COMMON INTERESTS OR COMMON POLITIES? REINTERPRETING THE DEMOCRATIC PEACE

Henry S. Farber
Joanne Gowa

COMMON INTERESTS OR COMMON POLITIES? REINTERPRETING THE DEMOCRATIC PEACE

ABSTRACT

The central claim of a rapidly growing literature in international relations is that members of pairs of democratic states are much less likely to engage each other in war or in serious disputes short of war than are members of other pairs of states.

Our analysis does not support this claim. Instead, we find that the dispute rate between democracies is <u>lower</u> than is that of other country pairs only after World War II. Before 1914 and between the World Wars, there is no difference between the war rates of members of democratic pairs of states and those of members of other pairs of states. We also find that there is a <u>higher</u> incidence of serious disputes short of war between democracies than between nondemocracies before 1914.

We attribute this cross-temporal variation in dispute rates to changes in patterns of common and conflicting interests across time. We use alliances as an indicator of common interests to show that cross-temporal variation in dispute rates conforms to variations in interest patterns for two of the three time periods in our sample.

Henry S. Farber
Department of Economics
Princeton University
Princeton, NJ 08544
and NBER

Joanne Gowa
Department of Politics
Princeton University
Princeton, NJ 08544

Common Interests or Common Polities?:
Reinterpreting the Democratic Peace

The central claim of a growing literature in international relations is that pairs of democratic states are much less likely than are other pairs of states to engage each other in war or in serious disputes short of war (Bremer 1992b, 1993; Chan 1984, 1993; Dixon 1994; Doyle 1986; Maoz and Abdolali 1989; Maoz and Russett 1993; Russett 1993; Small and Singer 1976; Weede 1993).

In this paper, we contend that neither the incidence of wars nor that of militarized interstate disputes short of war (MIDs) depends on whether or not the members of pairs of states are democratic, per se. We find that it is whether states have interests in common or interests in conflict that determines dispute rates between them.

Our analysis shows that there is substantial cross-temporal variation in interest constellations. Before 1914 and between the World Wars, members of pairs of democratic states are less likely to have interests in common than are members of other pairs of states. After World War II, however, members of democratic dyads are much more likely than are their nondemocratic counterparts to have interests in common. This implies that relative dispute rates by regime type should vary correspondingly.

We find that the data conform to predicted patterns both before 1914 and after 1945. Prior to World War I, the rate of serious disputes short of war is higher for members of pairs of democratic states than for members of other country pairs; there is

no relationship between war rates and regime type. After 1945, however, serious dispute rates are <u>lower</u> between members of democratic dyads than between other states. The interwar period is anomalous: As we explain below, relative dispute rates in this period do not conform to the predicted pattern.

The variation in relative dispute rates of democratic and other dyads across time cannot be attributed to democracy <u>per se</u>. We attribute it instead to changing constellations of interests: For two of three time periods we study, variations in relative dispute rates correspond to variations in patterns of common and conflicting interests. We conclude that Kenneth N. Waltz got it right: "Explanation at the level of units alone is bound to mislead" (1979, 68).

We organize the paper as follows. First, we briefly review the existing literature. Then, using alliance rates as a measure of interests, we analyze patterns of common and conflicting interests across time. In succeeding sections, we analyze dispute rates across time for war and for serious disputes short of war. Before concluding, we examine alliance patterns more closely in search of a potential explanation for the interwar anomaly.

THE EXISTING LITERATURE

There is a rapidly growing body of literature that examines whether interactions between members of pairs of democratic states are unique. There is a strong consensus on two related issues. First, democracies do not engage each other in war. Second, and implied by the first, members of pairs of democratic states are much less likely to engage

each other in serious disputes short of war than are members of other pairs of states.[1]

Generally, the existing literature finds evidence of a democratic peace across the 1816-1980 period as a whole.[2]

Many of the studies in the democratic peace literature examine whether the incidence of war between democracies differs from that of war between other states. According to William Dixon, these studies have produced "very strong and consistent empirical evidence that wars between democracies are at most very rare events" (1994, 14).[3] Indeed, on the basis of their analysis of data spanning 150 years, Zeev Maoz and Nasrin Abdolali conclude that "democracies never fight one another" (1989, 21).

Students of this issue have been very careful to make clear that whether or not a state is democratic does not affect its overall propensity to wage war. As they observe, democracies are just as likely as are other states to engage in war (Bueno deMesquita and Lalman 1992; Chan 1984; Doyle 1986; Levy 1988; Morgan and Schwebach 1992; Rummel 1968). In addition, there is no strong evidence that democracies are less likely to initiate war. Thus, the incidence of war between democracies is not an indicator of the war-proneness of democracies in general. Instead, the distinctive effect of democracy on war is limited to cases in which both members of a pair of states are democratic.

Another finding that emerges from this literature relates to the outbreak of

---

[1]"Other" pairs of states may consist of one democratic state and one nondemocratic state or two nondemocratic states.

[2]Exceptions exist. Maoz and Abdolali (1989) find some variation across time; Maoz and Russett (1993) study only the post-World War II period, because they believe that democracies have become more institutionalized over time.

[3]For an exception, see Spiro 1994.

"militarized interstate disputes" (MIDs). Several studies find that there is a statistically significant difference in the incidence of MIDs between members of pairs of democratic states and members of other dyads. A dispute is categorized as an MID if: 1) it involves "threats to use military force, displays of military force, or actual uses of force;" and 2) the threat or deployment of military forces is "explicit, overt, nonaccidental, and government sanctioned" (Gochman and Maoz 1984, 587). Examples of MIDs include the 1898 Fashoda crisis, the 1962 Cuban Missile crisis, and the 1969 Sino-Soviet border crisis. The finding about MIDs echoes that about wars: Militarized disputes are much less likely to occur between democracies than between members of other pairs of states.

To explain these findings, contributors to the democratic-peace literature advance two arguments: 1) There is a norm of peaceful conflict resolution that applies within and between democracies; and 2) There are more effective constraints on would-be renegade leaders in democratic than in nondemocratic polities. Powerful criticisms have been levied against both explanations (see, e.g., Layne 1994; Owen 1994; Spiro 1994). In our analysis, we examine the role that interests play in explaining patterns of disputes between democratic states across time.

INTERESTS, ALLIANCES, AND REGIME TYPES

The Use of Alliance Rates as a Measure of Interests

To analyze the relationship between regime type and disputes, it is crucial to develop a measure of interests. The optimal approach would be to measure the relevant interests explicitly and to use this measure as an explanatory variable in a multivariate analysis of the probability of disputes. Doing so would make it possible to estimate the

effect of regime type controlling for interests. Unfortunately, however, it is not feasible to construct such a measure of interests.

As a result, students of international relations use alliances as an indicator of common interests, because there seems to be a close relationship between these two variables (Bueno de Mesquita 1981; Bueno de Mesquita and Lalman 1992; Dixon 1994; Siverson and Emmons 1991; Siverson and Starr 1991). Still, alliances are an imperfect measure of interests: They are the outcome of complex interstate interactions, including attempts to aggregate military power and efforts to control allies (Schroeder 1976, 230; Siverson and Starr 1991, 27). As such, alliances measure with error interests relevant to the outbreak of military conflicts.

If this were the only problem plaguing the use of alliances as an independent variable in analyses of dispute rates, it would not be insuperable. Measurement error is, after all, a fairly common phenomenon. However, in the case at hand, the variable measured with error is likely to be correlated systematically with regime type. As such, measurement error in the alliance variable biases not only the coefficient of the alliance variable but also the coefficient of regime type, the variable of primary interest.[4]

Thus, severe inference problems arise if alliances are used to control for interests in a multivariate analysis of democracies and dispute rates. A combination of three conditions give rise to these problems. There is 1) measurement error in the alliance

---

[4]This is true even where the measurement error is pure noise, i.e., independent of everything in the model.

5

variable; 2) a negative relationship between interest congruence and dispute rates; and 3) a positive relationship between alliances and democracies (at least in some periods). In this context, a regression analysis will yield a negative statistical relationship between the democracy variable and the probability of a military dispute <u>even when no structural relationship exists between these variables.</u>[5]

In an ideal world, we could find an error-free dyad-level measure of interests. A potential alternative would be to have another, perhaps imperfect, dyad-level measure of interests to use as an instrument for alliances. We could use an instrumental variables approach to derive consistent estimates of the effect of regime type on dispute probabilities if and only if: 1) This alternative variable and alliances were both correlated with interests; and 2) measurement errors in the two variables were independent. Even this approach is problematic because of the discrete nature of the outcome being studied (dispute or no dispute). In any case, there are no good candidate measures available to use as an instrument for alliances.

As a result, we analyze the relationship between interests and dispute rates in two stages. In the first, we use alliances as a measure of interests to examine whether there is variation across time in the extent of interest congruence between democracies. We

---

[5]There are two alternative interpretations, apart from measurement error, of the use of alliances as a measure of interests that lead to similar conclusions regarding consistent estimation of the effect of regime type on dispute probabilities: 1) There are omitted variables that affect the probability of disputes and are correlated with both alliances and regime type; and 2) alliances and disputes are simultaneously determined (see, e.g., King, Keohane, and Verba 1994, 198). For the sake of simplicity, we cast the argument here in terms of measurement error. For a more detailed development of the measurement error argument, see Appendix A.

use the results of this analysis to predict dispute patterns. In the second stage, we test these predictions against the relevant data on wars and militarized interstate disputes (MIDs) short of war.

The Data: Sources and Sample Definition

As is standard in the democratic peace literature, we use a dyad-year as the unit of observation throughout this paper. That is, we use as our unit of observation each pair of countries each year at a time. The sample throughout consists of all countries that were members of the interstate system during the relevant time periods between 1816 and 1980.[6] Following Small and Singer (1982), we define a nation as a member of the interstate system before 1914 if and only if: (a) It had a minimum population of 500,000; and (b) it had British and French representation on its soil "at or above the rank of charge d'affaires."[7] After World War I, a nation so qualified if it was either (a) "a member of the League or the United Nations at any time during its existence;" or (b) it "met the half million population minimum and received diplomatic missions from _any two_...major powers" (Small and Singer 1982, 40-1, emphasis original).

As do most studies in the existing literature, we use Ted Robert Gurr's Polity II data set to define autocratic, democratic, and anocratic regimes.[8] Gurr defines autocracies as systems in which: 1) tight constraints on political participation exist; 2) only

---

[6]For reasons we explain below, we omit the periods of the two World Wars from our analysis.

[7]This was sufficient to signal international recognition, because "as Britain and France went, so went the majority" of other nations (Small and Singer 1982, 40).

[8]Some studies also use an additional data set to assess polity types (i.e., either Banks 1971 or Chan 1984). See, e.g., Bremer 1992b; Maoz and Russett 1993.

members of the political elite select the chief executive; and 3) institutions do not constrain the leader's power (1990, 37). In contrast, in democracies: 1) individuals can "express effective preferences about alternative policies and leaders;" 2) institutionalized constraints limit the leader's power; and 3) guarantees of civil liberties exist (Gurr 1990, 38).

Gurr constructs two discrete 10-point scales to measure the extent of autocracy and democracy in each state annually.[9] The scores a polity receives are composite measures that reflect, inter alia, the method of executive recruitment; the competitiveness of party politics; and the range of political participation. Gurr labels as "anocratic" those polities that receive "middling scores on both Autocracy and Democracy scales" (1990, 38).[10]

We use Gurr's scales to categorize each regime as democratic, autocratic, or anocratic. More specifically, we categorize a regime as democratic if it receives a score of six or more on Gurr's democracy scale; as autocratic if it scores five or higher on Gurr's autocracy scale; and as anocratic if it is categorized as neither a democracy nor

---

[9]There are three types of cases which Gurr codes as missing and which we, as a result, omit from our analysis. "Interruptions" are cases in which a wartime occupation temporarily disrupts an existing polity. The other two cases are "transitions," defined as periods of change from one regime type to another, and "interregnums," defined as periods during which no central government exists.

[10]More intuitively, an anocracy is a polity in which the state "had minimal functions, an uninstitutionalized pattern of political competition, and executive leaders constantly imperiled by rival leaders. Anocracy...means literally the absence of power or control," although it is used "to signify states which approach but do not reach the extreme conditions" (Gurr 1974, 1487, n11).

an autocracy.[11]

In the multivariate probit analyses that follow, we control for major-power status and geographic contiguity. We use Small and Singer's (1982) classification of major powers, and we record the number of major powers in each dyad (0, 1, or 2). We include a pair of dummy variables to indicate whether a dyad includes one or two major powers.

For our measure of contiguity, we use Siverson and Starr's border data (1991). These data are complete through 1965.[12] We extended the data set through 1980. There are three ways in which members of a dyad can be contiguous: They can share home or colonial borders, or they can be separated by less than 200 miles of water. If they are not contiguous in any of these ways, we classify them as non-contiguous. In our probit model, a single dummy variable indicates whether or not dyad members are contiguous.

We use the alliance data that Small and Singer compiled (1966) and that Alan N. Sabrosky updated through 1980.[13] We omit wartime alliances from our analysis. We do so because we use alliances here as a measure of interests in order to predict the incidence of disputes. Wartime alliances, however, do not offer any information about

---

[11]These rules do not generate any inconsistencies. Specifically, there are no regimes that satisfy both the requirement for a democracy and the requirement for an autocracy. The simple correlation between Gurr's autocracy and democracy scales is -0.83.

[12]Siverson and Starr record as an event additions and removals of a boundary of a given type, but they do not record whether all boundaries of a given type are removed when a removal is recorded. Thus, possible inaccuracies are inherent in these data if, after the last recorded removal of a boundary of a given type (e.g., colonial), there remain existing boundaries of that type.

[13]The Small and Singer data are from ICPSR Study No. 5602. Alan Sabrosky gave us his more recent data.

interests that is independent of war itself.[14] This effectively excludes the periods of the World Wars (i.e., 1914-18 and 1939-45) from our analysis, because virtually all alliances during these periods are wartime alliances.

We disaggregate the remaining years into three periods: pre-World War I (1816-1913); the interwar years (1919-38); and post-World War II (1946-80). We do so because it seems clear from the historical record that interest constellations vary across these periods. The pre-1914 multipolar system precipitated intense but relatively short-lived colonial and other rivalries between states. Profound disagreements about European reconstruction succeeded these conflicts of interest in the multipolar world of the interwar years. After World War II, the world became bipolar and was split into two discrete and relatively stable blocs.

Empirical studies of alliance formation lend support to the patterns that descriptive histories record. Before 1914, a Poisson model characterizes the process of alliance formation: Both the number of alliances that form and the composition of major-power coalitions are random with respect to time (McGowan and Rood 1975; Li and Thompson 1976; Midlarsky 1981, 1983; Duncan and Siverson, 1982). The interwar pattern is less clear: Some, but not all, studies find that a Poisson process describes alliance formation in this period as well (cf., e.g., Li and Thompson 1976 and Siverson and McCarthy 1982).

---

[14]As do Small and Singer and Sabrosky, we omit all alliances which were "consummated by nations while participating in war or within three months prior to such participation..." (Small and Singer 1969, 262). The same logic dictates the exclusion of alliances that occur proximate to MIDs. Because MID-time alliances are potentially problematic only for multilateral MIDs and because about three-fourths of all MIDs are bilateral MIDs, MID-time alliances are not likely to be an important factor in our analysis.

After 1945, however, serial dependence and stability characterize alliance formation (Li and Thompson 1976).

Our basic sample, then, consists of 272,435 dyad-years for which we have complete data on the required variables for the period 1816-1980, exclusive of the periods of the World Wars.[15] In the next section, we use this sample to examine whether there is variation across time in the extent to which common interests, as measured by alliances, characterize relations between members of specified pairs of states.

The Results

For each time period, Table 1 shows alliance rates, broken down by dyadic regime type. That is, the table shows the percentage of years members of democratic and other dyads spent in an alliance with each other during each of the three time periods. It also shows that no consistent difference exists in the alliance rates of members of pairs of democratic states and those of members of other country pairs: 1) Before 1914, there is no difference between democratic and other dyads (p-value = .933); 2) between the wars, members of democratic dyads are less likely to ally with each other than are members of other dyads (p-value < .0005); and 3) after 1945, democracies ally with other

---

[15]By including every possible dyad-year for which we have complete data on both members, we are including many dyad-years whose members are very unlikely to have meaningful contact of any kind, let alone form an alliance or have a military dispute. One approach, used by Maoz and Russett (1993), is to include only dyad-years whose members are contiguous or that have at least one major power as a member. While it is true that noncontiguous dyad-years with no major powers have much lower alliance and dispute rates, there are more than a few alliance and disputes involving such dyad-years. Thus, we include all dyad-years and control explicitly for contiguity and major-power status. We have also repeated all of the analyses in this study using the restricted sample of dyad-years, and the results are qualitatively identical.

democracies more than do other pairs of states (p-value < .0005).

[Table 1 about here]

In Table 2, we report the results of a multivariate probit analysis of alliance rates, controlling for major-power status and geographic contiguity along with regime type. Throughout this paper, we report the results of both bivariate and multivariate analyses. However, we rely upon the latter to generate and test predictions about dispute rates across time, because the control variables exert strong effects on the measured outcomes: Members of contiguous dyads are substantially more likely to ally and to engage in disputes, and the number of major powers in the dyad tends to be positively related both to the probability of alliance and to dispute rates.

[Table 2 about here]

Table 2 also shows that the probability that members of democratic dyads will ally with each other is significantly lower than is that of their nondemocratic counterparts both before 1914 and between the World Wars. After World War II, however, there is a strongly positive relationship between democratic regime type and alliance probability: Members of pairs of democratic states are more likely than are members of other pairs of states to be allied with each other.

As expected on the basis of the historical record, then, patterns of common and conflicting interests vary across time. The results of the multivariate analysis indicate that members of democratic dyads are less likely than are members of nondemocratic dyads to have interests in common both before 1914 and between the World Wars. After 1945, however, the relationship reverses: Common interests are more likely to characterize

relations within democratic dyads than within other types of dyads.

These findings imply that we should find evidence of corresponding variation in the data on relative dispute rates. More specifically, we should see _higher_ dispute rates between democracies than between other states before 1914 and between the wars. After 1945, however, dispute rates should be lower between democratic than between other states. Note that these predictions stand in sharp contrast to the uniformly lower dispute rate for democratic dyads that the democratic peace literature predicts.

We next examine dispute patterns by regime type across time. First, we examine only wars. Then, we examine MIDs, excluding wars.

REGIME TYPE AND THE PROBABILITY OF WAR

The Data: Sources and Sample Definition

As do all studies in this literature, we use the Correlates of War (COW) data set (Small and Singer 1982) to define and measure interstate war.[16] Thus, we define a war as a clash that involves "one or more system members" and that leads "to a minimum of 1,000 battle fatalities among all of the system members involved." A member of the international system is defined as a belligerent only if it either committed 1,000 troops to battle or suffered at least 100 casualties (Small and Singer 1982, 55).

It is clear that war is a rare event: Our sample contains 288 dyad-years (0.10 percent) at war, distributed across 57 interstate wars.[17] Contributors to the existing

---

[16]These data are taken directly from the public use version of the COW war data set (Part 1 of ICPSR Study Number 9044).

[17]The COW data set actually contains 67 wars. However, we had to drop five wars from our analysis because of missing polity data on at least one country in every dyad

13

literature usually code all 288 dyad-years as warring observations (see, e.g., Chan 1984, 621). However, doing so treats the onset and the continuation of wars between countries identically.[18] Given that the issue of central importance is the <u>incidence</u>, rather than the duration, of war between pairs of states, a more useful measure would count each war between pairs of states as only a single warring observation. We proceed using this more restrictive measure.[19]

Thus, we code as a war outcome only the first year a dyad is involved in a particular war. We delete from the sample all subsequent years the dyad is involved in the same war. The years in which a dyad is at peace are coded as non-war observations. For example, the less restrictive measure records the 1877-78 war between Russia and Turkey as two dyad-years at war. The measure we use records the war as only one dyad-year at war (1877), and it excludes from the analysis the remaining dyad-year (1878). The reduced sample based on our measure contains 272,267 dyad-years, of which 120 are dyad-years at war (0.04 percent).

---

involved in the war. Five more wars are not included in the analysis because they were entirely within the periods of the two World Wars (World War I, World War II, and three small wars).

[18] There are also statistical problems in treating all observations for a given dyad within the same war identically. Effectively, this means that these observations are treated as independent despite the fact that they are not. In general, the existing literature does not acknowledge explicitly the statistical difficulties that this lack of independence creates. For exceptions, see Bremer (1993, 236); Maoz and Russett (1993); and Morgan and Schwebach (1992, 310).

[19]We have also analyzed the data using all war years. The results are qualitatively the same.

A Statistical Issue: Estimation vs. Testing

Because war is an extremely rare event, there are likely to be configurations of the independent variables where there is no variation in outcomes for a specific value of a dichotomous independent variable. For example, there are no wars within democratic dyads after World War II. This "empty-margin" problem raises difficult questions of appropriate statistical techniques, particularly in a multivariate analysis. It renders inapplicable two standard approaches: latent variable models (e.g., logit or probit) and Poisson models. These models yield unbounded estimates where there is an empty margin.[20] Another alternative, the linear probability model, is known to be particularly problematic when used for the analysis of very rare events.

Thus, we take two approaches to analyzing the relationship between regime type and the probability of war. First, we compute Pearson χ^2 statistics from two-way breakdowns of regime type by war, and we use these χ^2 statistics to test the hypothesis of independence of regime type and conflict.[21] A strength of this approach is that it is straightforward and robust to underlying distributional assumptions.

A weakness of the bivariate approach is that there may be important omitted variables that could bias the estimated relationship between regime type and the

---

[20]Bremer (1992b and 1993) applies a Poisson model to the analysis of democracy and conflict, and he avoids the empty margin problem by aggregating across time periods.

[21]Caution is required in testing hypotheses regarding such rare events as war. However, the Pearson χ^2 statistic is generally recognized to be appropriate as long as the *expected* cell sizes under the null hypothesis of independence are all greater than one (Fienberg 1980, 170). In our study the minimum expected cell size (the expected number of wars between democracies) is always substantially larger than one so that the conditions for appropriate use of the Pearson χ^2 statistic are met throughout.

probability of conflict. Thus, we also analyze disputes using a multivariate approach. Depending on the time period studied, several scholars include variables such as wealth, alliance ties, major-power status, and geographic contiguity (see, e.g., Bremer 1992b, 1993; Dixon 1994; Maoz and Russett 1993).

For different reasons, we omit two of these four variables from our analysis. Consistent and reliable measures of wealth are not available for the entire period from 1816 through 1980. For reasons discussed above, the use of alliances as a measure of interests creates biased parameter estimates. No such problems, however, plague either major-power status or geographic contiguity, and both are strongly related to interstate conflict. Thus, we include both variables in our analysis.

Because of the empty-margin problem, we use a relatively uncommon but nonetheless straightforward method to test the hypothesis that, controlling for both contiguity and major-power status, no relationship exists between regime type and the probability of war against the alternative hypothesis that members of democratic dyads are less likely to fight than are members of other dyads.

This test has two stages. In the first stage, we maintain the null hypothesis that there is no difference between democratic and other dyads with respect to the probability of war. We estimate a probit model of the probability of war as a function of contiguity and major-power status, using the sample of all dyad-years in the relevant time periods. In the second stage, we use these estimates and the sample of democratic dyads to predict the probability of occurrence of no more than the number of wars actually observed between members of democratic dyads.

16

If this predicted probability is larger than some critical level (e.g., 0.05), we fail to reject the null hypothesis of no difference in war rates by regime type. Thus, we conclude that the same probability process governs the production of wars in general and wars between democracies. If, however, this probability is smaller than the critical level, we conclude that the process governing the full sample was unlikely to have generated the observed incidence of democratic wars, and we reject the null hypothesis in favor of the alternative that democratic dyads are less war prone.[22]

More concretely, suppose that we estimate the probit model making no distinction by regime type and that we observe K wars in N democratic dyad-years in the time period under consideration. The first-stage probit estimates are used in the second stage to predict the probability of K or fewer wars from the sample of N democratic dyad-years. This probability tells us how likely it was that we would have observed K or fewer wars within democratic dyads conditional on their observed characteristics (contiguity and major-power status), assuming that there is no structural difference in the probability of war by regime type. If this probability is smaller than the critical level, we reject the hypothesis of no structural difference in favor of the alternative that democratic dyads are less war-prone than nondemocratic dyads. If this probability is larger than the critical level then we conclude that there is no structural difference in war rates by regime type.

---

[22]Spiro (1994) uses a similar method. Note, too, that a test procedure analogous to that outlined here can be used to test the null hypothesis of no relationship between regime type and the probability of war against the alternative that democratic dyads are more war-prone than nondemocratic dyads.

The Results

In order to verify that our data yield results consistent with those of previous studies, we first examine the evidence using all observations in the entire 1816-1980 period, including the periods of the two World Wars. This includes 284,221 dyad-years.[23] War occurs in only 223 of them. Only seven of these involve democratic dyads. Six of these involve Finland paired with various allied nations in World War II. The seventh is the Spanish-American War.[24]

The results of our preliminary analysis conform to those of other studies. We find that wars between democracies occur at a significantly lower rate than do wars between members of other pairs of states across the entire 1816-1980 time period. The probability of war between democracies is 0.02 percent compared with a probability of war of 0.09 percent for all other dyads. A Pearson χ^2 test of independence of regime type and the probability of war clearly rejects independence (p-value < 0.0005).

Next, we examine war rates by regime type separately for the three time periods for which we analyzed interest patterns: pre-World War I (1816-1913); the interwar years

---

[23]Recall that we are using only the first year in any war that a particular dyad is fighting. Subsequent years are coded as missing and dropped from the analysis.

[24]Typically, contributors to the existing literature exclude as democratic all seven of these dyad-years (see, e.g., Doyle 1986; Ray 1993; cf. Bremer 1992b, 329-30). They exclude the Spanish-American War, because they do not believe that Spain was "really" democratic at the time (Ray 1993, 264); they exclude the Finnish cases, because Finland was only nominally at war with the allies. However, because neither standard of exclusion is applied systematically to all cases, the exclusion of these seven dyad-years risks the creation of biased parameter estimates.

(1919-38); and post-World War II (1946-80).[25] Because the members of only one democratic dyad (Spain and the United States) engaged each other in war over these three periods, it is clear that our analysis cannot rely on finding substantial numbers of wars between democratic states.

Instead, we examine two alternative hypotheses: 1) The war rate between democracies is consistently lower than is that between other states, as the existing literature predicts; 2) relative war rates vary across time in predictable ways, as our analysis of alliances implies. The issue of statistical significance is central. Because both war and democracies are relatively rare, we observe few wars between democracies (to date). Yet, the underlying probability of war between democracies might in fact be as high as the underlying probability of war of other dyads.

Table 3 contains the probability of war by regime type for each of the three periods. The table also contains Pearson chi-squared statistics for tests of independence of regime type and the probability of war. In contrast to the findings of the democratic-peace literature, these results show that the relationship between regime type and the probability of war is not consistent across time.

[Table 3 about here]

More specifically, no significant relationship exists between regime type and the

---

[25]During World War I, members of democratic dyads are significantly less likely to engage each other in war than are members of other dyads (p-value = 0.027). During the Second World War, there is no difference in war rates by regime type (p-value = 0.721).

probability of war before 1914 (p-value = 0.671).[26] This result does not depend on whether or not we classify Spain as a democracy.[27] The interwar period displays the same pattern: There is no difference between democratic and other country pairs with respect to the incidence of war (p-value = 0.168). It is only after World War II that a significant relationship exists between regime type and the probability of war: After 1945, members of democratic dyads are significantly less likely to fight each other than are members of other dyads (p-value = 0.005).

We now present the results of the two-stage test we described above. Table 4 contains estimates of probit models of the probability of war as a function of contiguity and major-power status, based on the null hypothesis. These estimates show that the probability of war is directly related to geographic contiguity and to the number of major-powers in a dyad.[28]

[Table 4 about here]

We now test the hypothesis that the probability of war and regime type are unrelated. We observe one war involving a democratic dyad prior to World War I. Using the estimates in the first column of Table 4, we predict the probability that there is one

---

[26]Additionally, it is not reasonable to interpret the finding of no statistically significant difference as simply a function of the relatively small size of the pre-1914 sample; there would still be no statistically significant difference between democratic and other dyads even if the sample size was inflated by a factor of ten.

[27]The p-value of the χ^2 statistic testing independence of regime type and the probability of war is 0.21 if Spain is reclassified as a non-democracy.

[28]There are no wars between members of noncontiguous dyads in the interwar period. This creates an empty-margin problem of its own. As a result, the model for the interwar period does not control for contiguity.

or fewer wars for the 1,475 democratic dyad-years. That statistic is 0.296. Thus, for the pre-1914 period, we cannot reject the null hypothesis that the same process that produces wars in general also produces wars between democracies.

There are no wars between members of democratic dyads during the interwar years. We use the estimates in the second column of Table 4 to predict the probability of no wars for the 5,919 democratic dyad-years in this period. The result is 0.154. Again, therefore, we cannot reject the null hypothesis.

Finally, there were no wars between democratic states in the post-World War II period. The estimates in the third column of Table 4 predict that there is a 0.00002 probability of no wars for the 22,498 democratic dyad-years in this period. For the Cold War years, then, we clearly reject the hypothesis that the process that generates wars in general also generates war between democracies.

Thus, the results of the multivariate analysis are clear: The relationship between regime type and the incidence of war varies across the 1816-1980 period. Indeed, what has become conventional wisdom about the relationship between democracies and war applies, in fact, only to the Cold War years: It is only during these years that there is a demonstrable difference with respect to the incidence of war between members of different country-regime pairs.

These results support only one of the three predictions we made on the basis of an analysis of interest patterns across time. Before 1914 and between the wars, we predicted that the war rate for pairs of democratic states should be higher than that for all pairs of states. We expected that the relationship would reverse after 1945. The

21

evidence supports only the latter prediction. Firm conclusions, however, await an analysis of the effect of regime type on other serious disputes.

REGIME TYPE AND THE PROBABILITY OF LOWER-LEVEL DISPUTES

The Data: Sources and Sample Definition

As in the case of wars, we rely on the COW project to define and measure militarized interstate disputes, as defined above.[29] There are 837 disputes recorded in the MID data set covering the period from 1817 through 1976, excluding the periods of the World Wars. For each country involved in any given MID, Small and Singer record the most severe hostility level reached among four possible levels: 1) threat to use force; 2) display of force; 3) use of force; and 4) outbreak of a Small-Singer war (defined above).

There are three aspects of the MID data set worth noting. First, because the only information coded is the maximum level of hostility reached by each participant considered individually, it is impossible to examine the level of hostility reached between specific pairs of countries in a multilateral dispute. Second, the MID data set does not include all wars in the COW interstate war data set, although the relevant documentation suggests that the latter should be a proper subset of the former. More specifically, of the 120 dyads at war in the COW wars data set outside the period of the World Wars, the MID data set omits 12. Third, it is not possible to study dispute escalation using these data. This is because the MID data records only the maximum level of hostility that any

---

[29]These data are taken directly from the public use version of the COW militarized interstate dispute data set (Part 3 of ICPSR Study Number 9044). Gochman and Maoz (1984) describe the MID data in more detail.

dispute reaches. As such, there is no information on the initial level of hostility, making the data set inappropriate for studies of escalation (cf. Cusack and Eberwein 1982; Gochman and Maoz 1984, 601-2; Maoz and Russett 1993, 628).

Using the MID data, we create a variable which indicates for each dyad-year in our sample whether or not the two countries in that dyad were on opposite sides of at least one dispute in that year.[30] In the sample are 1,685 dyad-years with disputes, representing 1,133 pairs of countries. The difference between these numbers represents multi-year disputes.

To measure the level of hostility focused on the opposing member of the dyad, we record the level of hostility of each member of a disputing dyad. We code as lower-level MIDs all disputes where neither member of a dyad is coded as having a level of hostility equal to a Small-Singer war.[31] Of the 1,133 disputing dyads, 957 are coded as having lower-level disputes. Fully 374 of these dyads are potentially miscoded because data on the level of hostility are missing for at least one dyad member. However, because none of these 374 dyad-years are listed in the COW war data set, it is unlikely that there are substantial numbers of warring dyads included in our lower-level disputing dyad sample.

For reasons discussed in detail in the preceding section, we include only the first year of each dispute for each dyad in our analysis. These are the initial years of the 957

_____

[30]There are cases where two countries are involved in more than one dispute with each other in a particular year.

[31]Where there is more than one dispute involving a specific dyad in a given year, we code the level of hostility of each side as the maximum level of hostility reached by that side in any dispute involving both members of the dyad that year.

disputing dyads referred to in the previous paragraph. They constitute 0.40 percent of the 240,196 dyad-years from 1817 through 1976. We code subsequent years of a dispute as missing.

The Results

In this section, we examine the rate of MIDs short of war between members of pairs of democratic states and that of members of other country pairs across the three time periods.[32] We first present the results of bivariate analyses of regime type and low-level MIDs analogous to the analyses of war presented in the preceding section. However, because lower-level MIDs are substantially more common than wars, there is no empty-margin problem. As a result, we then carry out and report the results of a multivariate probit analysis of the relationship between regime type and lower-level MIDs, controlling as well for contiguity and number of major powers.

As with wars, we first analyze these disputes across the entire 1817-1976 time period. Consistent with the existing literature, we find that democracies engage each other in MIDs at a significantly lower rate than do members of other pairs of states. The probability of disputes short of war between democracies is 0.30 percent; the comparable statistic for all other dyads is 0.45 percent. A Pearson χ^2 test of independence of regime

---

[32]While we do not present the results, we also analyzed lower-level MIDs and Singer-Small wars together. The results of this analysis are similar to those reported in this section for low-level disputes, and they are similar to those reported by Maoz and Abdolali (1989) for MIDs generally. This is because MIDs short of war are far more common than are wars.

type and the probability of war clearly rejects independence (p-value < 0.0005).[33]

Next, we examine relative dispute rates across the three time periods. Table 5 contains the probability of lower-level MIDs by regime type for each of the three time periods. The table also contains Pearson chi-squared statistics for tests of independence of regime type and the probability of MIDs. Again, these findings contrast sharply with the claim that there is a democratic peace: There is no consistency across time in the relationship between regime type and the probability of these disputes.

[Table 5 about here]

The most striking finding in Table 5 is that the probability of MIDs short of war is significantly <u>higher</u> for democratic dyads than for other types of dyads prior to World War I (p-value < 0.0005). There is no statistically significant difference in the interwar period (p-value = 0.927). However, during the Cold War, the rate of lower-level MIDs is significantly lower for democratic than for other dyads (p-value =0.001).

The contrast between the pre-1914 and the post-1945 periods, in particular, could not be sharper. Democracies were indeed distinctive prior to World War I, but that distinctiveness seems to have resulted in a higher probability of lower-level disputes between them. In part, this reflects the fact that two democracies (the United States and the United Kingdom) are the two most dispute-prone nations in the MID data set as a

---

[33]During World War I, there is no difference in lower-level MID rates by regime type (p-value = 0.351). During the Second World War, members of democratic dyads are significantly less likely to engage each other in lower-level MIDs than are members of other dyads (p-value = 0.013).

whole (Gochman and Maoz 1984, 609).[34]

Table 6 contains probit analyses, separately for the pre-1914, interwar, and post-1945 periods, of the probability of lower-level MIDs that control for regime type, number of major powers in the dyad, and contiguity. As before, these controls exert strong effects on the probability of conflict across all three time periods. Contiguous dyads are substantially more likely to come into conflict, and the probability of intra-dyadic disputes increases with the number of major powers in the dyad.

[Table 6 about here]

The results of the multivariate analysis with respect to regime type differ somewhat from those of the bivariate analysis. Prior to World War I, members of democratic dyads are now only marginally significantly more likely to be involved in disputes than are other type of dyads (p-value = 0.09, using a two-tailed test). In contrast to the null finding in the bivariate analysis, democratic dyads in the interwar period are significantly less likely to be involved in lower-level MIDs (p-value = 0.010). After World War II, there remains a marked, statistically significant lower probability of disputes short of war between democracies (p-value < 0.0005).[35]

As in the case of wars, these results show that the relationship between dispute rates and regime type is not constant across time. As such, they challenge the conclusion of the democratic peace literature that democratic dyads have consistently

---

[34]The U.K. is classified as a democracy by our coding scheme since 1837. The U.S. is classified as a democracy throughout.

[35]Maoz and Russett (1993) established the post-1945 result earlier.

lower dispute rates than do other types of dyads.[36] Additionally, the multivariate analysis supports two of three predictions we made on the basis of patterns of interest congruence. We predicted higher dispute rates within democratic dyads before World War I and lower dispute rates within democratic dyads after World War II. We also predicted, incorrectly, that there would be more disputes between democracies between 1919 and 1938.

Of the three predictions based on relative congruence of interests, then, it is only that which applies to the interwar period that generates inconsistent results with respect to the incidence of both wars and MIDs. In the section that follows, therefore, we examine the data on alliance patterns more closely to see whether they will yield some clues to this anomaly.

THE INTERWAR PUZZLE

Although the interwar years make up only about 12 percent of our sample of dyad-years, we examine it more closely here because it is the only period which defies the predictions of our-interest based analysis for all disputes. In order to do so, we make use of common knowledge about alliances. More precisely, we exploit the facts that there are different types of alliances and that these types are not distributed uniformly across time.

The Small and Singer and Sabrosky data sets code each alliance as one of three types: defense pact, non-aggression or neutrality agreement, or entente. Defense pacts commit their signatories to "intervene militarily on the side of any treaty party that is

---

[36]As in the case of war, exceptions exist. See Maoz and Abdolali (1989) and Maoz and Russett (1993).

attacked...;" neutrality pacts pledge adherents to "remain militarily neutral if any co-signatory is attacked;" and ententes mandate consultation and/or cooperation in the event of crisis (Small and Singer 1966, 5).

Among the three, defense pacts represent the strongest level of commitment and exert the most powerful effects on the behavior of their signatories (Kim 1991, 672; Siverson and Starr 1991, 61). Neutrality agreements and ententes reflect much weaker commitments and effects. Their relationship to each other varies across time: In the nineteenth century, neutrality agreements embody more serious commitments than do ententes; in the twentieth century, the relationship reverses (Small and Singer 1969, 280).[37]

The incidence of alliance types varies across time (Small and Singer 1969; Bueno deMesquita 1973). As Small and Singer note, for example, the nonaggression pact "was clearly an invention of the 1920's and 1930's...." (1969, 270). Table 7 shows that these pacts represented 23.4 percent of alliance years during the interwar period. The comparable statistic is 4.7 percent for the pre-1914 period and 1.6 percent for the post-1945 period. The table also shows considerable variation in defense pacts: The fraction of alliance years that defense pact represent before World War I is 84.3 percent; between the wars, it is 21.1 percent; and after World War II, it is 50.3 percent.

[Table 7 about here}

---

[37]This is not meant to imply that alliance commitments are always fulfilled. The data show that about one-third of commitments are fulfilled but also show that allies are much more likely to become involved in war than are nonallies (Sabrosky 1980; Siverson and Starr 1991).

Because defense pacts represent the strongest commitment that allies make to each other, both in principle and in practice, we examine their incidence by regime type in order to see whether we can generate predictions that are more consistent with the data on disputes, particularly for the interwar period. Table 8 shows that it is only during the interwar period that the results of a defense-pact analysis alone differ from those of the multivariate probit analysis of all alliances. In this period, although the overall alliance rate of democratic dyads is lower than is that of nondemocratic dyads, the incidence of defense pacts is the same.

[Table 8 about here]

Thus, the predictions that we made on the basis of all alliances and those that we would make on the basis of defense pacts alone differ only for the interwar period. The all-alliance analysis implied that the dispute rate between democracies should be lower for the interwar period; the defense-pact only analysis implies that no difference should exist with respect to these rates between democratic and other country pairs.

The data conform more closely to the latter prediction, but the correspondence is not complete. As noted above, there is no difference between war rates between 1918 and 1939. The incidence of MIDs, however, remains inconsistent both with the prediction based on all alliances and that based on defense pacts alone. Thus, we gain some leverage if we break down alliances by type but not enough to eliminate the interwar anomaly entirely.

CONCLUSION

In contrast to the existing literature, we find no evidence that democracies are consistently less likely than are other states to engage each other in serious disputes. It is only during the Cold War that the rates of both wars and lower-level MIDs are significantly lower between members of democratic pairs of states than between members of other country pairs. Democracy per se cannot explain the cross-temporal variation in dispute rates that we observe.

Instead, what seems to matter is not whether common polities exist but whether common interests do. We find that the extent to which democracies have interests in common has varied across time. We also find that the incidence of war and disputes short of war corresponds closely to cross-temporal variation in patterns of interest congruence for two of the three periods we study.

Thus, the results we report here suggest that the democratic-peace literature has to resolved the long-standing debate in international politics about the importance of "Second Image" or domestic political variables. That these variables have a significant impact on the incidence of interstate conflict remains to be demonstrated.

REFERENCES

Banks, A.S. 1971. "Cross-Polity Times-Series Data." Cambridge: MIT Press.

Bremer, Stuart. 1992a. "Are Democracies Less Likely to Join Wars?" Paper prepared for delivery at the Annual Meeting of the APSA.

_____. 1992b. "Dangerous Dyads: Conditions Affecting the Likelihood of Interstate War, 1816-1965." Journal of Conflict Resolution 36:309-41.

_____. 1993. "Democracy and Militarized Interstate Conflict, 1816-1965." International Interactions 18:231-249.

Bueno de Mesquita, Bruce. 1981. The War Trap. New Haven: Yale University Press.

Bueno de Mesquita, Bruce and David Lalman. 1992. War and Reason. New Haven, CT: Yale University Press.

Chan, Steve. 1984. "Mirror, Mirror on the Wall...Are the Freer Countries More Pacific?" Journal of Conflict Resolution 28:616-48.

Chan, Steve. 1993. "Democracy and War: Some Thoughts on Future Research Agenda." International Interactions 18:205-14.

Cusak, Thomas R. and Wolf-Deiter Eberwein. 1982. "Prelude to War: Incidence, Escalation, and Intervention." International Interactions 9:9-28.

Dixon, William J. 1994. "Democracy and the Peaceful Settlement of International Conflict." American Political Science Review 88:14-32.

Doyle, Michael. 1986. "Liberalism and World Politics." American Political Science Review 60:1151-69.

Duncan, George T., and Randolph M. Siverson. 1982. "Flexibility of Alliance Partner Choice in a Multipolar System." International Studies Quarterly, Vol. 26, No. 4 December 1982, pp. 511-538.

Fienberg, Stephen E. 1980. The Analysis of Cross-Classified Categorical Data. Cambridge: MIT Press.

Gochman, Charles S. and Zeev Maoz. 1984. "Militarized Interstate Disputes, 1816-1976." Journal of Conflict Resolution 28:585-615.

31

Gurr, Ted Robert. 1974. "Persistence and Change in Political Systems, 1800-1971." American Political Science Review 68:1482-1504.

_____. 1990. "Polity II: Political Structures and Regime Change, 1800-1986" [Computer File]. Boulder, CO: Center for Comparative Politics [producer]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor].

Kim, Chae-Han. 1991. "Third-Party Participation in Wars." Journal of Conflict Resolution 35:659-77.

King, Gary, Robert O. Keohane, and Sidney Verba. 1994. Designing Social Inquiry: Scientific Inference in Qualitative Research. Princeton: Princeton University Press.

Layne, Christopher. 1994. "The Myth of the Democratic Peace." International Security 19.

Li, Richard P.Y., and William R. Thompson. 1976. "The Stochastic Process of Alliance Formation Behavior." American Journal of Political Science 72:1288-1303.

Maddala, G. S. 1977. Econometrics. New York: McGraw-Hill.

Maoz, Zeev and Nasrin Abdolali. 1989. "Regime Types and International Conflict." Journal of Conflict Resolution 33:3-35.

Maoz, Zeev and Bruce Russett. 1993. "Normative and Structural Causes of Democratic Peace, 1946-1986." American Political Science Review 87:624-638.

McGowan, Patrick J., and Robert M. Rood. 1975. "Alliance Behavior in Balance of Power Systems: Applying a Poisson Model to Nineteenth-Century Europe." American Political Science Review 69:859-870.

Midlarsky, Manus. 1981. "Equilibria in the Nineteenth Century Balance of Power System." American Journal of Political Science. 25:270-96.

_____. 1983. "Absence of Memory in the Nineteenth-Century Alliance System: Perspectives from Queuing Theory and Bivariate Probability Distributions." American Journal of Political Science 27:762-84.

Morgan, T. Clifton and Valerie L. Schwebach. 1992. "Take Two Democracies and Call Me in the Morning: A Prescription for Peace?" International Interactions 17:305-320.

Owen, John M. 1994. "How Liberalism Produces Democratic Peace." International Security 19:87-125.

Ray, James Lee. 1993. "Wars between Democracies: Rare or Nonexistent?" International Interactions 18:251-276.

Russett, Bruce. 1993. Grasping the Democratic Peace: Principles for a Post-Cold War World. Princeton, NJ: Princeton University Press.

Sabrosky, Alan N. 1980. "Interstate Alliances: Their Reliability and the Expansion of War." In The Correlates of War II: Testing Some Realpolitik Models, ed. J. David Singer. New York: Free Press.

Schroeder, Paul W. 1976. "Alliances, 1815-1945: Weapons of Power and Tools of Management." In Historical Dimensions of National Security Problems, edited by Klaus Knorr. Lawrence: University of Kansas Press.

Siverson, Randolph M. and Charles McCarthy. 1982. "Alliances in the Interwar Era, 1919-1939: A Re-Examination." Western Political Quarterly 35:24-32.

Siverson, Randolph M. and Harvey Starr. 1991. The Diffusion of War: A Study of Opportunity and Willingness. Ann Arbor: University of Michigan Press.

Siverson, Randolph M. and Juliann Emmons. 1991. "Birds of a Feather: Democratic Political Systems and Alliance Choices in the Twentieth Century." Journal of Conflict Resolution 35:285-306.

Small, Melvin and J. David Singer. 1966. "Formal Alliances, 1816-1965: An Extension of the Basic Data." Journal of Peace Research 3:257-82.

_____. 1976. "The War-Proneness of Democratic Regimes." Jerusalem Journal of International Relations 1:50-68.

_____. 1982. Resort to Arms. Beverley Hills, CA: Sage.

Spiro, David E. 1994. "The Insignificance of the Liberal Peace." International Security 19:50-86.

Waltz, Kenneth N. 1979. Theory of International Politics. Reading, MA: Addison Wesley.

Appendix A

Consider the simple regression model

(1) $$Y = \beta_0 + X_1\beta_1 + X_2\beta_2 + \varepsilon$$

where Y represents the outcome, the X's represents explanatory variables, and the β's represent the parameters of interest, and ε is a random component. Suppose now that X_1 is measured with error so that we observe only $Z_1 = X_1 + \mu$, where μ is an error term independent of everything else in the model. In this case we estimate the regression

(2) $$Y = \beta_0 + Z_1\beta_1 + X_2\beta_2 + (\varepsilon - \beta_1\mu).$$

Ordinary least squares (OLS) applied to equation 2 yields biased parameter estimates because the error term, $(\varepsilon - \beta_1\mu)$, is negatively correlated by construction with Z_1.

It is straightforward to derive the bias in the OLS estimates of β_1 and β_2 (Maddala 1977, 294). Let ρ represent the correlation between Z_1 and X_2 and let θ represent the ratio of the variance of the measurement error (μ) to the total variance of X_1. In this case the bias in the OLS estimate of β_1 is approximately

(3) $$E(\hat{\beta}_1)-\beta_1 = -\theta\beta_1/(1-\rho^2)$$

which has the sign of $-\beta_1$. Thus, the OLS estimate of β_1 is biased toward zero as long as there is measurement error in X_1 ($\theta>0$).

Despite the fact that X_2 is not correlated with the error term directly, the OLS estimate of β_2 is also biased as long as Z_1 and X_2 are correlated ($\rho\neq0$) and there is measurement error in X_1 ($\theta>0$). The bias in the OLS estimate of β_2 is approximately

(4) $$E(\hat{\beta}_2)-\beta_2 = \theta\beta_1\rho/(1-\rho^2)$$

which has the sign of β_1 times the correlation of X_1 and X_2.

In order to make this concrete, consider the following example that is directly related to the central issue of regime type and the probability of disputes. Let Y represent the likelihood of a military dispute, let X_1 represent a measure of commonality of interests relating to the likelihood of a military dispute, and let X_2 represent a measure of democracy.[38] The central prediction of the democratic distinctiveness hypothesis is that $\beta_2 < 0$. However, suppose that X_1 is not directly observable and that a measure of alliance status (Z_1), an imperfect measure of interests, is used instead. What can we expect?

Consider a time period during which democracies have strong interests in common and, hence, are more likely to ally (the correlation of X_2 and Z_1 is positive $(\theta > 0)$). We argue that this is the case in the cold-war era. Suppose, for arguments sake, 1) that there is no relationship between regime type and the probability of disputes conditional on interests $(\beta_2 = 0)$ and 2) that dyads with interests in common are less likely to fight $(\beta_1 < 0)$. An OLS regression of Y on Z_1 and X_2 will yield a downward biased estimate of β_2 as a result of the measurement error in Z_1. Intuitively, the democracy variable is picking up part of the effect of interests on dispute rates due to the imperfect measurement of interests. Thus, we would expect to find a negative statistical relationship between democracy and probability of a dispute even where there is no structural relationship between these variables $(\beta_2 = 0)$.

---

[38]The analysis here is directly relevant to an OLS analysis, but the qualitative conclusions apply equally to a probit model of the sort used in our analysis of wars and disputes.

TABLE 1
Alliance Rates by Regime Type and Time Period

Fraction of Dyad-Years in Alliance
[Sample Size]

| Time Period | Regime Type | | χ^2 statistic | p-value |
	Democratic-Democratic	Other		
Pre-World War I (1816-1913)	0.026 [1475]	0.027 [50154]	0.007	0.933
Interwar (1919-38)	0.013 [5919]	0.034 [28046]	72.0	<0.0005
Post-World War II (1946-80)	0.133 [22498]	0.109 [164343]	115.7	<0.0005

Note: The χ^2 statistics are the Pearson statistics for tests of independence of the regime type and the probability of alliances for each period.

TABLE 2
Probit Analysis of Probability of Alliance

Variable	Pre-1914 (1)	1919-1938 (2)	Post-1945 (3)
Constant	-2.62 (.0259)	-2.04 (.0186)	-1.32 (.0045)
Democratic	-.374 (.0833)	-.561 (.0513)	.0720 (.0119)
Contiguous	1.00 (.0283)	.962 (.0354)	1.23 (.0149)
1 Major power	.446 (.0306)	.119 (.0344)	-.0275 (.0129)
2 Major powers	1.53 (.0442)	.593 (.0822)	.444 (.0605)
Log L	-4668.0	-4081.5	-61735.5
Sample Size	51629	33965	186841

Note: The numbers in parentheses are asymptotic standard errors.

36

TABLE 3
Probability of War by Regime Type and Time Period

Fraction of Dyad-Years at War
[Sample Size]

Time Period	Regime Type		χ^2 statistic	p-value
	Democratic-Democratic	Other		
Pre-World War I (1816-1913)	0.0007 [1475]	0.0010 [50119]	0.18	0.671
Interwar (1919-38)	0.0 [5919]	0.0003 [28039]	1.90	0.168
Post-World War II (1946-80)	0.0 [22498]	0.0004 [164217]	7.95	0.005

Note: The χ^2 statistics are the Pearson statistics for tests of independence of the regime type and the probability of low-level disputes for each period.

TABLE 4
Probit Analysis of Probability of War

Variable	Pre-1914 (1)	1919-1938 (2)	Post-1945 (3)
Constant	-3.39 (.0741)	-3.69 (.147)	-3.62 (0.510)
Contiguous	.617 (.0912)		.730 (.0842)
1 Major power	.182 (.0934)	.502 (.196)	.335 (.0853)
2 Major powers	.276 (.169)	.895 (.355)	.709 (.221)
Log L	-384.4	-78.4	-476.3
Sample size	51594	33958	186715

Note: The numbers in parentheses are asymptotic standard errors.

TABLE 5
Probability of Low-Level Disputes by Regime Type and Time Period

Fraction of Dyad-Years in Low-Level Dispute
[Sample Size]

Time Period	Regime Type		χ^2 statistic	p-value
	Democratic-Democratic	Other		
Pre-World War I (1817-1913)	0.0177 [1470]	0.0074 [49767])	20.08	<0.0005
Interwar (1919-38)	0.0032 [5913]	0.0033 [27983]	0.008	0.927
Post-World War II (1946-76)	0.0017 [19198])	0.0031 [135865]	11.93	0.001

Note: The χ^2 statistics are the Pearson statistics for tests of independence of the regime type and the probability of low-level disputes for each period.

TABLE 6
Probit Analysis of Probability of
Lower-Level MIDs

Variable	Pre-1914 (1)	1919-1938 (2)	Post-1945 (3)
Constant	-2.86 (.0345)	-3.33 (.0761)	-3.05 (.0243)
Democratic	.134 (.0899)	-.239 (.103)	-.435 (.0672)
Contiguous	.749 (.0417)	1.13 (.0819)	1.16 (.0371)
1 Major power	.288 (.0437)	.446 (.0853)	.371 (.0406)
2 Major power	.662 (.0706)	1.21 (.121)	1.22 (.100)
Log L	-2006.7	-542.5	-2493.7
Sample size	51237	33896	155063

Note: The numbers in parentheses are asymptotic standard errors.

TABLE 7
Breakdown of Alliance Patterns by Type

Fraction of Allied Dyad-Years in Alliance of Given Type
[Sample Size]

Time Period	Alliance Type		
	Defense	Neutrality	Entente
Pre-World War I (1816-1913)	.843 [1166]	.0470 [65]	.110 [152]
Interwar (1919-38)	.211 [214]	.234 [238]	.555 [564]
Post-World War II (1946-80)	.503 [10483]	.0164 [342]	.480 [10001]

TABLE 8
Probit Analysis of Probability of Defensive Alliance

Variable	Pre-1914 (1)	1919-1938 (2)	Post-1945 (3)
Constant	-2.62 (.0256)	-2.85 (.0412)	-1.80 (.0060)
Democratic	-1.40 (.208)	.0087 (.0659)	.412 (.0129)
Contiguous	.989 (.0292)	1.05 (.0562)	1.20 (.0158)
1 Major power	.416 (.0310)	.214 (.0580)	.171 (.0145)
2 Major powers	1.15 (.0478)	-.0158 (.160)	.634 (.0639)
Log L	-4342.6	-1097.4	-39594.6
Sample Size	51629	33965	186841

Note: Numbers in parentheses are asymptotic standard errors.