Conflict Management and Peace Science, 21:179–193, 2004

ISSN: 0738-8942 print / 1549-9219 online
DOI: 10.1080/07388940490487261

Taylor & Francis
Taylor & Francis Group

When Do They Stop? Modeling the Termination of War

MICHAELA MATTES
T. CLIFTON MORGAN

Rice University
Department of Political Science
Houston, Texas, USA

This paper deals with war termination. We develop a formal model based on the logic of domestic political accountability. We assume that leaders seek to maximize the likelihood that they will stay in office and that their decisions regarding war termination are responsive to their winning coalition's expectations and sensitivity to costs and to the costs of war. Our model generates predictions about when state leaders will prefer to terminate an ongoing war, given specific terms of settlement. By applying these results to both sides in a war, we can use the model to develop propositions regarding the terms of settlement and the duration of war given varying expectations, costs, and sensitivity to costs.

Keywords war termination, domestic politics, principal/agent models

In the 1960s and early 1970s, observers of American foreign policy often puzzled over the reluctance of successive administrations to withdraw from the war in Vietnam. The war was costly in terms of political support as well as lives and treasure, and the hope of ultimate success appeared slim. In the 1990s, many of the same observers puzzled over the reluctance of the first Bush administration to continue the war against Iraq. The war provided an enormous boost in public support for the administration, it was relatively costless (at least in terms of American lives and treasure), and success seemed virtually assured. Considered singly, each of these occurrences is curious; taken together, they appear even more intriguing, and any attempt to explain both in a single, consistent argument would strike many as unbelievable. This suggests that our understanding of the processes by which wars end remains theoretically underdeveloped. The goal of general theory is, after all, to provide explanations for curious events and to show that seemingly contradictory behaviors can be explained through a single, simple, and consistent framework.

Our purpose in this paper is to present a simple formal model of war termination that can explain when, and under what terms, a war will end. The model is based, fundamentally, on the logic of domestic political accountability. We assume that all state leaders are answerable to some winning coalition, that leaders want to stay in office, and that their foreign policies are designed to maximize their chances of being retained. We further assume that the

We would like to thank Ashley Leeds, Burcu Savun, Branislav Slantchev, Randy Stevenson, and two anonymous reviewers for their helpful comments. Earlier versions of this paper were presented at the 2002 annual meeting of the Peace Science Society in Tucson, Arizona, and the 2003 annual meeting of the Southwestern Political Science Association in San Antonio, Texas.

Address correspondence to Michaela Mattes, Rice University, Department of Political Science, MS 24 P.O. Box 1892, Houston, TX 77251-1892, USA. E-mail: michaela@rice.edu

winning coalition's evaluation of a leader is influenced, though not completely determined, by the leader's foreign policy decisions. With respect to decisions regarding the termination of war in particular, the winning coalition's evaluation of the leader rests on the relationship between the terms of settlement and the winning coalition's expectations regarding those terms *and* the costs of prosecuting the war coupled with the winning coalition's sensitivity to those costs. The model incorporates a recognition that war involves (at least) two sides. We assume that these sides are engaged in bargaining over something of value and that the war ends when a settlement can be found such that the leaders of both sides prefer it to continuing the war. Although the model is relatively simple, it suggests that the duration of war and the terms of settlement of war are determined by a fairly complex relationship among the winning coalitions' expectations, their sensitivity to the costs of war, and the "baseline" prospects that each side's leader would be retained in the absence of war.

In the next section, we briefly review the existing literature on the termination of war. We then present our model and demonstrate that it leads to a number of hypotheses regarding war termination. Prior to concluding, we evaluate the model in light of some existing empirical results and we discuss how the model enhances our understanding of the Spanish-American war.

Literature on War Termination

Traditionally, nearly all of the scholarship devoted to the study of war focused on the onset of war[1] rather than on how wars end. Only recently have scholars given more attention to questions of war termination. The reason for this proliferation of studies on war termination is twofold. First, scholars have recognized that war onset and war termination are intricately linked. Factors that determine when a war begins must also contribute to determining when it ends. Second, war does not only end in victory or defeat but also in negotiated settlements. If wars end in negotiated settlements, this suggests that bargaining between states does not end when war begins. It continues throughout the war, and a more thorough understanding of the bargaining process could help policy-makers reduce war's destructiveness.

These insights, which have heavily influenced recent scholarship, are the result of some of the few early works on war termination, such as Kecskemeti's *Strategic Surrender* (1958), Blainey's *The Causes of War* (1988), Pillar's *Negotiating Peace* (1983), and Iklé's *Every War Must End* (1991). Blainey argued that to understand why wars begin we have to understand why they terminate. He focused our attention on the importance of uncertainty in determining the onset and termination of war. He argued that if states can agree on the outcome of war, there is no point in fighting. War ends when both sides' expectations regarding what can be obtained through fighting are compatible. If the same factors are related to war onset and war termination, then onset and termination should be conceptualized in terms of a unified framework. Building on such a notion, Kecskemeti treated war as part of the bargaining process and focused attention on the relationship between the costs of fighting and the costs of making concessions. If warring parties are bargaining over the distribution

[1]This has been a natural outgrowth of the belief, held by most who study war, that the ability to prevent war is desirable and that this ability requires an understanding of why wars occur. It is interesting that the scholarly community has focused on understanding the onset of war, while the mass public finds it more important to focus on the ability to terminate wars once begun. Consider that the Nobel Peace Prize has been awarded on the basis of an individual's success in averting a war that otherwise would have occurred far less often (probably never) than it has been awarded for efforts to end an ongoing war. Numerous recipients' most notable "accomplishments" have actually been their skill at waging war—Theodore Roosevelt, Woodrow Wilson, George Marshall, Henry Kissinger and Le Duc Tho, Menachem Begin, Yasser Arafat, and Shimon Peres all come to mind. Several have been lauded simply for publicly stating, sometimes falsely, that they have decided to stop killing.

of some set of goods (the issues at stake), a settlement will occur when both believe that the cost of continuing the war exceeds the additional value that can be obtained from continuing. Thus, even a thoroughly defeated state retains some capacity to elicit concessions from its enemy (the enemy would prefer some concessions to the cost of bullets to kill all surviving citizens). Kecskemeti's argument focuses our attention on the fact that "war outcome" is not a dichotomy. His point was substantiated by later work by Pillar, who showed empirically that war can end in defeat or victory, but most of the time it ends in negotiated settlements.

Finally, the most recent of these works, Iklé's *Every War Must End*, adds domestic politics into the mix. Iklé suggested that war often continues longer than rational calculation (from the nation's perspective) would suggest because leaders, seeking to remain in office, must consider how their actions will be interpreted by the public. This implies that the public's expectations regarding what can be gained through war must, at least, complement the leader's.

These works provide an extremely useful foundation on which to build an understanding of war termination. They are very rich theoretically and they suggest significant factors to consider. Unfortunately, however, most of these works are not particularly systematic. Possible exceptions include Pillar (1983) and Wittman (1979), who used formal models to introduce more rigor into the research on war termination and to derive interesting and sometimes counterintuitive propositions that can be tested empirically. Wittman, for example, developed a formal model that helps shed light on the necessary and sufficient conditions for two countries at war to come to a settlement. He analyzed how domestic and military costs, attitudes towards risk, and time preferences affect the duration of the war and the terms of the settlement. Some of his rather interesting results suggest that changes in relative military power between states have no effect on whether a settlement is found and that the reduction of hostilities may actually prolong the war.

Both Pillar and Wittman demonstrated the fruitfulness of the formal approach to the study of war termination. Their analyses systematically explore the impact of a number of different variables on the likelihood that a war will end, and they produce a number of interesting predictions. Unfortunately, however, their work suffers from a major shortcoming. Both largely ignored domestic political factors, which, as Iklé has argued, play an important role in the decisions of leaders to end a war.

Much recent work on war termination has followed the lead of Wittman and Pillar by creating formal models (Smith, 1998; Wagner, 2000; Filson & Werner, 2002; Slantchev, 2003). There have also been attempts to test hypotheses drawn from these models in a systematic way using large N studies (Stam, 1996; Bennett & Stam, 1998; Werner, 1998). Other scholars have used sophisticated statistical analysis to isolate a number of key variables that affect the duration and termination of war. These studies provide indications that war termination is affected by a number of variables, including combat fatalities, the issue at stake, battlefield victories, military strategies, regime type, outside intervention, and the number of parties (Vuchinich & Teachman, 1993; Bennett & Stam, 1996; Reiter & Stam, 1998a, 1998b; Goemans, 2000a, 2000b; Dixon & Senese, 2002; Chan, 2003).

Some of these studies have started to explore systematically the impact of domestic political factors, especially domestic political accountability, on the termination of war. Wars are terminated by political leaders and, whether in democratic or nondemocratic systems, these leaders are constrained by their domestic constituencies. If a constituency is dissatisfied with the foreign policy performance of its leader, it can remove her from office. This forces political leaders to make policy decisions—especially decisions as salient as to end or continue a war—that maximize their chance of remaining in office (Bueno de Mesquita, Siverson, & Woller, 1992; Bueno de Mesquita & Siverson, 1995; Gaubatz, 1998; Fearon, 1994; Werner, 1996; Goemans, 2000a, 2000b). If the domestic constraints on leaders

affect their decision-making in international crises and wars, then any model that seeks to explain when war ends (or when war occurs, for that matter) needs to analyze these domestic constraints. Both Goemans (2000a, 2000b) and Werner (1998) have incorporated this idea into their research on war termination and have contributed significantly to our understanding of the role of domestic political accountability in decisions to terminate an ongoing war.

Goemans, drawing on the work of Downs and Rocke (1994) among others, laid out and tested an interesting theoretical argument of how the postwar fate of leaders determines their incentives to continue or end wars. He argued that leaders of so-called "semi-repressive regimes" face particularly strong incentives for "gambling for resurrection." Since leaders of semirepressive regimes will lose office (and most likely are denied the chance to ever return) whether they lose moderately or disastrously, they face an incentive to continue a war that they are losing. Goemans's empirical findings show that domestic political accountability indeed plays a crucial role in the decision of leaders to end a war.

Werner (1998) developed a formal model incorporating the impact of domestic political accountability on the decision of leaders to terminate a war. She considers two explanations for the wide variation in the settlement terms that end wars. The first approach states that the original war aims of the participants affect the terms of the settlements. The second approach stipulates that the final terms arise out of the bargaining power of each side in the negotiations to end the war. The bargaining power of each side is partly determined by the leader's probability of staying in office when continuing the war. A leader whose probability of removal from terminating the war increases relative to his probability of removal from continuing the war has a bargaining advantage towards a leader who will more likely be removed from office when he continues than when he ends the war. In her empirical evaluation of these hypotheses, Werner found support for both explanations. This is puzzling given that the two explanations seem slightly contradictory. The first explanation focuses on factors exogenous to the war, i.e., the initial war aims, while the second explanation focuses on factors endogenous to the war, i.e., the relative bargaining positions determined by the costs inflicted during the war and the degree to which the domestic public is willing to bear further costs. In her conclusion, Werner pointed to her surprising finding and suggested a solution: original war aims have an indirect impact on the terms of the settlement by affecting the leader's likelihood of retention in office, which, in turn, is one of the factors that affects a leader's bargaining position in the negotiations to end the war.

Our goal in this paper is to build on previous scholarship by presenting a simple model of the war termination process. While the model is actually simpler than what has been developed recently (Werner & Filson, 2002; Slantchev, 2003), it is designed to incorporate many of the insights of previous work. It views war from a bargaining perspective. Outcomes are seen as agreed upon settlements that can be arrayed continuously. The model identifies the conditions under which a war will begin as well as the conditions under which it will end. It emphasizes the influence of domestic politics by focusing on both the public's expectations from war and its sensitivity to the costs of war. Finally, it incorporates the role of uncertainty, though with what we believe is an interesting twist. While those making the decisions of whether to fight and on what terms to settle operate with complete and perfect information (though their environment does contain an element of risk), they are answerable to a myopic winning coalition that must function with incomplete and imperfect information. In this way, we hope to provide a simple but powerful explanation for the duration of wars as well as for the terms on which wars are settled. We believe the model can account for many existing empirical findings and can provide guidance as to the direction of further empirical analyses.

A Model of War Termination

In the context of this model, we view war as occurring between two sides that are contending over the division of some good. Each side is represented by a decision-maker and the war continues until these decision-makers reach agreement over the division of the good. War involves costs to each side that, for the purposes of this paper, are assumed to accrue at a constant rate throughout the war.[2] At each moment, the decision-makers must decide between continuing the war, allowing their citizenry to bear the associated costs, and ending the war on some terms that will be accepted by the opposing decision-maker.

We assume the decision-makers to be rational and fully informed. Each is motivated *only* by a desire to retain office, and each is answerable to a subset of its citizenry, to which we refer as the winning coalition. This winning coalition would comprise a majority of the voters in a democracy or those responsible for maintaining the rule of the leader in an autocracy. Decision-makers base their decisions regarding whether to continue a war or settle on some specific terms on consideration of which alternative will maximize the probability that they will retain office.

We assume the winning coalition determines, at any moment, the probability with which the decision-maker is retained in office. This probability is determined, to a great extent, by considerations unrelated to foreign policy. These considerations establish a baseline probability of retention that is adjusted according to the leader's foreign policy performance. For this paper, we assume that this baseline probability remains constant throughout a war.[3] The costs and benefits of foreign policy accrue to the citizenry of each side, and we assume that the winning coalition rewards or punishes the decision-maker for her foreign policy performance by increasing or decreasing the probability of retention. Leaders are rewarded for producing foreign policy benefits (i.e., divisions of the goods under dispute) that exceed the winning coalition's expectations and they are punished for the costs (associated with war) that must be borne.

Unlike the decision-maker, the winning coalition is largely uninformed regarding the foreign policy environment. It is aware of costs that have accumulated, but it cannot anticipate future costs. Similarly, it is aware of benefits that accrue through settlements, but it is unaware of the bargaining offers made and rejected by the two sides' decision-makers. Importantly, it is also uninformed regarding the opponent's decision-maker's probability of retention and how that is affected by the costs and settlement of the war.[4] It is not necessarily irrational for the public to remain so ignorant. Obtaining this type of information is extremely costly, which is precisely why countries "retain" leaders to make foreign policy. Rather than devoting the time and effort that would be necessary to evaluate fully a leader's foreign policy decisions, it is much more cost effective for the public to base its evaluation of a leader's performance on easily observed variables that may be less than perfect indicators of true performance.

Conceptually, this model fits clearly within two modeling traditions. First, we draw heavily from the logic of principal/agent models. The winning coalition serves as the principal, whose interests are served by the decision-maker as agent. The principal is aware that its utility is affected by the performance of the agent as well as by factors beyond

[2]Assuming costs accrue at a constant rate allows us to equate accrued costs with duration. This is done for simplicity and it would be straightforward to relax this assumption in future work.

[3]All that is essential is to assume that influences, other than those associated with the aims and costs of the war, on a leader's probability of retention are not systematically related to the effect on this probability of war-related decisions. Assuming that the baseline probability of retention remains constant simplifies the analysis considerably and results in identical substantive interpretations.

[4]Essentially, this assumption says that the winning coalition of each side does not know the utility function or, crucially, the reservation point of the opposing side.

the agent's control. The situation is characterized by an information asymmetry in that the agent, though not the principal, is aware of the environmental constraints (i.e., the future costs of war and the bargaining position of the opponent). The principal rewards or punishes the agent only on the basis of the observed costs and benefits of foreign policy. Second, this model falls clearly in the tradition of bargaining theory. We can easily view the situation facing the two decision-makers in terms of a classic Nash-type bargaining model. They are bargaining over the division of some good, and the ultimate outcome will be a function of the two sides' reservation points. Each bargainer's reservation point is determined by the specific manner in which her performance is evaluated by her winning coalition. That is, a decision-maker will not accept an outcome that would cause her probability of retention to be lower than it would be if war continued.

The formalization of our model is captured in a pair of equations for each side. The first equation specifies the probability that the decision-maker will be retained over time if a war is begun or continued. At the beginning of a war, i.e., at the moment before any costs have been borne, this probability equals the baseline probability of retention. As war continues, this probability of retention is a decreasing function of the costs that have been paid. The precise form of this function is determined by the winning coalition's sensitivity to the costs of war. Since, in this paper, we assume that the costs of war accrue at a constant rate across time, this is equivalent to treating this probability of retention as a function of the duration of the war. The specific equation we adopt for the ith state is:

$$\mathrm{P}_{\text{retention|war continuation}} = \frac{a_i}{(x_i t + 1)^{b_i}}, \tag{1}$$

where a_i represents the baseline probability of retention ($0 \leq a_i \leq 1$), x_i represents the costs per unit time of war ($x_i > 0$), t represents the duration of war in units of time, so $x_i t$ represents the costs that have accrued as a result of the war up to the present time, and b_i reflects the winning coalition's sensitivity to those costs ($b_i > 1$).[5]

The second equation for each state reflects the decision-maker's probability of retention given a specific international settlement. If this probability of retention is greater than her probability of retention from beginning the war, no war will occur. In this case, the settlement that the leaders can achieve without going to war exceeds the aspirations of the winning coalitions. The aspiration level of the winning coalition is defined by that settlement y at which the leader's baseline probability of retention equals her probability of retention given the settlement y. Conversely, if the settlement provides fewer benefits to the winning coalition than expected (i.e., it lies below the aspiration level), the probability of retention given this specific settlement is reduced and war will occur. This probability of retention is also a decreasing function of the costs that have been paid through war (which may be zero, if the settlement occurred without war). Thus,

$$\mathrm{P}_{\text{retention|negotiated settlement}} = \frac{\pi_i}{(x_i t + 1)^{c_i}}, \tag{2}$$

where $x_i t$ again represents the accumulated costs of any war, c_i reflects the sensitivity to those costs given a settlement ($c_i > 1$), and π_i reflects the valuation the winning coalition places on the terms of the settlement.[6] We adopt the additional assumption that $b_i > c_i$. This implies that the winning coalition's sensitivity to costs is greater in any moment in which a settlement is not reached than it would be if a settlement occurred at that same

[5]Many specific equations could serve our purpose. We adopt this one for simplicity.
[6]Again, many specific equations could serve our purpose. We adopt this one for simplicity.

moment. The winning coalition will be more sensitive to the same costs $x_i t$ when an end of the war is in sight than when no end is in sight. Our primary motivation for adopting this assumption is practical. Without this assumption, one implication of the model would be that many wars, once started, would never end because the decision-makers would forever be better off continuing to fight.

We assume that at any moment, a decision-maker will either accept the best available negotiated settlement or make war, depending on which maximizes her probability of retention. That is, a decision-maker will accept a specific offer π_i, when

$$\frac{\pi_i}{(x_i t + 1)^{c_i}} \geq \frac{a_i}{(x_i t + 1)^{b_i}}.$$

We can specify the least favorable offer that i would accept as a function of the variables in the model by equating both sides of this inequality and solving for π_i. Thus, when

$$\pi_i = a_i (x_i t + 1)^{c_i - b_i}, \tag{3}$$

the decision-maker would just prefer reaching an agreement to continuing the war. This is captured in Figure 1. Here, the curve with the higher intercept represents the probability of retention when war is continued as a function of the accumulated costs. The curve with the lower intercept represents the probability of retention given a settlement at level y. Note that a more favorable settlement would be reflected in a higher curve; a less favorable settlement would be reflected in a lower curve. This suggests that i would not be willing to accept a settlement of y at a level of accumulated costs of less than $x_i t$, but would be willing to accept y when costs had reached that point.

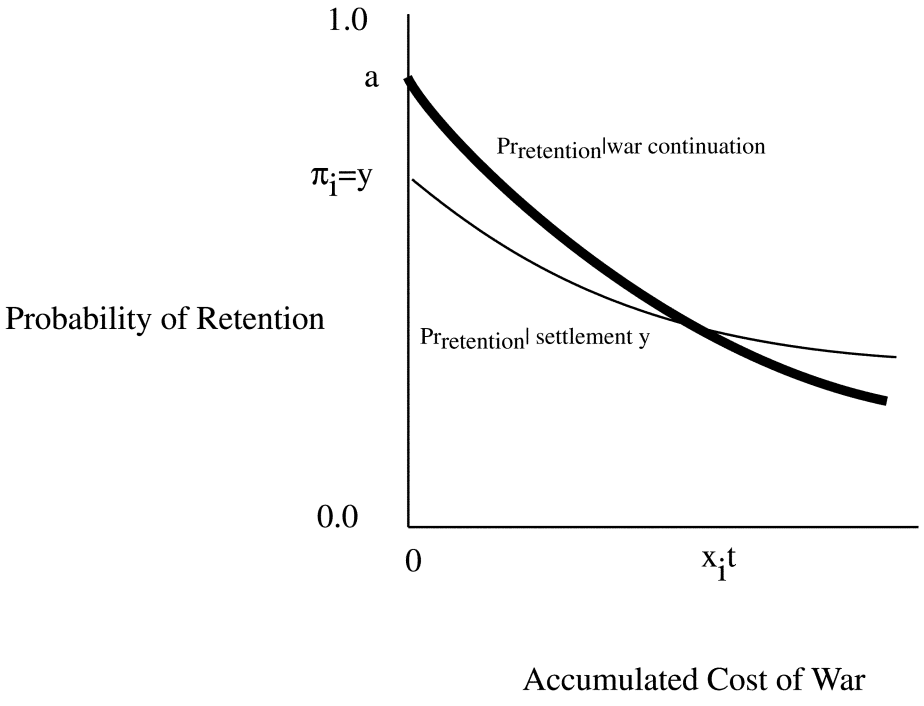

FIGURE 1 Decision-maker's probability of retention.

The "availability" of a particular negotiated settlement depends, of course, on what the opposing decision-maker is willing to accept. When settlements of international disputes are available that make both sides' winning coalitions happier than they would be bearing the costs of war, war does not occur. Conversely, when there is no division of the good under dispute that would increase the probability of retention of both decision-makers at least to the level it would be should they fight, war will occur or continue.[7] If we normalize the total amount of the good under dispute to a value of 1.0, we can say that a war can end when the least amount each side would accept rather than continue fighting sums to 1.0 or less. We adopt the more restrictive assumption that war ends when $\pi_i + \pi_j = 1.0$;[8] or, substituting from (3),

$$a_i(x_i t + 1)^{c_i - b_i} + a_j(x_j t + 1)^{c_j - b_j} = 1.0. \quad (4)$$

This model is quite simple, in terms of both the number of variables included and its mathematical statement. However, it produces a number of hypotheses regarding the duration and settlement of wars. More importantly, these hypotheses capture much of what has already been learned about the process of war termination, and they lead to suggestions for additional tests. The following propositions can be derived from a simple examination of (4). That is, we can imagine one variable increasing, or decreasing, and determine what must happen to some other variable to maintain the equality.

Proposition 1. As the baseline support for one decision-maker increases, that side can expect a more favorable outcome to the war, though the war will last longer. To see this, consider what happens if a_i is increased. This increases the entire term capturing π_i, or i's share of the good indicating that i obtains a better outcome, and necessitating a worse outcome for j. Since j will not accept a worse outcome at the same level of costs, x, we should expect a longer war.

Proposition 2. As the costs of war increase for one side, that side should obtain a less favorable outcome, but the war should be shorter. Mathematically, if x is increased, the entire term capturing π_i decreases. Note, however, that this presumes that all other variables are held constant. This relationship should be dampened by the extent to which there is an association between the costs of war to one side and the costs of war to the other, as well as by the extent to which there is a relationship between the costs of war and the stakes of war.

Proposition 3. As the winning coalition of one side becomes increasingly sensitive to the costs of war in the absence of a settlement, that side should expect a worse settlement and a shorter war.

Proposition 4. As the aspiration level (or expectations) of one side's winning coalition regarding an acceptable resolution to the dispute increases, that side should obtain a more favorable settlement and a longer war.

One further aspect of the model should be acknowledged: its construction allows for the possibility that a war will never end. The "probability of retention" equations are asymptotic, so there is a nonzero probability that particular functions could be specified that would never

[7]One might ask whether a leader would accept a settlement that, while reducing her probability of retaining office in the short term, would increase her probability of retention in the long term. Essentially, we assume that leaders discount the future entirely. If a leader is removed from office today, having a higher probability of retention tomorrow is meaningless. Thus, we are comfortable with the assumption that a leader's decision at any moment will be directed at maximizing her probability of retention at that moment.

[8]Note the shift from "less than or equal to 1" to "equals 1." This allows us to presume that both sides will opt to end the war simultaneously and jointly.

cross. This would not be the case in most wars, however, and in the cases in which this did occur we could assume that, eventually, changes in leadership would bring a set of equations that would lead to a resolution. Technically though, we are not guaranteed an equilibrium.

Discussion and Evaluation of the Model

We have presented a very simple model that captures a number of the factors assumed in previous work to affect war termination. The model leads to a number of simple propositions that prove to be quite rich empirically. Although it draws heavily from previous models, it is distinct in several respects. In this section, we briefly highlight some of these distinctions, we consider the implications of some existing statistical work for our model, and we show that it is quite consistent with the unfolding of events in the Spanish-American War.

First, recall that in her empirical study on war termination, Werner (1998) suggested that there are two primary types of explanations for when war will end. One focuses largely on factors present at the onset of the war, the other focuses on those factors that result through the prosecution of the war. Her empirical results, somewhat paradoxically, provide support for both types of argument. These explanations are not necessarily mutually exclusive, however. Decisions to terminate war can be affected both by the situation that existed prior to the onset of war *and* by factors that occur as a result of the war. The model presented here integrates these explanations. Expectations regarding what should be obtained through a decision-maker's foreign policy, as well as the overall, prior, support for the leader are key variables reflecting the situation at war's onset. The costs incurred as a result of fighting and the willingness of the opponent to accept a particular outcome (which, in turn, is determined by a similar set of factors) capture the effect of events occurring during the course of the war.

Second, there are some clear differences between the assumptions incorporated into this model and those on which several recent, "rationalist," models are based. These arguments (see especially, Fearon, 1995) hold that, *ex post*, war is irrational because the participants could have, *ex ante*, obtained the same division of the issues under dispute without incurring the costs of combat. Therefore, war can occur, and presumably continue, only if either the combatants face a situation of incomplete information and the concomitant incentive to misrepresent their own preferences and capabilities or the combatants are incapable of committing credibly to fulfill obligations incurred under a peace agreement. In the model presented here, those making decisions regarding whether to begin or continue a war can anticipate the outcome precisely, and we assume that all agreements will be fulfilled. How can war occur under the conditions specified in this model?

Our explanation rests in the principal/agent framework. In our model, the actors who make decisions regarding whether to begin, or continue, a war care only about whether they remain in office and not about international settlements or the costs required to achieve those settlements. They are not myopic, in the sense that they *can* anticipate the outcome, and cost, of war; but, they discount the future entirely. That is, at any moment, they maximize the probability of retaining office at that moment without consideration for the effect their actions have on the probability they will be removed from office at some point in the future. The principal in the model (the public) does care about international settlements and the costs of war, but it has no basis whatsoever on which to develop expectations regarding the future course of war. Much like a retrospective voter (Fiorina, 1981), the principal knows only what it wants and what it has obtained from the agent in the past. It does not use this information to update beliefs about likely war outcomes because it has no such beliefs to update. This is not necessarily nonrational behavior on the part of the principal.

Obtaining information on which to base such beliefs is extremely costly, which is why it is necessary to retain an agent in the first place. The essence of principal/agent problems is that the principal cannot directly evaluate the agent's performance and must instead rely on indirect measures that are relatively cheap to observe. Thus, our explanation for war does rely on incomplete information, but not on the part of the actors making the decision to fight.

The usefulness of this model, relative to others, is ultimately an empirical question. Here we draw some inferences from previous work and from examining specific cases.

Werner (1998) has conducted the empirical analysis that is most relevant for our model. She sought to identify whether the variation in war settlements could best be attributed to factors associated with war participants' original war aims or with factors associated with how war-time bargaining unfolds. As noted above, her statistical evaluation of 115 losers of wars fought between 1816 and 1980 suggested that war settlements were affected both by prewar expectations and by the course of war. This broad conclusion is certainly consistent with our model, in that it was explicitly designed to incorporate both types of factors. Two of her specific findings are of particular interest. First, she found that increasing the battle deaths suffered by the loser in war leads to worse settlements for the loser. Since she controlled for war duration in her analysis, we can assume that battle deaths are associated with the rate of cost imposition. This finding is thus consistent with our second proposition: that as the costs of war increase for a side, it should expect a worse outcome. Second, she considered whether most of the war was fought on the loser's territory, on the winner's territory, or both; and, she found that losers suffered worse outcomes when the war was fought on their own territory. We assume that, since the analysis controls for battle deaths, the location of the fighting is associated with the citizenry's sensitivity to the costs of war. Thus, this finding is consistent with our third proposition, that sensitivity to costs leads to worse expected outcomes.

Obviously, this does not provide overwhelming, irrefutable evidence in support of the model. It is instructive, however, in that it demonstrates that empirical findings consistent with the model do exist. This suggests that further empirical work aimed directly at testing hypotheses derived from the model is warranted. It is also instructive to consider specific cases to see whether the model provides a reasonable account for the events that transpired. Here, we briefly discuss the Spanish-American War.

The Spanish-American War: Onset and Termination

The Spanish-American War of 1898 provides an interesting case for our model. Political leaders on both sides desperately sought to prevent the war, but domestic political opinion ultimately forced the reluctant leaders to take aggressive action. The war was settled (on terms leaders of both states would have willingly accepted *ex ante*) only when domestic opinion in both countries turned against the war.

A dispute between the United States and Spain over Cuba had been growing for decades. Cuba had been the site of repeated revolts against Spanish repression, and when the world-wide depression of 1893 brought grave poverty to the island, the rebellion intensified. William McKinley, who inherited this situation when he assumed the presidency, opposed war. His highest priority was to restore the economy following the depression, and he felt that war would impede this goal (Trask, 1981; Morgan, 1967). Moreover, he had experienced the sufferings of the civil war and was rather pacifistic in character (DeConde, 1963; Morgan, 1967; Trask, 1981; Smith, 1994). At the beginning of his presidency, McKinley stated, "We want no wars of conquest, [and] we must avoid the temptation of territorial aggression. War should never be entered upon until every agency for peace has failed; peace

is preferable to war in almost any contingency."[9] He desperately tried to find a peaceful solution with Spain. He sent a minister, Stewart L. Woodford, to Spain to negotiate with the Queen Regent and the Liberal prime minister, he offered to buy Cuba, attempted to convince Congress and the people to settle for Cuban autonomy rather than Cuban independence, and even tried to postpone the war message. However, he ultimately failed to avoid war because domestic pressures became too powerful.

From the beginning, the Cuban revolt aroused the sympathy of the American public who thought the policies of the Spanish administration inhumane. The anger towards the Spaniards was further fueled by the jingoistic and sensationalist journalism of Pulitzer's *New York World* and William R. Hearst's *New York Journal*, which served to increase pressure on McKinley (Leckie, 1981; Hoyt, 1988; DeConde, 1963). McKinley's repeated efforts to resolve the dispute peacefully ended after the sinking of the *Maine*, which many in the United States blamed on Spanish treachery. The press, the public, and Congress became increasingly impatient with McKinley's attempts at diplomacy. For example, on February 27, the Chicago Tribune wrote, "The people want no disgraceful negotiations with Spain. Should the President plunge his administration into that morass, he and his party would be swept out of power in 1900 by a fine burst of popular indignation. An administration which stains the national honor will never be forgiven."[10] After March 1898, McKinley became a target of abuse: in Virginia a mob burned effigies of him (Morgan, 1967). In late March and early April, pressure from Congress reached its height with the threat that Senate might override the President and declare war itself.[11] Given these sentiments, McKinley feared that the Democrats would gain control of Congress in the November election and that he might not even be renominated by his own party in 1900 (Trask, 1981; Morgan, 1967). Thus, while McKinley preferred and continuously worked for a peaceful solution, in the end he decided to go to war for his war-enthusiastic constituency. The war message was sent to Congress on April 11, 1898.

On the Spanish side, the political leaders faced essentially the same problem. Given domestic pressures they were unable to accept McKinley's offers and eventually were forced to fight. The Spanish system had been created only 23 years earlier and was characterized by a delicate alliance of factionalized political forces. Before this Restoration period, in which Queen Regent Maria Christina shared power with the liberal and conservative parties that alternated in government, Spain had suffered 50 years of civil wars, riots, and coups. The Queen Regent, as well as the liberal Prime Minister Sagasta and his government, were concerned that a concession of Cuban independence would throw the fragile regime back into domestic conflict.[12] Neither the Queen Regent nor Sagasta wanted war, and, in fact, they knew that Spain would lose a military confrontation with the United States. This became clear when the U.S. Congress unanimously appropriated 50 million dollars for "general defense improvement." Following the approval of the bill, Woodford reported from Madrid, "It has not excited the Spaniards—it has stunned them. To appropriate 50 millions out of money in the Treasury, without borrowing a cent, demonstrates wealth and

[9]This pronouncement against war can be found in Coletta, *Threshold to American Internationalism*, pp. 12–13 (cited in Trask, 1981, p. 13).

[10]Cited in Morgan (1967, p. 54).

[11]In April, the Vice-President Garret Hobart reported, "Mr. President, I can no longer hold back the Senate. They will act without you if you don't act at once." See Jennie Hobart, *Memories*, p. 60 (cited in Trask, 1981, p. 42).

[12]Sagasta had just come into power in October 1897 after the previous Conservative prime minister Canovas had been assassinated by an Italian anarchist. Even in the reconstruction period there was repeated unrest, which was taken very seriously by the media and the government (Balfour, 1997).

power."[13] In addition to the financial superiority of the United States, the Spaniards were also aware of the sorry state of their own armed forces. While Spain had far more soldiers under arms, they were widely dispersed, poorly supplied, in bad health, and suffered low morale. Moreover, its navy was weaker than the American navy, not necessarily because Spain had fewer battle ships but because the American ships were newer and generally in a better state (Smith, 1994). This was certainly the opinion of the Spanish admiral Pascual Cervera y Topete, who warned that the contest with the United States could only result in a disaster for Spain.[14]

While the government wished to avert a war that it knew it would lose, the Spanish public, including the press and political parties ranging from the Republicans on the left to the Carlists on the right, wanted to fight (Trask, 1981; Balfour, 1997). They regarded Cuba as part of their national heritage and would not tolerate conceding it to the Americans without a fight. When Spain declared an armistice with Cuban rebels to pacify the Americans, there were riots in Madrid (Balfour, 1997). Furthermore, the military, which played an important role in the Restoration system and whose support was necessary for any Spanish administration to persist, was prowar. In fact, there were rumors that the military might support a coup by Republicans and Carlists (Trask, 1981).

Given this domestic pressure, the Spanish government faced a dilemma: either risk a war, which it knew Spain would lose, or risk the loss of office (or throne). The Queen preferred to preserve the throne for her son and Prime Minister Sagasta preferred to defend the constitutional regime that allowed him to stay in power. As Woodford put it, "They prefer the chances of war, with the certain loss of Cuba, to the overthrow of the dynasty."[15] On April 23, 1898 Spain declared war.

The war that followed lasted 10 weeks. After a series of American military victories, Spain sued for peace. Ultimately, on December 10, the Treaty of Paris settled the matter: Spain relinquished her sovereignty over Cuba and ceded the Philippines, Puerto Rico and Guam to the United States. For giving up the Philippines, Spain received $20 million from the United States.

As with the decision to start fighting the war, the decision to terminate it was strongly influenced by the domestic political considerations of the political leaders. The political leaders in Spain feared that if they were not willing to give in after the fall of Santiago, the United States would eventually feel the need to invade Spain itself, which would constitute a significant threat for the government and the Restoration regime (Smith, 1994). Furthermore, Sagasta's government was very unpopular towards the end of the war and it feared that continuing warfare would lead to more unrest. During the peace negotiations, Duke d'Almodóvar told the Spanish commissioners to sign the treaty but to make some protests at the same time. "The Government . . . does not lose sight of the internal state of the country, whose restlessness is due to some extent, no doubt, to the international conflict pending; its duration provoking alarm in the prudent part of the nation, which desires that it be terminated, and serving as a constant stimulant to the agitators." Almodóvar was concerned that refusing to sign the peace agreement "might produce subsequent complications and even greater evils for our country, which is anxious to escape from the situation."[16]

[13]Note from Woodford to McKinley, 9 March 1898, *Foreign Relations* 1898, pp. 681–685 (cited in Trask, 1981, p. 34).

[14]Private correspondence between Cervera and Spottorno, 30 January 1989, can be found in Chadwick, *The Relations of the United States and Spain*, Vol. 2, p. 95 (cited in Smith, 1994, p. 65).

[15]Note from Woodford to McKinley, 26 February 1898, *Foreign Relations*, 1898, p. 665 (cited in Trask, 1981, p. 55).

[16]See Almodóvar to Montero Ríos, 25 November 1898, *Spanish Diplomatic Documents*, pp. 333–334 (cited in Trask, 1981, p. 465).

Domestic political concerns also weighed heavily on President McKinley. For one, the press reported the desperate health conditions of the American troops in Cuba, and the public started to pressure for their return (Trask, 1981). The impact of domestic political considerations is also clear in the President's decision to annex the Philippines. Initially, McKinley had been opposed to taking the Philippines, but after a tour of the Midwest in October he came to the conclusion that the people wanted to annex the Philippines and instructed the peace commission to defend this demand (Bailey, 1964; DeConde, 1963; Trask, 1981). McKinley's concern for public opinion paid off: the new Congress elected in November 1898 was more Republican than its predecessor and McKinley himself was reelected in 1900. The Spanish leadership experienced a similar success: the Queen Regent could hand over the crown to her son, and Sagasta, as well as other important ministers during the war, returned to power after a short interlude.

The case of the Spanish-American war helps illustrate important aspects of the model developed in this paper. It shows that war is possible even if the political leaders of both sides can anticipate the outcome of the war and would prefer to settle the dispute on those terms rather than paying the cost of war. Both the American and Spanish leaders felt that if they did not give in to the war enthusiasm of their constituencies they would likely lose office. This concern for their retention in office drove both their decisions to fight and ultimately to terminate the war.

Conclusion

In this paper, we presented a simple model of war termination. The model draws heavily on the insights provided by previous work on the subject. It is based on the notion that war is an element of bargaining; it incorporates the role of domestic politics on leaders' decisions; it posits that uncertainty plays a large role in determining when wars occur and when they continue; and it accepts that the same factors that explain the occurrence of war should explain its termination. We show that the model leads to testable hypotheses, and we show that it is consistent with at least some simple, empirical observations.

Returning to the puzzle with which we began, we can see that the model also provides an explanation for why the United States was so slow to exit the war in Vietnam and so quick to exit the Gulf War. The model's explanation for Vietnam is entirely consistent with that of Gelb and Betts (1979), who argued that the war continued because each successive president believed his popular support would suffer more from leaving the war on the available terms than from continuing the fight. This resulted from two main factors. First, the public's aspiration levels regarding the outcome were quite high—no president's support could survive "losing" Vietnam to the communists. After all, how could the mighty United States lose to a minor power? Second, in the grand scheme of things, the baseline level of support for each American president was quite high. This is not to say that the level of support did not erode, in large part because of the war, only that each president had good reason to believe that, in the absence of the war, the probability of remaining in office through two terms was very high. The conditions in North Vietnam made it very unlikely that an outcome preferred to a continuation of the war by an American president would be offered. There, too, the expectations regarding the outcome were quite high, the baseline probability of retention for the leadership was high, and the sensitivity to costs was very low. In contrast, the Gulf War ended quickly because, although the president's baseline of support was equally high, an outcome that exceeded the public's aspiration level presented itself quickly. Once an outcome was possible that increased George H. W. Bush's chances of retention above what they would have been with continued fighting, he chose to end the war.

Finally, as is the case with any good model, this one raises at least as many questions as it answers. In particular, the model forces us to face the fact that we have assumed away many interesting aspects of the phenomenon. Note that other arguments also assume these aspects away, the point is that this model forces us to think about such things explicitly. Consider first the central role that the winning coalition's aspiration level plays in our model. We have completely ignored the issue of from where these aspirations arise and, perhaps more importantly, whether they are susceptible to manipulation by the decision-maker. A direct examination of this issue could shed light on a number of interesting questions, including those dealing with the diversionary use of force. Second, we have assumed that all winning coalitions view the costs of war in the same terms. This might not be the case. Winning coalitions in democracies might focus almost exclusively on the loss of life as comprising the cost of war, while the winning coalition in a monarchy might focus almost exclusively on the loss of treasure.[17] Determining if, and how, different winning coalitions view war costs could tell us a lot about how different political systems behave during war. As a final example, we have assumed that the cost of war cumulates at a constant rate throughout the war and that it is not susceptible to manipulation by decision-makers. A cursory examination of the behavior of U.S. presidents in wartime certainly suggests that they believe that the costs of war affect how they are evaluated and that they attempt to manipulate those costs. Expanding the model to incorporate such considerations could provide a much richer accounting of the processes by which wars are fought, and ended.

References

Bailey, T. A. 1964. *A diplomatic history of the American people*. 7th ed. New York: Appleton-Century-Crofts.

Balfour, S. 1997. *The end of the Spanish empire: 1898–1923*. Oxford, UK: Clarendon Press.

Bennett, S., and A. C. Stam III. 1996. The duration of interstate wars, 1816–1985. *American Political Science Review* 90: 239–257.

Bennett, S., and A. C. Stam III. 1998. The declining advantages of democracy: A combined model of war outcomes and duration. *Journal of Conflict Resolution* 42: 344–366.

Blainey, G. 1988. *The causes of war*. 3rd ed. New York: The Free Press.

Bueno de Mesquita, B., R. Siverson, and G. Woller. 1992. War and the fate of regimes: A comparative analysis. *American Political Science Review* 86: 638–646.

Bueno de Mesquita, B., and R. Siverson. 1995. War and the survival of political leaders: A comparative study of regime types and political accountability. *American Political Science Review* 89: 841–855.

Chan, S. 2003. Explaining war duration. A Boolean analysis of causes. *Journal of Peace Research* 40: 49–66.

DeConde, A. 1963. *A history of American foreign policy*. New York: Scribner.

Dixon, W., and P. D. Senese. 2002. Democracy, disputes and negotiated settlements. *Journal of Conflict Resolution* 46: 547–571.

Downs, G. W., and D. M. Rocke. 1994. Conflict, agency and gambling for resurrection: The principal-agent problem goes to war. *American Journal of Political Science* 38: 362–380.

[17] A familiar story concerns the different methods used to clear mine fields in WW II. Apparently, the United States would send armor through a mine field in advance of the infantry, while the Soviets would send infantry through in advance of the armor. The point of the story is that armies place their most expendable resources in the positions of greatest risk. Our model suggests a slightly different interpretation. It might be that the winning coalition in a democracy is most sensitive to the costs associated with the loss of human life, whereas the winning coalition in an autocracy is most sensitive to the costs associated with the loss of material wealth.

Fearon, J. D. 1994. Domestic political audience costs. *American Political Science Review* 88: 577–592.

Fearon, J. D. 1995. Rationalist explanations for war. *International Organization* 49: 379–414.

Fiorina, M. 1981. *Retrospective voting in American national elections*. New Haven, CT: Yale University Press.

Filson, D., and S. Werner. 2002. A bargaining model of war and peace: Anticipating the onset, duration, and the outcome of war. *American Journal of Political Science* 46: 819–838.

Gaubatz, K. 1998. None dare call it reason: Domestic incentives and the politics of war and peace. In *Strategic politicians, institutions and foreign policy*, ed. R. M. Siverson. Ann Arbor: Michigan University Press.

Gelb, L. H., and R. K. Betts. 1979. *The irony of Vietnam: The system worked*. Washington, DC: Brooking's Institution.

Goemans, H. E. 2000a. Fighting for survival. The fate of leaders and the duration of wars. *Journal of Conflict Resolution* 44: 555–579.

Goemans, H. E. 2000b. *War and punishment. The causes of war termination and the First World War*. Princeton, NJ: Princeton University Press.

Hoyt, E. P. 1988. *America's wars & military encounters from colonial times to the present*. 2nd ed. New York: Da Capo Press.

Iklé, F. C. 1991. *Every war must end*. New York: Columbia University Press.

Kecskemeti, P. 1958. *Strategic surrender: The politics of victory and defeat*. Stanford, CA: Stanford University Press.

Leckie, R. 1981. *The wars of America*. Rev. ed. New York: Harper and Row.

Morgan, H. W. 1967. *America's road to empire. The war with Spain and overseas expedition*. New York: Wiley.

Pillar, P. 1983. *Negotiating peace. War termination as bargaining process*. Princeton, NJ: Princeton University Press.

Reiter, D., and A. C. Stam III. 1998a. Democracy and battlefield military effectiveness. *Journal of Conflict Resolution* 42: 259–277.

Reiter, D., and A. C. Stam III. 1998b. Democracy, war initiation and victory. *American Political Science Review* 92: 377–389.

Savun, B., and R. Corbetta. 2002. *An analysis of dispute duration, 1945–1992*. Paper presented at the Annual Meeting of the International Studies Association, New Orleans, March 24–27, 2002.

Slantchev, B. L. 2003. The power to hurt: Costly conflict with completely informed states. *American Political Science Review* 97: 123–133.

Smith, A. 1998. Fighting battles, winning wars. *Journal of Conflict Resolution* 42: 301–320.

Smith, J. 1994. *The Spanish-American War: Conflict in the Caribbean and the Pacific 1895–1902*. New York: Longman.

Stam III, A. C. 1996. *Win, lose or draw. Domestic politics and the crucible of war*. Ann Arbor: University of Michigan Press.

Trask, D. F. 1981. *The war with Spain in 1898*. New York: Macmillan.

Vuchinich, S., and J. Teachman. 1993. Influences on the duration of wars, strikes, riots and family arguments. *Journal of Conflict Resolution* 37: 544–568.

Wagner, H. R. 2000. Bargaining and war. *American Journal of Political Science* 44: 469–484.

Werner, S. 1996. Absolute and limited war: The possibility of foreign-imposed regime change. *International Interaction* 22: 67–88.

Werner, S. 1998. Negotiating the terms of the settlement: War aims and bargaining leverage. *Journal of Conflict Resolution* 42: 321–343.

Wittman, D. 1979. How a war ends. A rational model approach. *Journal of Conflict Resolution* 23: 743–763.