, \mathrm{De})$ and $h(p, \mathrm{Di})$ have a unique intersection at $p = 1/2$ (see Figure 2). If $p > 1/2$, then $h(p, \mathrm{De}) > h(p, \mathrm{Di})$. Thus, when facing an aggressive opponent who is likely to play A, the leader of the full democracy is more likely to choose A than a dictator (hawkish bias) because he loses power if he responds to A with P. On the other hand, if $p < 1/2$, then $h(p, \mathrm{De}) < h(p, \mathrm{Di})$. Thus, when facing a peaceful opponent who is likely to play P, the leader of the full democracy is more likely to choose P than a dictator (dovish bias) because he loses power if he responds to P with A. The intersection of $h(p, \mathrm{De})$ and $h(p, \mathrm{Di})$ lies below the 45 degree line because

$$h\left(\frac{1}{2}, \mathrm{Di}\right) = h\left(\frac{1}{2}, \mathrm{De}\right) = F\left(\frac{d+\mu}{2}\right) < F(c^{\mathrm{med}}) = \frac{1}{2},$$

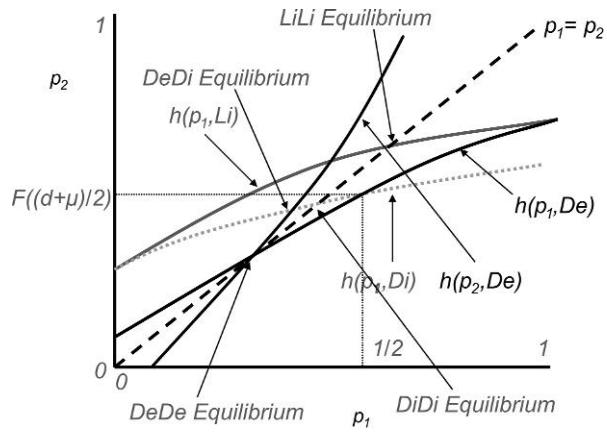

FIGURE 2
Dyadic Democratic Peace

where the inequality uses Assumption 2. Because of this, as can be verified using Figure 2, each leader in a dyad that excludes limited democracies chooses A with probability less than 1/2. In this region, the fully democratic leader has a dovish bias, so $w_{\mathrm{DeDe}} < w_{\mathrm{DeDi}} < w_{\mathrm{DiDi}}$. Thus, we have the following proposition:

Proposition 2 (Dyadic Democratic Peace). *A dyad of full democracies is more peaceful than any other pair of regime types.*

Despite the dyadic democratic peace, there are many historical examples of democracies going to war against less democratic states. In our model, the equilibrium probability of conflict increases dramatically when a dyad of two full democracies changes to a mixed dyad with just one full democracy, for two reasons. First, the less democratic regime will not have a dovish bias, making it more likely to choose A. But this triggers the second effect: the democratic leader's dovish bias disappears because the median voter wants him to respond to A with A.

In Figure 3, $p_{TT'}$ denotes the equilibrium probability that regime type T chooses A when playing against regime type T'. Thus, if country 2 is a full democracy, with best-response curve $h(p_1, \mathrm{De})$, then the equilibrium probabilities are $(p_{\mathrm{DeDe}}, p_{\mathrm{DeDe}})$ if country 1 is also a full democracy (with best-response curve $h(p_2, \mathrm{De})$), but they are $(p_{\mathrm{DiDe}}, p_{\mathrm{DeDi}})$ if country 1 is a dictatorship (with best-response curve $h(p_2, \mathrm{Di})$). If country 2 changes from a full democracy to a dictatorship, then leader 2's best-response function shifts up, from $h(p_1, \mathrm{De})$ to $h(p_1, \mathrm{Di})$. The equilibrium probabilities increase from $(p_{\mathrm{DeDe}}, p_{\mathrm{DeDe}})$ to $(p_{\mathrm{DeDi}}, p_{\mathrm{DiDe}})$ if country 1 is a full democracy, and from $(p_{\mathrm{DiDe}}, p_{\mathrm{DeDi}})$ to $(p_{\mathrm{DiDi}}, p_{\mathrm{DiDi}})$ if country 1 is a dictatorship. The increase in both p_1 and p_2 is larger in the former case, as illustrated in Figure 3. This follows from comparing the slopes of the best-response functions, obtained by differentiating equations (5), (7),

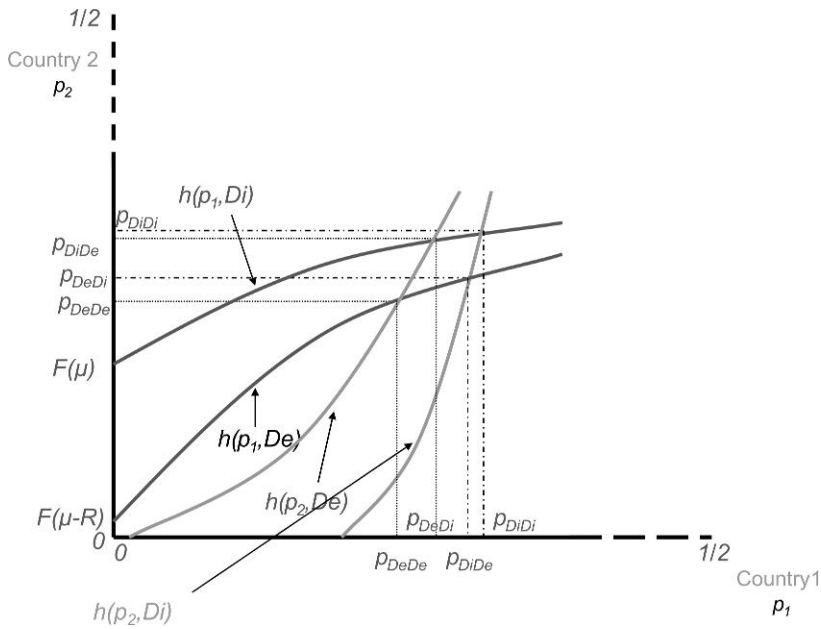

FIGURE 3
Democracies Turn Hawkish

and (9): by the concavity of F,

$$\frac{\partial h(p,\mathrm{De})}{\partial p} > \frac{\partial h(p,\mathrm{Di})}{\partial p} > \frac{\partial h(p,\mathrm{Li})}{\partial p},$$

where the first inequality holds as long as $p < 1/2$ (which is true in the absence of limited democracies). Since the best-response function of a full democracy has the steepest slope, full democracies react most aggressively to an increased threat level. Thus, when country 2 becomes more aggressive (due to a change away from full democracy), the probability of conflict increases more when country 1 is a full democracy than when it is a dictatorship. A similar figure reveals that the probability of conflict increases more when country 1 is a full democracy than when it is a limited dictatorship and the same holds for the case where country 2 changes from a full democracy to a limited democracy. Thus, we have the following proposition:

Proposition 3 (Democracies Turn Hawkish). *As country j changes from a full democracy to any other regime type $T' \in \{\mathrm{Di}, \mathrm{Li}\}$, the equilibrium probability of conflict increases more if country i is a full democracy than if it is any other regime type $T \in \{\mathrm{Di}, \mathrm{Li}\}$. That is,*

$$w_{\mathrm{De}T'} - w_{\mathrm{DeDe}} > w_{TT'} - w_{T\mathrm{De}}. \tag{12}$$

4. EMPIRICAL ANALYSIS

We first describe the data, then the empirical model, and finally discuss the estimation results.

4.1. *Data*

4.1.1. Conflict data. We use data on militarized interstate disputes (MIDs) from the Correlates of War (Jones, Bremer and Singer, 1996) project (COW, hereafter). This data set is an unbalanced panel that provides information on MIDs among approximately 190 states, at annual frequency, starting in 1816 and ending in 2000. Militarized disputes include interstate wars, but also threats, demonstrations of force, and other hostile interstate actions. This broad interpretation of conflict, which increases the frequency of conflicts in the data, is consistent with our theoretical model. The COW has been the predominant data source in the empirical literature on the democratic peace hypothesis (*e.g.* Oneal and Russett (1997)). In its monadic form, the COW records, for each year, whether a country is involved in a MID. But in our theory, the incentive to be aggressive depends on the regime types of *pairs* of countries. We therefore use the data set in a dyadic form, which contains conflict information for each possible pair of countries in the system.[9]

Our theoretical model is a static game. It does not identify one country as having initiated the conflict (both may have chosen A), neither does it predict the duration of conflicts or coalition formation in multilateral disputes. Therefore, we estimate the probability of conflict for country pairs using the so-called "undirected" form of the data, and we exclude all dyad-year observations corresponding to either an *ongoing* dispute or a country *joining* an ongoing dispute.

9. Data for the historical period 1816–1992 in the COW are available in monadic form, and forming the dyadic data requires additional information not reported in the original data set. Maoz (1999) has augmented the standard monadic COW data set and constructed a dyadic data set for the years 1816–1992. The COW v 3.02 contains militarized dispute data in dyadic form for the remaining years 1993–2000 included in our sample.

4.1.2. Classifying regime types. Data on political regime characteristics are from the Polity IV data set (Marshall and Jaggers, 2002). Indexes measuring the competitiveness of political participation, competitiveness of the process for selecting the chief executive, regulation of political participation, openness of executive recruitment and constraints on the chief executive are used to construct democracy and autocracy scores ranging from 0 to 10 for each regime. We follow previous literature (Oneal and Russett, 1997 among many others) and use the difference between the democracy and the autocracy index—the combined Polity or "net democracy" score—to classify countries as dictatorships, limited democracies or full democracies. Very high values of the score signal strong democratic institutions with strong checks on the leader's power. Very low values, instead, suggest the absence of any controls on the leader. Intermediate values of the score correspond to regimes in which some limits on the leader's power exist, but not enough for the regime to qualify as fully democratic. We will use such intermediate values to define limited democracies. This approach has also been used in other studies that focus on regimes in this middle range, sometimes known as "anocracies" or "mixed regimes" (see Gurr, 1974; Goemans, 2000; Mansfield and Snyder, 2005).[10] The net democracy index from Polity IV ranges from −10 to 10, taking 21 possible values in all. In the baseline model, we divide the range of possible net democracy scores into three subintervals of equal length. Thus, a dictatorship corresponds to values smaller than −3, a limited democracy to values between −3 and 3, and a full democracy to values greater than 3.

A few examples illustrate the category of "limited democracies." Germany in the late nineteenth and early twentieth century is a limited democracy. Power was concentrated in the hands of the kaisers, but they could not repress the views of the population entirely. Under Wilhelm II, the Socialist party formed a strong voting block in the Reichstag and even won the general elections in 1913 (Craig, 1978, Chapter 8). Louis-Philippe, "King of the French", was appointed by France's Chamber of Deputies after the July Revolution of 1830 (Howarth, 1961). During much of his reign, France is a limited democracy. Napoleon III initially ruled dictatorially, but from the 1860s, he gave the French Parliament more power (Wetzel, 2001). By 1870, France is classified as a limited democracy in our data. Latin American countries such as Argentina, Ecuador, Nicaragua and Peru are heavily represented in our sample of limited democracies in both the nineteenth and twentieth centuries. Ecuador is classified as a limited democracy for the longest amount of time, 114 years between 1854 and 1971. Middle Eastern countries begin to appear in this classification in the post-war period. Anecdotal evidence, and the results in Mansfield and Snyder (2005), suggest that these limited democracies may be highly prone to conflict.

Mansfield and Snyder (2005) argue that conflicts are likely to occur during *transitions* to democracy. In fact, our empirical findings will suggest that limited democracies are *inherently* more aggressive and not just during periods of political regime transitions. In the nineteenth century, the great European powers are limited democracies and are heavily involved in disputes. In Asia, Japan and Thailand are involved in conflicts frequently. In Africa and the Middle East, countries like Kenya and Jordan are limited democracies for a short period of time but engage in disputes relatively frequently during that period. Dyads of limited democracies also include Latin American countries which experienced many conflicts with European powers as well as with each other. For example, Ecuador and Peru repeatedly fought over the Condor Mountain range (Simmons, 1999). The late 1930s and early 1940s marked a violent turning point in this conflict and, during this period, both countries are classified as limited democracies. Bolivia–Paraguay and Argentina–Chile are other conflict-ridden dyads of limited democracies. Japan has

10. Merged COW and Polity data in dyadic form, along with other controls considered in the democratic peace literature, are available from Scott Bennett's EUGene Web site: http://eugenesoftware.org.

participated in many conflicts with various opponents.[11] Many of these disputes occurred during the nineteenth and the first half of the twentieth century. We return to this issue below, when we analyse the estimates of the model over shorter time subsample.

4.2. *Empirical model*

Our empirical strategy has two steps. We first utilize the Polity net democracy score to construct a set of dummy variables that characterize the regime types of each dyad in the sample. We then estimate the probability that a MID occurs within each possible dyad. The explanatory variables include the regime-type dummies and controls typically considered in the democratic peace literature. Our preferred estimation procedure is a panel logit regression model with fixed effects at the dyadic level. This simple methodology allows us to study the effects of democracy on conflict using a flexible functional specification that links conflict to political regime types. It is particularly well suited for investigating a possible non-monotonic relation between democracy and conflict. The dyadic fixed-effects control for time-invariant sources of unobserved heterogeneity, such as historical enmities between countries, or geographical distance.

The main restriction imposed by our methodology is the initial classification of regimes into dictatorships (net democracy scores below -3), limited democracies (scores between -3 and 3) and full democracies (scores above 3). As a robustness check, we consider a broader definition of a limited democracy, corresponding to net democracy scores between -6 and 6 (as well as other definitions). Some countries which never meet the narrower definition, like Spain, meet the broader definition in some years. Other countries, like France, meet the narrower definition during certain years but meet the broader definition more often.

There are six possible configurations of regime types for a dyad. As shown in Table 1, we define a corresponding set of six dummy variables where $J \equiv \{\text{DiDi}, \text{DiLi}, \text{DiDe}, \text{LiLi}, \text{LiDe}, \text{DeDe}\}$, representing *dyad types* ranging from a pair of dictatorships (DiDi) to a pair of full democracies (DeDe) as well as all other possible combinations of regimes. The dummy variable D_j equals one ($D_{j,dt} = 1$) if at time t dyad d is composed of a pair of regime types $j \in J$ (and zero otherwise). For our baseline definition of a limited democracy, the composition of dyad types varies from a maximum of 31% for a democracy–dictatorship pair, to 6% for a limited democracy pair (Table 2).

To maximize the amount of data, we consider MIDs rather than wars. Even so, MIDs are rare events. For instance, in our baseline model, which only considers dyads for which at least one dispute occurred in the data (see below), a total of 40 786 observations are included but only 5% of these involve MIDs (see Table 2).

Let $MID_{dt} = 1$ if dyad d experienced a military dispute at time t, and $MID_{dt} = 0$ otherwise. Our baseline empirical specification is a logit model that identifies the conditional probability of a MID for dyad d at time $t+1$ by

$$\text{Prob}\{\text{MID}_{dt+1} = 1 | \{D_{j,dt}\}_{j \neq \text{LiLi}}, \mathbf{X}_{dt}, c_d\} = G\left(c_d + \boldsymbol{\beta}'\mathbf{X}_{dt} + \sum_{j \neq \text{LiLi}} \gamma_j D_{j,dt}\right), \qquad (13)$$

11. The online appendix of this paper (available on the journal Web site) provides additional data detail. Table 1 lists the countries that are classified as limited democracies for the longest period of time in our sample. Table 2 reports the limited democracies that were engaged most frequently in disputes. Table 3 shows the dyads of limited democracies that were most conflict ridden.

TABLE 1
Definition of the regime-type dummy variables

	Dictatorship $\text{NetDem}_2 \in [-10, -4]$	Limited democracy $\text{NetDem}_2 \in [-3, 3]$	Democracy $\text{NetDem}_2 \in [4, 10]$
Dictatorship $\text{NetDem}_1 \in [-10, -4]$	D_{DiDi}	D_{LiDi}	D_{DeDi}
Limited democracy $\text{NetDem}_1 \in [-3, 3]$	D_{LiDi}	D_{LiLi}	D_{DeLi}
Democracy $\text{NetDem}_1 \in [4, 10]$	D_{DeDi}	D_{DeLi}	D_{DeDe}

Notes: The table shows the set of regime-type dummy variables included in the regression models for the baseline cut-off points in Polity scores. Each dummy variable D_j is equal to one, when NetDem_1 and NetDem_2 assume values in the relevant intervals, and are equal to zero otherwise.

TABLE 2
Sample description for the baseline model

Variable	Mean	Standard deviation	Minimum	Maximum
MID onset	0.05	0.21	0	1
D_{DiDi}	0.21	0.40	0	1
D_{LiDi}	0.13	0.34	0	1
D_{LiLi}	0.06	0.24	0	1
D_{DeDi}	0.31	0.46	0	1
D_{DeLi}	0.12	0.32	0	1
D_{DeDe}	0.17	0.38	0	1
MajPower	0.54	0.50	0	1
LogCapRatio	2.40	1.67	0	8.44
Allianced	0.20	0.40	0	1
Observations: 40 786				

Notes: Summary measures for the dependent (MID onset) and explanatory variables included in the baseline regression Model 1 in Table 3.

where $\mathbf{X}_{dt}$ is a vector of controls, c_d is a fixed effect defined at the dyadic level and $\{D_{j,dt}\}_{j \neq \text{LiLi}}$ are all regime-type dummy variables with the exception of the limited democracies pair.[12] The fixed effects account for unobserved heterogeneity arising from factors such as geography and persistence of culture and institutions in the cross section of dyads.[13]

A logit regression model's parameters are not identified if a subset of regressors perfectly predicts the outcome of the dependent variable. Since we include both dyadic and year fixed effects in model (13), only country pairs for which at least one MID occurs in the sample period can be included in the estimation; in addition, any year in which no MID occurred is also

12. $G(\cdot)$ is the logistic function. For a review of qualitative response models, and their panel specifications, see Wooldridge (2002).

13. For example, the colonial origin of countries in Africa and South America has played a large role in their subsequent development. See Acemoglu and Robinson (2006) for a review of much of this work.

excluded.[14] To reduce issues of reverse causality in situations where regime transitions and disputes occur during the same year, we lag explanatory variables by one period, as noted by the time subscripts in (13).

To estimate the parameters in (13), we use Chamberlain's (1980) conditional maximum likelihood procedure, which yields consistent estimates of all parameters except the fixed effects (the c_d's). Because of the exclusion of $D_{\text{LiLi},dt}$ in (13), the coefficient γ_j on each regime dummy D_j measures the partial effect of regime type j relative to a pair of limited democracies. However, because the magnitude of the partial effects depend on the fixed effects which are not estimated, we only obtain an ordinal—rather than a cardinal—ranking of the conflict propensity of each dyadic type. For example, a negative value for γ_{DiDi} implies that a dyad of dictatorships is less likely to experience a conflict than a dyad of limited democracies, but the parameter estimate does not reveal the magnitude of the effect.[15]

Returning to the theoretical model, Proposition 1 implies that a dyad consisting of two limited democracies is the most conflict ridden, so all coefficients γ_j should be negative. Proposition 2 implies that a dyad consisting of two full democracies is the most peaceful, so we should have $\gamma_{\text{DeDe}} < \gamma_j$ for all $j \neq$ DeDe. Finally, Proposition 3 implies that if a country ceases to be fully democratic, the probability of conflict increases most in those dyads where it is matched with a full democracy. Proposition 3 cannot be tested in our baseline model because we do not estimate the fixed effects. Instead, we estimate the parameters of (13) using two alternative procedures: a pooled logit model, which excludes fixed effects, and a linear probability model, where $G(\cdot)$ is an identity map.

The set of controls $\mathbf{X}_{dt}$ includes year fixed effects to account for time varying factors that are common to all dyadic pairs (*e.g.* the number of countries in the system, worldwide economic shocks, worldwide conflicts.) Furthermore, we include cubic spline terms in the number of years since a country pair was last involved in a conflict in order to capture the temporal dependence of militarized disputes on past occurrence of disputes within a pair of countries with a flexible functional specification.[16] We follow earlier literature on democratic peace (*e.g.* Oneal and Russett, 1997) in selecting the remaining controls. First, major powers may have an increased incentive to engage in a MID if they think they can escape retaliation, but they may be less aggressive if they can achieve their objectives without conflict. These effects are captured by the dummy variable MajPower, which is equal to one if at least one of the two countries is a major power at time t. Second, an imbalance of military power may create conflict (Bremer, 1992). The COW data set contains an index of military capabilities, constructed from measures of urban and total population, energy consumption, iron and steel production, military manpower and expenditure. The variable LogCapRatio that we include in the regressions is the logarithm of the maximum to the minimum level of military capabilities within each country pair taken from the COW data set. Third, if two countries in a dyad are formally allied by a non-aggression or neutrality treaty,

14. The maximized value function of the likelihood would be unbounded if these observations were instead included in the estimation (see, *e.g.* Albert and Anderson, 1984). The years excluded from the sample are 1818, 1819, 1827, 1841, 1843, 1866 and 1891. The corresponding number of observations are less than 0.5% of the total.

15. Indeed, the partial effect of a dyad of type j relative to a pair of limited democracies is $G(c_d + \hat{\boldsymbol{\beta}}'\mathbf{X}_{dt} + \hat{\gamma}_j) - G(c_d + \hat{\boldsymbol{\beta}}'\mathbf{X}_{dt})$, where hatted variables denote estimates of the corresponding parameters. Although absolute magnitudes of these partial effects cannot be estimated when the c_d's are unknown, values for $\hat{\gamma}_j$'s are sufficient to order the partial effects.

16. Formal tests support the use of the year fixed effects and the spline terms. The estimated coefficient on the four spline terms included indicate that the probability of a MID is higher when another MID occurred in the recent past within the same dyad. The spline term specification allows to account for the temporal dependence with a flexible but parsimonious specification (four parameters in our specification, see Beck, Katz and Tucker (1998) for an earlier specification of cubic spline regressions in the democratic peace literature).

TABLE 3
Regression models—baseline

	Dependent variable: onset of a MID							
Model	(1) Baseline		(2)		(3)		(4)	
Panel a								
D_{DiDi}	−0.58		−0.0027		−0.90		−0.35	
	[0.21]***	(<0.01)***	[0.0013]**	(<0.01)***	[0.18]***	(0.03)**	[0.16]**	(<0.01)***
D_{LiDi}	−0.54		−0.0030		−0.47		−0.26	
	[0.20]***	(<0.01)***	[0.0013]**	(<0.01)***	[0.19]**	(<0.01)***	[0.13]**	(<0.01)***
D_{DeDi}	−0.57		−0.0033		−0.34		−0.40	
	[0.20]***	(<0.01)***	[0.0013]**	(<0.01)***	[0.19]*	(<0.01)***	[0.17]**	(<0.01)***
D_{DeLi}	−0.70		−0.0044		−0.44		−0.26	
	[0.21]***	(<0.01)***	[0.0014]***	(<0.01)***	[0.20]**	(<0.01)***	[0.15]*	(<0.01)***
D_{DeDe}	−1.38		−0.0071		−1.33		−1.34	
	[0.22]***		[0.0014]***		[0.23]***		[0.26]***	
Panel b								
Alliance	−0.38		−0.0054		−0.06		−0.41	
	[0.12]***		[0.0016]***		[0.12]		[0.12]***	
MajPower	0.36		0.0030		1.84		0.42	
	[0.28]		[0.0025]		[0.15]***		[0.28]	
LogCapRatio	−0.01		0.0001		−0.13		−0.01	
	[0.07]		[0.0004]		[0.036]***		[0.07]	
Contiguous	—		—		2.27		—	
					[0.15]***			
LogDist	—		—		−0.36		—	
					[0.06]***			
Model	CLOGIT		FE-LPM		LOGIT		CLOGIT-Ds	
Years	1816–2000		1816–2000		1816–2000		1816–2000	
Observations	40 786		495 062		492 420		40 786	
(pseudo) R2	0.09		0.01		0.32		0.09	

Notes: Robust standard errors reported in square brackets below each coefficient. The *p*-values for a Wald test of equality between each coefficient and the coefficient of D_{DeDe} are reported in parentheses next to the corresponding standard error. Models 1 and 4 are conditional logit models with fixed effects for each dyadic pair. Model 2 is a linear probability panel model with dyadic fixed effects. Model 3 is a pooled logit model. Standard errors are clustered at the dyadic level in Models 2 and 3. Model 4 differs from 1 in the definition of the regime-type dummy variables: In Model 4, values of the Polity IV net democracy index in [−6,6] are coded as limited democracies, values of [−10,−7] as dictatorships and of [7,10] as democracies. Each regression model includes (coefficient not reported) year fixed effects and cubic spline terms in the number of years since a country pair is last involved in a MID (see footnote 16 for additional detail.)
*, ** and ***Significant at 10%, 5% and 1%, respectively.

the Alliance dummy variable equals one. We discuss details of the other controls used in the robustness checks below.

4.3. *Empirical results*

Estimates of the parameters of the empirical models are shown in Tables 3, 6 and 8. Each table shows the empirical estimates in two panels. Panel *a* contains two columns for each regression model. The first column reports the estimated coefficients and standard errors for all—but a pair of limited democracies—regime-type dummy variables. The second column reports the *p*-value of a Wald test for the null that the estimated coefficient on the dummy D_j is equal to that of D_{DeDe}, *i.e.* a pair of full democracies.[17] Panel *b* reports coefficient estimates and standard errors

17. The *t* test (*p* value in the first column) on D_{DeDe} is asymptotically equivalent to the corresponding Wald test and is therefore omitted from the table.

TABLE 4
Partial effects for the pooled logit Model 3 in Table 3

Variable	Partial effect	% Change
D_{DiDi}	−0.0010***	−59
D_{LiDi}	−0.0006**	−38
D_{DeDi}	−0.0005^	−29
D_{DeLi}	−0.0006**	−36
D_{DeDe}	−0.0012***	−74
Pr(MID|{Li,Li}) = 0.0017		

Notes: Pr(MID|{Li,Li}) denotes the probability for a pair of limited democracies to engage in a militarized dispute, predicted by Model 3 in Table 3 when all D_j's are set to zero, and the other controls are equal to the respective sample means. The reported partial effects indicate the discrete change in conflict probability when the value of the corresponding dummy variable D_j goes from zero to one. The significance of a Wald test for the null that each effect is zero is reported next to the corresponding estimate as in the following footnote.
^, *, ** and ***Significant at 11%, 10%, 5% and 1%, respectively.

TABLE 5
Test of Proposition 3

Regime types	Value of $(\omega_{\text{De}T'} - \omega_{\text{DeDe}}) - (\omega_{TT'} - \omega_{T\text{De}})$	
$(T = \text{Di}, T' = \text{Di})$	0.0034***	0.0013***
$(T = \text{Li}, T' = \text{Di})$	0.0026***	0.0008***
$(T = \text{Li}, T' = \text{Li})$	−0.0016	0.00003
Specification	FE-LPM	LOGIT

Notes: The table reports estimates of the conditional probabilities for each pair of regime types T and T' that form (12), when the inequalities are expressed with all terms appearing on the left-hand side. A positive number indicates that the corresponding inequality is satisfied. The parameters are estimated using the fixed effect linear probability Model 2 in Table 3, and the logit Model 3 in Table 3. The significance of a Wald test for the null that each value is equal to zero is reported next to the point estimates as in the following footnote. Refer to footnote 24 for additional detail.
*, ** and ***Significant at 10%, 5% and 1%, respectively.

for all additional controls included in the regression models with the exclusion of the year fixed effects and the cubic spline terms.

4.3.1. Baseline model. Parameter estimates of our baseline empirical specification—the conditional logit model with fixed effects—are shown in the first column under Model 1 of Table 3. As can be seen from the table, all estimates $\hat{\gamma}_j$ are negative and significant at the 1% level. In other words, a dyad of limited democracies is more likely to experience a militarized dispute than any other dyad type. Also, the estimated coefficient $\hat{\gamma}_{\text{DeDe}}$ on the regime-type dummy variable D_{DeDe} is the smallest among the dyad-type dummies. The p-values reported in the second column of Model 1 show that these differences are significant at the 1% level. We thus confirm previous findings of a dyadic democratic peace (Babst, 1972; Levy, 1988; Maoz and Russett, 1993).[18] However, the parameter estimates show a non-monotonic

18. Only the dummy for alliance treaties is statistically different from zero among the additional controls included in the model. The existence of a treaty reduces the likelihood of a MID within the dyad.

TABLE 6
Regression models—comparison with Mansfield and Snyder (2005)

	Dependent variable: onset of a MID							
Model	(1)		(2)		(3)		(4)	
Panel a								
D_{DiDi}	−0.69		—		−0.22		—	
	[0.26]***	(0.04)**			[0.18]	(<0.01)***		
D_{LiDi}	−0.48		—		−0.37		—	
	[0.23]**	(<0.01)***			[0.14]***	(<0.01)***		
D_{DeDi}	−0.58		—		−0.31		—	
	[0.25]**	(<0.01)***			[0.19]	(<0.01)***		
D_{DeLi}	−0.62		—		−0.13		—	
	[0.25]**	(<0.01)***			[0.17]	(<0.01)***		
D_{DeDe}	−1.14		—		−0.98		—	
	[0.26]***				[0.28]***			
Panel b								
DeLi transition dummy	−0.31		−0.14		0.18		0.29	
	[0.16]*		[0.14]		[0.11]*		[0.11]***	
Alliance	−0.52		−0.60		−0.59		−0.61	
	[0.13]***		[0.13]***		[0.14]***		[0.13]***	
MajPower	0.26		0.33		[0.34]		0.34	
	[0.32]		[0.31]		[0.30]		[0.31]	
LogCapRatio	0.03		0.06		0.03		0.06	
	[0.08]		[0.08]		[0.08]		[0.08]	
Model	CLOGIT		CLOGIT		CLOGIT		CLOGIT	
Years	1821–2000		1821–2000		1821–2000		1821–2000	
Observations	32 793		32 793		32 793		32 793	
(pseudo) R^2	0.09		0.09		0.09		0.09	

Notes: Robust standard errors reported in square brackets below each coefficient. The *p*-values for a Wald test for equality between each coefficient and the coefficient of D_{DeDe} are reported in parentheses next to the corresponding standard error. All specifications are conditional logit models with fixed effects for each dyadic pair. Models 3 and 4 differ from 1 and 2 in the definition of the dummy variables: values of the Polity IV net democracy index in [−6,6] are coded as limited democracies, values in [−10,−7] as dictatorships and in [7,10] as democracies. The DiLi transition dummy is defined accordingly. At each date t, the dummy variable detects whether at least one of the countries' political system in a dyad transitioned from a dictatorship to a limited democracy between $t-5$ and t. Each regression model includes (coefficient not reported) year fixed effects and cubic spline terms in the number of years since a country pair is last involved in a MID (see footnote 16 for additional detail).
*, ** and ***Significant at 10%, 5% and 1%, respectively.

relationship between democratization and peace since limited democracies are the most conflict prone.

Macroeconomic factors such as measures of economic development, openness to trade and bilateral trade flows may affect the incentive to engage in conflict.[19] However, reliable data on

19. Different political indicators for classification of regime types might be another variation worth considering. The most obvious choice is the index from the Freedom House (2006). These data have been used in theoretical and empirical studies of democratization and economic development (see Acemoglu and Robinson's 2006 book for an overview of this literature). However, these data are only available starting in 1972. The results confirm our results for the post World War II subsamples reported in a later section.

TABLE 7
Count of negative D_j's in baseline Model 1 in Table 3 for alternative cut-off points in Polity scores

	Maximum				
Minimum	2	3	4	5	6
−6	(5,5)	(5,5)	(5,5)	(5,5)	(5,5)
−5	(5,4)	(5,4)	(5,3)	(5,2)	(5,2)
−4	(5,5)	(5,4)	(5,3)	(5,3)	(5,2)
−3	(5,5)	**(5,5)**	(5,5)	(5,5)	(5,5)
−2	(5,5)	(5,2)	(5,2)	(5,3)	(5,2)

Notes: The table reports the number of point estimates of the regime-type dummies D_j that are negative as well as negative and significant at the 10% level—respectively, the first and second entry in each parentheses—under alternative definitions of the regime-type dummy variable in the baseline regression Model 1 in Table 3. Limited democracies are defined for values of the Polity IV net democracy index between a minimum value reported in the first column and a maximum value reported in the first row. The baseline model results, which are reported in full in column 1 of Table 3, are shown in bold.

these variables are not available for the full sample, especially prior to 1945, which, as discussed in the next subsection, is a central historical period in our analysis.[20] Moreover, the two sets of fixed effects included in our baseline specification help capturing in part the impact of these variables. First, the year fixed effects can account for worldwide economic shocks and business cycles. Hence, economic fluctuations that are common to both members of a dyad and affect their incentives to be aggressive are captured by the year fixed effects. Furthermore, the dyadic level fixed effects account for some important factors, such as the relative disparity of natural resource endowments and geographic distance, which are largely time invariant but affect the likelihood of conflict through their impact on variables such as dyadic trade flows and the degree of disparities in national income.

4.3.2. Alternative empirical specifications. We now consider two alternative empirical models: a linear probability model with fixed effects and a pooled logit model. These models allow us to assess the robustness of our baseline results. Moreover, they allow us to compare the magnitudes of the effect of different regime types on the probability of conflict. This allows us to test the prediction made in Proposition 3.

Robustness and further results: The estimates of the linear probability model with dyadic fixed effects are also shown in Table 3. From the first column under Model 2 of Panel *a*, all estimated coefficients on the regime-type dummies are negative and significantly different from zero. Furthermore, the coefficient on D_{DeDe} is the smallest and significantly so, as shown by the *p* values in the second column. As in the baseline model, a pair of limited democracies is

20. We augmented the baseline model specification to include a measure of dyadic trade among the set of controls (using historical data from Barbieri, 1996). The estimated coefficient on dyadic trade was never statistically different from zero. Moreover, due to missing observations, the sample size dropped by more than two thirds relative to the baseline model, and due to the missing data, only the years 1871–1992 are included in the estimation. In addition, we also included measures of gross domestic product per capita in PPP, restricting our sample to the post-1950 sample. All regime-type dummies remained negative, although the point estimates were much noisier than in the full sample. These results are similar to the ones for the post-World War II subsample, discussed in the next section.

TABLE 8
Regression models—subsamples

Dependent variable: Onset of a MID								
Model	(1)		(2)		(3)		(4)	
Panel a								
D_{DiDi}	−0.84		−0.24		−1.63		0.14	
	[0.26]***	(0.14)	[0.38]	(0.03)**	[0.65]**	(0.65)	[0.99]	(0.11)
D_{LiDi}	−0.64		−0.47		−1.46		−0.30	
	[0.22]***	(0.03)**	[0.40]	(0.35)	[0.71]**	(0.50)	[0.91]	(0.22)
D_{DeDi}	−0.62		−0.25		−1.20		−0.04	
	[0.26]**	(<0.01)***	[0.37]	(<0.01)***	[0.68]*	(0.04)**	[1.00]	(0.03)**
D_{DeLi}	−0.66		−0.59		−1.71		−0.32	
	[0.24]***	(0.01)**	[0.39]	(0.52)	[0.71]**	(0.67)	[1.02]	(0.11)
D_{DeDe}	−1.36		−0.74		−1.86		−1.32	
	[0.36]***		[0.38]*		[0.71]***		[1.10]	
Panel b								
Alliance	−0.72		−0.10		−0.19		−1.10	
	[0.21]***		[0.18]		[0.28]		[0.49]*	
MajPower	0.02		0.35		0.64		−0.68	
	[0.26]		[0.54]		[0.88]		[1.47]	
LogCapRatio	−0.10		−0.10		−0.19		−0.25	
	[0.11]		[0.14]		[0.36]		[0.36]	
Model	CLOGIT		CLOGIT		CLOGIT		CLOGIT	
Years	1816–1945		1946–2000		1985–2000		1990–2000	
Observations	16 143		15 615		2946		1624	
(pseudo) R^2	0.13		0.05		0.07		0.14	

Notes: Robust standard errors reported in square brackets below each coefficient. The p values for a Wald test of equality between each coefficient and the coefficient of D_{DeDe} are reported in parentheses next to the corresponding standard error. All parameters are estimated using conditional logit models with fixed effects at the dyadic level. Each regression model includes (coefficient not reported) year fixed effects and cubic spline terms in the number of years since a country pair is last involved in a MID (see footnote 16 for additional detail). The regression models are analogous to Model 1 of Table 3 but the parameters are estimated on the subsamples reported at the bottom of each column.
*, ** and ***Significant at 10%, 5% and 1%, respectively.

most likely to engage in a MID, and a dyad of full democracies is the least likely. Because of the linearity of the model, the partial effects of the different regime types relative to the limited democracy pair are equal to the coefficients on each regime-type dummy D_j. To interpret these magnitudes, note that the probability of conflict in the sample of observations used to estimate the linear model is significantly smaller than in the sample used to estimate the baseline model. Indeed, a large number of dyads that never engaged in a MID are included in this model but were excluded in the estimation of the conditional logit model.[21] The predicted probability of conflict for a pair of limited democracies is equal to 0.0075.[22] The likelihood that a dyad engages in a MID falls by about 35% when a dyad changes from a pair of limited democracies to a pair of dictatorships, and it falls by 95% when a dyad changes from a pair of limited democracies to a

21. The unconditional probability of a MID is 0.0038 in the sample used to estimate the linear model compared to 0.05 in the sample of the baseline model (see Table 2).

22. It is calculated by setting the values of all other regime dummies to zero and of all remaining regressors to their respective sample means.

pair of full democracies. However, we should point out that, due to the very low frequency of MIDs in the sample and the linearity of the model, a significant portion of fitted probabilities implied by the parameter estimates (in fact about 30%) turn out to be negative.

The pooled logit regression model (Model 3 in Table 3) always predicts probabilities between zero and one, but it excludes dyadic fixed effects. Instead, we enlarge the set of controls to include other standard measures used in the democratic peace literature. In particular, we include two measures of distance: the logarithm of the distance between the two countries' capitals, LogDist, and a dummy variable, Contig, which indicates whether the country pair shares contiguous borders. Unlike the other two models, both within- and between-dyadic variation in the data are used to estimate the model parameters. Furthermore, as for the linear probability model, all parameters are estimated and it is thus possible to quantify the magnitudes of the partial effects associated with the different regime types. As shown in Model 3, Table 3, a dyad of limited democracies is again the most conflict ridden, and a dyad of full democracies is the most peaceful (all results are significant at conventional levels).[23] Table 4 displays the magnitudes of the partial effects of each regime type relative to the limited democracy pair. As shown, all partial effects are significant at conventional levels, with the exception of the one corresponding to D_{DeLi}, which is only barely significant. The magnitudes of the partial effects relative to the baseline probability are again sizable. The likelihood that a dyad engages in a MID falls about 59% when the dyad changes from a pair of limited democracies to a pair of dictatorships, and it falls about 74% when the dyad changes from a pair of limited democracies to a pair of full democracies.

To summarize, the estimates of the alternative empirical models confirm the baseline results of a non-monotonic empirical relation between the probability of engaging in conflict and political regime types: a dyad of *limited* democracies is the *most* likely to engage in a MID and a dyad of *full* democracies is the *least* likely. Even our more conservative estimates suggest that the limited democratization of a dyad of dictatorships raises the likelihood of conflict by more than half.

Democracies turn hawkish: The three empirical specifications considered so far provide support for the dyadic democratic peace hypothesis. Here, we test an additional implication of the model. In our theory, whatever the regime type of country i, conflict becomes more likely when the opposing country j becomes more aggressive. Proposition 3 implies that this effect is maximal when country i is itself a full democracy. This prediction can be tested using the estimates of the linear probability model with fixed effects and the pooled logit model. Table 5 displays the point estimates, and significance for the null that these estimates are zero, for the combinations of conflict probabilities ω_{ij} that occur in inequality (12), for three different pairs of regime types T and T'.[24] The table does not report results for the fourth case $T = \text{Di}, T' = \text{Li}$ since by the symmetry of the model it is equivalent to the case $T = \text{Li}, T' = \text{Di}$.

23. The addition of more controls, the elimination of the fixed effects and the different estimation sample changes some of the results for the remaining controls. The Alliance dummy is no longer significant, while MajPower and LogCapRatio are now statistically significant. The parameter estimates confirm findings in the democratic peace literature: They imply that country pairs with similar military capabilities and for which at least one country is a major power are more likely to engage in a MID.

24. In the pooled and fixed-effect logit model specifications, the difference in the predicted probabilities conditional on the regime pairs, which form (12), depend on all parameters including the fixed effects. Thus, we cannot test the proposition using the conditional maximum likelihood estimates of the fixed-effect logit model since the fixed effects are not being estimated. In the linear probability model, instead, the difference in the conditional probabilities in (12) simplifies to the difference of the corresponding regime-type dummies. In the pooled logit model, the difference is calculated by setting the value of all regressors (excluding the regime-type dummies) at their sample means, as in the previous calculations of the marginal effects. The variance covariance matrix for the Wald test in the logit model is obtained by the delta method.

The estimates of the linear probability model are reported in the first column of the table. Point estimates for two of the three pairs of regime types satisfy inequality (12) and are significantly different from zero. For the case $T = \text{Li}, T' = \text{Li}$, the parameter estimates are too imprecise to assess whether the inequality holds. The estimates of the pooled logit model are qualitatively similar and reported in the second column of Table 5. All three point estimates satisfy the inequality (12) and two are statistically different from zero. On net, we thus find evidence that full democracies turn hawkish in the sense of responding most aggressively to adverse changes in the environment. Conversely, using the estimates of the linear probability model, if a country changes from a dictatorship to a full democracy, then the probability of conflict with a full democracy decreases by about 90%, but the probability of conflict with a dictatorship decreases by only about 12%.[25] Thus, even full democratization does not significantly lower the probability of conflict with non-democratic states.

4.3.3. Other empirical results.

Alternative regime definitions and transitions: In our baseline analysis, we divided the range of possible net democracy scores, which goes from −10 to +10, into three intervals of equal length, with limited democracies in the interval [−3,3]. In Mansfield and Snyder (2005), limited democracy instead corresponds to net democracy scores between −6 and 6. As shown in Model 4 of Table 3, the main findings of our baseline model are confirmed if we use their classification: dyads of limited democracies are most likely to engage in a MID, while fully democratic dyads are the most peaceful. However, the main issue raised by Mansfield and Snyder (2005) is that states that have recently been partially democratized are likely to be aggressively nationalistic during a *transitional* period. Accordingly, they define a transitional dummy that indicates whether a transition from a dictatorship to a limited democracy occurred in the previous 5 years. To study the effect of regime transitions, we include Mansfield and Snyder's transitional dummy in our regression, using both the [−3,3] definition of limited democracy from our baseline empirical model and the broader classification [−6,6].

As shown in Model 1 of Table 6, our baseline regression results are not affected when we include the transitional dummy: all regime-type dummies are still negative and significant at conventional levels. In other words, limited democracies are not only prone to conflict during a period of transition. They are more likely to be involved in conflicts even long after the transition. Our baseline results appear robust to the inclusion of the additional control: dyads of limited democracies (new and old) are most conflict ridden, while dyads of full democracies are most peaceful. In our baseline regression, Mansfield and Snyder's (2005) transitional dummy has the wrong sign (significant at the 10% level): a recent democratization actually *decreases* the likelihood of conflict. This result also holds when excluding our regime-type dummies (Model 2).

If instead we use the [−6,6] classification, there is more support for Mansfield and Snyder's (2005) theory. The transitional dummy is positive and barely significant at the 10% level.[26] All the coefficients on the regime-type dummies for dyads of regime types are still negative, but only two are significant at conventional levels. We conclude that the data can support both the idea that transitional periods are dangerous, and the idea that limited democracies are inherently

25. That is $(\omega_{\text{DeDe}} - \omega_{\text{DeDi}})/\omega_{\text{DeDi}}$ versus $(\omega_{\text{DeDi}} - \omega_{\text{DiDi}})/\omega_{\text{DiDi}}$.

26. The statistical significance of the transitional dummy increases when excluding our regime dummies (Model 4).

hawkish, but one or the other theory looks better depending on the exact classification of regime types.

Polity scores are based on qualitative assessments of governing institutions. Various definitions of limited democracies in terms of Polity scores appear in the literature, *e.g.* Fearon and Laitin (2003) use the range [−5,5]. In our theoretical model, the leader of a limited democracy can stay in power with the support of a hawkish minority, and it is not clear which Polity scores correspond more closely to this. Indeed, there is no reason why the definition should necessarily be symmetric around zero. In general, limited democracies can be defined as states with net democracy scores in some set $[x, y]$. As a further robustness check, we reestimate the baseline conditional logit model for different values of x and y.[27] Specifically, x takes values between −6 and −2, and y takes values between 2 and 6, for a total of 24 alternative definitions. Table 7 summarizes the results of this analysis. Each entry enclosed in parenthesis reports the number of point estimates for the regime-type dummies D_j that are negative as well as negative and significant at the 10% level—respectively, the first and second entry—for the corresponding definition of a limited democracy. For each alternative definition $[x, y]$ of limited democracy, the minimum net democracy score x is given in the first column, and the maximum y in the first row.

As indicated by the first entries enclosed in parenthesis, under all 24 alternative definitions of limited democracy, point estimates for the coefficients of all five regime-type dummies are negative for all regression models. As shown by the second entries in parenthesis, the large majority of these negative point estimates are also statistically different from zero across the alternative definitions. Thus, although the significance somewhat depends on the classifications, the point estimates indicate that limited democracies are the most conflict prone, for a broad range of possible definitions of limited democracy.

Subsamples: An inspection of the data indicates that a large number of MIDs for limited democracy pairs occurred before World War II.[28] Therefore, we reestimate the baseline model over two subsamples of pre- and post-World War II data. As shown in Table 8, the results in the pre-World War II subsample are analogous to the ones obtained over the entire sample. All coefficients on the regime dummies are negative and significantly different from zero; the coefficient on D_{DeDe} is again the smallest, and the difference with respect to D_{DeDe} is significant for four of the five dummies. In the post-World War II sample, we find weaker evidence. Although the coefficients on all regime-type dummies are still negative, only one differs significantly from zero. Furthermore, only three of the dummies now have coefficients that are significantly larger than D_{DeDe}. Overall, the dyadic democratic peace hypothesis seems to be supported both pre- and post-World War II.[29] The hypothesis that limited democracies are inherently aggressive finds less support after World War II.

During the Cold War, there is a decline both in the number of limited democracies in our sample and in the number of MIDs in the western hemisphere. During this special period, countries within the Soviet bloc could not act independently, and the fear of nuclear war prevented minor disputes from escalating (Gaddis, 2005, pp. 261–263). To study if the old patterns might

27. For example, for $x = -5$ and $y = 3$, limited democracies are in the interval $[-5, 3]$, dictatorships are in $[-10, -6]$ and full democracies in $[4, 10]$.

28. See Table 2 in the online appendix to this paper.

29. However, if we consider only pre-World War I data, then we reproduce the result of Farber and Gowa (1997), who found no evidence for a democratic peace in this period. Thus, it is more correct to say that there is evidence in favour of a democratic peace only after World War I.

return after the erosion of the Soviet bloc, we consider the subsample of militarized disputes after 1984.[30]

The details of the empirical specification are the same as in our baseline model. The estimation results are reported as Model 3 in Table 8. A dyad of limited democracies is again more conflict prone than any other dyad type at conventional statistical significance levels. The result holds also for the broader [−6,6] definition of a limited democracy (not shown in the table). A dyad of full democracies is again the most peaceful, but the difference is statistically significant only for two regime-type dummies. Model 4 of Table 8 reports the weaker support for our theory when we focus on only the post-1989 subsample.[31] These findings are not surprising since the parameters of our model are only identified by within-country variation of data (in terms of interstate conflict and regime change), and this is very limited in such a short sample (about half the size of the post-1984 estimation).

Countries arising from the disintegration of Yugoslavia and the Soviet Union have recently brought war back to Europe. Participants in these conflicts, such as Armenia, Croatia, Georgia, Russia and Yugoslavia, are classified as limited democracies (even using a narrow definition). The results suggest that the nineteenth and early twentieth centuries constitute a better model for the contemporary pattern of conflict than the Cold War period.

5. CONCLUSION

According to Paine and Kant, democracy is good for peace because wars are disadvantageous to the population at large. But if wars are caused by fear and distrust, then the link between democracy and peace is not obvious. In our simple model of Schelling's dilemma, the average citizen is a coordination type. He wants peace, but he supports aggressive actions against potentially hostile enemies. The behaviour of coordination types is key to Schelling's dilemma. If both leaders were commonly known to be coordination types (just like their representative citizens), then for any pair of regime types, there would be two pure-strategy Nash equilibria: AA and PP. In our model, this indeterminacy vanishes because each leader is *not quite sure* that the opponent is a coordination type. Incomplete information and the possibility of dominant strategy types creates a "fear spiral" that leads to a unique interior equilibrium. In this equilibrium, the marginal incentive to be aggressive depends on the regime type. The combination of incomplete information and incentives for domestic political survival thus generates the relationship between political institutions and conflict.

The model suggests a possibly non-monotonic relationship between democracy and peace, which is in fact found in the data. Our empirical analysis of militarized disputes in the nineteenth and twentieth centuries reveals that dyads consisting of two limited democracies are the most conflict ridden of all dyads (including "mixed" dyads). Dyads consisting of two full democracies are peaceful, but as the environment becomes more hostile, full democracies become more

30. As noted above, the inclusion of the fixed effects in the baseline model requires the estimation to only include dyads for which at least one MID occurred in any given subsample. Given this restriction, the amount of data are quite limited if we start the subsample after the fall of the Berlin Wall in 1989, as discussed below. Arguably, the erosion of the Soviet bloc began before 1989. In 1980, Solidarity was founded in Poland, and in 1985 Mikhail Gorbachev came to power. The cut-off point 1984 is the midpoint between the arrival of Solidarity and the fall of the Berlin Wall. In terms of robustness of the results discussed below to other cut-offs points, we always find the point estimates of the regime dummies to be negative through the 1980s. In terms of significance, the results would be identical choosing 1985, rather than 1984, but would be somewhat weaker in terms of significance if we choose 1982, 1983 or 1986. The significance drops considerably post-1987 as the data available to estimate the parameters is significantly more limited.

31. Consistent with these results, Gowa (2008) estimates a pooled logit model after the Cold War and finds weak support for the democratic peace hypothesis.

aggressive faster than other regime types. These empirical findings are consistent with the simple model.

A non-monotonic relationship between democracy and peace has important policy implications. Many countries in the Middle East are classified as dictatorships, or vacillate between dictatorship and limited democracy. For example, between 1981 and 2000, countries such as Afghanistan, Iraq, Kuwait, Libya, Saudi Arabia and Syria are classified as dictatorships in our baseline model. Algeria, Egypt, Jordan, Iran and Tunisia are either dictatorships or limited democracies at different times. According to President Bush (2003), "the advance of freedom leads to peace." Unfortunately, the data suggest that this may not be true for a *limited* advance of freedom.

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