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The American Political Science Review; Dec 1999; 93, 4; Research Library
pg. 791

An Institutional Explanation of the Democratic Peace

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We examine formally the link between domestic political institutions and policy choices in the context of eight empirical regularities that constitute the democratic peace. We demonstrate that democratic leaders, when faced with war, are more inclined to shift extra resources into the war effort than are autocrats. This follows because the survival of political leaders with larger winning coalitions hinges on successful policy. The extra effort made by democrats provides a military advantage over autocrats. This makes democrats unattractive targets, since their institutional constraints cause them to mobilize resources for the war effort. In addition to trying harder, democrats are more selective in their choice of targets. Because defeat is more likely to lead to domestic replacement for democrats than for autocrats, democrats only initiate wars they expect to win. These two factors lead to the interaction between polities that is often referred to as the democratic peace.

The study of international relations has produced few widely accepted generalizations. One of these, sometimes even asserted to be an empirical law (Levy 1988), is that democracies do not fight wars with one another. The empirical evidence for this claim is quite strong (Bremer 1992; Maoz and Abdolali 1989; Oneal and Russett 1997; Ray 1995). Recent efforts to cast this empirical observation in doubt notwithstanding (Farber and Gowa 1995; Layne 1994; Schwartz and Skinner 1997; Spiro 1994), extensive, rigorous statistical tests all show a significant propensity for democracies to be nearly immune from wars with one another (Maoz 1998; Russett 1995). Associated with this so-called democratic peace are seven additional empirical regularities related to war proneness and democracy, all based on empirical observations. (1) Democracies are not at all immune from fighting wars with nondemocracies (Maoz and Abdolali 1989).[1] (2) Democracies tend to win a disproportionate share of the wars they fight (Lake 1992; Reiter and Stam 1998b). (3) When disputes do emerge, democratic dyads choose more peaceful processes of dispute settlement than do other pairings of states (Brecher and Wilkenfeld 1997; Dixon 1994; Mousseau 1998; Raymond 1994). (4) Democracies are more likely to initiate wars against autocracies than are autocracies against democracies (Bennett and Stam 1998). (5) In wars they initiate, democracies pay fewer costs in terms of human life and fight shorter wars than nondemocratic states (Bennett and Stam 1996; Siverson 1995). (6) Transitional democracies appear more likely to fight than stable regimes (Mansfield and Snyder 1995; Ward and Gleditsch 1998). (7) Larger democracies seem more constrained to avoid war than do smaller democracies (Morgan and Campbell 1991).

Although these observations about democracy and war are part of an important pattern, they lack a coherent explanation. Several possibilities have been put forward, but none has gained broad acceptance. We propose a game-theoretic model that may help bring closure to the debate on the causal mechanism governing the eight regularities mentioned above. The model will be shown to account for the empirical record regarding the first six of the eight patterns. The regularities concerning transitional democracies (Mansfield and Snyder 1995; Ward and Gleditsch 1998) and the constraints on great power democracies (Morgan and Campbell 1991) are stated in monadic form. These regularities cannot be evaluated in terms of a model of strategic interaction without additional information. Specifically, without data on the democratic state's adversary, we cannot evaluate the relevant institutional and resource relationships. We will provide an interpretation of our model that is consistent with both monadic results, but we cannot undertake a more rigorous assessment.

THE DEBATE

The debate over the war behavior of democratic states, and particularly the democratic peace, centers on whether a normative or an institutional explanation best accounts for the known facts (Thompson and Tucker 1997). Normative accounts focus on several different presumptions about democracies. One such supposition is that they share a common value system, including respect for individual liberties and competition. As stated by Dixon (1994, 17):

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The research reported here was supported by the National Science Foundation under grant SBR-9409225. We are greatly indebted to Raymond E. Wolfinger for his facilitation of this research and to David Austen-Smith, Fiona McGillivray, Will Moore, Bruce Russett, Kiron Skinner, Allan Stam, and several anonymous referees for their helpful comments.

[1] Some studies suggest that democracies are, on the whole, more pacific than autocracies (Benoit 1996; Ray 1995). Yet, such general war avoidance cannot account for their relative propensity to fight with different regime types.

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> international disputes of democratic states are in the hands of individuals who have experienced the politics of competing values and interests and who have consistently responded within the normative guidelines of bounded competition. In situations where both parties to a dispute are democracies, not only do both sides subscribe to these norms, but the leaders of both are also fully cognizant that bounded competition is the norm, both for themselves and their opponents.

A closely related argument is that citizens in democracies abhor violence and so constrain their leaders from pursuing violent foreign policies. As succinctly explained by Morgan and Campbell (1991, 189), "the key feature of democracy is government by the people and . . . the people, who must bear the costs of war, are usually unwilling to fight." Adherents of these perspectives also argue, however, that democracies are willing to set aside their abhorrence of violence or their respect for other points of view when they confront authoritarian states, because the latter do not share these common values. As stated by Maoz and Russett (1993, 625), "when a democratic state confronts a nondemocratic one, it may be forced to adapt to the norms of international conflict of the latter lest it be exploited or eliminated by the nondemocratic state that takes advantage of the inherent moderation of democracies."

We believe that any explanation of the democratic peace must satisfy two criteria. First, it must account for the known regularities that are often grouped together to define the democratic peace. An explanation that accounts for all the regularities obviously is more comprehensive than those that account for only some. Furthermore, because the extant explanations are generally constructed in response to the observed regularities, the more patterns that are explained, the more credible the explanation, provided that it does not come at the expense of parsimony. Second, we believe that a credible explanation also should suggest novel hypotheses that do not form part of the corpus of the democratic peace. Further credibility to the overall explanation is added if these novel hypotheses are borne out by the evidence.

The existing norms-based and institutional-constraints arguments fail both tests. The model we propose provides a direct explanation of six regularities and an account consistent with the two nondyadic regularities mentioned earlier and suggests numerous novel hypotheses that are supported by evidence. Later, for instance, we show that our theory implies that democracies devote more resources to their war efforts than do nondemocracies. We cite independently derived evidence. In addition, we have shown elsewhere that the institutional model we propose also accounts for variation in economic growth across regimes and explains why leaders with failed public policies tend to last in office longer than leaders with successful policies (Bueno de Mesquita et al. n.d.).

There are two difficulties with the norms-based arguments in the literature. First, the arguments appear to be ad hoc. The presence and substance of norms are established solely by reference to the outcomes of conflict between democratic states. The international and domestic norms are induced from the observed patterns of behavior in international conflicts that these arguments seek to explain. That democracies are willing to abandon their normative commitment to the peaceful resolution of disputes in the face of a threat to their survival by another state that does not adhere to those norms is entirely plausible. In order to qualify as an explanation of the observation, however, that assertion must be derived independently of the observation, either from prior axioms or from unrelated empirical evidence. Otherwise, we cannot know what the argument predicts about seemingly contradictory patterns of evidence. For instance, analyses by James and Mitchell (1995) and Forsythe (1992) of covert operations suggest that, providing democratic leaders can escape public scrutiny, they often undertake violent acts against other democracies. Does such evidence contradict a norms-based arguments, or do the norms apply *only* to interstate conflict at the level of crises and war?

Second, a related difficulty is empirical. The historical record is replete with democratic states that followed policies at variance with the norms argument. Many democratic states pursued imperialistic policies and, in building empires, engaged in wars that were about subjugation rather than self-protection. It may be correct to argue that democratic states resort to realist strategies in the face of a powerful nondemocratic opponent who threatens their existence, but too many democratic wars have been against significantly weaker states for this argument to be sustained as an explanation for the democratic peace. It is difficult to reconcile such a pattern with democratic political culture. The explanation we propose, by contrast, explains the willingness of democracies to undertake imperialistic or colonial conquest. This observation is the sort of novel fact for which an explanation of the democratic peace should account, and we return later to our explanation of imperial wars by democracies.

The institutional-constraints argument holds that democracies are more deliberate in their decision making than autocracies because their procedures preclude unilateral action by leaders. This is thought to raise the costs of violence. Maoz and Russett (1993, 626) state: "Due to the complexity of the democratic process and the requirement of securing a broad base of support for risky policies, democratic leaders are reluctant to wage wars, except in cases wherein war seems a necessity or when the war aims are seen as justifying the mobilization costs."[2] This suggests, however, that democracies should be unlikely to wage war generally, not just against other democracies.

The empirical record does not support such a conclusion.[3] Rather, it shows that democracies do not fight one another but do indeed engage in wars with author-

[2] Without some specification of war aims and mobilization costs, the last phrase of this statement allows anything with respect to democratic war behavior.

[3] Benoit (1996) suggests that on average democracies are slightly less war prone than other systems.

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itarian regimes.[4] The argument based on the cheapness of expressing opposition seems stronger than the other putative institutional explanations, but it also has shortcomings, one of which is its failure to account for the well-known rally-round-the-flag effect observed in democracies at the outset of crises and wars (Mueller 1973; Norpoth 1987). This effect suggests that there is not an inherent abhorrence of violence in democracies. Most important from a theoretical position, none of the institutional-constraints arguments has a sufficiently well-developed theory of how and why democratic institutions constrain leaders in the particular way that produces the eight regularities observed, whereas other institutional arrangements do not. Rather, these arguments generally just assert that democratic leaders are more constrained.

Bueno de Mesquita and Lalman's (1992) signaling explanation accounts for three of the eight observed regularities, but it does not, for instance, explain why democracies win a disproportionate share of their wars or why their costs are lower. Bueno de Mesquita and Siverson's (1995) model accounts for these regularities but not for the democratic peace. Both those models have in common the assumption that democracies are more constrained than autocracies. For reasons of theoretical parsimony, however, we prefer that this be a deductive result of a general model rather than an assumption. That is, we wish to account for the several empirical regularities without assuming that one type of political system is more constrained than another. Instead, we will demonstrate how institutional arrangements produce different levels of constraint in different political systems and what effect those institutional arrangements have on behavioral incentives and the empirical generalizations of interest.

Our explanation shows that the behavioral incentives—these could be called norms—are endogenous to certain political institutions and the interests that sustain them.[5] We make no claims about the citizens' abhorrence of violence or the ease with which they might protest government policies. In fact, we assume that political leaders in all systems are motivated by the same universal interest: They desire to remain in office. We make no normative assumptions about differences in the values or goals of democratic leaders or their followers as compared to authoritarian leaders or their followers.

POLITICAL INSTITUTIONS

All polities are characterized by institutional rules pertaining to the role of citizens in influencing the selection of government leaders. Let any polity consist of N citizens. Let S be the subset of N that participates in the selection of the political leadership. We call this subset the selectorate. Then $N - S$ is the set of disenfranchised citizens with no say in the choice of leadership. All members of S have the right to participate in choosing the government. A subset of the selectorate forms a winning coalition, which we denote as W. Members of the winning coalition are those people whose support is required to keep the incumbent in office. If the incumbent cannot find W members of the selectorate to support her, then she is removed from office.[6] Since we assume that leaders are keen to stay in power, they are eager to satisfy members of the winning coalition.

Typical categories of regimes can be related to the institutional variables on which we focus. In a democracy with universal suffrage, for instance, S is approximately equal to N, and W is large, typically being a majority of S. In monarchies and military juntas, W and S are typically small relative to N. In some authoritarian states, S is quite large, and in others it is very small, while W is always small in such systems. In a communist state, for instance, S has typically been a figure between just the members of the Communist Party (i.e., 57 million people in China) and all citizens, since universal suffrage (in largely meaningless elections) is commonplace for such systems. Authoritarian regimes are often characterized by rigged elections in which S is large, but this has little effect on actual governance other than to raise the risks for members of W if they defect from the incumbent, as we explain below.

Incumbent leaders (as individuals or as a governing coalition) select and implement public policies, which inevitably have a public goods component and a private goods component. Leaders have only limited resources to allocate to different policy goals and to help keep them in office. They can put everything into public policy that benefits everyone in the polity, everything into private goods that are consumed only by members of the winning coalition, or any mix in between. If they spend resources on, for instance, providing defense for the citizenry, then they cannot use those same resources to provide special privileges to the members of the winning coalition. If they buy the necessities of national defense only from cronies in the winning coalition, then the reduced competition to provide defense results in an inefficient provision of that public good while cronies skim money off the top for their personal gain. Thus, scarcity necessarily requires leaders to make choices over just how much to focus their limited time and other resources on providing generally beneficial public policies and how much to focus on just satisfying the wants of their core supporters.

The main concerns here are to identify how resources are allocated during an international dispute, given variations in institutional arrangements; to iden-

[4] Although democracies do not fight wars with one another, they often become engaged in militarized disputes (Oneal and Russett 1997). See Senese (1997) for an alternative viewpoint.

[5] Earlier work demonstrates the endogenous relationship of institutions to foreign policy interests (Bueno de Mesquita and Siverson 1995; McGillivray 1997; Schultz 1996).

[6] The theory we develop does not require that we assume minimal winning coalitions (Riker 1962). Indeed, the results generalize straightforwardly to any defined magnitude for W. Yet, it makes most sense to begin from a minimal winning context because that appears to be incentive compatible with the objective of leaders to maximize their gains. A central question of interest to us here is how W is selected, including the selection of W such that it deviates from minimal winning. The comparative static analysis we undertake focuses in part on that question.

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tify whatever dependencies exist between regime type and war participation and outcomes; and to evaluate the prospects that leaders are retained in office as a function of institutional arrangements. These issues influence whether leaders concentrate resources on the pursuit of national goals or on benefits to key constituents. In showing that this is true, we explain the empirical regularities that constitute the democratic peace.

Before turning to the formal representation, we pause to describe the basic structure of our model and outline the intuition that leads to the democratic peace result. We start by assuming that two nations, A and B, are engaged in a dispute. National leaders must decide whether to start a war in the hope of achieving their objectives or rely instead on a negotiated settlement. If war occurs, then leaders must decide how much effort to make to achieve military victory. By this we mean what proportion of available resources a leader is prepared to allocate to the war effort rather than to other purposes. Obviously, leaders who dedicate large quantities of resources to the war are more likely to win, but at the cost of not having those resources available to reward their supporters. The citizens receive payoffs based on the outcome of the crisis—be it a war or a negotiated settlement—and the rewards that accrue from resources not consumed in the war effort. Given these payoffs, the winning coalition decides whether to retain or replace the current leader.

A polity's institutional arrangements shape the selection criteria that supporters use to determine whether to retain the incumbent. Hence, political institutions determine which outcomes allow a leader to keep her job and which do not. As we shall see, these differences shape the policies that leaders choose.

Citizens in general enjoy the benefits of public policies, whether or not they belong to the winning coalition. The advantage that members of W have is that they also enjoy a share of whatever private goods are allocated by the leadership. On average, each member of W receives a share of private goods equal to R/W, where R is the available pool of resources and W is the size of the winning coalition.

As the winning coalition increases, holding the budget constant, each member's share of private goods decreases. This makes public policy benefits loom larger in the overall utility assessment of members of the winning coalition in more democratic polities as compared to autocracies. One consequence is that democratic leaders, being just as eager to retain office as their authoritarian counterparts, must be especially concerned about policy failure. To reduce the risk of policy failure and subsequent deposition, they make a larger effort to succeed in disputes. This means that they are willing to spend more resources on war effort and only engage in fights they anticipate winning. In contrast, leaders with small winning coalitions reserve more resources for distribution to their supporters in the form of private goods. As long as they can provide substantial private goods, they are at less risk of being deposed than are their democratic counterparts, who perforce cannot give a large amount of such benefits to each member of their winning coalition.

Democratic leaders are more likely to try hard to win their wars than are autocrats. If they do not expect to win, then they try to avoid fighting; This implies that they pick and choose their conflicts carefully, which has several consequences. Democrats are more likely to win wars than autocrats for two reasons. First, if they need to, democrats try hard, spending resources on the war to advance their public policy goals (Reiter and Stam 1998b). Second, fearing public policy failure, democrats try to avoid contests they do not think they can win. Since two democrats in a dispute both try hard, both can anticipate that, if they go to war, each will spend lots of resources in a risky situation in which neither is disproportionately advantaged by greater effort. Therefore, democrats are generally inclined to negotiate with one another rather than fight (Lake 1992; Stam 1996, 176–8). By contrast, autocrats typically reserve their resources for domestic uses, as their political survival depends on satisfying key constituents through the distribution of private goods. Autocrats do not have a great need to produce successful public policies. Consequently, they try less hard than democrats in war, and they sometimes fight wars in which their chances are poor because defeat does not so greatly affect their prospects of political survival at home. Democrats, by their superior level of effort, often defeat autocratic foes and achieve successful policy outcomes. This helps enhance their reselection.

THE GAME

We assume that two nations, A and B, are engaged in a dispute. Our model examines the fundamental decisions that national leaders make under this contingency. In the game, leaders choose to fight or to negotiate a settlement. If the choice is to fight, then leaders decide how many of their available resources they are prepared to commit to the war effort. In reality, of course, either side in a dispute can resort to war. We, however, consider the restricted game in which the leader in nation A chooses between the use of force and a negotiated settlement. If she decides to attack, then she also picks an effort level, by which we mean she allocates some proportion, g_A, of her available resources, R_A, to the conduct of the war. Once attacked, the leader in nation B also picks an effort level, g_B. If nation A decides not to attack, then the dispute is settled peacefully through negotiations.

The war's outcome is a function of the relative effort by each side. That is, who wins depends in part on how leaders choose to allocate their limited resources. When the dispute is settled, either through negotiation or war, the domestic audiences in A and B then decide whether to retain or to depose the incumbent (Fearon 1994; Smith 1998). To make this decision, they evaluate their payoffs under each contingency and decide whether they are better off remaining in the incumbent's winning coalition or defecting to a prospective new leader.

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Structure of the Game

1. The leader in nation A chooses between war and negotiations. If she selects war, then she also chooses how hard to fight, $g_A \in [0, 1]$.
2. If war occurs, then the leader of B, having observed A's effort level, chooses how hard to fight, $g_B \in [0, 1]$.
3. Nature determines the outcome of the war.
4. In each nation, the members of the winning coalition, having observed the international outcome and the level of private goods allocated to them, decide whether to retain their leader or defect to a domestic political rival, thereby removing the current leader from office.

We assume that only A can start a war. This assumption is benign. The question of whether B wants to initiate is answered by simply flipping the labels A and B. Our central question is how political institutions affect crisis behavior.

Settling Crises by War

We model war as a costly lottery in which each player's expected utility from the war depends on the probability that its side will win or lose and the utilities associated with each possible outcome. In this section we develop our notions regarding the probability of victory (and defeat) and the attendant utilities.

The values of victory and defeat are normalized to one and zero, respectively. In addition, players pay a per-capita cost, k, associated with the war's destruction and the risks of fighting. Therefore, the utility of victory equals $1 - k$, and the utility for defeat is $-k$.

Many factors shape the outcome of a war. Observable military capabilities certainly play an important part, as do short-term shifts in government priorities by putting more national resources behind a war effort (Kim and Morrow 1992; Organski and Kugler 1980; Powell 1996a, 1996b). The probability of victory is presumed to increase as the total military advantage dedicated to the war effort by one side grows relative to the other side. Therefore, the victor is likely to be the nation with the most total military capabilities dedicated to the war.

We consider two types of military capabilities: the observable military balance, M, and the proportion of additional national resources committed to the war effort, g_i. The subscript will refer to nation A or B, as appropriate. The military balance, which takes values between 0 and 1, represents the ratio of observable military assets of the two sides. Additional resources dedicated to the war by either country are drawn from the R_i resources each leader has at her disposal. By choosing to devote the proportion g_i of R_i to the war effort, she generates an additional $g_i r$ in military assets, where r represents the exchange rate between resources and military capability.

The probability that A wins in a war, denoted $p_A = p_A(g_A, g_B, M)$, is increasing in military balance, M, and A's effort, g_A, and is decreasing in B's effort, g_B. The probability B wins is $p_B = 1 - p_A$. A general method of modeling this process is to treat p_A as the probability that a random variable ε, with distribution $\Phi(\varepsilon)$, is less than a function of the variables $h(g_A, g_B, M)$, a common example of which is the probit model, where $\Phi(\varepsilon)$ is the standard normal distribution, and $h(g_A, g_B, M) = M - \frac{1}{2} + g_A r - g_B r$.[7]

Negotiations

When nations enter negotiations, we assume they have expectations about the likely outcome of the bargaining process. In particular we assume the expected rewards for A and B from a negotiated settlement are χ and $1 - \chi$, respectively. We might suppose this deal, χ, reflects the relative military balance, M, but it need not. Other factors can also be influential. As Fearon (1995) points out in his bargaining model, the indivisibility of the policy space, the sustainability of deals in the future, and the role of current negotiations in altering the future military balance all influence which deals can be achieved through negotiations.[8]

The payoff to A from a negotiated settlement is χ, which is enjoyed by all citizens in A. That is, this payoff is a public good. The citizens in B enjoy the benefit $1 - \chi$ from negotiation.

$$U_A(negotiations) = \chi;\ U_B(negotiations) = 1 - \chi.$$

Table 1 summarizes the policy payoffs associated with each possible outcome of the international dispute. We let z represent the generic outcome. Everyone in A receives the policy payoff $V_A(z)$ associated with the outcome z, and all members of polity B receive the payoff $V_B(z)$.

TABLE 1. The Policy Payoffs Associated with International Outcomes

Outcome	$V_A(z)$	$V_B(z)$
Negotiations	χ	$1 - \chi$
A wins the war	$1 - k$	$-k$
A loses the war	$-k$	$1 - k$

[7] Other common examples used in international relations include Bueno de Mesquita, Morrow, and Zorick (1997), who set

$$\Phi(\varepsilon) = \begin{cases} 0 & \text{if } \varepsilon < 0 \\ 1 & \text{if } \varepsilon \geq 0 \end{cases}$$

and $h(M, m_A, m_B, g_A, g_B) = m_A + 2(M - 1) - m_B + g_A r - g_B r$, where m_A and m_B are intangible military utilities, and the standard ratio of forces model (see, e.g., Bueno de Mesquita 1981), which sets

$$\Phi(\varepsilon) = \begin{cases} 0 & \text{if } \varepsilon < 0 \\ \varepsilon & \text{if } \varepsilon \in [0, 1] \\ 1 & \text{if } \varepsilon > 1 \end{cases}$$

and $h(M, g_A, g_B) = (M + rg_A)/(1 + rg_A + rg_B)$. Hirshleifer (1989) examines the implications of variation in these functions.

[8] Nations' private information about their capability, which may take the form of intangible military assets of morale and leadership (Reiter and Stam 1998a, 1998b; see also Morrow 1989), also influences negotiations.

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Reselection

Following the international dispute, the leaders in each nation face reselection. The members of the selectorate evaluate the payoff they received under the incumbent. They compare this with what they expect to receive if they depose the incumbent and choose a domestic challenger. Deposition is not simply a matter of concluding that the leader did a poor job during the dispute. Rather, it is a question of whether the members of W believe they will be better off under alternative leadership.

Incumbents are deposed when they can no longer convince W members of the selectorate to support them. If the package of benefits an incumbent offers to her supporters is better than the rewards any challenger can credibly offer, then the incumbent can find W members of the selectorate who will retain her in office. If, however, the incumbent fails to provide benefits to the winning coalition in excess of what a challenger can credibly promise to provide, then the incumbent can no longer garner enough support to form a winning coalition. At this point, supporters defect, and the incumbent is ousted.

Defection is risky. There is no shortage of challengers and prospective defectors. Consequently, a member of the current winning coalition cannot be certain of being essential to the successor government. That is, by defecting, members of the winning coalition place their private goods benefits at risk. We characterize that risk as increasing as the pool of available members for a winning coalition increases and as decreasing as the necessary size of the winning coalition increases, so that the risk increases as S increases and decreases as W increases. For simplicity's sake, we treat the probability of being a member of the successor winning coalition in A as W_A/S_A. Then, the expected utility from private goods in a new coalition if one defects to a challenger is simply $(R_A/W_A)\ (W_A/S_A) = R_A/S_A$.

Like the incumbent, the challenger proposes a mix of public and private goods allocations. Of course, the selectorate does not know what the challenger can actually deliver, whereas they have observed the performance of the incumbent. The selectorate must infer the ability of the challenger (Riker 1996). We denote the competence, strength, or ability of the challenger in A as c_A and use comparable notation for the challenger in B.[9] When the incumbent is making choices about whether to fight or negotiate and how to allocate resources, she is uncertain of the qualities of a prospective domestic rival. We represent the distribution of possible challengers with the cumulative density function $F_A(x)$, where $F_A(x) = Pr(c_A \leq x)$. For technical convenience, we assume the distribution of challengers is exponential: $F_A(x) = 1 - e^{-x/\sigma}$.

What can a challenger credibly offer the selectorate? He cannot make credible promises regarding how he will perform during a dispute or on other policy questions. Knowing this, the selectorate's members focus on the reservation value they expect if they choose a new leader. We assume that the reservation value for picking the challenger is $c_A + R_A/S_A$.

Incumbents can anticipate what they must give supporters to defeat challengers. They simply must provide more utility for their coalition members than that offered by the challenger, or

$$(1 - g_A)\frac{R_A}{W_A} + \mu_A + V_A(z),$$

where μ represents the performance of the leader on all policy dimensions other than the international dispute. This utility term is quite intuitive. $V_A(z)$ is the utility supporters derive from the outcome of the policy of the leader in the international dispute.[10] $(1 - g_A)$ is the proportion of resources reserved for distribution as private goods to the winning coalition after spending g_A on the war effort. Of course, if there is no war, then $g_A = 0$. The total pool of resources (R_A) is diminished by whatever portion goes to the war effort, if any. What remains is distributed evenly to the members of the winning coalition so that each member receives $(1 - g_A)\ R_A/W_A$. Of note is that members of the winning coalition are assumed to be certain to receive their share of private goods if they stay with the incumbent, but they only receive such goods probabilistically if they defect. In addition, neither the incumbent nor the challenger can promise to distribute any resources that are destroyed or lost by the state during a war. This proves important later in understanding why autocrats do not make the same allocation decision as democratic leaders.

Leaders want to remain in office. At the time leaders choose their actions, including whether to wage war and how to allocate resources, they cannot be certain of the quality of prospective political rivals. Yet, given the distribution of possible challengers, the incumbent can assess how outcomes influence her prospects for reselection. Leader A remains in office as long as she offers her winning coalition at least as much as a potential challenger credibly promises. Hence, the probability the incumbent remains in office given outcome z and effort g_A is $Pr((1 - g_A)\ R_A/W_A + V_A(z) +$

[9] In autocracies and other nondemocratic regimes, campaigns may not be public but instead take such forms as secret discussions about a coup, assassination, or other means to overthrow the incumbent. Success depends on attracting enough supporters to depose the sitting government and replace it with one led by the challenger. Because of the risks (captured by our notion that the probability of being essential to a successor government is equal to W/S), challengers in autocracies generally operate in secret. It would be a mistake to believe that challengers do not always exist. Even in the most autocratic regime there are always people eager to take over the role of leadership. One obvious indication is that following the sudden death of an incumbent there is always someone willing to step in and assume leadership. Frequently, many people compete for the opportunity, although the closest supporters of the leader are the obvious candidates.

[10] We assume here that all members of society benefit equally from international outcomes. As earlier work shows (Bueno de Mesquita et al. 1997), however, foreign policy objectives are a function of institutional arrangements. Countries with small winning coalitions typically fight for resources that can be targeted as private goods to the regime's supporters. By contrast, countries with large winning coalitions fight over policies that have larger public goods components.

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$\mu_A \geq c_A + R_A/S_A) = Pr((1 - g_A)\, R_A/W_A - R_A/S_A + V_A(z) + \mu_A \geq c_A) = F(V_A(z) + (1 - g_A)\, R_A/W_A - R_A/S_A + \mu_A)$.

All else equal, leaders who perform well on other issues (large μ) and those with large selectorates (large S) find it easiest to remain in office. When the selectorate is large, challengers can draw their political backing from a large pool of potential supporters. This means supporters of the current incumbent cannot be certain of also being included in future coalitions. Hence, members of the current winning coalition only probabilisitically receive private goods under future leaders. By contrast, current members of the winning coalition receive private goods with certainty from the incumbent. This forms the basis of the leader's incumbency advantage.

The size of the leader's incumbency advantage depends upon the configuration of the polity's political institutions. The smaller the selectorate, the greater are the private goods benefits members of the current winning coalition can expect from any challenger and, therefore, the greater the private benefits the incumbent must provide in order to remain in power. Similarly, as the size of the required winning coalition decreases, the number of people with whom private benefits must be shared decreases, which makes the value of the benefits to each member that much greater. Therefore, as the winning coalition becomes larger, the incumbency advantage diminishes because the value of the private benefits to individual members of the winning coalition gets smaller. When the winning coalition is small and the selectorate is large, supporters of the incumbent jeopardize their welfare if they defect to a political rival of the incumbent, since they face a high risk of being cut off from private benefits under the new leader. The risk of being excluded from the private payoffs of future coalitions grows as the size of the selectorate increases and as the size of the winning coalition decreases, so that the risk is greatest in autocracies and smallest in democracies.

The incumbent is advantaged in her ability to supply private goods because current members of the coalition are sure of receiving them. Given her advantage in private goods, the incumbent survives so long as she does not do such a poor job on public policy that she is judged grossly incompetent as compared to the challenger. That is, as long as c_A is not especially large or μ strongly negative, the incumbent has the upper hand. What constitutes sufficient policy incompetence by the leader to warrant deposition, however, depends on the structure of the polity. If the leader has a huge advantage over the challenger in her ability to supply private goods, then she can survive disastrous policy outcomes. Although leaders from systems with large winning coalitions, such as democracies, have some advantage in the supply of private goods, the magnitude of this advantage is small, so these leaders cannot tolerate policy failure as well as can autocrats or even monarchs.[11]

[11] Bueno de Mesquita and Siverson (1995) and King, Tomz, and Wittenberg (1998) find empirical support for these predictions.

The preceding discussion suggests the incentives of leaders. We now specify those formally by denoting the payoffs to leaders under each contingency they face. In particular, if the outcome of the international dispute is z and the leader's effort level is g_A, and assuming the leader also gets the payoffs received by any other member of the winning coalition, then the leader's payoff is:

$$U_A(z, g_A) = V_A(z) + \Psi F_A\left(V_A(z) + (1 - g_A)\frac{R_A}{W_A} + \mu - \frac{R_A}{S_A}\right) + (1 - g_A)\frac{R_A}{W_A},$$

where Ψ is the leader's utility for remaining in office, and the other terms refer to the payoff from membership in the winning coalition.[12] $F_A(\cdot)$, recall, is the distribution of challenger types; hence, $F_A(V_A(z) + (1 - g_A)\, R_A/W_A + \mu - R_A/S_A)$ is the probability that the leader of A retains power given the international outcome z and effort g_A.

During a dispute, the incumbent leader in A decides whether to fight and, if so, how hard to try. If attacked, the leader in B chooses an allocation of resources to dedicate to the war effort. Following the end of the dispute, members of the winning coalition decide whether to remain loyal or to defect, thereby retaining or bringing down the incumbent leadership. This is the sequence of play in the game. With the utilities all specified, we can now turn to solving the game.

SOLVING THE GAME

We solve the game by finding subgame perfect equilibria, starting at the bottom of the game tree and working sequentially backward through each decision. As such, the analysis of each stage is done with the knowledge of actors' anticipated responses in subsequent decisions. Having already examined reselection above, we move to the preceding decision: the level of resources dedicated to prosecuting the war.

If attacked, the leader of B chooses how many of his available resources, R_B, to dedicate to the war effort: $g_B \in [0, 1]$. The advantage of spending more on the war is that he improves B's prospects of victory, but trying hard also involves risks. By trying harder, B's leader reduces the amount of resources available to reward his supporters through private goods. Political institutions influence the effort decision because they determine the relative importance for political reselection of saving resources to use as private goods versus increasing the odds of military victory by spending those resources on the war effort. Let $Y(g_B)$ represent the expected payoff of B's leader from dedicating g_B of the available resources to the war, where $p_B(g_B)$ is the

[12] One might argue that the value of remaining in office, Ψ, is a function of regime type. As Goemans (1995) points out, being ousted is more often fatal for autocrats than democrats. Our assumption, however, is that the primary goal of all leaders is to keep their job. Given this, the principal, component in every leader's objective function is reselection.

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probability that nation B wins given an effort level of g_B. This probability of victory also depends upon A's effort and the military balance, but since we are currently focusing on B's decision, we suppress this notation. Similarly, we suppress all unnecessary subscripting:

$$Y(g_B) = p_B(g_B) - k + (1 - g_B)\frac{R}{W} + \Psi\left(p_B(g_B)F\left(v_B + (1 - g_B)\frac{R}{W}\right) + (1 - p(g_B))F\left(l_B + (1 - g_B)\frac{R}{W}\right)\right),$$

where $v_B = 1 - k - R_B/S_B + \mu_B$ and $l_B = -k - R_B/S_B + \mu_B$.

The term $p_B(g_B) - k$ refers to the expected value of the war to the nation as a whole. $(1 - g_B)\ R/W$ is the leader's share of the private goods rewards. The final term, $\Psi(p_B(g_B)F(v_B + (1 - g_B)\ R/W) + (1 - p(g_B))F(l_B + (1 - g_B)\ R/W))$, is the product of the value of officeholding, Ψ, and the expected probability of surviving in office. This expected probability is made up of two components. The first, $p_B(g_B)F(v_B + (1 - g_B)\ R/W)$, is the probability of victory $(p_B(g_B))$, multiplied by the probability that B's leader survives in office given victory, $F(v_B + (1 - g_B)\ R/W)$. The second component, $(1 - p(g_B))F(l_B + (1 - g_B)\ R/W)$, is the probability of military defeat $(1 - p(g_B))$, multiplied by the probability that B's leader survives in office given defeat, $F(l_B + (1 - g_B)\ R/W)$.

Leaders choose the effort level that maximizes their expected payoff. In general, the larger the winning coalition, the greater is this optimal effort level. This leads to our substantive conclusion that democrats try harder in wartime than do autocrats. Before we explain the origins of this result, it is important to add a qualifier. In some cases, the outcome of the war may be so important relative to private goods that all leaders, whatever their domestic political institutions, try all out to win. At the other extreme, the salience of the war may be sufficiently low that no political arrangements induce additional effort. Between these extremes, however, it is large winning coalitions that induce high effort levels and small coalitions that induce the hoarding of resources for subsequent distribution as private rewards to the winning coalition.

The game reveals that large winning coalitions encourage leaders to dedicate additional resources to the war effort. As for all the technical results, the formal proof is in the Appendix. The key insight concerns how coalition size influences the importance of private goods as a means of rewarding supporters. As leaders increase their level of effort during a war, they increase the probability of victory. A military victory benefits everyone in nation B, including members of the winning coalition. The marginal benefit of increased effort is independent of political institutions, since everyone benefits from the policy success, whether leader, member of the winning coalition, member of the selectorate, or part of the disenfranchised portion of society. Yet, increased effort comes at the expense of having fewer resources with which to provide private goods for supporters.

Resources not spent on the war effort go to the winning coalition in the form of private goods. The value of these private goods depends upon how many people must be rewarded. Each supporter's share of the private goods is R/W. As the leader allocates resources to the war effort, he reduces the private goods rewards for his supporters. The rate at which increased effort diminishes supporters' benefits depends upon W. When the winning coalition is small, each member's share of the resources is high. Given these concentrated benefits, increased war effort drastically reduces the utility of members of the winning coalition. In contrast, when W is large, each member receives only a small share of the private goods in the first place. Thus, when the winning coalition is large, the reduction in supporters' utility from having resources channeled into the war effort, instead of being retained as private benefits, is small. It is incentive compatible with a leader's goal of remaining in office to maximize his supporters' utility. In terms of the supporters' rewards, the cost of improving the probability of victory increases as the winning coalition gets smaller. Thus, the marginal benefit of increased effort—the increase in the probability of victory—is independent of political institutions but the cost of increased effort is dependent on those institutions. To make the institutional comparison as stark as possible, consider the following limiting case.

Suppose a leader chooses between making an all-out effort that guarantees victory ($g_B = 1$ and $p_B(1) = 1$) and no additional effort at all, even though this makes defeat inevitable ($g_B = 0$ and $p_B(0) = 0$). The expected payoff of a leader who makes the all-out effort is $Y_B(g_B = 1) = 1 - k + \Psi F(v_B)$, where $v_B = 1 - k - R_B/S_B + \mu_B$. Alternatively, by making no additional effort, the leader receives $Y_B(g_B = 0) = -k + R/W + \Psi F(l_B + R/W)$, where $l_B = -k - R_B/S_B + \mu_B$. Each of these equations has terms relating to the leader's direct rewards and terms relating to the prospects of reselection. We examine these components separately.

In terms of direct rewards, an all-out effort gets the leader a payoff of $1 - k$ as opposed to no additional effort, which generates a direct payoff of $-k + R/W$. Therefore, if the winning coalition is larger than R, then the leader makes an all-out effort ($W > R$). Although the direct benefits are illustrative of why leaders with large W try hard, we think of our argument as predominately reselection driven. The reselection related rewards associated, respectively, with an all-out effort and no additional effort are $\Psi F(v_B)$ and $\Psi F(l_B + R/W)$. Since $v_B = 1 - k - R_B/S_B + \mu$ and $l_B = -k - R_B/S_B + \mu$, and since $F(.)$ is an increasing function, the all-out effort term is greater than the no-effort term when $1 > R/W$. Again, in this limiting case, leaders make an all-out effort to win only when $W > R$. Otherwise, leaders hoard their resources for private goods provision and make no additional effort,

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even though military defeat is inevitable. Such leaders could improve their chances of victory by trying harder, but this is not incentive compatible with their desire to stay in office.

Thus far we have shown how political institutions affect the amount of resources dedicated to the war effort for B. Similar logic applies for A. Although A's leader's decision calculus is slightly more complicated, because she must anticipate B's effort level, the same motivations persist. Again, the larger A's winning coalition, the less important private goods become relative to foreign policy success. Therefore, all else being equal, the larger the winning coalition, the more resources A dedicates to the war effort.[13]

The game shows that democratic leaders, because they require large winning coalitions, try harder in war than do autocrats, who only need support from a small coalition to stay in office. One might think that autocrats have an interest in fighting hard to protect the pool of resources they need to distribute as private goods, but to stay in office they must only provide more than their challenger can credibly promise. The challenger cannot promise to distribute any resources that have been lost as a consequence of defeat in the war. Therefore, the incumbent autocrat's comparative advantage in distributing private goods and in reserving resources for that purpose remains unaltered following military defeat.

The deduction from our model that democratic leaders try harder in wars than do autocrats is, we believe, a novel theoretical result. It is interesting to note, therefore, empirical evidence that fits our deduction. Bates et al. (1998, 7) report that Rosenthal

> finds a "selection effect:" parliamentary governments, for example, fight fewer wars [than monarchies or autocracies]. They are only willing to fight wars that are profitable, and they are more willing to adequately finance, and therefore more likely to win, the wars they choose to sponsor. His conclusion is reinforced by the argument of Levi, which explores the impact of increased democratization and industrialization upon military mobilization. Faced by an increase in both variables, she argues, governments have to invest more in convincing their populations of the importance of the war and in winning their consent to fight.

That is, democratic leaders invest their effort and resources in mobilizing their societies to produce the public good of victory in war, as predicted. Lamborn (1991) presents additional direct evidence for the deduction that democracies try harder in war. He shows that, before World War I, Germany devoted a larger percentage of its gross national product to the military than did Britain or France. Nevertheless, the latter mobilized greater resources once the war began because they were better able than the Germans to increase revenue extraction for the war effort.

We have demonstrated that the incentives of leaders in war differ as a function of their institutional settings. All else being equal, institutional arrangements provide democratic leaders with greater incentives to try hard relative to autocrats. To show how this influences the empirical regularities associated with the democratic peace, we now assess the incentives to negotiate rather than fight.

THE DECISION TO FIGHT OR TO NEGOTIATE

Because leaders in states with large winning coalitions cannot easily compensate for policy failure by doling out private good, they need to succeed in foreign and domestic policy. Leaders in systems with small winning coalitions can more readily compensate for policy failure by providing private benefits to their few key backers. Therefore, they do not try as hard in wars as do democrats. One consequence is that democracies are less attractive targets than autocracies. By the same token, democracies are reluctant to pursue wars they do not expect to win. Their leaders are at great risk of political defeat at home due to failed policies. Autocratic leaders are not.

It follows that democratic leaders generally attack only if they anticipate victory. They are highly selective; they prefer to negotiate when they do not anticipate military success. This does not mean they are unwilling to fight. Democracies, because of their propensity to try hard, can often overwhelm their foe. This carries an important implication for the type of foe they can fight and defeat. Because autocrats do not try as hard in war, they make attractive targets for democracies. In contrast, two democracies are reluctant to fight each other. Since both try hard, each minimizes to the extent possible, given its resource endowments, the chance that the other will win. Since democrats need to be overwhelmingly confident of victory, it is difficult to satisfy the conditions necessary for democracies to fight one another.

Autocrats do not depend upon military victory to keep their job. Of course, they prefer winning to losing, but their political (and personal) survival is primarily a function of satisfying their small band of supporters rather than providing their citizens with successful policies. They are more willing to gamble on war than are democrats because the latter's political survival is on the line; the former's is not. Thus, it is straightforward to see that democracies and autocracies can fight wars against each other and that autocracies can afford to fight one another.

Stated formally, we characterized optimal effort decisions for leaders in A and B once war occurs as g_A^* and g_B^*, respectively. All else being equal, the larger is W_i, the harder nation i tries. If A's leader initiates conflict with B, then A's payoff is its chance of winning multiplied by its utility for winning, plus the chance it loses multiplied by its utility for losing, plus the value of the private goods retained after choosing a level of war effort: $U_A(WAR|g_A^*, g_B^*) = p_A - k + (1 - g_A^*) R_A/W_A + \Psi(p_A F_A(v_A + (1 - g_A^*) R_A/W_A) + (1 - p_A)F_A(l_A + (l - g_A^*) R_A/W_A))$, where p_A is the

[13] In general, the interaction between the effort levels of A and B depends upon the precise function mapping effort into probability of victory, $p(g_A, g_B)$. For the special case in which $p(g_A, g_B)$ is the force ratio model, however, increased effort by one side elicits increased effort from the other.

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probability that A wins given effort levels g_A^* and g_B^*. If A's leader chooses negotiation rather than conflict, then her expected payoff is $U_A(nego) = \chi + \Psi F_A(n_A + R_A/W_A) + R_A/W_A$, where $n_A = \chi + \mu_A - R_A/S_A$.

A's leader only initiates conflict when the benefit of doing so exceeds what she expects from a negotiated settlement: $U_A(WAR|g_A^*, g_B^*) \geq U_A(nego)$.[14] The more likely A is to win, the more likely it is that this condition is met. Given their political institutions, A and B exert effort levels g_A^* and g_B^*, respectively. These effort levels influence the probability of A being victorious, p_A. In addition to structuring how hard A and B try, political institutions also influence whether leaders want to initiate conflict, given knowledge of the effort levels that will follow in any subsequent war. We define P as the probability of victory that makes A indifferent between negotiations and war:

$$P = \frac{\chi + k + g_A^* \frac{R_A}{W_A} + \Psi F_A\left(n_A + \frac{R_A}{W_A}\right) - \Psi F_A\left(l_A + (1 - g_A^*)\frac{R_A}{W_A}\right)}{\left(1 + \Psi\left(F_A\left(v_A + (1 - g_A^*)\frac{R_A}{W_A}\right) - F_A\left(l_A + (1 - g_A^*)\frac{R_A}{W_A}\right)\right)\right)}.$$

A only initiates conflict if $p_A \geq P$. Although this expression is mathematically precise, it provides little substantive interpretation of the incentives that leaders face. Yet, political institutions shape this expression in a systematic manner. We present examples for both autocrats and democrats to illustrate how political institutions structure the conditions under which leaders choose war rather than negotiations. These standard cases show how autocrats and democrats differ in their decisions to initiate conflict. Generally, survival for an autocrat depends upon her ability to distribute private goods. Providing she does not expend resources on the war effort, she typically survives whether she wins, loses, or negotiates. Since her survival is not strongly influenced by the war outcome, an autocrat's initiation decision resembles a standard realist calculation of benefits and losses. For a democrat the situation is different. Given the large number of supporters she must appease, she cannot buy political loyalty with private goods alone but must rely instead on public policy success. For her, military defeat equates with political defeat; so, where possible, she avoids fighting when defeat is a significant possibility.

The Decision for Autocrats

Autocrats initiate conflict when the expected gains of conflict exceed what they expect to obtain through negotiations. Yet, the decision to fight is largely a secondary consideration that is not driven by an autocrat's primary objective—to stay in office. As such, conflict initiation depends upon an assessment of the expected value of war relative to negotiations. As we saw, autocrats find it easier to retain office than do their democratic counterparts. Autocrats have an advantage over challengers in their ability to provide private goods. Since private goods figure predominantly in the rewards given to supporters in autocratic systems, supporters risk much if they desert the incumbent. This incumbency advantage in the supply of private goods means that as long as autocratic leaders retain resources to provide private goods for their supporters, they survive. Hence, as shown above, even if she makes little additional effort, A's leader survives in office.

Knowing that the leader in A makes no additional effort and typically survives whatever the outcome of conflict, her expected value of fighting approximately reduces to $p_A - k + R_A/W_A + \Psi$, where p_A is the probability of victory given no additional effort by A's leader. Negotiated settlements leave A's resources untouched and available for distribution as private goods. Again, having the incumbency advantage of guaranteed private goods provision, the typical autocrat also retains office via negotiations. An autocrat's expected value for negotiations reduces to approximately $\chi + R_A/W_A + \Psi$. Therefore, an autocrat's decision resembles that of a standard unitary actor model. An autocratic leader typically initiates fighting when $p_A > \chi + k$: The expected benefits of conflict outweigh the expected value of negotiations.[15]

The Decision for Democrats

Unlike autocrats, leaders with large winning coalitions have only a small incumbency advantage in the supply of private goods. As already shown, this makes their survival in office harder and more contingent upon their public policy performance. Knowing that the survival of democrats depends upon their public policy performance, we construct an example to show how institutions structure the conflict decision of leaders in large winning coalition systems. Having examined this archetypal case, we analyze the limiting mathematical case. Although we believe the stereotypical case is generally appropriate, there are plausible conditions under which the results we generate from this example break down. These conditions are important because they predict the domestic political circumstance when democrats become belligerent and when war between democracies is most likely. Rather than interrupt the flow of our general argument by continually referring to these exceptional circumstances, which resemble those of gambling for resurrection under the diversionary war hypothesis (Downs and Rocke 1994; Goemans

[14] If $\chi < -k$, then war is inevitable, since A would prefer losing to a negotiated settlement. At the other extreme, if A's expected deal through negotiations is greater than the best possible outcome from war, A always negotiates: $\chi \geq 1 - k$. Since we are primarily thinking of χ as a division between 0 and 1, the first extreme is generally impossible. To restrict ourselves to substantively interesting cases, we assume $-k \leq \chi \leq 1 - k$.

[15] The limiting case shows this clearly. As the winning coalition contracts, $W \to 0$, the private goods that each supporter receives become extremely large, $R/W \to \infty$; hence, leaders make no effort, and the decision to fight resembles the unitary actor solution: $\lim_{W \to 0} P = \chi + k$.

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1995; Levy 1989; Richards et al. 1993; Smith 1996; Werner 1996), we consider them separately.

As we have already demonstrated, in systems with large winning coalitions, leaders have only a small incumbency advantage in the provision of private goods. Instead, leaders survive on the basis of their public goods performance. With their sensitivity to public policy provision in mind, we construct our stylized case by assuming that defeat means almost certain removal and victory means almost certain retention. Therefore, the expected payoff for a democratic leader from initiating conflict is approximately $p_A(1 - k + \Psi) + (1 - p_A)(-k) = -k + p_A(1 + \Psi)$, where p_A is the probability of victory for A given the effort each side makes. If instead of fighting A's leader negotiates a settlement, then her expected payoff is $U_A(nego) = \chi + \Psi F_A(n_A + R_A/W_A) + R_A/W_A$, where $n_A = \chi + \mu_A - R_A/S_A$. Although we shall subsequently discuss relaxing this assumption, for current purposes suppose that this is approximately equal to $\chi + \Psi + R_A/W_A$. We know that democratic leaders are sensitive to policy failure and that supporters' rewards from negotiations are generally closer to those of success than failure, since conflict is inefficient. An additional, although small, benefit from negotiation is that leaders can allocate private goods. So, as an initial working supposition, we assume that negotiations also give leaders a significant probability of retaining office.

Democrats initiate conflict when $-k + p_A(1 + \Psi) > \chi + \Psi + R_A/W_A$, which can be alternatively expressed as $p_A > (\chi + \Psi + k)/(1 + \Psi) + R_A/((1 + \Psi)W_A)$. Given the large winning coalition size of a democracy, the latter term, $R_A/((1 + \Psi)W_A)$, is small. The magnitude of the former term, $(\chi + \Psi + k)/(1 + \Psi)$, depends upon the value of holding office. As holding office becomes important (large Ψ), this term becomes close to one. This indicates that democratic leaders who value holding office need to be almost certain of victory before risking war.

In constructing this stylized example we made suppositions about the probability of reselection associated with each outcome. Later we explore the robustness of our results in light of variation in these conditions. By looking at the limiting case of an extremely large winning coalition we see justification for this working assumption. As the winning coalition expands, $W \rightarrow \infty$, each supporter's private goods allocation becomes vanishingly small, $R/W \rightarrow 0$. Under this contingency, private goods have no value to leaders, either in terms of personal or reselection benefits. Hence, leaders allocate all available resources to extra war effort, $g^* = 1$. Under this condition A only attacks if $p_A \geq \lim_{W\rightarrow\infty} P = (\chi + k + \Psi F(n) - \Psi F(l))/(1 + \Psi(F(v) - F(l)))$. Of course, if leaders care nothing about reselection ($\Psi = 0$), then this again reduces to the unitary actor solution. If, as we believe, the reselection motive is primary (large Ψ), however, then concavity in $F(.)$ is sufficient to ensure that $(\chi + k + \Psi F(n) - \Psi F(l))/(1 + \Psi(F(v) - F(l))) > \chi + k$. Given our assumption that challenger types are exponentially distributed, this means that leaders in systems with large W must be more certain of winning before they attack than is true for their autocratic counterparts.

The implications of the above theoretical result about the willingness of democratic leaders to use violence as the means to advance their objectives is noteworthy. Autocracies may engage in imperialist expansion, for instance, out of a quest for additional private goods. Democracies can also be expected to participate in imperialist expansion according to our model, provided that doing so enhances the survivability of incumbents. The targets during wars of colonial and imperial expansion typically are very weak states or peoples who can easily be defeated. The norms-based argument that democracies use violence to protect their survival against nondemocratic foes who do not share the abhorrence of violence may account for some democratic-autocratic wars, but it seems to be contradicted by wars of colonial or imperial expansion by democracies. Certainly, the weak foes in such wars did not threaten the survival of the democratic belligerent. Yet, our model shows that extremely weak opponents readily fulfill the requirements to be targets of democratic initiations of violence. Democracies, according to our model, initiate fighting when their prospects of victory are almost certain, so they, like autocracies, are not immune from the temptations of expansionism. Near certainty of victory, not normative commitment to peaceful resolution of disputes, describes when democracies go to war.

The democratic propensity to try hard makes it difficult for either side of a democratic dyad to overwhelm the other. Being unable to guarantee victory, both sides seek to avoid what is likely to be a bloody and protracted conflict. The exception arises when one party in the dyad is much weaker than the other. In that case, large democracies are not immune from attacking small ones, but small democracies are expected to sue for peace rather than fight back. This follows in the model because democracies need a high probability of victory in order to fight. Therefore, large democracies are prepared to fight weak adversaries, including democracies, but the weak democrats, having a low probability of victory, are unwilling to fight back. This results in cases of low-level, one-sided attacks by large democracies against small ones (e.g., the United States attacked the Dominican Republic in 1965), a phenomenon widely observed in the historical record. This also explains why democracies can be imperialist powers.

Democrats need to be more certain of victory than do autocrats before they attack, but this is not to say that democratic states are necessarily more dovish than autocratic regimes. Although democrats must be confident of victory before initiating conflict, their increased effort means that often they can overwhelm other states. In the Appendix we formally show that the size of a negotiated settlement, χ, sufficient to buy off A and prevent A from attacking is not a simple monotone in the size of the winning coalition. Simply because democrats are more selective in their conflicts does not always make them less aggressive. Rather, whether large or small winning coalition systems are more aggressive is a function of the specific conditions.

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Under some circumstances autocrats may be more dovish, under other conditions they may be more hawkish. Our institutional explanation has two opposite components. First, leaders with large winning coalitions typically try hard during conflict, dedicating additional resources to the war effort, which allows them to overwhelm other states. Second, democratic leaders with large winning coalitions need to be more certain of victory than their autocratic counterparts before initiating conflict. Given these two competing influences, we cannot say whether in general democrats are more hawkish or dovish than autocrats, but the combination of these two effects leads to the implication that democratic nations generally do not fight one another.

The Interaction of Polities

Thus far, we have shown that political institutions help shape war-fighting incentives. We found that a large winning coalition has two effects: It makes states try harder if there is a war, and it makes leaders more selective about the disputes they are prepared to escalate to warfare. We now explore how these effects shape the possibility of conflict between different combinations of polities.

Case 1: A is autocratic and so is B. Neither tries hard if there is a war. The leader of A attacks if she believes that on average she can get more from conflict than negotiations. She may believe, for instance, that the expected settlement through negotiations underestimates A's relative war-fighting ability. B's leader, presumably, does not share this belief. If she did, then the negotiated settlement proffered by B would reflect that fact. As the war's outcome is not critical to A's (or B's) political survival, the decision to fight is more easily influenced by secondary factors not assessed in our model.

Case 2: A is autocratic, but B is democratic. Despite the fact that A's institutions place few constraints on the decision to fight, A's leader is generally reluctant to attack a democracy because democracies try hard. Therefore, she knows that her state is likely to lose the war. This reduces the expected utility from fighting as compared to the expected utility from negotiations, which makes war initiated by an autocrat against a democrat less likely, all else being equal, than war initiated by an autocrat against another autocracy.

Case 3: A is democratic, but B is an autocrat. The political institutions of A make its leader reluctant to attack B unless military victory is highly likely. Yet, the incumbent in A is prepared to put more effort into the war (if there is one) than will the autocratic B. Hence, A is more likely to win the conflict than, for instance, the prewar military balance alone suggests. Thus, democracies are willing to fight autocrats so long as the prewar military balance plus the democracy's additional effort give A a substantial probability of victory. Autocrats are willing to fight back under these conditions because victory is not essential for their political survival.

Case 4: A is democratic and so is B. A will attack B only if B is substantially weaker than A, taking both the prewar military balance and effort levels into account. Since B will try hard, A must have a great prewar military advantage or a great advantage in overall resource endowments that can be put to use in the war effort. Aside from such asymmetric conflicts as characterize imperialism and wars of colonial expansion, wars between democracies are unlikely.

We have now established that autocracies fight each other provided either one believes it has a consequential advantage; autocracies are more reluctant to initiate wars against democracies because of the difference in levels of effort, although they are not precluded from doing so when the conditions in the model are right; and democracies target autocratic states just under those circumstances when the democracy expects to win, although this occurs more often than we might suppose because of the effort advantage induced by democratic institutions. The latter two results suggest an explanation for Benoit's (1996) finding that democracies are overall more pacific than other systems. They also explain Bennett and Stam's (1998) finding that democracies are more likely to initiate war against autocracies than vice versa. We now move to the heart of the democratic peace and explain why pairs of democracies have such a low propensity to fight.

The institutional arrangements within democracies mean that the leader's survival depends more upon policy success than upon the provision of private goods to supporters. Once engaged in a war, democratic leaders typically make every effort to win. A war between two democracies is likely to be bloody and hard fought, with both sides using every available resource. Democratic leaders are reluctant to engage in a war unless they are extremely confident of winning. Against an autocrat, victory often is almost assured because of the democrat's willingness to try hard. A democratic opponent, however, is also prepared to go the extra mile for policy success. Victory has to be a near certainty in order for a democracy to fight rather than negotiate, and it is unlikely that either democracy will have a sufficiently large advantage to prefer war to negotiation. Consequently, democracies are more likely to negotiate a resolution of their mutual disputes rather than fight. Only democratic leaders who do not highly value retaining office are willing to fight when the perceived odds of victory are not extremely high.

Our model supports the claim that democracies tend not to fight one another but do tend to initiate wars against autocracies, provided the democrat has a substantial probability of victory. The model also indicates that autocracies can readily fight one another and are less inclined to negotiate than are democrats. We began with eight observed empirical regularities of interest, and we have shown how institutional arrangements explain the first five. Although the other three have not been explicitly discussed thus far, the model can readily address these patterns, too.

It is commonly assumed, and has been demonstrated empirically, that the costs a nation endures in war and the length of time it takes to win are inversely related

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to its military dominance (Bennett and Stam 1996; Bueno de Mesquita 1983). If this is so, then nations that overwhelm their opponents are likely to win quickly and suffer fewer causalities in the process. As we have shown, democracies tend to make the greater effort. Therefore, on average, we should expect them to win quickly and to have lower casualties than autocracies. Although the relationship between costs and relative military dominance is outside the formal framework of our model, it reinforces our findings. Democracies find it hard to overwhelm other democracies because both sides are prepared to make an all-out war effort. Hence, a war between democracies is likely to be long and costly. Since the survival of democratic leaders depends upon public policy success, they typically want to avoid long and costly wars.

Mansfield and Snyder (1995) suggest that transitional democracies are not bound by the democratic peace. Instead, they are more war prone than older democracies or autocracies. Our model may shed some light on the regularity they have advanced. Elsewhere we report on the endogenous selection of institutions (Bueno de Mesquita et al. 1998) using a variation of the model discussed here. We found a larger set of conditions under which there are incentives to expand the size of the selectorate rather than the size of the winning coalition. If states in transition to democracy expand their selectorate faster than they expand their winning coalition, then the latter falls below its optimal size. In that case, the model suggests the existing government is highly susceptible to overthrow by foreign or domestic rivals, which makes it highly unstable. This seems compatible with the view advanced by Mansfield and Snyder (1995) and reinforced by Ward and Gleditsch (1998), who maintain that not all transitional democracies are war prone; those undergoing reversal in the democratization process are most apt to fight. That is an avenue of research we will continue to pursue, mindful that current results are consistent with but inconclusive at this stage regarding the hypothesis about transitional democracies.

As stated at the outset, we cannot systematically evaluate Morgan and Campbell's (1991) monadic observation that large democracies appear particularly constrained, but we can indicate how it might be consistent with our theory. We bear in mind that they do not address the resources or institutional constraints of the adversary in war. Major power democracies typically have a significant advantage over their opponents in terms of the military balance, which enhances their bargaining position relative to the bargaining position of smaller, less powerful democracies. Since an advantageous bargaining position allows leaders to obtain nearly everything they want anyway, even if certain of victory, the small additional gains made through military victory are likely to be offset by the costs of fighting. Therefore, powerful democracies should strongly manifest the expected behavior of democracies in a manner consistent with the Morgan and Campbell monadic results.

DIVERSIONARY WAR AND COMPROMISE AGREEMENTS

Although we present a general model of war, for clarity of exposition we have focused on particular cases. These stylized cases suggest that democracies are only aggressive if they are nearly certain of victory. When the outcome of the war is less certain, democracies prefer negotiated settlements. Since this conclusion drives the democratic peace predictions, its robustness is worth exploring to identify the conditions under which it breaks down.

For mathematical convenience we assumed the distribution of challenger types was exponential. With respect to effort level, our intuition focuses on the arguments of $F(.)$, rather than the specific shape of the exponential distribution. That is, our arguments about effort levels are grounded upon how political institutions shape the rewards supporters receive and not specifically on the marginal effect of these benefits. So, with respect to effort level, our assumption that challenger types are distributed exponentially is benign. With respect to the decision to fight, however, our assumption is less innocent. For example, in examining the limiting case ($W \rightarrow \infty$), we used the concavity of the exponential distribution. It certainly seems reasonable to assume there are diminishing marginal returns from additional rewards for supporters when a leader is already likely to remain in office, but such an assumption is less tenable when a leader's initial prospect of survival is low. We may, for example, prefer to assume challengers are distributed normally, which makes the reselection decision appear as a probit model. Of course, providing a leader has reasonable prospects of survival, the logic behind our stylized case holds. For leaders who have little hope of remaining in office, however, the rationale for our stylized case diminishes and may be reversed. This implies that democratic leaders with failed domestic policies (low μ) may be extremely belligerent.

Given her institutional incentives, a democratic leader with failed public policies is unlikely to retain office unless she has an astonishing change in performance. If we think of reselection as modeled in a probit setting, then this is to say the leader starts deep in the left-hand tail. Given the increasing marginal returns on additional rewards when starting from such a low base, a leader with failed policies has an incentive to gamble everything on the outcome of conflict. It is perhaps only through a successful war that she has any significant chance of remaining in office. If a leader is in a position of accepting a negotiated settlement that leaves her with little chance of domestic survival, then, counter to our earlier argument, she faces no disadvantage from fighting. If she loses, she will be deposed, but she would have been removed anyway. Yet, victory holds the prospects (although not necessarily high, significantly greater than with negotiations) of remaining in office. Hence, a democratic leader with failed policies is potentially bellicose. This, of course, is the gambling for resurrection idea inherent in the diversionary war theory literature (Downs and Rocke 1994;

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Goemans 1995; Levy 1989; Richards et al. 1993; Smith 1996; Werner 1996).

These diversionary hypotheses may appear to undermine our earlier conclusions, but this is not so. Indeed, quite to the contrary, these diversionary results are satisfying on several dimensions. Our theory does not simply state that democracies are either more cautious or more bellicose; it states the conditions under which each of these eventualities occurs. This distinction is important. Our theory does not state that a war between democracies is impossible. Rather, we show that the conditions under which a democrat will attack another democrat are more restrictive than the conditions under which a democrat will attack an autocrat. This constraint, which occurs because democrats are less attractive targets due to their high war effort, holds even in diversionary circumstances. Autocrats always are the more attractive targets, but when two democratic leaders have unsuccessful domestic policies, war between democracies is most likely.

In terms of theory building, the diversionary hypotheses are pleasing. A new theoretical model is convincing when it accounts for the predictions of extant models. Hence, the fact that our model simultaneously accounts for findings in both the diversionary war and democratic peace literatures strengthens our arguments. Indeed, we believe the most attractive feature of our institutional model, and more generally the larger project of which it is a part, is its ability to encompass results from disparate and distinct literatures (Bueno de Mesquita et al. 1997, 1998, 1999, n.d.).

Negotiations are complex, and for convenience we have not modeled their details. The objectives of leaders during negotiations differ depending on their institutional arrangements. Since autocrats typically survive whatever the policy outcome, providing they do not squander their resources, they simply seek to maximize their gains from the process. Democratic leaders face different pressures. It is harder for them to keep their job if they perform poorly on policy. They would like to get a good deal for their nation through negotiations, but they only *need* a deal good enough for them to be reselected. If the negotiations break down, then the democrat must be militarily successful to satisfy domestic policy wants and to survive politically. Hence, a democratic leader may be prepared to accept a more modest settlement rather than allow negotiations to break down and risk being removed by failure during war. This is particularly true if the democrat faces a democratic opponent who will try hard in any war. Again, we see that democrats are unlikely to fight one another; they are likely to seek ways to succeed through negotiations even if one side must make additional concessions to avoid a breakdown.

For autocrats the story is different. They survive domestically by providing private goods. Unless the international outcome is horrendous, it is unlikely to influence their reselection prospects. Because they do not have a great incentive to avoid the breakdown of negotiations, they have a smaller incentive than democrats to make additional concessions to avoid a war. Whereas domestic policy failures make democratic leaders belligerent, autocrats find it less important to keep negotiating than do democrats. Two democratic leaders are destined to fight only when neither is able to make additional concessions, a circumstance that arises only if both have failed domestic policies. The same motivations exist for autocrats, but the incentives are weaker, since autocrats are surer of reselection whatever the international outcome.

CONCLUSION

In our simple model, leaders are assumed to be motivated by a desire to keep their job. They allocate resources toward the pursuit of public policies that benefit all citizens and toward private goods that benefit only their key supporters. When a member of the winning coalition defects from the incumbent leadership, the defector puts her access to private goods at risk. That risk is assumed to increase as the selectorate increases in size and to decrease as the winning coalition increases in size.

The institutional arrangements of political systems influence the incentives of leaders to provide different kinds of policies. We examined the link between institutions and policy choices in the context of international disputes. We demonstrated that democratic leaders, when faced with a war, are more inclined to shift extra resources into the war effort than are autocratic leaders. This follows because, as the winning coalition grows, the prospects of political survival increasingly hinge on successful policy performance. The extra effort made by democrats gives them a military advantage over autocrats in war. In addition, democratic leaders only choose to fight when they are confident of military victory. Otherwise, they prefer to negotiate.

Democrats make relatively unattractive targets because domestic reselection pressures cause leaders to mobilize resources for the war effort. This makes it harder for other states to target them for aggression. In addition to trying harder than autocrats, democrats are more selective in their choice of targets. Defeat typically leads to domestic replacement for democrats, so they only initiate war when they expect to win. These two factors lead to the interaction between polities that is often termed the democratic peace. Autocrats need a slight expected advantage over other autocratic adversaries to initiate conflict, but they need more overwhelming odds against democratic foes. This is because democrats compensate for any initial military disadvantage by devoting additional resources to the war effort. In order to initiate war, democrats need overwhelming odds of victory, but that does not mean they are passive. Because democrats use their resources for the war effort rather than reserve them to reward backers, they are generally able, given their selection criteria for fighting, to overwhelm autocracies, which results in short and relatively less costly wars. Yet, democracies find it hard to overwhelm other democracies because they also try hard. In general, democracies make unattractive targets, particularly for other democracies. Hence, democratic states rarely attack one another.

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One objection to the democratic peace concept is that it lacks a comprehensive explanation. Frameworks based on norms or on constraints account for some but not all patterns observed Our model appears to be fairly comprehensive. Two novel hypotheses are that democracies try harder and that political incentives in democracies do not make them immune from wars of imperial expansion. Evidence from other studies supports the former; the latter is a well-known fact but seems to contradict core parts of the norm-based explanations of the democratic peace. Our model explains these diverse phenomena without attributing superior motives or greater civic mindedness to one kind of leader over another. The explanation is driven purely by self-interested leaders who seek to retain office and face alternative institutional arrangements.

APPENDIX

In this appendix we examine the properties of the subgame perfect equilibria of the game to show mathematically how political institutions affect the effort level that nations make once engaged in a war and how political institutions influence the conditions under which nations initiate violence. Subgame perfect equilibria are strategy profiles that are Nash equilibria in every proper subgame of the game. Given the boundedness, continuity, and differentiability of the functions in our setup, the existence of such equilibria is guaranteed by standard results.

We consider the aspects of equilibria required to support our conclusions. First, we examine B's effort decision. Second, we analyze A's effort decision. For both A and B, the greater the size of a nation's winning coalition, the greater is the wartime effort made. Third, we examine the propensity of different systems to initiate conflict by characterizing how the size of the winning coalition affects the value of conflict relative to the value of negotiations. Fourth, we build upon this result to show that the size of the negotiated settlement that makes A indifferent between fighting and negotiations is not a monotone of the size of the winning coalition.

Effort Level

Once engaged in conflict, leaders decide how hard to try. This effort increases with the size of the winning coalition. We start with B's effort decision. B, having observed A's effort, g_A, decides what proportion of available resources to dedicate to the war. Suppressing all subscripts, B's effort level, g, influences the probability that it wins the war, $p(g) = p_B(g_A, g_B)$.

PROPOSITION 1. *B's optimal effort level,* g_B^*, *is weakly increasing in the size of* W_B.

Proof. $Y(g, W)$ is B's expected payoff from the war given effort level g.

$$Y(g, W) = p(g) - k + (1 - g)\frac{R}{W} + \Psi\left(p(g)F\left(v + (1 - g)\frac{R}{W}\right) + (1 - p(g))F\left(l + (1 - g)\frac{R}{W}\right)\right),$$

where $v = 1 - k + \mu - R/S$, $l = -k + \mu - R/S$, and $F(.)$ represents the distribution of challengers, which we assume is exponential $F(x) = 1 - e^{-x/\sigma}$.

Let $g^* = g^*(W)$ be the effort level that maximizes B's expected payoff given a winning coalition of size W: $g^*(W) = \arg\max_{g\in[0,1]} Y(g, W)$. For what follows, we assume that this optimal effort is unique.[16]

There are two cases to consider: B's optimal effort lies on a boundary (i.e., $g^* = 0$ or $g^* = 1$) and B's optimal effort is interior ($g^* \in (0, 1)$). In the former case, B strictly prefers to spend either nothing ($g^* = 0$) or all available resources ($g^* = 1$) on the war. Straightforwardly, under these contingencies an infinitesimal change in W has no effect on B's optimal effort: $dg^*(W)/dW = 0$.. Hence, we focus on the latter case. When B's optimal effort decision is interior, the first- and second-order conditions imply $\partial Y(g, W)/\partial g = 0$ and $\partial^2 Y(g, W)/\partial g^2 < 0$.

The first-order condition implies that $H(W) = \partial Y(g, W)/\partial g = (p'(g)W - R + \Psi W p'(g)(F(x) - F(y)) - \Psi R(p(g)F'(x) + (1 - p(g))F'(y)))/W = 0$, where $x = v + (1 - g)R/W$, $y = l + (1 - g)R/W$, $p'(g) = dp(g)/dg$ and $F'(x) = dF(x)/dx$. Defining the numerator of $H(W)$ as $G(W)$, $\partial H/\partial W = (W(\partial G/\partial W) - G(\partial W/\partial W))/W^2$, which, given the first-order condition $G(W) = 0$, reduces to $\partial H/\partial W = (\partial G/\partial W)/W$. By the implicit differentiation rule, $dg^*(W)/dW = -(\partial H/\partial W)/(\partial H/\partial g)$. Since, by the second-order condition, $\partial H/\partial g < 0$, $\partial G/\partial W > 0$ implies $dg^*/dW > 0$.[17]

Evaluating $\partial G/\partial W$ yields $\partial G/\partial W = p'(g) + \Psi p'(g)(F(x) - F(y)) - R/W\ \Psi p'(g)(1 - g)(F'(x) - F'(y)) + R^2/W^2\ \Psi(1 - g)(p(g)F''(x) + (1 - p(g))F''(y))$. Given that $F(x) = 1 - e^{-x/\sigma}$, $F'(x) = 1/\sigma\, e^{-x/\sigma}$, and $F''(x) = -1/\sigma^2\, e^{-x/\sigma}$, $\partial G/\partial W > 0$. Hence, $dg^*(W)/dW > 0$, so optimal effort levels increase as the winning coalition grows. *Q.E.D.*

The analysis of A's effort decision is analogous to that for B. Hence, we omit a proof.

PROPOSITION 2. *A's effort level,* g_A^*, *is weakly increasing in the size of* W_A.

The Decision to Fight or Negotiate

We examine how, in addition to affecting effort levels, political institutions affect the conditions under which A initiates conflict. In the text we discussed this in terms of a stereotypical case and analyzed the limiting cases as W becomes extremely large or extremely small ($W \to \infty$ and $W \to 0$). Here, we provide additional results. First, we characterize how W affects Z, the payoff difference between conflict and negotiation. Second, we use this result to show that the size of the negotiated settlement that makes A indifferent between fighting and negotiations is not a monotone of W. Hence, whether large or small winning coalition systems require the larger payoff to avert war depends upon specific conditions.

[16] Given the nonlinearity of these equations, flat spots or identical maxima are unlikely, but deterrence offers a straightforward equilibrium selection refinement if there are any. The higher B's effort level, the less attractive a target B becomes. Since higher effort levels deter A, and such effort levels are credible, we use the refinement that B picks the larger effort level.

[17] Evaluating the second-order condition at the turning point, $\partial G/\partial g = W\,\partial H/\partial g = p''(g)W + W\Psi p''(g)(F(x) - F(y)) + 2/p(g)\,p'(g)(R - W) - 2/p(g)Wp'^2 g\Psi(F(x) - F(y)) + 2/p(g)\,p'(g)R\Psi(F'(y) - p(g)F'(x)) + R^2/W\Psi(p(g)F''(x) + (1 - p(g))F''(y))$. The sign of the first two terms depends upon $p''(g)$, and the sign of the third term is determined by $(R - W)$. Everything else is negative.

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The Effect of Regime on the Decision to Fight. A only initiates conflict if the value of doing so exceeds the value of a negotiated settlement: $Z(W) = U_A(WAR|g_A^*(W), g_B^*(W)) - U_A(nego) \geq 0$.

Writing the utility from conflict in terms of W only,

$$U_A(WAR|W) = p - k + (1 - g)\frac{R}{W} + \Psi\left(pF\left(v + (1 - g)\frac{R}{W}\right) + (1 - p)F\left(l + (1 - g)\frac{R}{W}\right)\right),$$

where p is the probability that A wins given optimal effort levels g and $v = 1 - k + \mu - R/S$, and $l = -k + \mu - R/S$. If A chooses negotiation rather than a conflict, then her expected payoff is $U_A(nego) = \chi + \Psi F(n + R/W) + R/W$, where $n = \chi + \mu - R/S$.

Therefore, $Z(W) = p - k + (1 - g)\,R/W + \Psi(pF(v + (1 - g)\,R/W) + (1 - p)F(l + (1 - g)\,R/W)) - (\chi + \Psi F(n + R/W) + R/W)$. This expression is the payoff difference between conflict and negotiation. Next, we examine how institutional features affect Z by differentiating it with respect to W: $dZ/dW = dp/dg\; dg/dW(1 + \Psi(F(x) - F(y))) + Q + \Psi Q(pF'(x) + (1 - p)F'(y)) + R/W^2 + R/W^2\,\Psi F'(n + R/W)$, where $Q = -dg/dW\,R/W - (1 - g)\,R/W^2$, $x = v + (1 - g)\,R/W$ and $y = l + (1 - g)\,R/W$. Substituting the first-order condition from the effort decision $((1 + \Psi(F(x) - F(y))) = R/W\,((1 + pF'(x) + (1 - p)F'(y)))/(dp/dg))$, this can alternatively be written as:

$$\frac{dZ}{dW} = \frac{R}{W^2}\left[g - (1 - g)\Psi\left(pF'\left(v + (1 - g)\frac{R}{W}\right) + (1 - p)F'\left(l + (1 - g)\frac{R}{W}\right)\right) + \Psi F'\left(n + \frac{R}{W}\right)\right].$$

The sign of this expression determines whether an increase in the size of W makes A more or less aggressive. A positive sign means increases in W make A more likely to use force. This expression cannot be unambiguously signed, and whether an increase in W makes war more or less likely depends upon the precise conditions. To get an idea of factors that influence the sign of this expression, however, suppose that bargaining strength approximately correlates with military strength (i.e., $n \approx p$). Under such circumstances, concavity in $F(.)$ suggests $F'(n + R/W) < (pF'(x) + (1 - p)F'(y))$. Although events depend on precise conditions, this suggests that when effort levels are already high (g close to one), an increase in W makes A more aggressive ($dZ/dW > 0$) Alternatively, when g is low, $dZ/dW < 0$.

What Value of Negotiations Makes Leaders Forgo War. Next we show that the size of the negotiated settlement that is just sufficient to avoid war is not a monotonic function of coalition size. Rather, whether the size of a deal is sufficient to buy off an autocrat or a democrat depends upon the particular conditions and not just the size of the winning coalition. Suppose n_c is the value of a negotiation that makes A indifferent between negotiation and conflict (i.e., if $\chi = n_c$, then $Z = 0$).

Dropping all nonessential terms and subscripts, we let $N(n_c, W)$ define the identity of A being indifferent between conflict and negotiation: $N(n_c, W) = U_A(attack|W) - U_A(nego|n_c, W) = 0$.

Since increasing n_c increases the value of negotiations relative to conflict, $\partial N/\partial n_c < 0$. Using the implicit differentiation rule, we have $dn_c/dW = -(\partial N/\partial W)/(\partial N/\partial n_c)$. Hence, whether an increase in W results in a larger or small negotiated settlement being just sufficient to buy off A depends upon the size of $\partial N/\partial W$, which is equivalent to dZ/dW.

Hence, in general we cannot unambiguously determine whether an increase in W will increase or decrease the deal sufficiently to buy off A. Substantively, this implies that increasing W may increase or decrease the prospects for a negotiated settlement depending upon the precise conditions. Democrats need not be more dovish than autocrats.

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