

To Concede or To Resist? The Restraining Effect of Military Alliances*

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Abstract

Creating institutions that effectively manage interstate conflict is a priority for policymakers. In this paper we demonstrate that military allies are well positioned to influence the crisis bargaining behavior of both challengers and targets in ways that often lead to peace. Through a three player game theoretic model, we demonstrate that a target's alliances not only have an effect on the demand that the challenger makes, but also on the behavior of the target. When a target values an alliance highly, an ally's recommendation for settlement can encourage the target to concede demands without further escalation. Our statistical analysis provides evidence in support of the theoretical finding. Allies can both deter challengers and restrain partners, and as a result, can encourage peaceful behavior not only from adversaries, but from member states as well. Our study thus sheds new light on the role of military alliances as potential conflict management devices.

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Interstate wars cost more than thirty million lives during the twentieth century, and nine new interstate wars have begun since the end of the Cold War.¹ Finding ways to avoid interstate disputes and to manage those that arise short of war, therefore, is a major priority for policymakers and for scholars of international relations. It is well recognized that military alliances play a role in conflict prevention by deterring attacks upon their members, but less attention has been paid to the role of allies in conflict management. We argue that allies, as coercive actors with a stake in the dispute, are sometimes especially well positioned to help resolve disputes short of war.

In this article we examine the influence of allies to a target state on crisis bargaining. Not only do allies have an interest in the outcome of crisis bargaining, they also may have the ability to make credible threats to both the challenger and the target that influence the bargaining stances of both disputants. A target's ally can make it clear to the challenger that if the challenger demands too much, the ally will intervene in the war on behalf of the target. But a target's ally may also be able to make a credible threat to the target that if the target refuses to concede a demand that the ally finds reasonable, the ally will not intervene in the war on the target's behalf. The ally may therefore have a moderating effect not only on the demand of the challenger, but also on the response of the target, making peaceful settlement more likely. We refer to the former as the *deterrence* effect of alliances, and the latter as the *restraining* effect of alliances.

To study this process, we develop a three player game theoretic model. Most recent game theoretic models of crisis bargaining assume that a challenger and a target bargain without influence from any outside states.² Yet, allies who would be obligated to intervene in a war that develops between a challenger and target will often cast a shadow over crisis negotiations. Dyadic bargaining models that assume a challenger and a target bargain without influence from any outside states are inadequate for our understanding of conflict dynamics in such situations.

In the next section, we explain how our work draws on and builds from prior models

¹Deaths figure is based on battle deaths as coded by the Correlates of War Project. Sarkees and Wayman 2010.

²An exception is a set of models that analyze the role of mediators. See, for example, Kydd 2003 and 2006; and Favretto 2009.

of alliance politics and war. We then introduce our game theoretic model and present the equilibrium results. We derive a number of propositions about the relationships between such factors as the costs of war, the value of the stakes, and the value of an alliance and specific outcomes. We show that the demands challengers make, the conditions under which targets concede demands without fighting, and the conditions under which targets resist demands militarily are all influenced by the presence of an ally. Given the richness of our formal results, we make no attempt to test all of the implications of the model. We do, however, offer discussion of a few stylized cases that highlight different outcomes, and we provide a large N empirical test of one proposition drawn from the model. We find support for the claim that when a target depends heavily on an alliance for security, that target is less likely to resist a challenge militarily.

Our research suggests that military alliances have an influence in international politics well beyond collaborative war fighting and deterrence. While alliances do deter conflicts, which in itself is a force for peace, even when challengers are not deterred from making demands, allies can facilitate peaceful settlement. Alliances can be important institutions for conflict management, not only among their members, but between their members and outside states as well. As such, alliances can be broad institutions for peace that play an important role in maintaining the stability of the international system.³

Alliances and Crisis Bargaining

When a leader considers making a demand of another state, he takes into account many factors, but chief among them is the probability that his state will win a war that results from resistance to the demand. One of the most important factors affecting the probability of prevailing in war is whether a third-party would assist the target state. Alliance commitments serve as costly signals that provide information to potential challengers about which states are likely to receive assistance in war. Early models of alliances and war predicted that alliance commitments to target states reduce conflict by deterring potential challengers from making demands through the threat of outside intervention.⁴ More recently, scholars have

³Of course the normative value of stability depends on one's view of the desirability of the current distribution of benefits. Like many political institutions, alliances have a status quo bias.

⁴See Morrow 1994; Smith 1995 and 1998.

suggested that alliances may not only deter some challengers from making demands at all, but may affect the kinds of demands challengers make; demands made of targets with allies should be smaller than those of targets without allies.⁵ Empirical studies show that states with allies committed to defend them are less likely to be targets of militarized interstate disputes.⁶

Alliances should have an effect not only on the behavior of challengers, however, but also on the behavior of targets during crises. The conventional wisdom is that a target with allies will be emboldened and more likely to escalate disputes.⁷ Since this set of targets has a higher probability of winning wars, fighting may be a better option than conceding. This potential effect of alliance commitments suggests that when general deterrence fails, disputes involving targets with allies may be associated with higher risks of deadly conflict.⁸

Existing theoretical models, however, do not explicitly consider interactions between the target and her ally. Given an ally's obligation to join a war involving the target, an ally may have a strong desire to resolve the conflict short of war. Allies may also have an ability to influence the bargaining stance of the target through a credible threat to weaken or terminate the alliance.⁹ In fact, some scholars view the potential opportunity to restrain (or manage, in their parlance) a partner as one of the main attractions of alliances.¹⁰ Gelpi provides evidence that great power allies are particularly effective mediators of disputes, and he suspects that this is due to the ability of major powers to restrain their allies.¹¹ Yet, rarely has the possibility of alliance restraint been included in formal theoretic models of crisis bargaining involving alliances.¹²

In most cases, allies will have an opportunity to consult with targets regarding their

⁵See Werner 2000; and Yuen 2009.

⁶See Leeds 2003; and Johnson and Leeds 2011. Benson builds on this research but suggests that only a subset of defensive alliances exhibit a deterrence effect. Benson 2011.

⁷See Snyder 1984; and Smith 1995.

⁸A similar logic emerges in the literature on humanitarian intervention, in which the prospect of third party intervention affects conflict between states and rebel groups. See, for example, Kuperman 2008; Grigoryan 2010; and Kydd and Straus forthcoming.

⁹See Snyder 1984 and 1997; Gelpi 1999; and Pressman 2008.

¹⁰See Schroeder 1976; Snyder 1997; Weitsman 2004; and Pressman 2008.

¹¹Gelpi 1999. See also Owsiak and Frazier Forthcoming.

¹²Exceptions are Zagare and Kilgour and Benson, although their conceptions of restraint are somewhat different from ours. See Zagare and Kilgour 2003; and Benson 2012.

response to a demand. In fact, many alliance treaties require this.¹³ While sometimes the ally may recommend that the target resist the demand and reassure the target of allied support, in other cases the ally may recommend that the target concede the demand. A recommendation to concede is not cheap talk if the ally can credibly threaten not to come to the target's aid if the target disregards the ally's recommendation and ends up in a war. While the target and the ally would not be allied if they did not share some common interests, and thus, the ally should generally prefer for the target to achieve as beneficial an outcome as possible from bargaining, the ally may not value a particular good as much as the target does, and thus might prefer to see a target make some concessions rather than escalate a dispute to war. In such instances the ally might prefer to preserve resources for other potential conflicts.

If an ally recommends concession, the target then must determine whether the alliance is valuable enough to warrant conceding the challenger's demand in order to preserve positive relations with the ally.¹⁴ Even if the alliance does not end as a result of the policy disagreement between the allies, its future deterrence potential might be compromised if potential future challengers witness policy divisions in the alliance.¹⁵ When states are facing multiple potential threats, they may be unwilling to compromise the deterrent potential of their alliance in other situations over the current disagreement.

We can certainly think of cases in which an ally's advice seems to have encouraged a target to concede to a challenger, and we can also think of cases in which target states did not accept the advice of their allies to concede demands.¹⁶ In 1938, when Hitler made clear his intention to annex the Sudetenland, Czechoslovakia preferred to resist the demand. Czechoslovakia's most important ally was France, however, and French leaders not only recommended that Czechoslovakia accept the Munich agreement and cede the Sudetenland to Germany, but also informed Czech leaders that if they did not comply, they would not

¹³In the Alliance Treaty Obligations and Provisions (ATOP) Dataset, more than half of the agreements in which states promise to defend one another militarily also include explicit commitments to consult and coordinate behavior in the event of military crisis. Leeds et al. 2002.

¹⁴Crawford suggests, for instance, that allies have more influence over the conflict behavior of their partners when the partners do not have other good alignment options. Crawford 2003.

¹⁵Morrow 2000.

¹⁶Allies do not always advise concession, and our model also explains the conditions under which this occurs. Consider, for instance, the case of Austria-Hungary in 1914. Austria's ally Germany encouraged strong resistance to Serbian demands. See Fischer 1975, 58; Taylor 1954, 522; and Langsam 1948, 16.

receive French support against a German military attack.¹⁷ Czechoslovakia conceded the Sudeten territories to Germany, and the result was a temporary peace. In other instances, however, an ally's recommendation for peaceful settlement goes unheeded. In 1911, French attempts to exert greater control over Morocco led to demands for colonial concessions from Germany. France's ally, Russia, argued strongly that France should concede the demands.¹⁸ Despite this, France took a much harder line stance than Russia preferred, unduly risking war in the Russian view. The crisis was eventually settled in compromise terms that were favorable to France.

Below we present a crisis bargaining model that we believe captures important features of alliance relationships and provides insight into these cases. There are three actors in the model—a potential challenger, a potential target, and the target's ally. If the challenger makes a demand, the ally recommends whether the target should concede or resist before the target responds to the challenger. In equilibrium, whether the ally recommends concession depends on the ally's value for the issue at stake, the ally's expected costs of war, and the ally's value for alliance with the target. Whether the target obliges an ally's recommendation to concede depends on the target's value for these same parameters.¹⁹ Our formalization allows us to be precise in explaining the conditions under which targets with allies are likely to concede demands and the conditions under which targets resist demands, allowing disputes to escalate.

Our model shows the important role that allies can play in conflict management. When an ally can credibly threaten to intervene in a conflict if a challenger demands too much and to stay out of the conflict and damage the alliance if the target concedes too little, the ally can have a significant effect on the resulting distribution of goods and the probability of war. Not only can alliances deter the initiation of disputes, as prior formal models of alliances emphasize, but they can also sometimes prevent disputes from escalating by helping to craft peaceful bargains.

¹⁷Mahoney 2011, 167.

¹⁸Snyder 1997, 285.

¹⁹These are similar to the factors that Snyder expected would influence an alliance's stance toward an adversary. Snyder 1997, 179.

Model and Equilibrium Results

Suppose that there is a dispute over a unit of good between a challenger state, C , and a target state T . The target has an ally, A , with whom the target has a formal military alliance.²⁰ The status quo is that the target owns the disputed good. Let each player's valuation of the good be $v_i > 0$, where $i \in \{c, t, a\}$ corresponds to the challenger, the target, or the ally. The challenger demands a division of the good, $x \in [0, 1]$, where x is the challenger's share, and $1 - x$ is the target's share. If there is a war between the challenger and the target without the ally's assistance, the target wins with probability $p \in (0, 1)$; if the ally intervenes, then the alliance wins with probability $q \in (0, 1)$, where $q > p$. When the target or the alliance wins the war, the target keeps the whole unit of the good and both the target and the ally derive benefit from the target's possession; if the challenger wins the war, then the challenger alone enjoys the benefit of the good. War is costly, and the cost of fighting for each player is $c_i > 0$, where $i \in \{c, t, a\}$. Moreover, the ally and the target may incur additional costs from damaging the alliance relationship if they disagree on the appropriate response by the target. In particular, if the ally recommends that the target accept the challenger's demand, but the target refuses, then the target pays $k_t > 0$ and the ally pays $k_a > 0$. See Table 1 for a summary of the notation.

Table 1: Model Notation

$x, 1 - x$	Challenger and target's shares of the good, respectively
v_i	Actor i 's valuation of the disputed good
p	Target's probability of winning a bilateral war
q	Alliance's probability of winning a multilateral war
c_i	Actor i 's cost of war
k_i	Alliance member i 's cost of damaging the alliance

The players' strategies and the sequence of the game are as follows (Figure 1). The challenger proposes a division of the good to the target. The ally advises the target to accept or reject the demand. The target then decides to accept or reject the demand. If the target accepts the demand, then the status quo is changed to reflect the challenger's demand; if the target rejects the demand, then the challenger has a choice of escalating the crisis to

²⁰Alliance formation is exogenous to our model to keep the model tractable. We discuss potential influences of this simplifying assumption below.

war or backing down from the demand. If a war occurs as a result of both the ally and the target rejecting the challenger's demand, then the alliance will fight against the challenger. On the other hand, if the ally advises acceptance but the target rejects the challenger's demand, then the target will fight the challenger alone. The actors that participate in a war will pay the costs of war; in addition, if the allies disagree on their response to the challenger's demand, each of them pays a cost for damaging the alliance relationship.²¹

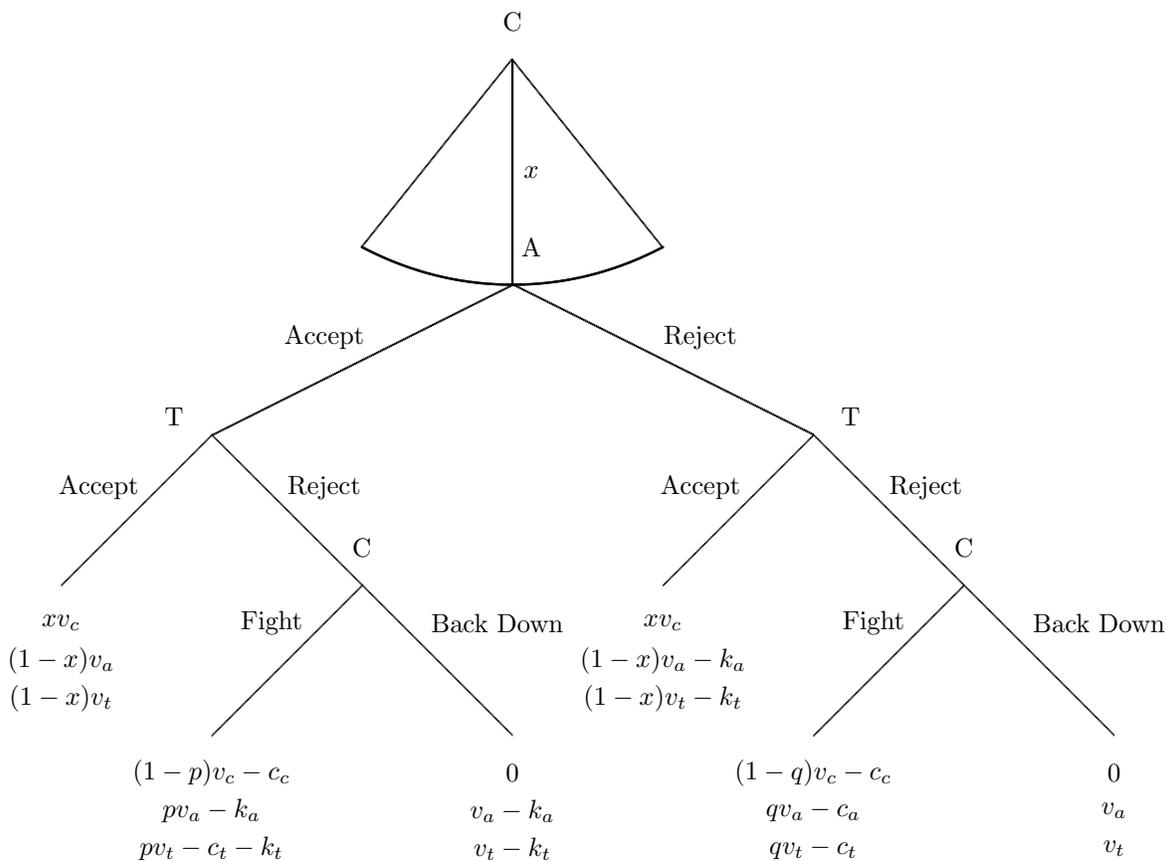


Figure 1: The Sequence of the Game

We first analyze a version of the game in which the players have complete information about all aspects of the game. Analyzing the complete information game allows us to see

²¹The costs to the ally could include any audience or reputational costs for violating an alliance agreement as well as the decreased credibility of the alliance in the eyes of this or other challengers and the potential loss of the target's support should the ally face a dispute. The target also faces decreased alliance credibility and the potential loss of the ally's future support. In addition, if alliance formation involves issue linkage, damaging an alliance could result in the loss of trade benefits, foreign aid, or other forms of foreign policy support. See Morrow 1991 on alliances involving issue linkage.

exactly what factors drive the outcome that interests us, namely, the outcome that the ally advises the target to concede the challenger's demand and the target does so. We then relax the assumption to allow for the possibility that the challenger has incomplete information about the target's cost of war, which leads to other possible outcomes that we may observe in the real world.²²

To understand the equilibrium results, we first consider the challenger's decision whether to escalate a crisis at the end of the game after the target rejects its demand. Suppose $(1 - q)v_c - c_c \leq 0$, i.e., the challenger is not willing to fight against the alliance when its demand is rejected by both A and T . Then, there is a unique equilibrium to the game in which C makes no demand ($x = 0$) and the status quo is preserved. Consider what the equilibrium means substantively. The condition, $(1 - q)v_c - c_c \leq 0$, can be transformed equivalently to $1 - q \leq c_c/v_c$. The condition says that the relative cost of fighting—the ratio between the cost of war and the value of the good—for the challenger, c_c/v_c , is at least as great as the expected benefit of war, $1 - q$, if the challenger is fighting against the alliance. The challenger will not be willing to engage in such a war and will at most be willing to fight the target when the target is alone. Understanding this incentive, the ally will always make a credible commitment to the target about coming to the target's aid in war, and consequently, the challenger will be deterred from making a demand at all.

Below we consider the more interesting case where $(1 - q)v_c - c_c > 0$, i.e., the challenger is willing to fight against the alliance when its demand is rejected by both the ally and the target. If the challenger is willing to fight both, then it follows immediately that the challenger will be willing to fight the target in a bilateral war, $(1 - p)v_c - c_c > 0$, because the probability of winning against the target alone is greater than against the alliance. This means that in equilibrium the challenger fights whenever the target rejects its demand.

Next, we analyze the target's response in an equilibrium. Consider the history of the game where the ally advises the target to accept a demand by the challenger. If the target

²²For the complete information game, we solve for Subgame Perfect Equilibrium (SPE), and for the incomplete information game, we solve for Perfect Bayesian Equilibrium. We assume that the target accepts a challenger's demand if it is indifferent between accepting and rejecting, and the ally recommends acceptance if it is indifferent between recommending acceptance and rejection of a challenger's demand. All the proofs are in the appendix.

accepts x , then the target receives $(1-x)v_t$; if it rejects x , then the target fights a war against the challenger by itself and receives a payoff of $pv_t - c_t - k_t$. This is a case in which the target not only fights the challenger alone and pays the cost of war, but also pays the cost of not listening to the ally's advice. The target accepts the demand if $(1-x)v_t \geq pv_t - c_t - k_t$, or

$$x \leq (1-p) + \frac{c_t + k_t}{v_t} \quad (1)$$

Let $x^{(1)} = (1-p) + \frac{c_t + k_t}{v_t}$. Now consider the history of the game where the ally advises the target to reject a demand by the challenger. If the target accepts the demand, then it gets $(1-x)v_t - k_t$; if the target rejects the demand, then it gets $qv_t - c_t$ because the allies fight the challenger together and the alliance relationship is intact. The target accepts the demand if $(1-x)v_t - k_t \geq qv_t - c_t$, or

$$x \leq (1-q) + \frac{c_t - k_t}{v_t}. \quad (2)$$

Let $x^{(2)} = (1-q) + \frac{c_t - k_t}{v_t}$. Intuitively, $x^{(2)} < x^{(1)}$; that is, when the target has the support of the ally in a war against the challenger, the threshold level for the target to accept a demand by the challenger is smaller. In other words, the target will be encouraged by the ally's support and reject a wider range of demands by the challenger. Note, however, the challenger understands this effect of the alliance, and its equilibrium demand will be adjusted accordingly so that it does not risk fighting a war with the alliance unnecessarily.

Given the above analysis, we now know that the target will respond to the challenger's demand in three ways depending on the size of the demand, x . If $x \leq x^{(2)}$, then the demand is sufficiently small that the target will always accept regardless of what the ally advises. On the other hand, if $x > x^{(1)}$, then the demand is so big that the target will reject regardless of what the ally advises. In these two extreme cases, the ally's position on the demand does not matter to the target. The most interesting case is when the demand falls in the middle range, i.e., $x^{(2)} < x \leq x^{(1)}$, such that the target's behavior will be contingent on the ally's advice. More specifically, the target will accept the demand if the ally recommends acceptance and reject the demand if the ally recommends rejection. We define an equilibrium in which the target follows the ally's advice as a *coordination* equilibrium. In this equilibrium, if the ally advises the target to accept a demand and preserve the peace, then the alliance has a restraining effect on the target; on the other hand, if the ally advises the target to

reject the challenger's demand, then the alliance has an emboldening effect on the target.

Having analyzed the target's equilibrium behavior in a coordination equilibrium, we now turn to the analysis of the ally's strategy in such an equilibrium. Specifically, when will the ally advise the target to accept a demand and when will it advise otherwise? If the ally recommends acceptance, then the ally's payoff is $(1 - x)v_a$ from a peaceful resolution of the conflict; if the ally recommends rejection, then it means that the ally will join the target to fight against the challenger in war and receive a payoff of $qv_a - c_a$. So the ally recommends acceptance if $(1 - x)v_a \geq qv_a - c_a$, or

$$x \leq (1 - q) + \frac{c_a}{v_a} \quad (3)$$

Let $x^{(3)} = (1 - q) + \frac{c_a}{v_a}$. We can see that the ally is more likely to advise restraint when the ally expects high costs from war and/or places low value on the issue at stake.

Because the challenger anticipates the effect of the alliance, for the coordination equilibrium to emerge, it has to be in the challenger's best interest to make a demand that falls in the range $(x^{(2)}, x^{(1)})$. In other words, in the equilibrium the payoff for the challenger from making a demand such that $x^{(2)} < x \leq x^{(1)}$ has to be at least as good as making a demand such that $x \leq x^{(2)}$, or $x > x^{(1)}$. Combining all the equilibrium analysis thus far, we have the following proposition that characterizes the unique coordination equilibrium.

Proposition 1 (Coordination Equilibrium). *If $\frac{c_a}{v_a} \geq \frac{c_t - k_t}{v_t}$, then there is a unique equilibrium to the complete information game. In the equilibrium, the challenger demands $x^{(3)} = (1 - q) + \frac{c_a}{v_a}$ if $\frac{c_a}{v_a} \leq \frac{c_t + k_t}{v_t} + q - p$, and $x^{(1)} = (1 - p) + \frac{c_t + k_t}{v_t}$ if $\frac{c_a}{v_a} > \frac{c_t + k_t}{v_t} + q - p$. For the target and the ally, if the challenger demands $x \leq x^{(2)}$, then the target accepts the demand regardless of the ally's recommendation, and the ally recommends acceptance; if $x^{(2)} < x \leq x^{(1)}$, then the target follows the ally's recommendation, and the ally recommends acceptance if $x \leq x^{(3)}$ and rejection if $x > x^{(3)}$; if $x > x^{(1)}$, then the target rejects regardless of the ally's recommendation, and the ally recommends acceptance if $\frac{c_a}{v_a} \geq q - p + \frac{k_a}{v_a}$ and rejection if $\frac{c_a}{v_a} < q - p + \frac{k_a}{v_a}$.*

The equilibrium outcome for either offer by the challenger is that the ally recommends acceptance and the target follows the ally's recommendation. Two points are worth noting.

First, a sufficient condition for the coordination equilibrium to emerge is that the ally's relative cost of war, c_a/v_a , is greater than the target's relative cost of war, c_t/v_t . Put another way, the lower the value of the contested good for the ally (v_a), and the higher the ally's cost of war (c_a), the more likely it is that the ally will be able to influence the target's decision. Moreover, when the target attaches a high value to the alliance relationship (k_t), the coordination equilibrium is even more likely to emerge. Importantly, it can be plausibly argued that in the real world an ally often does have a higher relative cost of war than the target, which means that the coordination equilibrium may be a common occurrence.

Second, although the coordination equilibrium allows for both the restraining effect and the emboldening effect of the alliance, the equilibrium outcome in Proposition 1 reflects only the *restraining* effect: the target accepts the demand conditional on the ally advising her to accept.²³ This is because in the complete information set-up, the challenger is able to make a precise demand in the equilibrium such that the ally will recommend acceptance *and* the target accepts. The complete information game thus informs us what type of uncertainty is necessary to bring about the emboldening effect of alliances: an emboldening effect may occur if the challenger does not have accurate information about the ally's value of the good (v_a) or the ally's cost of war (c_a) such that it makes a demand that is larger than $x^{(3)}$, the threshold demand that makes the ally indifferent between recommending acceptance and rejection to the target in the coordination equilibrium.²⁴

The next proposition characterizes the unique equilibrium for the parameter range that complements that for Proposition 1.

Proposition 2 (Unconditional Appeasement Equilibrium). *If $\frac{c_a}{v_a} < \frac{c_t - k_t}{v_t}$, then there is a unique equilibrium to the complete information game. In the equilibrium, the challenger demands $x^{(2)} = 1 - q + \frac{c_t - k_t}{v_t}$. For the target and the ally, if the challenger demands $x \leq x^{(2)}$, then the target accepts the demand regardless of the ally's recommendation, and the ally recommends acceptance; if $x^{(2)} < x \leq x^{(1)}$, then the target follows the ally's recommendation,*

²³Different authors use "restraint" to refer to a variety of behaviors. Some, for instance, discuss restraint in the context of stopping an ally from initiating disputes or from provoking an adversary. In our model, the restraining effect is defined in contrast with two other possible situations concerning targets with allies: (1) the target would accept or reject a demand regardless of what the ally recommends; (2) the target rejects a demand conditional on the ally advising her to reject (i.e., the emboldening effect).

²⁴In the online appendix we provide an example that shows how the emboldening effect may lead to war when there is uncertainty regarding the value of c_a and thus $x^{(3)}$.

and the ally recommends rejection; if $x > x^{(1)}$, then the target rejects regardless of the ally's recommendation, and the ally recommends acceptance if $\frac{c_a}{v_a} \geq q - p + \frac{k_a}{v_a}$ and rejection if $\frac{c_a}{v_a} < q - p + \frac{k_a}{v_a}$.

The equilibrium outcome is that the target accepts the challenger's small demand no matter what the ally recommends; consequently, the ally recommends acceptance to avoid damaging the alliance relationship. Combining the two propositions, we find that the challenger's demand varies with the ally's relative cost of war, c_a/v_a , which is most clearly demonstrated in Figure 2.²⁵ The demand has an upward trend as the ally's relative cost of war increases. An increasing relative cost of war for the ally means that the ally is increasingly reluctant to fight alongside the target; as a result, the challenger can make an increasingly larger demand without provoking a war with the alliance. This raises an interesting question as to whether the target is worse off by having an alliance in terms of the concession it has to make to the challenger. If a target values an alliance relationship, the logic of the coordination equilibrium suggests that a reluctant ally could force the target to accept a demand that it would not accept if there were no alliance. Note that without the alliance, the challenger's best offer to the target is $x_0 = (1 - p) + c_t/v_t$, which will be accepted by the target. Comparing this demand with those that the target will receive when there is an alliance, we find that if $c_a/v_a < \frac{c_t}{v_t} + q - p$, then the challenger's demand is smaller when the target has an ally than it would have been if the target did not have an ally, i.e., $x^{(3)} < x_0$; therefore, the target benefits from having the alliance in its negotiation. On the other hand, if $c_a/v_a > \frac{c_t}{v_t} + q - p$, then the challenger demands more than the challenger would have demanded if the target did not have an alliance. The highest demand that the challenger can make in the presence of the alliance is $x^{(1)} = (1 - p) + \frac{c_t + k_t}{v_t}$, and it is greater than x_0 by k_t/v_t , which is the target's costs of damaging the alliance relative to the target's value for the disputed good. So indeed, if the ally's relative cost of war is sufficiently large, then the target is worse off because of the restraining effect of the ally. Thus, an alliance does not uniformly decrease the challenger's demand as is argued in the existing literature.²⁶ Once we introduce a rather minimal assumption that an alliance relationship is valued by its members, more interesting dynamics emerge between the challenger and the alliance.

²⁵Figure 2 is drawn for the case that has the most variation in the equilibrium offer.

²⁶Yuen 2009.

We want to be careful about drawing strong inferences here about the (dis)utility of alliances for targets. Keep in mind that alliance formation is exogenous to our model. This simplifying assumption helps to keep the model tractable. Yet, equilibrium outcomes in which a challenger demands more from an allied target than the challenger would demand from a non-allied target require the ally's relative costs of war to be higher than $c_t/v_t + q - p$. This condition is more likely to be satisfied if the ally's contribution to the probability of the alliance defeating the challenger, i.e., $q - p$, is low. Alliances in which the ally has high relative costs of war and a low contribution to the probability the alliance defeats the challenger may form rarely, and if they do form, the value of the alliance to the target (k_t) might be low. When k_t is low, even the challenger's maximum demand under the coordination equilibrium differs little from the demand the challenger would make of a non-allied target.

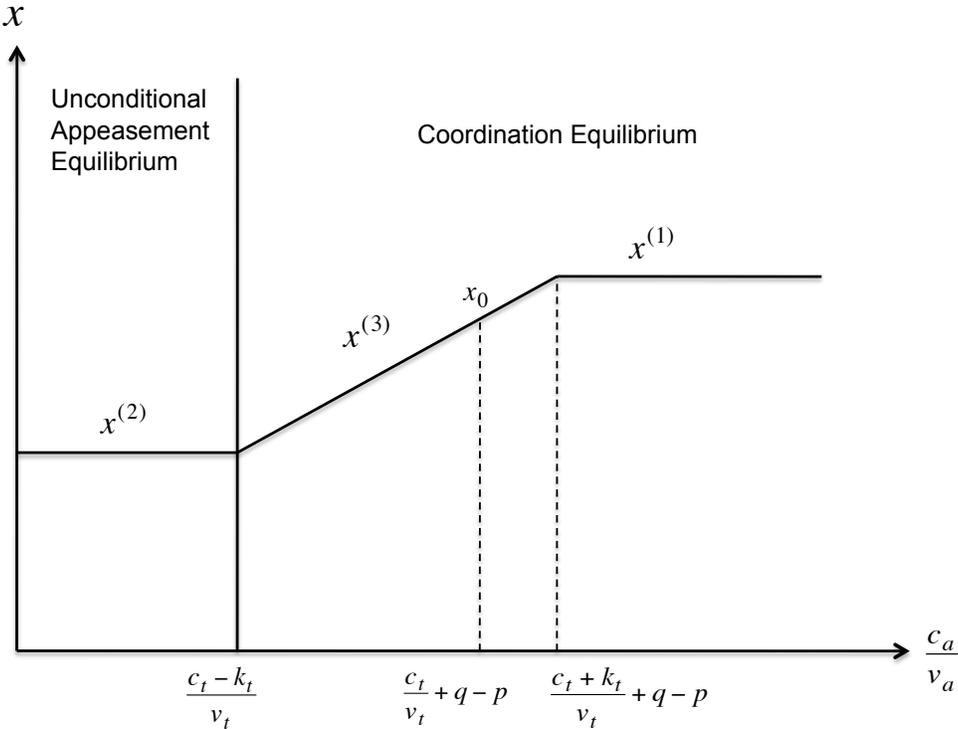


Figure 2: The Complete Information Game: The Challenger's Equilibrium Demand as a Function of the Ally's Relative Cost of War

Having fully discussed the causal mechanisms underlying the equilibrium outcomes in the complete information game, we now proceed to introduce uncertainty into our model to

more fully capture various alliance dynamics in the real world. What we have learned in our analysis of the complete information game will prove to be central to our understanding of the incomplete information game as well. There are many ways of introducing uncertainty to the model, because any of the parameters in the model could potentially be unknown to some actors. We adopt a common approach for introducing uncertainty into crisis bargaining models and assume that the challenger does not know the target's costs of war, c_t .²⁷ As well articulated by Schultz, challengers are most likely to be uncertain about the resolve of the target—captured by the costs of war relative to the value of the disputed good, c_t/v_t —because resolve is determined in large part by the domestic conditions of the target state.²⁸ These can be difficult to assess for foreign leaders. Moreover, we add uncertainty on the target's costs of war because in this study we want to maintain our focus on the bargaining dynamics between the challenger and the target while under the shadow of an alliance, *even if* there is nothing uncertain about the ally's preferences.²⁹

Suppose it is common knowledge that the challenger knows that c_t is uniformly distributed on $[\underline{T}, \bar{T}]$, where $\bar{T} > \underline{T} > 0$, while the ally knows c_t .³⁰ We maintain the earlier assumption, $(1-q)v_c - c_c > 0$, so that the challenger will always fight once it makes a demand and the target rejects. Given that the challenger's strategy is the same as before when the target rejects a demand, the target's best response is also the same as before, thus $x^{(1)}$ and $x^{(2)}$ are still the cutpoints that condition the target's behavior. That is, if $x \leq x^{(2)}$ then the target will always accept; if $x > x^{(1)}$ then the target will always reject; if $x^{(2)} < x \leq x^{(1)}$, then the target's behavior will be contingent on the ally's reaction. Furthermore, the ally's best response is the same as before given that the target and challenger's subsequent optimal actions are the same as those in the complete information game. What is different is the challenger's optimal demand at the beginning of the game given that the challenger does not know the target's cost of war.

²⁷See Fearon 1994 and 1995; Powell 1996 and 1999; Schultz 1998; and Kydd 2003.

²⁸Schultz 1998, 832.

²⁹In our model there is no signaling of the ally's intentions to the other players. For the influence of diplomatic communication on war, see Trager 2010. Also, see Grigoryan 2010 for a model including uncertainty about third party intervention.

³⁰In solving the game, we impose further restrictions on \underline{T} and \bar{T} so that the game is not trivial. Specifically, we require $x^{(2)} \geq 0$, which implies $c_t \geq k_t - (1-q)v_t$, and $x^{(1)} \leq 1$, which implies $c_t \leq pv_t - k_t$. That is, we assume $\underline{T} = k_t - (1-q)v_t$ and $\bar{T} = pv_t - k_t$. Without the two restrictions on c_t , the game will be trivial: the ally will have a total control of the target's decision. For more details, see the appendix.

We present two main results from the incomplete information game that allow us to analyze the relationship between the kinds of equilibrium outcomes that we will observe and the ally's costs of war, its valuation of the contested good, and its valuation of the alliance. Recall that under the complete information game we cannot observe *entrapment*—the ally is dragged into war by the target, or *abandonment*—the ally leaves the target to fight the challenger alone, both of which have been discussed in historical accounts of wars. In the incomplete information game, it is much more difficult for the challenger to make a demand that will ensure acceptance by both the ally and the target; consequently, many kinds of war outcomes can occur.

Proposition 3 (Restraint or Entrapment). *If $\frac{c_a}{v_a} < q - p + \frac{k_a}{v_a}$, then there is a unique equilibrium to the incomplete information game. In the equilibrium, the challenger demands $x_1^* = \frac{1}{2} + \frac{1}{2v_c}((1 - q)v_c - c_c)$ if $\frac{c_a}{v_a} + \frac{c_c}{2v_c} > \frac{q}{2}$, and $x^{(3)} = (1 - q) + \frac{c_a}{v_a}$ if $\frac{c_a}{v_a} + \frac{c_c}{2v_c} \leq \frac{q}{2}$; the challenger maintains its prior belief $F(c_t)$. For the target and the ally, if the challenger demands $x \leq x^{(2)}$, then the target accepts the demand regardless of the ally's recommendation, and the ally recommends acceptance; if $x^{(2)} < x \leq x^{(1)}$, then the target follows the ally's recommendation, and the ally recommends acceptance if $x \leq x^{(3)}$ and rejection if $x > x^{(3)}$; if $x > x^{(1)}$, then the target rejects regardless of the ally's recommendation, and the ally recommends rejection.*

The condition in the proposition shows that when the ally's relative cost of war is lower than a threshold value, or if the ally values the alliance relationship highly, then there can be peace or a multilateral war due to an entrapment effect. The peace may come under two scenarios. The first is that the challenger makes a very small demand, $x \leq x^{(2)}$, so that the target accepts no matter what the ally says; the second is that the challenger makes a moderately large demand, $x^{(2)} < x \leq x^{(1)}$, and the target accepts only if the ally advises restraint and the ally does in equilibrium. Therefore, the restraining effect contributes to a peaceful outcome. In the same equilibrium, war only occurs if the challenger makes a high demand, $x > x^{(1)}$. In this case the target will reject the demand no matter what the ally says, and the ally supports the target. As a result, war occurs between the challenger and the alliance rather than between the challenger and the target. This is a case in which the ally joins the war because it knows that the target will fight the challenger with or without

its assistance, and the ally wants to avoid damage to the alliance relationship. Perhaps, for instance, the ally believes that good relations with the target are essential for dealing with other security issues, or perhaps the ally is getting support for other foreign policy priorities from the target, or perhaps the ally judges the reputational costs of abandoning an alliance partner to be too high. The dynamic underlying Proposition 3 is consistent with the entrapment effect that appears in historical accounts. In this equilibrium the alliance does not increase the probability of war, although it does expand the war.

Proposition 4 (Restraint or Abandonment). *If $\frac{c_a}{v_a} \geq q - p + \frac{k_a}{v_a}$, then there is a unique equilibrium to the incomplete information game. In the equilibrium, the challenger demands $x_2^* = 1 - \frac{p}{2} - \frac{c_c}{2v_c}$ if $\frac{c_a}{v_a} + \frac{c_c}{2v_c} > q - \frac{p}{2}$, and $x^{(3)} = (1 - q) + \frac{c_a}{v_a}$ if $\frac{c_a}{v_a} + \frac{c_c}{2v_c} \leq q - \frac{p}{2}$; the challenger maintains its prior belief $F(c_t)$. For the target and the ally, if the challenger demands $x \leq x^{(2)}$, then the target accepts the demand regardless of the ally's recommendation, and the ally recommends acceptance; if $x^{(2)} < x \leq x^{(1)}$, then the target follows the ally's recommendation, and the ally recommends acceptance if $x \leq x^{(3)}$ and rejection if $x > x^{(3)}$; if $x > x^{(1)}$, then the target rejects regardless of the ally's recommendation, and the ally recommends acceptance.*

Proposition 4 characterizes the complementary case to Proposition 3 where the ally does not value the alliance relationship too highly. Again, there can be peace or war. The peace may come about in similar circumstances as those for Proposition 3, i.e., because of a very small demand, $x \leq x^{(2)}$ by the challenger, or a restraining effect from the alliance partner even when the demand is moderately large, $x^{(2)} < x \leq x^{(1)}$. On the other hand, war breaks out due to different alliance dynamics from those for Proposition 3; only bilateral wars are possible. If the challenger makes a high demand, $x > x^{(1)}$, then the target will reject no matter what the ally says, but contrary to the previous case where the ally values the alliance relationship highly, in this case the ally will not come to the target's aid when the target fights the challenger. In other words, the ally fails at restraining the target and abandons the target in war. These are cases in which we observe the violation of alliance commitments in war.

The equilibrium results for the incomplete information game are depicted in Figure 3.³¹

³¹Figure 3 is drawn for the case that has the most variation in the equilibrium offer.

We observe again that the challenger's demand shows an upward trend as the ally's relative costs of war (c_a/v_a) increases. When the ally values the alliance relationship highly such that its relative cost of war falls below $R^* = q - p + \frac{k_a}{v_a}$, the challenger demands either $x^{(3)} = (1 - q) + \frac{c_a}{v_a}$, which is an increasing function of the relative cost, or $x_1^* = \frac{1}{2} + \frac{1}{2v_c}[(1 - q)v_c - c_c]$. Because of the challenger's uncertainty about the target's cost of war, either demand could potentially fall outside of the threshold for the target to accept a demand, $x^{(1)}$. Consequently war is a possible equilibrium outcome. When the ally does not value the alliance relationship too highly, such that R^* is smaller than its relative cost of war, the challenger demands either $x^{(3)}$ or $x_2^* = \frac{1}{2} + \frac{1-p}{2} - \frac{c_c}{2v_c}$. Again, the uncertainty about the target's cost may result in either demand being larger than what is acceptable to the target.

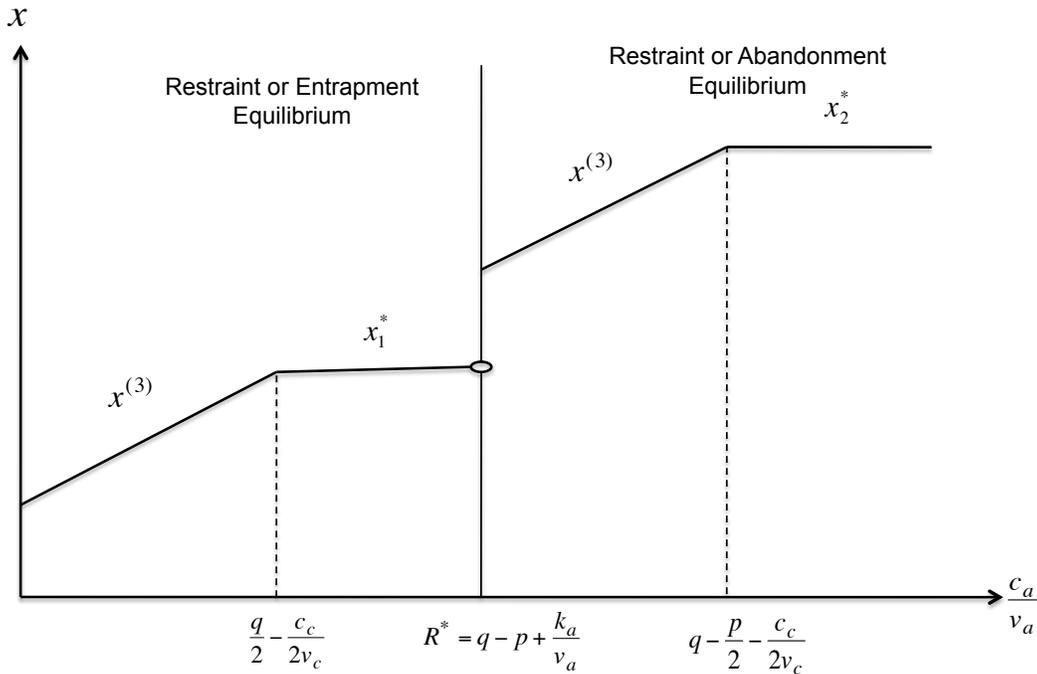


Figure 3: The Incomplete Information Game: The Challenger's Equilibrium Demand as a Function of the Ally's Relative Cost of War

So what can we say about the relationships between observable factors and the probability that a target escalates a dispute rather than conceding a demand? Some of the factors that appear to be important in this regard are familiar to crisis bargaining models—for example, the actors' costs of war, the values the actors place on the disputed goods, and the probability

that the challenger can defeat the target (or the target plus the ally) in war. The unique predictions of our model, however, have to do with the effect of the value the target and ally place on the alliance. The most straightforward result is that the ally's ability to restrain the target increases as the target values the alliance relationship more; consequently, we expect that the probability of war decreases.

Specifically, propositions 3 and 4 show that in equilibrium the challenger can make one of the three demands: $x^{(3)}$, x_1^* , and x_2^* . Moreover, we have established that war occurs if the equilibrium demand is greater than $x^{(1)}$. Hence, we can express the probability of war as $Pr(war) = Pr(x > x^{(1)})$, where x takes one of the three values. Proposition 5 summarizes the relationship between the target's valuation of the alliance and the probability of war, which supports our intuition.

Proposition 5 (The Probability of War). *In the equilibrium of the incomplete information game, the probability of war decreases as the target's valuation of the alliance relationship (k_t) increases.*

Now we revisit the two cases we introduced above in light of our equilibrium analysis. In both cases allies recommended to targets that they concede demands, but in one case the target followed the ally's advice (Czechoslovakia 1938) and in one case the target did not follow the ally's advice (France 1911). Our model's predictions suggest that the restraining effect exists in equilibrium; moreover, the effect is more likely to exist if the ally's cost of war is high, the ally's value for the contested good is low, and the target's value for the alliance is high. The result provides insights into the different outcomes of these two cases.

In 1938, France saw war with Germany as very costly. Thomas suggests that two new considerations made France believe war with Germany over Czechoslovakia was less feasible than French leaders had previously believed. First, the Austrian *Anschluss* of March 1938 made defending Czechoslovakia much more difficult, as Germany could launch a secondary attack through Austria.³² Second, France was facing serious financial difficulties; pressure on the franc was threatening the government's ability to maintain its defense spending.³³ While assistance from Britain would have made war easier, the burden of defending Czechoslovakia

³²Thomas 1999, 125.

³³Thomas 1999, 139.

would still fall primarily upon the French military. French army leaders reported to the cabinet in September 1938 that Czechoslovak defenses might well collapse in a matter of weeks, and it would be at least six months before Britain could provide meaningful assistance in Czechoslovakia.³⁴

How much did France value maintaining the integrity of her Czechoslovak ally in 1938? France cared a great deal about limiting German power, and a cornerstone of her strategy for accomplishing that involved alliances with Germany's eastern neighbors. But by 1938, it was clear that the eastern Locarno pact idea had failed; Germany would not be completely encircled by hostile forces. Given that, France had some preference for Germany focusing its expansionist goals in the East if it kept Germany from turning West. France had a number of other allies, some of whom were stronger and could offer more assistance than Czechoslovakia could in a future war. France also had other allies on Germany's eastern borders. Thus, an intact Czechoslovakia was not crucial to France's security policy. This is not to say that French leaders took the decision to abandon their ally lightly; they saw costs associated with violating the commitment.³⁵ Yet, given the very high costs of war, in the end France recommended that Czechoslovakia concede Germany's demand.

Czechoslovakia heeded French recommendations and conceded to Germany. The alliance with France was extremely important to Czechoslovakia. Czechoslovakia's only other great power ally was Russia, and a protocol to the alliance with Russia made Russian obligations contingent on French support. A French company had majority control of the Czech arms production company, France was the third largest investor in the Czech economy (after Germany and Britain), and France was one of Czechoslovakia's major creditors.³⁶ Czechoslovakia was quite dependent on good relations with France and on French military support. Thus, the Czechs dared not defy their ally.

In the second case (the Morocco crisis of 1911), the disparity between the expected costs of war and the value placed on the issue at stake for the ally were even larger. Russian leaders saw disputes over control of territories in Africa as completely outside their interests. In conversation with French Prime Minister Caillaux, Russian Ambassador Isvolsky reportedly

³⁴Thomas 1999, 138.

³⁵Thomas 1999, 136.

³⁶Thomas 1999, 133.

referred to the dispute with Germany as “a more or less trivial question of compensation.”³⁷ Russian leaders also viewed war with Germany as very costly. In fact, Russian leaders insisted to the French that they were not yet prepared to fight and needed at least two more years to prepare their military.³⁸ The costs of war were high and the value for the issue low, and Russia recommended that France concede to German demands.

Yet, French leaders escalated their dispute with Germany in spite of Russian warnings in 1911. France certainly valued the Russian alliance in 1911, but had other sources of support also. While France and Britain were not formally allied, Britain was providing support for France in this particular crisis, and the *Entente Cordiale* gave hope of further support in the future. It is certainly possible that France saw the damage to the Russian alliance as a result of their disagreement over Morocco as a reasonable cost to pay to avoid concession.

Importantly, in these examples, it is reasonable to think of alliance formation as exogenous to the immediate crisis, as it is in our model. In both cases, the alliance had existed for many years prior to the outbreak of the given dispute, and important aspects of the international and domestic landscapes had changed since alliance formation. The simplifying assumption that alliance formation is exogenous to crisis bargaining is not unreasonable for explaining an important set of crisis interactions.

Below we turn to a large N analysis of an hypothesis that follows directly from Proposition 5. While this analysis does not test all of the implications of our model, it does allow us to gain confidence in the empirical relevance of our model.

An Empirical Test of Target Resistance

Proposition 5 suggests that the probability of war decreases as the target’s valuation of the alliance relationship increases. The basic intuition of the result is that as targets expect higher costs from damaging alliances, they are more likely to comply with their allies’ recommendations to concede demands. Therefore, we test whether targets with high costs of damaging their alliance relationships are less likely to respond to interstate disputes with

³⁷Michon 1969, 195.

³⁸See Taylor 1954, 468; and Michon 1969, 195.

militarized actions than targets with low costs of damaging their alliance relationships.³⁹

To test this hypothesis we need a sample of observations in which a challenger initiated a dispute against a target that had at least one ally committed to defend her in a conflict with this challenger. In order to generate such a sample we combine data from the Correlates of War (COW) project and the Alliance Treaty Obligations and Provisions (ATOP) project. Ideally we would like to include only cases in which the ally recommended that the target concede to the challenger. However, not only have such data not been collected for a large sample of cases, but it is not clear that it would ever be possible to know exactly what an ally recommended to a target from the historical record in many cases. Alliance members may often have incentives to try to hide their internal bargaining, especially when it involves potential policy disagreements. Thus, our data pool together observations in which allies may and may not have recommended concessions, which means it will be harder to find support for our hypothesis in this sample. In other words, this is a conservative test.

First, we identify a set of observations in which a challenger initiated a dispute against a target in a given year. To do this we use the COW Militarized Interstate Dispute (MID) dataset and, specifically, Maoz's dyadic version of the dataset.⁴⁰ In this sample, one state, the challenger, threatened, displayed, or used force against another state, the target. These data include 2,354 directed dyad-years from 1816 to 2000 in which a challenger initiated a dispute against a target.⁴¹

Second, we identify the subset of disputing directed dyad-years in which the target of the dispute had allies committed to defend her against the challenger of the dispute. Simply because the target is an alliance member does not mean her allies agreed to defend her against the challenger. Many alliances do not require defensive military support and the ones that do are often invoked only under specific conditions. Therefore, to determine whether the target

³⁹A target's militarized response is a necessary condition for war to occur. While most cases in which targets respond militarily do not meet the usual empirical criteria for war (1000 battle deaths), our theoretical model is more generally aimed at understanding when targets concede without fighting and when they escalate disputes, so we employ a broader dependent variable for our empirical test that we believe is faithful to the concept we are trying to capture. At the same time, all of the conclusions we draw from our empirical test hold if we limit the dependent variable to the small number of cases that meet the Correlates of War criteria for war.

⁴⁰See Ghosn, Palmer, and Bremer 2004; and Maoz 2005.

⁴¹In years in which a challenger initiated more than one dispute against the same target, we include the dispute with the highest hostility level reached by the target.

in the observation had an alliance applicable to a dispute with the challenger, we utilize the coding of Johnson and Leeds.⁴² Their coding is based on the ATOP dataset, which has detailed information about states' promised alliance obligations.⁴³ When a target's alliance agreement would require an ally to intervene in a dispute against that particular challenger, Johnson and Leeds code the target as having an applicable defensive alliance. These data indicate that in 1,085 of the 2,354 disputing directed dyad-years the target had at least one alliance applicable to the dispute.

After identifying the sample, we code the dependent variable. The hypothesis we are evaluating suggests that targets that have high costs of damaging their alliance relationship will be less likely to resist the demands of their challengers militarily. Therefore, to code our dependent variable we use information from the COW MID data regarding how the target responded to the challenger. If the target responded with any form of militarized action (that is, responded with a threat, display, or use of force) we code the target as resisting the demands of the challenger.⁴⁴ The target resisted in 493 of the 1,085 directed dyad-years (45%).⁴⁵

The key independent variable in the empirical analysis is our measure of the target's cost of damaging its alliance relationship. To operationalize this concept we measure how important the alliance relationship is to the target's security. Some states rely a lot on a particular alliance relationship for security while others do not. The more important the alliance relationship is to the target's security, the more costly it will be for the target to damage the relationship. To capture how important an alliance is to a target's security we use the following expression:

$$\frac{cap_A}{cap_A + cap_T}$$

which is the ratio of the alliance's military capabilities to the sum of the alliance's and target's military capabilities. This variable ranges from 0 to 1, with values closer to 1 indicating that

⁴²Johnson and Leeds 2011.

⁴³Leeds et al. 2002.

⁴⁴As a robustness check, we analyzed models coding the dependent variable 1 only if the target reached higher levels of hostility. At every hostility level, we draw the same conclusions regarding our primary independent variable.

⁴⁵In four observations the target does not respond with any form of militarized action but one of its allies does respond with militarized action. As a robustness check we recode these four observations as the target resisting and estimate our model. Using this recoded dependent variable yields very similar results.

the alliance is more important to the target’s security and that damaging the relationship would be costly.⁴⁶ As this variable increases, the target should be less likely to resist the challenger, so we expect the coefficient associated with this variable to be negative.

To generate this variable we need to measure the military capabilities of each target and its allies. We use the composite index of national capabilities (CINC) scores from the COW project to measure the actors’ military capabilities.⁴⁷ To identify a target’s allies we refer to the alliances that the Johnson and Leeds coding indicate are applicable to the dispute being careful to include only states that were members of these alliances during the dispute and had defensive obligations to the target.⁴⁸ After identifying the allies, we sum up all of their CINC scores to generate cap_A . If a target had only one bilateral alliance, then cap_A is a function of one state’s military capabilities, but if the target had a multilateral alliance or multiple alliances, then cap_A is a function of multiple states’ military capabilities.⁴⁹ While the target’s capabilities are a component of this measure, the measure is not simply a proxy for target capabilities. Even strong states are weak in comparison to the combined capabilities of a large multilateral alliance, and thus even strong states can get significant security benefits from some kinds of alliances. To be certain our results are not being driven simply by the power of the target, however, we also analyze our empirical model controlling for the raw capabilities of the target, and our interpretation of results is unchanged.

We recognize that this is a coarse measure for two reasons. First, the measure does

⁴⁶Note that given that targets have multiple allies in most observations (76%—described in more detail below), it is not the case that any time an alliance is of high value to the target according to our measure it is of low value to the ally. For example, the importance of NATO to Poland’s security is measured as the sum of all the member capabilities of NATO excluding Poland divided by the capabilities of NATO. Poland’s NATO ally France’s value for NATO would be the sum of all the member capabilities of NATO excluding France divided by the capabilities of NATO. Both Poland and France could care a lot about the alliance.

⁴⁷Singer et al. 1972.

⁴⁸Johnson and Leeds 2011.

⁴⁹In 264 observations the target was allied to only one other state through one bilateral alliance. In the other observations the target either was a member of a multilateral alliance or had multiple applicable alliances in effect at the same time. In the analysis reported in the text we aggregate the capabilities of all unique allies, but we have done three robustness checks related to this coding decision: we conducted the analysis using only observations in which the target had one bilateral alliance, we conducted the analysis using only observations in which the target’s allies were all members of the same multilateral alliance, and we conducted the analysis using only the target’s strongest alliance. In all three instances, the results were similar to those reported here. Given that conflict with any member of a multilateral alliance could lead to damage to the alliance as a whole, we believe it is appropriate to consider the costs a state would experience from damaging a full alliance rather than simply relations with one member.

not take into account things that might make an ally valuable other than its military and economic capabilities, for example its strategic position, rare natural resources, etc. Second, the measure assumes that an ally would invest all of its capabilities in defending its partner. Of course this is unrealistic except in very rare circumstances, but a proportional discount would not be problematic for our measure. Variance in what proportion of an ally's military capabilities are at stake in an alliance could introduce some noise into our measure, but absent a theoretically informed discounting function, we believe that the full capability measure is our best estimate. The measure does have some face validity as well. The value of this variable for Czechoslovakia in 1938 in her dispute with Germany is well above the mean, and the value of this variable for France in 1911 in her dispute with Germany is below the mean.⁵⁰

To estimate the effect of our key independent variable, we include several other variables in our empirical model that may also influence the target's decision to resist the challenger militarily. We include two dichotomous variables that code whether the challenger had any offense or neutrality pacts that were applicable to the dispute. These alliances would make the target less likely to resist the challenger because they provide information that other states will aid the challenger or that other states will *not* aid the target. The coding for these variables comes from Johnson and Leeds.⁵¹ We also include a variable that captures the challenger's probability of defeating the target in a bilateral war. As this probability increases, we expect the target to be less likely to resist the challenger. We measure this variable using the ratio of the challenger's military capabilities to the sum of the challenger's and target's military capabilities.⁵² As before, the actors' CINC scores are used to measure their military capabilities.⁵³

We also take into account factors that may influence selection into the sample. States do not become involved in disputes randomly, and if this process is not modeled then our estimates can be biased. To account for the selection process we estimate our results using

⁵⁰A figure depicting the distribution of this variable is included in our web appendix.

⁵¹Johnson and Leeds 2011.

⁵²As a robustness check, we estimated our results using a measure in which we added all the target's defensive allies' capabilities to its capabilities and all the challenger's offensive allies' capabilities to its capabilities and our conclusions did not change.

⁵³Singer et al. 1972.

a censored probit model in which the dependent variable for the selection stage is a dichotomous variable that codes whether the potential challenger initiates a dispute against the potential target in the directed dyad-year.⁵⁴ The selection equation is estimated using the sample of 585,467 directed-dyad years from 1816 to 2000 in which the target had at least one alliance applicable to a potential dispute with the challenger.

We include a number of variables in the selection equation to model dispute initiation. First, we include the three control variables that are in the outcome equation: whether the potential challenger has an applicable offensive alliance, whether the potential challenger is a member of an applicable neutrality pact, and the potential challenger's probability of winning in a bilateral war. Challengers that have applicable offensive or neutrality pacts should be more likely to initiate disputes. This is because these challengers expect to receive assistance in war or that the target will not receive assistance in war, and thus these challengers expect to be more likely to succeed in accomplishing their goals through the threat or use of force. Additionally, when a challenger has a high probability of defeating the target in a bilateral war it should be more likely to initiate a dispute. We use the same operationalizations of these variables as mentioned above.

We also include several variables in the selection equation that do not appear in the outcome equation. We contend that these variables influence the challenger's decision to initiate a dispute but not the target's decision to resist. These variables are used to identify the censored probit model.⁵⁵ The first variable is the natural log of the capital-to-capital distance between the challenger and target. As the distance between the challenger and target increases, the challenger should be less likely to initiate a dispute because conflict with more distant states is more costly, and states further apart have fewer issues to dispute. Yet, since the conflict is likely fought on the target's territory, and once a dispute has been initiated we know there are already issues in conflict, distance should be much less relevant to the target's decision to resist. The data on distance are obtained from the EUGene

⁵⁴In addition to estimating the censored probit model, we estimated a probit model where we included the selection variables directly into the outcome equation and our conclusions do not change. We also obtain similar results using a two-step estimator.

⁵⁵As a robustness check, we have estimated the censored probit model while including each of our identifying variables in the outcome equation, and our conclusions do not change.

data generation program.⁵⁶ Second, we control for whether the challenger and target are jointly democratic. A large body of research suggests that pairs of democratic states are less likely to enter into disputes.⁵⁷ Yet, there is less consistent theoretical expectation about the escalation of jointly democratic disputes once they have begun. We consider the challenger and target to be democratic if they have scores of 6 or higher on the Polity2 variable from the PolityIV data set.⁵⁸ Third, we include the challenger and target's S-score, which is used to capture the similarity of the two states' interests.⁵⁹ As this variable increases, the two states' interests are considered to be more similar, and thus they should be less likely to have disagreements that could prompt militarized disputes. If a dispute occurs, however, general foreign policy similarity should not affect how it evolves. Lastly, we take into account any temporal dependence in the data related to dispute initiation using the strategy suggested by Carter and Signorino.⁶⁰ That is, we include a variable that codes the number of years since the last conflict in the dyad as well as the square and the cube of that variable.⁶¹

Table 2 reports our empirical results. Given that we estimate our results using a censored probit model, we have two sets of coefficients. The top panel reports the coefficients that are associated with the variables in the target resistance equation, and the bottom panel reports the coefficients that are associated with the variables in the dispute initiation equation.

⁵⁶Bennett and Stam 2000.

⁵⁷For example, Russett and Oneal 2001.

⁵⁸Marshall, Jagers, and Gurr 2010.

⁵⁹Signorino and Ritter 1999.

⁶⁰Carter and Signorino 2010.

⁶¹While the coefficients and standard errors for these temporal variables are not included in our table due to space concerns, we include a table reporting them in our web appendix.

Table 2: Censored Probit Analysis of Dispute Initiation and Target Resistance, 1816-2000

<i>Target Resistance</i>	
Target's Cost of Damaging its Alliance	-.40** (.14)
Challenger has an Applicable Offensive Alliance	-.27* (.14)
Challenger has an Applicable Neutrality Pact	-.43** (.11)
Challenger's Probability of Winning in Bilateral War	.22 (.12)
Constant	1.63** (.20)
<i>Dispute Initiation</i>	
Challenger has an Applicable Offensive Alliance	.28** (.04)
Challenger has an Applicable Neutrality Pact	.41** (.04)
Challenger's Probability of Winning in Bilateral War	-.06 (.03)
Challenger-Target Capital-to-Capital Distance	-.40** (.01)
Challenger-Target Joint Democracy	-.06 (.04)
Challenger-Target Similarity of Interests	-.51** (.05)
Constant	1.03** (.10)
Rho	-.58** (.08)
Observations	585,467
Uncensored Observations	1,085

Standard errors in parentheses

Two-tailed tests: ** p<0.01, * p<0.05

$peaceyears$, $(peaceyears)^2$, $(peaceyears)^3$ included in dispute initiation estimation stage

The key variable in our analysis is the first variable in the table— our measure of the target's cost of damaging its alliance relationship. Our theoretical model leads us to expect that as this variable increases, targets should be less likely to resist their challengers. This is

because as this variable increases, targets' allies will be able to restrain them if they choose and convince them to concede demands and avoid war. We make no assumption that allies always prefer to restrain their allies; whether they do depends on their values for the issues at stake and their costs of war. What our model does suggest, though, is that when allies do wish to restrain their partners, they will be more successful at doing so as the costs of damaging the alliance increases for the target. The coefficient associated with this variable reported in Table 2 supports this implication from our model. As targets' costs of damaging their alliances increase, they are less likely to resist demands of challengers.⁶²

This can be seen clearly in Figure 4, which graphs the predicted probability of target resistance given dispute initiation with 95% confidence intervals across different costs for the target damaging its alliance relationship. To generate this graph we apply the approach suggested by King, Tomz, and Wittenberg to the censored probit model.⁶³ The graph shows that when it is not very costly for the target to damage its alliance relationship, the target is more likely to resist a challenger's demand than when it is costly for the target to damage its alliance relationship. The predicted probability of target resistance given dispute initiation for the lowest cost is .55 [.41, .68] but as the costs of damaging an alliance increase, the predicted probability decreases to .41 [.31, .51] for the average level of costs and .37 [.27, .47] for the highest level of costs.⁶⁴ This results in a 10% ($= \frac{.04}{.41}$) decrease in the probability of target resistance given an increase in the costs of damaging an alliance from the average to the maximum and a 33% ($= \frac{.18}{.55}$) decrease in the probability of target resistance given an increase in the costs from the minimum to the maximum.

In addition to our key independent variable having the expected effect, many of the other variables in our censored probit model are consistent with our expectations and past

⁶²We have performed some additional robustness checks. First, since alliance poles are often thought to have been tighter during the Cold War, we analyzed our results for Cold War and non-Cold War samples separately and found that our results are consistent. We also included a dummy variable for the Cold War years and found no change in our interpretation of results. We controlled for the number of allies a target has, and found this variable to be statistically insignificant with no effect on our interpretation of the results. We analyzed the model on a sample that includes only targets that are members of one bilateral alliance (and are thus coordinating with only one ally) and found our hypothesis is supported in this smaller, less complicated sample. Finally, we analyzed the model dropping cases in which the challenger and target are members of a common defensive alliance, and again our interpretation of the results is unchanged.

⁶³King, Tomz, and Wittenberg 2000.

⁶⁴The values inside the brackets report the 95% confidence interval for each point estimate.

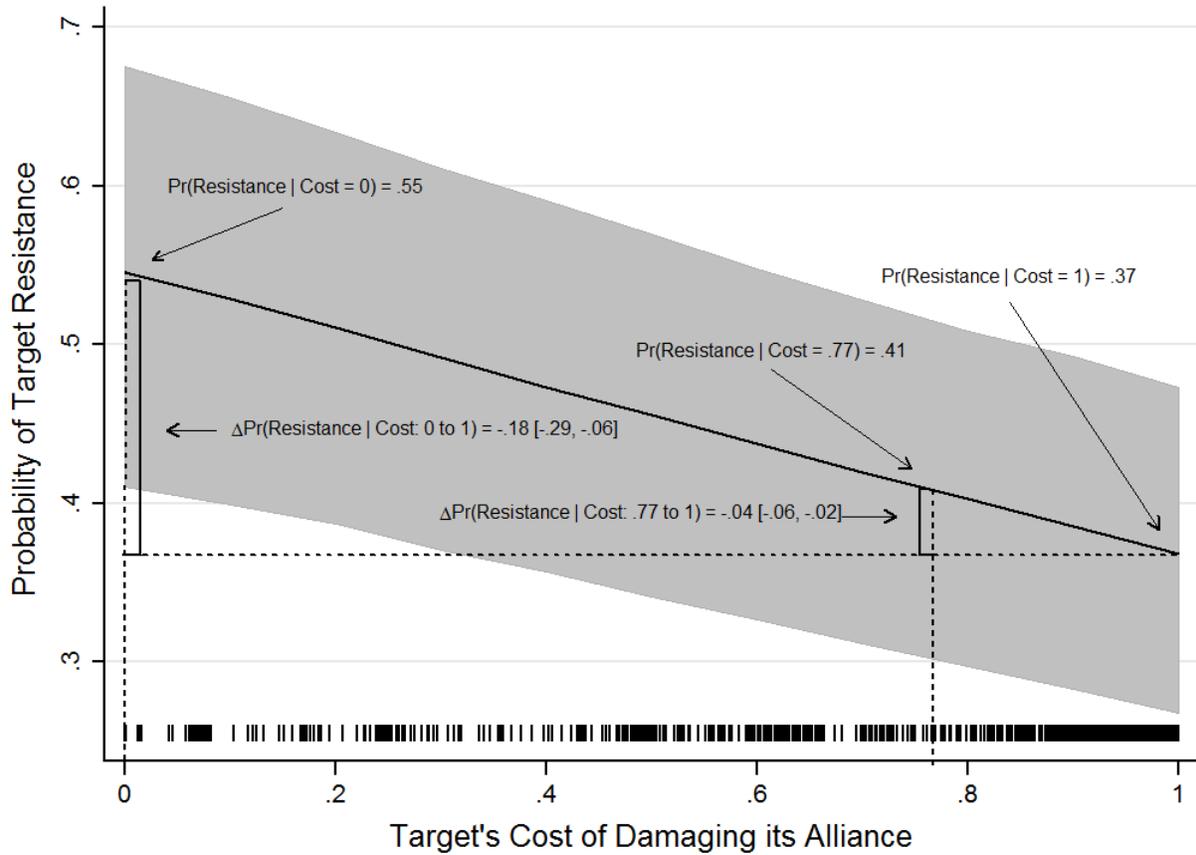


Figure 4: The Effect of the Target's Costs of Damaging its Alliance on Resistance

Notes. This figure graphs the predicted probability of target resistance given dispute initiation with 95% confidence intervals across different costs for the target damaging its alliance relationship. The x-axis identifies different values of the target's cost of damaging its alliance and the black ticks across the x-axis represent the distribution of this variable; the mean value is .77. The y-axis identifies the probability of the target resisting the challenger militarily. The black line represents our predictions for different values of the target's cost of damaging its alliance. The gray shade around the black line provides the 95% confidence interval for each prediction. These predictions are based on 1,000 simulated parameters from the censored probit model reported in Table 2 while the other variables are set at values for an average disputing directed dyad-year.

research. First, when the challenger has an applicable offense or neutrality pact it is more likely to initiate a dispute and the target is less likely to resist. Additionally, challengers are less likely to initiate disputes against targets that are further away and targets that have similar interests. Finally, the negative and significant correlation parameter, rho, suggests that there are important unmeasured factors that make dispute initiation more likely and target resistance less likely. This also suggests that the censored probit model is appropriate for these data.

Two variables that are not consistent with our expectations are our measures of joint

democracy and the challenger's probability of winning in a bilateral war. First, joint democracy is in the expected direction but does not reach conventional levels of statistical significance. Given that this variable is significant in other studies that use all dyad-years, our finding suggests that there may be a relationship between joint democracy and the presence of outside alliances, which is a condition we used to constrain our sample. However, even in our sample, if we employ a lower threshold for joint democracy (5 or higher on the Polity2 variable), it is statistically significant and negatively related to dispute initiation as expected.

Second, our measure of the challenger's probability of winning in a bilateral war is insignificant and in the opposite direction than we expected. We considered the possibility that the correlation between this variable and our key independent variable could be affecting our analysis, since both measures include the target's capabilities as a component. The correlation between these two variables is 0.41. When we estimate the model removing our key independent variable, the coefficient for the challenger's probability of winning remains statistically insignificant. In addition, controlling for the target's raw capabilities in our full model does not change our interpretation of the results. We conclude, therefore, that it is much more likely that this statistically insignificant coefficient is explained by the difficulty in measuring the challenger's probability of winning in our sample. Our sample consists of directed dyad-years where the target has outside alliances. Given that we are unable to measure the challenger's expectations about the level of allied participation in war, we are unable to fully capture the challenger's expected probability of winning either by examining the target's capabilities alone or by summing the target's capabilities along with its allies' capabilities. In sum, the fact that these two common variables from dispute initiation models (joint democracy and the challenger's probability of winning in a bilateral war) behave slightly differently in our sample of directed dyad-years involving targets with allies does not make us question the relationships we have observed about our primary variables of interest.

We readily acknowledge that our test does not capture some of the key elements of our theoretical model. For example, we are not able to measure the size of the challenger's demand or know for certain whether an ally advised a target to resist or concede in every case in our analysis. Yet, our theoretical model informs us that the basic relationship we test for here should exist. To the extent that the comparative static result derived from

the model is consistent with empirical evidence over a broad spatial-temporal domain, this increases our confidence in the empirical relevance of the model, even if we have not (and could not without an enormous new data collection project) tested other implications of the model in a large N context.

We already know that states with allies committed to defend them are less likely to be targeted in militarized disputes.⁶⁵ Past research has also demonstrated that targets with allies are less likely to resist disputes than targets without allies.⁶⁶ Here, we find that in the small sample of cases in which challengers initiate disputes against targets with allies, targets that depend most on their allies for their security (that is, targets with allies who enhance their military power significantly) are less likely to escalate disputes than those whose alliances may be less valuable to them. Taken together, these findings suggest that enhancing the security of states through powerful and valuable alliances can be a force for peace.

From a target's point of view, one might wonder whether a peace that involves concessions is desirable. Keep in mind, however, that often targets with allies concede demands that are smaller than the demands that a challenger would have made if the target did not have an ally. Therefore, the deterrence and restraining effects of alliances must be understood together. In general, powerful defensive alliances have a stabilizing effect that encourages maintenance of the status quo, but sometimes allies assist in producing peaceful transfers of benefits as well.

Conclusion

Creating institutions that effectively manage interstate conflict is a priority for policymakers. Recently scholars have invested great efforts in analyzing how factors like mediation, international courts, peacekeeping troops, conflict management treaties, and memberships in international organizations affect the initiation and resolution of interstate disputes. The hope is that this research will provide useful guidance for policymakers who wish to reduce bloodshed and encourage stability in the world.

⁶⁵See Leeds 2003; and Johnson and Leeds 2011.

⁶⁶Johnson and Leeds 2011.

In this regard, game theoretic crisis bargaining models have helped scholars focus on the factors that can cause war between challengers and targets. Conflict management scholars have taken insights from this literature to find ways in which international institutions and outside actors can change the incentives of disputants and help craft peaceful bargains without war. Many of these approaches have focused on neutral third players who can provide information or resolve commitment problems, two factors identified as causes of war by the crisis bargaining literature. Instead we bring in a third party, a military ally, with a stake in the conflict and the power to coerce.

We explicitly model the effects that a military ally has on crisis bargaining between a challenger and target. Since a military ally has an interest in the conflict and might intervene to assist the target, the existence of an ally can reduce the demand a challenger makes. At the same time, if the ally prefers a peaceful settlement to war given the demand the challenger has made, and if the target values the alliance, the ally may be able to encourage the target to settle the dispute peacefully in order to preserve good relations with the ally. Thus, the shadow of the alliance influences the bargaining stances of both challengers and targets, and our equilibrium results suggest that for a large range of parameter values that are likely to be common in the real world, the influence reduces the demands challengers make and decreases the probability that a target escalates a crisis. We find support for the latter claim in a large N empirical test.

Our research sheds new light on military alliances and highlights their role as conflict management devices. Scholars have long argued that alliances deter dispute initiation, but past game theoretic research also suggested that alliance commitments would embolden targets and make dispute escalation more likely. This line of reasoning overlooked the possibility that allies may have incentives to restrain their partners, a common insight in qualitative research. Explicitly modeling this possibility leads us to the conclusion that even if general deterrence has failed, defensive alliances to the target may prevent disputes from ending up in war rather than leading to escalation.

This research has important implications not only for conflict management, but also for alliance formation. For example, there is significant debate about whether further NATO expansion, especially to former Soviet states like Georgia, would increase the likelihood of

conflict with Russia. Our research suggests that in debating this question, policymakers should not only consider the possibility that Georgia would be emboldened by NATO membership, but also the possibility that a formal alliance commitment would increase the ability and willingness of NATO members to restrain Georgia and manage Russian-Georgian disputes short of war. Our research suggests that alliances can give outside states both an interest in peace and a credible punishment to impose upon an ally who chooses war.

Finally, we point to insights to be gained from moving beyond dyadic models of crisis bargaining. While certainly understanding the interactions between challengers and targets is key to predicting the outcomes of disputes and prescribing good policies to respond to conflicts, it is rarely the case that challengers and targets bargain in a vacuum. While allies are not the only relevant third parties, they are frequently important ones. In 46% of the militarized interstate disputes between 1816 and 2000, the target of the dispute had at least one ally committed to defend her in the event of conflict.⁶⁷ For those interested in managing and resolving interstate conflicts, understanding interactions among allies may be nearly as important as understanding the interactions between adversaries.

⁶⁷Johnson and Leeds 2011.

Appendix

Proposition 1 (Coordination Equilibrium)

Proof. In this proof we assume $(1-q)v_c - c_c > 0$, i.e., C is willing to fight against the alliance when its demand is rejected by both A and T , and thus $(1-p)v_c - c_c > 0$, i.e., C is willing to fight T alone (see the main text for a discussion of the condition). The condition means that C 's equilibrium strategy is fight whenever T rejects.

Next, we solve for T 's best response in the equilibrium. If A accepted a demand x , then T also accepts the demand if $(1-x)v_t \geq pv_t - c_t - k_t$, or

$$x \leq (1-p) + \frac{c_t + k_t}{v_t} \quad (4)$$

Let $x^{(1)} = (1-p) + \frac{c_t + k_t}{v_t}$. If A rejected x , then T accepts if $(1-x)v_t - k_t \geq qv_t - c_t$, or

$$x \leq (1-q) + \frac{c_t - k_t}{v_t}. \quad (5)$$

Let $x^{(2)} = (1-q) + \frac{c_t - k_t}{v_t}$. Note that $x^{(2)} < x^{(1)}$.

Now we turn to A and C 's best responses.

Case 1: If $x \leq x^{(2)}$, then T accepts x no matter what A does. So A compares $(1-x)v_a$ with $(1-x)v_a - k_a$, and its best response is accept. Moreover, given that A and T both accept any $x \leq x^{(2)}$, C 's optimal demand is $x^{(2)}$, receiving a payoff of $v_c(1-q + \frac{c_t - k_t}{v_t})$.

Case 2: if $x^{(2)} < x \leq x^{(1)}$, then T accepts if A accepts, and rejects if A rejects. Given T 's best response, A compares $(1-x)v_a$ with $qv_a - c_a$, and will accept if $(1-x)v_a \geq qv_a - c_a$. That is, A accepts x if

$$x \leq (1-q) + \frac{c_a}{v_a} \quad (6)$$

Let $x^{(3)} = (1-q) + \frac{c_a}{v_a}$.

- (1) Suppose $x^{(3)} < x^{(2)}$, i.e., $\frac{c_a}{v_a} < \frac{c_t - k_t}{v_t}$. Then $x^{(3)} < x$, and it will be rejected by A as well as by T . In this case, C gets $(1-q)v_c - c_c$.
- (2) Suppose $x^{(2)} \leq x^{(3)} \leq x^{(1)}$, i.e., $\frac{c_a}{v_a} \geq \frac{c_t - k_t}{v_t}$ and $\frac{c_a}{v_a} \leq \frac{c_t + k_t}{v_t} + q - p$. If $x \leq x^{(3)}$, then it will be accepted by A and T , and the best demand by C is $x^{(3)}$, which gives it a payoff of $v_c(1-q + \frac{c_a}{v_a})$. If $x > x^{(3)}$, then it will be rejected by A and T , and the payoff for C is $v_c(1-q) - c_c$. Clearly, C 's best response in this case is demanding $x^{(3)}$, receiving $v_c(1-q + \frac{c_a}{v_a})$.

- (3) Suppose $x^{(2)} < x^{(1)} < x^{(3)}$, i.e., $\frac{c_a}{v_a} > \frac{c_t+k_t}{v_t} + q - p$ (which implies $\frac{c_a}{v_a} \geq \frac{c_t-k_t}{v_t}$). Then $x < x^{(3)}$, and it will be accepted by A and T . In this case, the best demand C can make is $x^{(1)} = (1 - p) + \frac{c_t+k_t}{v_t}$, and its payoff is $v_c(1 - p + \frac{c_t+k_t}{v_t})$.

Case 3: If $x > x^{(1)}$, then T rejects no matter what A does. So A compares $pv_a - k_a$ with $qv_a - c_a$, and accepts x if $pv_a - k_a \geq qv_a - c_a$. That is, A accepts x if

$$\frac{c_a}{v_a} \geq q - p + \frac{k_a}{v_a} \quad (7)$$

Given A and T 's strategies, by making a demand $x > x^{(1)}$, C gets $(1 - p)v_c - c_c$ if $\frac{c_a}{v_a} \geq q - p + \frac{k_a}{v_a}$, and $(1 - q)v_c - c_c$ if $\frac{c_a}{v_a} < q - p + \frac{k_a}{v_a}$.

So far, we have found A 's best response given any x , and we also know C 's optimal demand for different regions of x . Next we find C 's *overall* optimal demand, so that we can characterize the equilibrium for the entire game. Moreover, we are interested in a coordination equilibrium for Proposition 1. In cases 1 and 3, the target does not condition its equilibrium strategy on what A does; therefore, there is no coordination equilibrium if C 's equilibrium demand is either $x^* \leq x^{(2)}$, or $x^* > x^{(1)}$. A coordination equilibrium can only exist if $x^{(2)} < x^* \leq x^{(1)}$ (case 2). So below we find out the conditions under which C 's optimal demand is some x^* such that $x^{(2)} < x^* \leq x^{(1)}$. Because C 's payoff depends on the location of $x^{(3)}$ for case 2, again we analyze three cases to find C 's optimal demand.

- (1) If $x^{(3)} < x^{(2)}$, i.e., $\frac{c_a}{v_a} < \frac{c_t-k_t}{v_t}$, then C 's payoff from demanding $x \in (x^{(2)}, x^{(1)})$ is $(1 - q)v_c - c_c$ because it will be rejected by both A and T . The strategy is strictly dominated by demanding $x = x^{(2)}$, so it is not an equilibrium strategy.
- (2) If $x^{(2)} \leq x^{(3)} \leq x^{(1)}$, i.e., $\frac{c_a}{v_a} \geq \frac{c_t-k_t}{v_t}$ and $\frac{c_a}{v_a} \leq \frac{c_t+k_t}{v_t} + q - p$, then C 's optimal demand for $x \in (x^{(2)}, x^{(1)})$ is $x^{(3)} = 1 - q + \frac{c_a}{v_a}$, which brings a payoff of $v_c x^{(3)} = v_c(1 - q + \frac{c_a}{v_a})$. It is easy to see that this payoff is higher than that from demanding $x \leq x^{(2)}$ (case 1). If $v_c x^{(3)}$ is also higher than the payoff from $x > x^{(1)}$ (case 3), then we will have found a coordination equilibrium. If $q - p > \frac{c_a - k_a}{v_a}$, then the payoff from $x > x^{(1)}$ is $(1 - q)v_c - c_c$, which is smaller than $v_c(1 - q + \frac{c_a}{v_a})$, so the coordination equilibrium exists. On the other hand, if $q - p \leq \frac{c_a - k_a}{v_a}$, then the payoff from $x > x^{(1)}$ is $(1 - p)v_c - c_c$. To have $v_c(1 - q + \frac{c_a}{v_a}) \geq (1 - p)v_c - c_c$, it must be that $q - p \leq \frac{c_a}{v_a} + \frac{c_c}{v_c}$, which is satisfied given that $q - p \leq \frac{c_a - k_a}{v_a}$. Therefore, there is indeed a unique coordination equilibrium when $x^{(2)} \leq x^{(3)} \leq x^{(1)}$. The equilibrium outcome is that C demands $x^{(3)} = 1 - q + \frac{c_a}{v_a}$ and it will be accepted by both A and T . The conditions for the equilibrium are: $\frac{c_a}{v_a} \geq \frac{c_t-k_t}{v_t}$ and $q - p \geq \frac{c_a}{v_a} - \frac{c_t+k_t}{v_t}$.

- (3) If $x^{(2)} < x^{(1)} < x^{(3)}$, i.e., $\frac{c_a}{v_a} > \frac{c_t+k_t}{v_t} + q - p$ (which implies $\frac{c_a}{v_a} \geq \frac{c_t-k_t}{v_t}$), then C 's optimal demand for $x \in (x^{(2)}, x^{(1)})$ is $x^{(1)} = (1 - p) + \frac{c_t+k_t}{v_t}$, which brings a payoff of $v_c x^{(1)}$. It strictly dominates demanding either $x \leq x^{(2)}$ and $x > x^{(1)}$, thus there is a unique coordination equilibrium for this case. The equilibrium outcome is that C demands $x^{(1)} = 1 - p + \frac{c_t+k_t}{v_t}$ and it will be accepted by both A and T .

To summarize the findings from (1)-(3), if $x^{(3)} < x^{(2)}$, i.e., $\frac{c_a}{v_a} < \frac{c_t-k_t}{v_t}$, then there is no coordination equilibrium; if $x^{(2)} \leq x^{(3)}$, i.e., $\frac{c_a}{v_a} \geq \frac{c_t-k_t}{v_t}$, then there is a unique coordination equilibrium, but the demand made by the challenger is different depending on a further condition: whether $\frac{c_a}{v_a} > \frac{c_t+k_t}{v_t} + q - p$. \square

Proposition 2 (Unconditional Appeasement Equilibrium)

Proof. From case 1 in the proof of Proposition 1, we know that if $x^{(2)}$ is demanded, then T will accept it no matter what A recommends. Given that T always accepts $x^{(2)}$, A will also accept $x^{(2)}$ because $(1 - x^{(2)})v_a > (1 - x^{(2)})v_a - k_a$. Moreover, we know that demanding $x^{(2)}$ is C 's optimal demand for the range of $x \leq x^{(2)}$, and it also strictly dominates any $x^{(2)} < x \leq x^{(1)}$ when $\frac{c_a}{v_a} < \frac{c_t-k_t}{v_t}$. What is left to check is whether C has an incentive to deviate to demanding some $x > x^{(1)}$. We only need to check two cases.

- (1) If $q - p \leq \frac{c_a - k_a}{v_a}$, then $x^{(2)}$ is C 's best response if $x^{(2)}v_c \geq (1 - p)v_c - c_c$, which implies $q - p \leq \frac{c_t - k_t}{v_t} + \frac{c_c}{v_c}$. This is always true given $q - p \leq \frac{c_a - k_a}{v_a}$ and $\frac{c_a}{v_a} < \frac{c_t - k_t}{v_t}$.
- (2) If $q - p > \frac{c_a - k_a}{v_a}$, then $x^{(2)}$ is C 's best response if $x^{(2)}v_c \geq (1 - q)v_c - c_c$, which implies $\frac{c_t - k_t}{v_t} > -\frac{c_c}{v_c}$. This is always true given $\frac{c_a}{v_a} < \frac{c_t - k_t}{v_t}$.

Proposition 3 (Restraint or Entrapment)

Proof. Suppose it is common knowledge that C only knows $c_t \sim F(c_t)$, where $F(c_t)$ is a uniform distribution on $[\underline{T}, \bar{T}]$ ($\bar{T} > \underline{T} > 0$), while A knows the value of c_t . In solving the game, we impose further restrictions on \underline{T} and \bar{T} so that the game is not trivial. Specifically, we require $x^{(2)} \geq 0$, which implies $c_t \geq k_t - (1 - q)v_t$; otherwise, T will never have an incentive to accept an offer when the ally recommends rejection. On the other hand, we require $x^{(1)} \leq 1$, which implies $c_t \leq pv_t - k_t$; otherwise, T will never have an incentive to reject a demand when the ally recommends acceptance. Without the two restrictions on c_t , the game will be trivial: the ally will have a total control of the target's decision. Thus, we assume $\underline{T} = k_t - (1 - q)v_t$ and $\bar{T} = pv_t - k_t$. \square

Now we turn to the solution of the game. We maintain the earlier assumption, $(1 - q)v_c - c_c > 0$, so that C will always fight if T rejects a demand. Given C 's strategy, T 's best response is the same as before, and consequently A 's best response is the same as those in the complete information game. To briefly recap, T always accepts $x \leq x^{(2)} = (1 - q) + \frac{c_t - k_t}{v_t}$, always rejects $x > x^{(1)} = (1 - p) + \frac{c_t + k_t}{v_t}$, and follows A 's advice for $x^{(2)} < x \leq x^{(1)}$. For A , if $x \leq x^{(2)}$, then A accepts; if $x^{(2)} < x \leq x^{(1)}$, then A accepts only if $x \leq x^{(3)} = (1 - q) + \frac{c_a}{v_a}$; if $x > x^{(1)}$, then A accepts only if $q - p \leq \frac{c_a - k_a}{v_a}$.

Suppose $\frac{c_a}{v_a} < q - p + \frac{k_a}{v_a}$. The condition implies that if the challenger demands $x > x^{(1)}$, then the ally will join the target to fight the challenger. The challenger's best response is a demand that maximizes its expected utility. Again, from the complete information game, we know that if $x \leq x^{(2)}$, then C gets $v_c x$; if $x^{(2)} < x \leq x^{(1)}$, then C 's payoff also depends on where $x^{(3)}$ locates in relation to $x^{(2)}$ and $x^{(1)}$. In particular, if $x^{(2)} < x^{(3)} < x^{(1)}$, then both A and T will accept if $x \leq x^{(3)}$, and both reject if $x > x^{(3)}$. Finally, if $x > x^{(1)}$, then C gets $(1 - p)v_c - c_c$ if $\frac{c_a}{v_a} \geq q - p + \frac{k_a}{v_a}$, and $(1 - q)v_c - c_c$ otherwise.

1. Suppose the challenger demands $x \leq x^{(3)}$. Then,

$$\begin{aligned} & Pr(x \leq x^{(2)})v_c x + Pr(x^{(2)} < x \leq x^{(1)})v_c x + Pr(x > x^{(1)})((1 - q)v_c - c_c) \\ &= Pr(x \leq x^{(1)})v_c x + Pr(x > x^{(1)})((1 - q)v_c - c_c) \\ &= Pr(c_t \geq (x + p - 1)v_t - k_t)v_c x + Pr(c_t < (x + p - 1)v_t - k_t)((1 - q)v_c - c_c) \\ &= \frac{\bar{T} - (x + p - 1)v_t + k_t}{\Delta} v_c x + \frac{(x + p - 1)v_t - k_t - \underline{T}}{\Delta} ((1 - q)v_c - c_c), \end{aligned}$$

where $\Delta = \bar{T} - \underline{T}$. The first order condition (FOC) is:

$$\frac{\bar{T} - (x + p - 1)v_t + k_t}{\Delta} v_c - \frac{v_t v_c x}{\Delta} + \frac{v_t}{\Delta} ((1 - q)v_c - c_c) = 0, \text{ which gives us the solution: } x_1^* = \frac{\bar{T}}{2v_t} - \frac{p}{2} + \frac{1}{2} + \frac{k_t}{2v_t} + \frac{1}{2v_c} ((1 - q)v_c - c_c). \text{ Substituting } \underline{T} = k_t - (1 - q)v_t \text{ and } \bar{T} = pv_t - k_t \text{ into the expression, we have } x_1^* = \frac{1}{2} + \frac{1}{2v_c} ((1 - q)v_c - c_c). \text{ If } x_1^* \text{ is an interior point, it must satisfy } x_1^* < x^{(3)}, \text{ i.e., } \frac{1}{2} + \frac{1}{2v_c} ((1 - q)v_c - c_c) < (1 - q) + \frac{c_a}{v_a}. \text{ Thus, the condition for } x_1^* \text{ to be an optimal interior solution is } \frac{c_a}{v_a} + \frac{c_c}{2v_c} > \frac{q}{2}.$$

2. Suppose the challenger demands $x > x^{(3)}$. Then,

$$\begin{aligned} & Pr(x \leq x^{(2)})v_c x + Pr(x^{(2)} < x \leq x^{(1)})((1 - q)v_c - c_c) + Pr(x > x^{(1)})((1 - q)v_c - c_c) \\ &= Pr(x \leq 1 - q + \frac{c_t - k_t}{v_t})v_c x + Pr(x > 1 - q + \frac{c_t - k_t}{v_t})((1 - q)v_c - c_c) \\ &= Pr(c_t \geq (x + q - 1)v_t + k_t)v_c x + Pr(c_t < (x + q - 1)v_t + k_t)((1 - q)v_c - c_c) \\ &= \frac{\bar{T} - (x + q - 1)v_t - k_t}{\Delta} v_c x + \frac{(x + q - 1)v_t + k_t - \underline{T}}{\Delta} ((1 - q)v_c - c_c). \end{aligned}$$

The FOC is $\frac{\bar{T} - (x + q - 1)v_t - k_t}{\Delta} v_c - \frac{v_t v_c x}{\Delta} + \frac{v_t}{\Delta} ((1 - q)v_c - c_c) = 0$, therefore, $x_1^{**} = \frac{\bar{T}}{2v_t} - \frac{q}{2} + \frac{1}{2} - \frac{k_t}{2v_t} + \frac{1}{2v_c} ((1 - q)v_c - c_c)$, or $x_1^{**} = \frac{1}{2} + \frac{1}{2v_c} ((1 - q)v_c - c_c) - \frac{k_t}{v_t} - \frac{q - p}{2}$. If x_1^{**} is an interior point, then $x_1^{**} > x^{(3)}$, i.e., $\frac{1}{2} + \frac{1}{2v_c} ((1 - q)v_c - c_c) - \frac{k_t}{v_t} - \frac{q - p}{2} > (1 - q) + \frac{c_a}{v_a}$. Thus, the condition for x_1^{**} to be an optimal interior solution is $\frac{c_a}{v_a} + \frac{k_t}{v_t} + \frac{c_c}{2v_c} < \frac{p}{2}$.

The conditions found in 1 and 2 cannot be satisfied simultaneously, therefore we can at most have one optimal point in one of the two ranges. We consider each case separately.

Suppose $\frac{c_a}{v_a} + \frac{c_c}{2v_c} > \frac{q}{2}$, then x_1^* is an interior optimal solution for $x < x^{(3)}$, while there is no interior solution for $x > x^{(3)}$. Since $x > x^{(3)}$ is half open and half closed, and the boundary point $x = 1$ is never optimal, $x_1^* = \frac{1}{2} + \frac{1}{2v_c}((1-q)v_c - c_c)$ is optimal for all $x \in [0, 1]$ for this case. Suppose $\frac{c_a}{v_a} + \frac{k_t}{v_t} + \frac{c_c}{2v_c} < \frac{p}{2}$, thus x_1^{**} is optimal interior solution for $x > x^{(3)}$, while no interior solution exists for $x \leq x^{(3)}$. We need to compare the boundary point $x^{(3)}$ with x_1^{**} . They bring the same payoff for C except when $x^{(3)} \in (x^{(2)}, x^{(1)})$, in which case demanding $x^{(3)}$ is strictly better because $[(1-q) + \frac{c_a}{v_a}]v_c > (1-q)v_c - c_c$. Hence, $x^{(3)}$ weakly dominates x_1^{**} and C will demand $x^{(3)}$ in equilibrium. If neither $\frac{c_a}{v_a} + \frac{c_c}{2v_c} > \frac{q}{2}$ nor $\frac{c_a}{v_a} + \frac{k_t}{v_t} + \frac{c_c}{2v_c} < \frac{p}{2}$ holds, then there is no interior solution for $x < x^{(3)}$ and $x > x^{(3)}$, and the boundary point between the two regions, $x^{(3)}$, is the optimal solution.

In sum, if $\frac{c_a}{v_a} + \frac{c_c}{2v_c} > \frac{q}{2}$, then C demands $x_1^* = \frac{1}{2} + \frac{1}{2v_c}((1-q)v_c - c_c)$; otherwise C demands $x^{(3)}$. In terms of the equilibrium outcome, if C 's equilibrium demand, whether it is $x^{(3)}$ or x_1^* , is greater than $x^{(1)}$, then there is *multilateral war* with the ally joining the target to fight the challenger; otherwise, the equilibrium outcome is peace due the ally's restraining effect. \square

Proposition 4 (Restraint or Abandonment)

Proof. The proof for the proposition is very similar to that for Proposition 3. Due to space considerations, the details are provided in the online appendix. \square

Proposition 5 (Probability of War)

Proof. In propositions 3 and 4, there are three types of optimal demand that C could make: $x^{(3)}$, x_1^* , and x_2^* . Moreover, we have established that war occurs if C 's equilibrium demand is greater than $x^{(1)}$. Note that k_t does not appear in any of the possible demands, but it enters positively in $x^{(1)}$; therefore, $x^{(1)}$ increases in k_t , which decreases the probability of war. As an example, suppose C demands $x^{(3)}$, then

$$\begin{aligned} Pr(\text{war}) &= Pr(x^{(3)} > x^{(1)}) = Pr(1 - q + \frac{c_a}{v_a} > 1 - p + \frac{c_t + k_t}{v_t}) \\ &= Pr(c_t < (\frac{c_a}{v_a} - q + p)v_t - k_t) \end{aligned}$$

Let $H = (\frac{c_a}{v_a} - q + p)v_t - k_t$, and $\frac{\partial H}{\partial k_t} = -1$.

The proof when the demand is x_1^* or x_2^* is similar. \square