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Allying for Peace: Treaty Obligations and Conflict between Allies

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We argue that certain provisions of alliance treaties can signal credible commitments to a peaceful relationship among members and establish institutional mechanisms that promote the settlement of disagreements through peaceful negotiation. Nonaggression, peaceful dispute settlement, military institutionalization, and permanent organization provisions should increase the duration of peace between alliance members; we test our hypotheses with a duration model. The analysis generally supports our expectations except that alliances that create permanent organizations, even those specifically established to arbitrate disagreements, are associated with shorter durations of peace. We conclude with some implications of our argument for the study of military alliances and international institutions more broadly.

Competing theoretical perspectives in the quantitative study of conflict among allies predict that intra-alliance conflict will be either more or less prevalent, with empirical evidence in support of each perspective. The inconsistency in both theory and evidence may be a consequence of interstate conflict scholars primarily focusing on the deterrent properties of alliances through capability aggregation. Snyder (1997), espousing a realist theory of alliance formation, explicitly states that the outward looking nature of alliances makes alliances different than other institutions. Such a perspective leaves little room for placing alliances within the larger set of international institutions as we think about international conflict processes. With attention focused on the external effects of alliances, it is not surprising that quantitative studies of alliances and conflict have only begun to examine the conflict process within alliances.

This gap in the alliance-conflict literature is particularly vexing because of the volume of theoretical and qualitative work in international relations that incorporates alliances into the broader institutional picture. Building upon the themes recognized by diplomatic historians such as Schroeder (1976), these scholars explicitly consider the formation and maintenance of international institutions (including alliances) to address security concerns with fellow members (e.g., Krebs 1999; Lake 1999; Weber 1997; Weitsman 2004). Therefore, a more complete understanding of the relationship between alliances and military conflict requires investigating whether or not alliances that form are successful at maintaining peace. We contribute to the literature on alliances and conflict by investigating the relationship between alliance treaty obligations and the duration of peace (i.e., the period of time between alliance formation and military conflict) between signatories. In other words, our argument concerns the extent to which alliances are effective at reducing military conflict once they are established.

As it turns out, many alliances incorporate institutional mechanisms designed to promote peace. We argue that states design alliances in part to regulate internal political dynamics and identify treaty provisions that should lengthen the duration of peace. Military alliances signal the parties’ commitment to peace and often establish institutions that reduce the transaction costs of communicating private information about capabilities or resolve. Specifically, four aspects of military alliances are likely to contribute to the

1Bearce, Flanagan, and Floros (2006) is a notable exception.


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duration of peace between the members: (1) provisions requiring states to refrain from aggressive action directed toward other members, (2) a commitment to resolving disagreements between the parties through peaceful dispute settlement mechanisms, (3) institutionalization of the military relationship between the allies, and (4) establishment of permanent organizations. We develop testable hypotheses concerning these characteristics and subject them to a systematic empirical test on all allied dyads from 1815 to 2001.

The analysis provides strong support for three out of four hypotheses. In particular, we find that promises of nonaggression, peaceful dispute settlement, and institutionalization of military affairs between allies all increase the duration of peace within an allied dyad (pair of allied states). Interestingly, we find that alliances formed in conjunction with permanent organizations and alliances that establish organizations whose purpose is to arbitrate disagreements among the members are quicker to experience a severe militarized conflict. These basic results are confirmed through additional analysis that controls for sample selection bias through the formation of the alliance.

Therefore, our research demonstrates that military alliances, when designed to signal a vow of peace and reveal information that alleviates uncertainty about military capabilities, are associated with prolonged periods of peace between the allies. However, international organizations and arbitration commissions, when created in conjunction with a military alliance, are correlated with shorter durations until serious militarized conflict among the allies. Policymakers that advocate forming international organizations to coordinate foreign policy among allies and students of an institutionalist perspective in international relations will find mixed support for their position within the evidence we present. International institutions are not always successful in managing interstate conflict; different institutional mechanisms appear to have different effects on the conflict process.

Our paper proceeds with a concise discussion of theoretical and empirical research about intra-alliance conflict. Then we present a theoretical argument about how military alliances can be designed to signal commitments to peace among the allies and increase the information exchange that bargaining models suggest is critical for resolving disagreements short of war. In the next section, we describe the research design to test our hypotheses about the influence of alliance characteristics on the duration of peace. Finally, we discuss the results of our statistical models and then conclude with some implications that this research has for the study of alliances and international institutions more broadly.

Conflict between Allies

Generally, the realist approach to international relations interprets military alliances and alignments as attempts to reduce uncertainty about the coalitions likely to form in the event of hostilities, and proponents of balance of power theory argue that alliances deter aggression on the part of potential adversaries (e.g., Morgenthau 1967; Waltz 1979). In contrast, others argue that military alliances provoke conflict by heightening the security dilemma that arises when states form alliances. By aggregating the individual capabilities of their members, alliances exacerbate the fears of nonallies. A potential adversary may counteract the initial alliance by forming a pact of its own and/or increasing military arms, which leaves all parties feeling less secure (e.g., Gibler and Vasquez 1998; Snyder 1984).

However, scholars also recognize the role that alliances play in managing relationships between the members (Cha 1999; Schweller 1998; Weitsman 2004). In other words, not all alliances are formed solely to increase the power/security of the allies against an external threat. One advantage of pondering the internal purpose of an alliance instead of the external purpose (i.e., the information it provides to nonallies) is the focus on alliances from an institutionalist perspective. Military alliances are in fact institutions, although they represent only one type of security institution (Keohane 1984; Hafendorf, Keohane, and Wallander 1999; Lake 1999; Weber 1997). An institutional perspective of alliances considers them a form of security cooperation that provides more autonomy in foreign policy decision making with relatively minimal maintenance costs. Some military alliances may even serve as regimes that crystallize norms and expectations of behavior among their members (Duffield 1992).

Weitsman (2004) incorporates institutionalist arguments into her theory about internal threats among allies. Conflicts of interest between states are a significant motivation for a type of alliance she calls “tethering” in which states “attempt to conciliate an
adversary through an alliance agreement” (21), and such an alliance is likely to decrease the chances of war by increasing transparency in the allies’ relationship. Similarly, Bearce, Flanagan, and Floros (2006) suggest that institutionalized alliances increase the knowledge that allies have about each other’s military capabilities. More information about an allies’ war-fighting capability should mitigate the fundamental problem of uncertainty that bargaining theories of conflict suggest lead to war (e.g., Fearon 1995; Morrow 1989; Reed 2003).

In contrast, Bueno de Mesquita (1981) suggests that his evidence that allies fight against one another more often than nonallies is the result of anticipated divergence away from the closeness in allies’ foreign policy positions, which contributes to a positive expected utility for war. However, the institutional nature of alliances does not guarantee restraint from militarized violence among the members. Among highly institutionalized, multilateral alliances the security provided to some members could paradoxically lead to a greater chance of intra-alliance conflict because neutralizing the external threat allows members to focus on secondary foreign policy concerns (perhaps involving allies), improves military capability to engage these secondary objectives, and provides an additional forum and leverage with which to challenge the status quo (Krebs 1999).

Unfortunately, the current empirical record does not provide students of international relations much in the way of a resolution to these competing claims. Both qualitative and quantitative studies of alliances and conflict provide inconsistent evidence. Tethering alliances were only successful in two of the three pre-World War I cases examined by Weitsman (2004), and even those that were successful “heightened uncertainty and insecurity in the system” (171). Analysis of the balance of power system in the late nineteenth century confirms that alliance members were not more likely to cooperate with one another than nonallies (Healy and Stein 1973; McDonald and Rosecrance 1985). While not formally allied, the relationship between Japan and South Korea may have suffered as a result of having the United States as a common ally in the post-WWII era (Cha 1999).

In addition, quantitative studies of militarized conflict often adopt the argument of Russett and Oneal (2001) by including alliances in their analysis to measure common security interests. The effect of a military alliance on the probability of a Militarized Interstate Dispute (MID) is often negative, but this result is by no means universal and may depend specifically upon model specification (e.g., Bremer 1992; Kimball 2006; Reed 2000). Bearce, Flanagan, and Floros (2006) suggest that military alliances have been utilized inappropriately as an indicator of “common interests” between allies and find that the effect of alliances on militarized conflict is conditional upon the balance of power between the allies; alliance agreements only deter conflict among allies as their power approaches parity.

Thus, one observes contrary arguments and inconsistent empirical evidence within scholarly research about the connection between military alliances and intra-alliance conflict. In the next section, we suggest a solution to this theoretical and empirical puzzle by examining the content of military alliance treaties.

Designing Military Alliances to Deter Intra-Alliance Military Conflict

Many scholars examine the deterrence properties of military alliances by assuming that allies promise military support to each other in the event of conflict (Morrow 1994, 2000; Smith 1995). While these approaches often consider military alliances equivalent documents in letter and spirit, we adopt the approach of more recent work that argues the specific content of alliance treaties matters (Bearce, Flanagan, and Floros 2006; Leeds 2003a; Leeds and Anac 2005; Leeds, Long, and Mitchell 2000; Weitsman 2004). Recognizing the multiple purposes of alliances is not only consistent with more recent international relations research, but conforms to historical interpretations of the purpose and function of many interstate alliances (Schroeder 1976) and coincides with arguments about the purposeful design of international institutions to achieve cooperation (Koremenos, Lipson, and Snidal 2001).4

4We adopt the definition of a military alliance specified by the Alliance Treaty Obligations and Provisions (ATOP) project. The ATOP project conceptualizes military alliances as “written agreements, signed by official representatives of at least two independent states, that include promises to aid a partner in the event of military conflict, to remain neutral in the event of conflict, to refrain from military conflict with one another, or to consult/cooperate in the event of international crises that create the potential for military conflict” (Leeds et al. 2002, 238).
Consequently, we assume the specific content of an alliance treaty corresponds to the goals that states wish to achieve by forming a cooperative security agreement with other states. Of course, maximizing the chances of deterring or defeating a potential foe can be one (or even the primary) purpose of a military alliance, and we agree that certain obligations (e.g., military assistance or neutrality) are an attempt to codify the behavior of alliance members in a written agreement that will achieve this purpose (Fearon 1997; Leeds 2003a). However, not all members of an alliance seek security from the relationship; some members may desire influence over the foreign policy of their allies in exchange for security guarantees (Morrow 1991; Weitsman 2004).

Therefore, we argue that certain obligations within military alliances may alleviate the security dilemma between allies, reducing the chances of intra-alliance conflict. Instead of inferring the motives of states in forming an agreement by some other criteria (e.g., public declarations upon signing, historical evaluations, highest level of commitment), we believe it is reasonable to presume that agreements are an accurate reflection of the goal(s) of the alliance.5

Whether or not the goal of a military alliance is achieved depends upon the partners fulfilling their expected duties under the circumstances of the agreement (Fearon 1997; Leeds 2003b; Leeds, Long, and Mitchell 2000). For an alliance to be successful at deterring intra-alliance conflict, we need information about the rate of success for nonviolent (e.g., negotiation) resolution of the allies’ disagreements. Lacking systematic information about the resolution of disagreements among alliance members, we suggest that observing the extent to which alliance agreements prolong peace among allies is a useful proxy. Each moment of time after an agreement is signed and ratified (if necessary) represents the “success” of the military alliance in preventing conflict between the members, so we consider the duration of peace between the alliance members after they enter into an agreement a suitable criterion for evaluating the efficacy of military alliances concerning conflict prevention. The arguments and hypotheses we develop in the next section concerning the provisions of military alliances are aligned with our argument that deterrence of intra-alliance conflict succeeds as peace endures between the members.

Commitments to Nonaggression and the Peaceful Settlement of Disputes

While alliance treaties should not be considered unconditional commitments of military support for allies in the event of conflict, alliances should be considered signals of the action (or inaction) that members will undertake in the future. Different signals are sent by the different types of commitments to which states adhere. Moreover, in formalizing their commitments states are sending costly signals about their future behavior; cooperation can occur between states without a formal agreement being negotiated, signed, and ratified (Fearon 1997; Morrow 2000; Smith 1995). Resources are consumed by the negotiations of an agreement, and the formation of an alliance requires that the state absorb some loss of autonomy in future foreign policy behavior (Altfeld 1984; Morrow 1987, 1991).

Consequently, we consider promises of nonaggressive behavior by alliance members to be costly signals of credible intentions about future behavior. When a government ties its hands with respect to future foreign policy behavior, it generates audience costs to be paid if and when it breaks that commitment (Fearon 1997). Audience costs arise through the actions of domestic constituencies that punish leaders for failing to honor their agreements or through the reluctance of foreign leaders to make agreements with an unreliable partner.

We interpret the inclusion of provisions in an alliance treaty that specify the refusal to use force, aid an ally’s enemies (external or internal), or interfere in the domestic political affairs of one’s alliance partners in the future as an attempt by leaders to signal their interest in maintaining peace between the allies.6 Leaders tie their hands in future foreign policy when they sign a military alliance requiring the members abstain from aggressive behavior toward other allies. In other words, provisions forbidding aggressive action included in military alliances should not be considered “cheap talk” by allies. If forming a nonaggression pact were completely costless, all states would freely enter, and violate, such contracts. Leaders should be reluctant to constrain their future behavior, especially if there are costs to pay for breaking a commitment.

5Leeds, Long, and Mitchell (2000) provide evidence that military alliance members rarely take actions beyond what is required in their agreements and fulfill their commitments about 75% of the time.

6So-called “nonaggression pacts” are neither ubiquitous nor unusual to find in military alliance treaties. In 648 alliances identified by the ATOP project spanning the years 1816–2003, 17% of the alliances identified do not include any other obligations besides a commitment to nonaggression.
Our first hypothesis predicts that commitments requiring states to reject aggressive behavior against alliance members will keep the peace because, ceteris paribus, breaking such an agreement is costly:

H1: Military alliances that include commitments to refrain from aggressive behavior will increase the duration of peace between the allies.

In addition, some military alliances explicitly require that any disputes arising between the alliance members will be settled through peaceful mechanisms. Provisions calling for nonviolent dispute resolution are not rare in alliance treaties. Within the ATOP alliance dataset, 119 (18%) of the treaties include provisions for the use of mediation or arbitration to adjudicate disputes between the alliance partners and 174 (28%) include promises to settle disputes exclusively by peaceful means.

Consequently, we suggest that proposals for peaceful methods of dispute resolution such as mediation or arbitration are an additional mechanism by which states can send costly signals about their intentions. Governments that form agreements requiring peaceful dispute settlement mechanisms should be likely to adhere to their commitments, which will prolong peace among the alliance members.

H2: Military alliances that include commitments by the members to resolve disputes peacefully will increase the duration of peace between the allies.

These characteristics of military alliances are mechanisms by which the parties formalize their intentions concerning future behavior toward one another. In the next section, we argue that two other characteristics of military alliances mitigate asymmetric information problems that may lead states to choose war over a negotiated settlement.

Military Institutionalization and Permanent Organizations

Bargaining models of war have provided a wealth of insights to scholars of international conflict. Fearon (1995) explains how rational actors can fail to negotiate resolutions to conflict even though such failure (i.e., war) is inefficient because both sides prefer to avoid the costs of war. While Fearon identifies issue indivisibilities, commitment problems, and private information about military capabilities or resolve as three mechanisms that could contribute to bargaining failures, it is the latter two problems that we argue specific characteristics of military alliances can influence. Private information about the true military capabilities or resolve of each state can be withheld by the actors in order to negotiate a more favorable deal. In other words, actors have incentives to misrepresent their real capabilities or resolve and cannot credibly communicate their situation. The uncertainty that is created by private information increases the difficulty of finding an acceptable solution, and thus increases the chance that states will resort to military force to resolve their differences (Reed 2003). Commitment problems arise when the parties have sufficient incentive to break their commitments after an agreement is reached. The prospect of a better bargaining position in the future, and thus a more favorable settlement, can derail an agreement. We argue that military alliances can alleviate the uncertainty of bargaining situations through two characteristics; military institutionalization and the creation of permanent organizations.

First, alliance treaties that establish greater levels of military cooperation may have the effect of revealing private information about each side’s capabilities in a military contest (Bearce, Flanagan, and Floros 2006; Weitsman 2004). By creating formal procedures and structures that require the militaries of each state to coordinate their activities, actors may indirectly alleviate the asymmetric information problem that bargaining theory suggests is critical in preventing states from creating a peaceful resolution. Military alliances that establish higher levels of military institutionalization should be more effective at revealing the private capabilities of their members than agreements that do not include these provisions. Alliance agreements that include provisions for communication between the armed services of the members, establish joint command structures for the militaries of the states, and/or create institutions whose purpose is to coordinate defense and security policies should mitigate informational problems that contribute to bargaining failures.

For example, Article V of the Molotov-Ribbentrop pact between Germany and the Soviet Union in 1939 declared that, “Should disputes or conflicts arise between the High Contracting Parties over problems of one kind or another, both parties shall settle these disputes or conflicts exclusively through friendly exchange of opinion or, if necessary, through the establishment of arbitration commissions” (Grenville 1987).

Powell demonstrates that issue indivisibilities “do not offer a distinct solution to the inefficiency puzzle and should really be seen as commitment problems” (2006, 170).
As a result, military alliances that incorporate more military institutionalization features should be more successful at prolonging peace. The third hypothesis we propose is:

**H3:** Military alliances that incorporate a higher degree of military institutionalization among the members will increase the duration of peace between the allies.

In addition to military institutionalization within alliance treaties, the creation of permanent organizations (with standing committees and bureaucracies) can also alleviate informational problems that lead to bargaining failures when uncertainty about the bargainers’ resolve or commitment problems are present. Military alliances that are created as part of or in conjunction with independent organizations that have a permanent bureaucracy can reduce asymmetric information problems. States institutionalize their relationships at the international level to promote cooperation when the risks from a failure to collaborate outweigh the costs (loss of autonomous decision making) of a commitment (Abbott and Snidal 2000; Lake 1999; Weber 1997). In other words, international organizations provide a cooperative structure that enhances the likelihood of acquiring the benefits of cooperation.

A permanent organization will provide information to the members about the extent to which each of them is abiding by the agreement and working toward the common goals of the organization. One feature of international institutions is that they centralize information-gathering authority, allowing cooperation through organizations to be more effective than decentralized bargaining by reducing the noise that increases uncertainty about states’ motives (Korenmenos, Lipson, and Snidal 2001). Organizations with a permanent presence also increase the interactions of the members, lengthening the shadow of the future and providing a forum where states can negotiate solutions to their differences using side payments (Axelrod 1984; Axelrod and Keohane 1985; Keohane 1984). Permanent organizations may even be able to act as guarantors of negotiated solutions to differences among the allies, alleviating commitment problems, or “act as information arbitrageurs, reducing the risk of war by revealing private information about strategic variables” (Boehmer, Gartzke, and Nordstrom 2004, 12).

The efficacy of international organizations in reducing conflict among their members could be contingent upon the institutional structure of the organization. Specifically, empirical research on international organizations shows that a higher degree of institutionalization in the organization reduces the chances of conflict between states (Boehmer, Gartzke, and Nordstrom 2004, 12). If organizations facilitate the negotiation of bargaining solutions, military alliances that establish permanent organizations with standing bureaucracies as part of the agreement should facilitate peace among the alliance members. We hypothesize that a standing organization with a permanent presence that is created as part of an alliance will have a similar effect on the alliance members’ ability to successfully maintain peace between one another:

**H4:** Military alliances that establish permanent organizations will increase the duration of peace between the allies.

Military institutionalization and permanent organizational structures can also alleviate the difficulty of managing conflicts among the allies. Therefore, we expect to find that these characteristics are associated with longer periods of peace among the members. The next section explains the empirical investigation that we conduct to evaluate our expectations.

### Research Design

The unit of analysis we observe to test our hypotheses is the dyad-year; a dyad consists of a pair of states that are both members of the interstate system according to the Correlates of War (COW) project. We restrict our sample to include only dyad-years in which the states were joint members of at least one military alliance in version 3.0 of the ATOP data set. Thus, while the data set covers the temporal range of 1816–2001, observations are only included in the sample if the states are allies (i.e., nonallied dyad years are excluded). Although states only need to be members of one alliance to be included in the sample, some dyads have multiple alliance relationships in force at the same point in time. Therefore, we construct our inde-

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9Alliances that establish organizations should be more likely to overcome the enforcement problems that plague international cooperation generally; a successful bargain over the creation of the organization has been already been reached (Fearon 1998).

10See Small and Singer (1982) for the criteria that determine system membership, an updated version of the data is provided by the Correlates of War Project (2005).
dependent variables about the nature of the allied dyad by utilizing all of the relevant obligations in force between the members, even if the provisions are contained in different alliance treaties.11 Thus, an ATOP alliance creates an allied dyad (or set of allied dyads if the alliance includes three or more members) by matching distinct pairwise combinations of states that are members of the alliance.12

Data and Variables

The dependent variable for our analysis records the length of time (in years) that the states are allied before the occurrence of a militarized conflict. Each episode is a set of allied-dyad years with the first year of the alliance recording the beginning of the episode and one of two events marking the end: (1) the allied status of the dyad ends, but no militarized conflict between the pair of states has occurred, or (2) failure occurs.13 We record a failure when a militarized conflict in which both sides use military force against each other occurs between the allies. Data on militarized conflicts is acquired from version 2.0 of the dyadic MID data (Maoz 2005). Once a dyadic MID in which both sides use force occurs, the allied dyad is dropped from the sample regardless of whether the alliance continues in force. If the alliance between the states ends, the same dyad can reenter the sample at a later time if the states enter a new military alliance. That is, the same dyad can be observed in multiple episodes if it is allied for a period of time, then unallied, and then allied again over the entire temporal range of the sample. For example, the history of the United Kingdom-France dyad from 1816 to 2001 consists of eight separate episodes, the first begins in 1827 when the states become allies and the last ends in 2001 when the sample ends with the United Kingdom and France remaining allies.

To test our hypotheses, we create independent variables from the detailed information about each military alliance’s characteristics provided in the ATOP data set (version 3.0).14 First, we create a variable that measures the prohibition of aggressive activity by one member against another. This variable, Nonaggression, combines three different characteristics of a military alliance: (1) whether the alliance includes an explicit obligation to refrain from the use of force to settle disputes, (2) whether the alliance forbids members from aiding the enemies (internal or external) of the other members, and (3) whether the allies promise not to interfere in the domestic affairs of one another. The Nonaggression variable is coded as the sum of the total number of these characteristics included in a military alliance treaty and ranges from a value of 0 (if none of the conditions hold) to 3 (if all three conditions hold). As the level of commitment to nonaggression increases, the duration between alliance formation and a MID in which both sides use military force should increase.

Second, we create a dichotomous variable coded 1 (0 otherwise) when the alliance includes a provision requiring the members to utilize dispute settlement procedures such as mediation or arbitration. The Mediate Disputes variable should lengthen the duration of peace after alliance formation.

Third, we measure the level of military institutionalization within the military alliance. Three provisions of military cooperation are recorded by the measure: (1) whether the alliance requires cooperation between the military forces of allies during peacetime, (2) whether the alliance establishes an integrated military command structure, and (3) whether the alliance requires that the parties establish an organization to facilitate military cooperation, such as a defense policy commission. This variable, Military Institutionalization, is a summary variable recording how many of

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11While we could also construct a data set that distinguishes between allied-dyads based on distinct alliance agreements between the same pairs of states (if multiple alliances are in force at the same time), we examine all alliances in force between a pair of states simultaneously because multiple alliance agreements between the same pair of states are not independent of one another.

12In some military alliances, members commit to different obligations toward different members. We utilize the ATOP dyad-year alliance data which adjusts multilateral alliances to account for differences in obligations made between individual members. See the ATOP codebook (Leeds 2005) for more information at http://atop.rice.edu/.

13The end of the alliance relationship within a dyad occurs when a dyad no longer has any alliance agreement in force and can occur through termination of all agreements or loss of system membership by one of the parties (Leeds 2005). These cases are right-censored along with each of the cases in which an alliance is still in force at the end of the time period for the sample, but where failure has not occurred.

14The data of Singer and Small (1966) and those that have updated their initial collection on alliances classify agreements in a mutually exclusive, three-category typology: Type I agreements are defense pacts, Type II agreements are neutrality/nonaggression pacts, and Type III agreements are ententes. Utilizing the Singer-Small typology would require that we ignore agreements that include provisions designed to promote peace among the members (if the agreement includes a nonaggression provision in addition to a defense provision) or include agreements that promise neutrality, which is different from nonaggression (Leeds 2005). Therefore, we believe that the more detailed information available in the ATOP project on alliances is a superior source of data for testing our argument.
these provisions are part of the alliance treaty and ranges from 0 (no military institutionalization) to 3 (peacetime cooperation between military forces, integrated command, and a military cooperation commission). We expect that greater degrees of military institutionalization will increase the duration between formation of the alliance and a serious MID within the dyad.

Finally, we code two dichotomous variables to capture the establishment of permanent organizations as part of the military alliance. The first, Organization, is coded 1 if the alliance establishes “a stand-alone organization with a permanent bureaucracy” (0 otherwise) and the second, Arbitration Commission, is coded 1 if the military alliance creates an organization for the sole purpose of resolving disputes between the members (Leeds 2005). Both of these independent variables should increase the duration of peace.

In addition to the variables that we utilize to test our hypotheses, we include standard control variables that are important correlates of militarized conflict. Specifically, we include a dichotomous measure, Shared Border, coded 1 for the existence of a shared land border between the states (0 otherwise). We expect states that share territorial borders will experience shorter durations of peace because conflict is more likely between territorial neighbors (Vasquez 1993). We also include two variables that capture the power of the states in the dyad. First, we code a dichotomous variable, Major Power, coded 1 (0 otherwise) if either of the states, or both, are considered major powers in the COW interstate system. The relative power of the states in the dyad is also included as a control variable, measured by a ratio of the larger state’s power to the combined power of both states in the dyad (Bennett and Stam 2000a). In our model, Relative Capabilities measures the relative power of the states in the dyad based on the COW dataset of national capabilities for each state (Singer, Bremer, and Stuckey 1972). Major powers have global interests and the ability to pursue those interests, so we expect that allies will experience a shorter duration of peace when major powers are part of the agreement. On the other hand, as the relative power in a dyad increases, the duration of peace should be longer because uncertainty over capabilities decreases (Reed 2003).

A number of scholars have demonstrated the propensity of democratic states to refrain from fighting with one another (e.g., Maoz and Russett 1993). We insert a dichotomous variable, Joint Democracy, coded 1 (0 otherwise) when the difference between the states’ democracy and autocracy scores is 6 or higher in the Polity IV dataset to account for differences in the conflict behavior of regime types (Marshall and Jaggers 2000). In addition to regime type similarity, common foreign policy interests among states should reduce the likelihood of militarized interstate conflict. We include a variable, Similarity, to measure the commonality of foreign policy interests within a dyad using the global, weighted Similarity score for the dyad (Signorino and Ritter 1999). Both Joint Democracy and Similarity should increase the duration of peace. We also control for whether or not an alliance is formed during wartime. Wartime Alliance is a dichotomous variable coded 1 (0 otherwise) if either state in the dyad is involved in a COW interstate war at the time the alliance is formed (Small and Singer 1982). Alliances formed during wartime may be designed for the purpose of prosecuting the immediate war and their duration may be shorter on average, ceteris paribus, if the end of a war coincides with the end of the alliance’s purpose. We expect Wartime Alliance to be associated with a shorter duration of peace.

**Statistical Estimation**

We estimate two statistical models to test our four hypotheses. The first model is estimated using the Cox proportional hazards technique. Because our sample includes information on an allied dyad over time (allied dyad-years), we are incorporating time-varying covariates in the analysis. The independent variables will change over time if a dyad is already allied and forms a military alliance with additional obligations that were not part of the original alliance relationship. Also, in a small number of alliances the parties terminate certain obligations while remaining party to the alliance as a whole. In these instances, our key independent variables may also change over time. In addition, variables like Shared Border, Major Power, Relative Capabilities, Joint Democracy, and Similarity may also vary over time.

Unlike the more commonly used Weibull model, the Cox proportional hazards model does not require that the functional form of the hazard rate be specified a priori. Instead, the hazard rate is determined by the model itself. Given that we have no strong theoretical expectation that the hazard rate should follow a Weibull, Exponential, or any other functional form, we feel the Cox model is more appropriate.
In the second model, we utilize an estimation technique that allows us to control for nonrandom sample selection bias because military allies may be less likely to experience serious militarized conflict (and thus, more likely to experience a longer duration between the formation of the agreement and a serious MID) than nonallies. If the data-generation process that leads to the formation of an alliance (or an alliance with particular characteristics) is nonrandom, sample selection may bias the coefficients of the duration model. The time until a serious dispute occurs between the parties may be longer not because of the alliances’ provisions, but because the parties to the alliance will experience a longer baseline duration until conflict due to their common interests in forming the alliance in the first place. Our primary purpose is to test the effects of different types of alliances on the duration of peace after the alliance is formed, so selection effects may not be critical to our empirical analysis. Nevertheless, we also estimate a two-stage model that controls for selection developed by Boehmke, Morey, and Shannon (2006).

In this second model, the first equation estimates the probability that an alliance will form between a pair of states. A random sample of 58,108 nonallied dyad-years is drawn from all dyads from 1816 to 2001 and combined with 3,056 allied dyad-years. The dependent variable is coded 1 in the initial year of the alliance (0 otherwise). To predict the formation of an alliance, we include variables measuring the similarity of the regime types of the states (Polity), whether or not one of the states in the dyad is a major power (Major Power), the geographic distance between the states in miles (Distance), the lag of the International Interaction Score (IIS) of the states, whether or not the states are strategic rivals with one another (Strategic Rivalry), the foreign policy similarity of the states (Similarity), the level of external threat facing the dyad (External Threat), and the number of allies of each state in the dyad (Allies i and Allies j). Other scholars have demonstrated that similarity in domestic regime type, major power status, and the level of external threat should increase the probability of alliance formation while the distance between states, a history of hostile interactions (IIS), and the number of allies for each state should decrease the probability of alliance formation (Gibler and Wolford 2006; Kimball 2006; Lai and Reiter 2000; Siverson and Emmons 1991). We include a variable for strategic rivalry to measure the extent to which states may be more likely to form an alliance in order to exercise control over their perceived enemies (Weitsman 2004).

Each of the independent variables from the first model is included in the second-stage duration of peace equation where the dependent variable is the time until a MID in which both allies use force against each other. Based on our initial analysis of the Cox proportional hazards model, we assume a Weibull distribution for the duration equation (i.e., the hazard rate is nonconstant over time). Unlike our initial model, the two-stage model does not allow for time-varying covariates, so the independent variables are constructed by combining the information across allied dyad-years into a single observation for the allied-dyad’s entire history. If an allied dyad experiences any of the provisions we designate to test our hypotheses during the time in which it is allied, the independent variable is coded positively to reflect that provision. We include the mean of the relative capabilities and similarity of foreign policy interests of the dyad in the duration equation to measure the average of these characteristics over the duration of the mili-

To elaborate, our argument specifies that differences across particular alliances will affect the duration until a serious MID occurs. The most appropriate correction for selection bias would guard against selection into alliances with the specific characteristics that are likely to lead to a longer peace. At this time we are not able to methodologically control for selection into particular types of military alliances or agreements that contain multiple specific provisions. Nevertheless, the selection-duration model developed by Boehmke, Morey, and Shannon (2006) does allow us to adjust the model for selection bias based on the formation of any alliance.

Our attempts to estimate the selection-duration model on the full sample of all dyads from 1816 to 2001 were unsuccessful. The model failed to converge on a set of coefficients that maximize the likelihood function. We drew a number of random samples of nonallied dyads and find consistent results across all samples. Thus, our results are not driven by the particular set of nonallied dyads that produced the model in Table 2.
Results

Table 1 presents the results of the Cox Proportional Hazards analysis. There are 3,695 episodes and 135 end in failure; a rate of conflict among allied-dyads that is approximately 3.5%. Before discussing the individual variables, we note that Schoenfeld residual tests show the null hypothesis of proportional hazards cannot be rejected. 19 This result holds for both the entire model and for each of the independent variables. Because each variable captured some mechanism that should help promote peace within an alliance, our theoretical expectations were that the presence of each key independent variable would decrease the hazard rate. The estimates in Table 1 provide direct support for Hypotheses 1 and 3; the variables for nonaggression and military institutionalization are negative and significant. Upon taking into account potential multicollinearity among the variables measuring alliance commitments, we also find support for Hypothesis 2. On the other hand, the coefficients of the variables that test Hypothesis 4 are in the opposite direction to our expectations.

Specifically, the results show that nonaggression commitments decrease the hazard rate among allied-dyads. Levy (1981) argues that nonaggression treaties, such as the Nazi-Soviet pact of 1939, are signed by countries that have a high chance of fighting one another (Levy 1981). While we account for alliance treaties that incorporate additional nonaggression promises beyond the obligation to refrain from using force against an ally, this result suggests that states incorporate nonaggression provisions into their alliance treaties and live up to the promise. Alliances that call for substantial integration of the militaries of each member also prolong the duration of peace between the allies. It appears as though alliances may gain in two ways from military institutionalization. The joining together of militaries could signal to an external rival that the allies are committed to one another, and our results show that institutionalization

19Specifically, none of the Schoenfeld scaled residuals achieve statistical significance for any of the independent variables and the global test produces a chi-square value of 6.81 (11 df, p < .81).

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**Table 1** Effects of Alliance Provisions and Obligations on Time Until First Dispute

<table>
<thead>
<tr>
<th>Cox Proportional Hazards Model with Time-Varying Covariates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coefficient</strong></td>
</tr>
<tr>
<td>Arbitration Commission</td>
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<tr>
<td>Organization</td>
</tr>
<tr>
<td>Non-aggression</td>
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<tr>
<td>Mediate Disputes</td>
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<tr>
<td>Military Institutionalization</td>
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<tr>
<td>Relative Capabilities</td>
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<td>Shared Border</td>
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<td>Joint Democracy</td>
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<tr>
<td>Similarity</td>
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<td>Wartime Alliance</td>
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<tr>
<td>Major Power</td>
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<tr>
<td>Number of Episodes</td>
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<tr>
<td>Number of Failures</td>
</tr>
<tr>
<td>Number of Observations</td>
</tr>
<tr>
<td>Chi-square</td>
</tr>
</tbody>
</table>

* = p < .05 in two-tailed tests of statistical significance.

Note: Cox proportional hazards model using the Breslow method for ties and clustered on episode.

Substantive effects (the change in the hazard rate) in the third column are calculated as $e^{b} - 1$ for a one unit change in dichotomous (or categorical) variables and $e^{(b \cdot sd)} - 1$ where sd is a change of one standard deviation in the Relative Capabilities and Similarity variables.
of the militaries makes it less likely that the allies will have disputes among themselves. Moreover, our findings represent a more general result than previous research on military institutionalization, which suggested that the effects of alliances on intra-alliance conflict were conditional on the balance of power between the allies (Bearce, Flanagan, and Floros 2006).

The standard error for the coefficient of the mediation variable is larger than allowable for conventional levels of statistical significance. However, the variables for mediation, organization, and nonaggression are correlated between .5 and .8 in our sample. Thus, multicollinearity may have produced inflated standard errors for the mediation variable (as well as for the organization variable, which we discuss below). Results of a joint F-test suggest that we can reject the null hypothesis that the coefficients for the mediation, organization, and nonaggression variables are all equal to zero (chi-square = 12.89, \( p < .01 \)). Given that the coefficient is negative, we conclude that alliances calling for problems to be solved via negotiation help promote peace between alliance members.

Interestingly, both of the variables used to test Hypothesis 4 have a relationship to the duration of peace that is counter to our expectations. As was mentioned above, the arbitration commission variable marks those alliances that call for a permanent (institutionalized) arbitration panel. Arbitration commission is statistically significant, but has a positive coefficient. The organization variable is positive but fails to achieve statistical significance, but as with the mediation variable, is shown to be contributing to the model via a joint F-test. These results are counterintuitive according to arguments that political institutions accompanying military alliances reduce the chances of intra-alliance conflict.20 Instead, Krebs’s (1999) realist-institutionalist argument about military alliances is partially supported by our results; some forms of institutionalization (permanent organizations) make militarized conflict among allies more likely in our sample.

We provide the substantive effects of alliance provisions on the duration of peace in the form of the percentage change in the hazard rate, also shown in Table 1. In addition to the substantive changes to the hazard rate, we also display the effects of the alliance characteristics that are statistically significant in Figures 1–3. The figures demonstrate the effects of alliance provisions by graphing the survivor functions for each value of the alliance variables when all other variables are set at their modal or mean values. The survivor function conveys the probability (on the y-axis) that a subject’s survival time (T) is equal to or greater than time (t) in years (on the x-axis). First, a one-unit change in the nonaggression variable (e.g., from no obligations concerning nonaggression to one obligation) results in a 37% decrease in the hazard rate. Further calculation shows that the addition of all three obligations barring aggressive behavior by allies results in a 75% decrease in the hazard rate. As Figure 1 demonstrates visually, including a greater number of nonaggression obligations increases the probability of survival for an allied dyad.

Second, a one-unit increase in the military institutionalization variable produces a 31% decrease in the hazard rate, we also display the effects of the alliance characteristics that are statistically significant in Figures 1–3. The figures demonstrate the effects of alliance provisions by graphing the survivor functions for each value of the alliance variables when all other variables are set at their modal or mean values. The survivor function conveys the probability (on the y-axis) that a subject’s survival time (T) is equal to or greater than time (t) in years (on the x-axis). First, a one-unit change in the nonaggression variable (e.g., from no obligations concerning nonaggression to one obligation) results in a 37% decrease in the hazard rate. Further calculation shows that the addition of all three obligations barring aggressive behavior by allies results in a 75% decrease in the hazard rate. As Figure 1 demonstrates visually, including a greater number of nonaggression obligations increases the probability of survival for an allied dyad.

Second, a one-unit increase in the military institutionalization variable produces a 31% decrease in
the hazard rate. Alliance partners that maximize this element of treaty design by including all three elements of military institutionalization experience, on average, a 67% decrease in the hazard rate. Figure 2 demonstrates the effects of increasing the number of military institutionalization obligations on the probability of survival by an allied dyad, with the probability of survival increasing with each additional provision.

Third, the arbitration commission variable has the largest substantive effect: those alliances that include a permanent arbitration commission experience an increase in the hazard rate of over 250%. In Figure 3, we plot the survival rates of allied dyads that include a provision creating an arbitration mechanism to resolve disputes between the members of the alliance versus those that eschew such an obligation. The influence of arbitration commissions has the most visually remarkable of all the alliance obligation variables, with the probability of survival falling below .8 just before 60 years when an arbitration commission is established by the agreement.

Finally, the mediation and organization variables affect the hazard rate in different directions; organization increases the hazard of failure (militarized conflict) for an allied dyad by 42%, but the mediate disputes variable decreases the hazard rate by about 30%.

Further, the effects of the control variables in Table 1 are in line with the quantitative literature on international conflict. Territorial contiguity has the strongest effect of all the variables in the model. A dyad with a shared border is often far more likely to experience military conflict than noncontiguous states and the results here support that notion. Our results show that dyads with a shared border experience a substantial increase in the hazard rate (almost 600%). The results are also consistent with the conflict literature for joint democracy and relative capabilities. For the former, two democratic allies will exhibit a 62% decrease in the hazard rate, while an increase of one standard deviation in the relative capabilities variable results in a 20% decrease in the hazard rate. Wartime alliances and alliance portfolio similarity have no significant effect on the duration of peace, but alliances that include at least one major power experience a hazard of failure 41% greater than alliances without major powers.

Table 2 contains estimates of a two-stage model with the second stage estimated as a duration process with a Weibull specification. The first stage of the model is meant to control for the possibility that alliances are not formed randomly. We based the selection stage on the alliance formation literature that argues alliances are more likely to form because of regime and foreign policy similarity, geographical proximity, the major power status of the members, the external threat faced by the dyad, and a desire to reduce conflict between the potential allies. Past hostility between states and a larger set of allies for each state should signal less likelihood of alliance formation. Although this is not the focus of our analysis, it is important to note that all the coefficients are significant and exhibit the correct signs except for the number of allies for each dyad member. The two variables capturing past conflict and involvement in a strategic rivalry have opposite signs. In support for the tethering argument made by Weitsman (2004), strategic rivals are more likely to form alliances, but those dyads with a dispute-prone past are less likely to ally with one another according to the coefficient for the International Interaction score.

With respect to the duration stage, the results are similar to those in Table 1. Thus, our findings are robust even when controlling for the possibility that the alliance dyads in the selection model are not a random sample. Hypotheses 1–3 are supported by the analysis; the variables measuring the presence of nonaggression and military institutionalization obligations are significant and negative. Once again, multicollinearity among the organization, nonaggression, and mediation variables is present within our sample (.7 or higher), and a joint F-test of the hypothesis that all three variables are equal to zero can be rejected (chi-square = 31.68, p < .000). Hypothesis 4

![Figure 3: Survivor Functions by Arbitration Commission](image-url)
again receives no support; Table 2 shows that both of the variables testing the organizational hypothesis are positive and significant, indicating that they increase the hazard rate. In the conclusion below, we review the contributions of the paper and assess the implications for international relations research more generally.

### Table 2  Effects of Alliance Obligations and Provisions on Time Until First Dispute with Selection on Alliance Formation

<table>
<thead>
<tr>
<th>Selection-Weibull Model with non-Time-Varying Covariates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td><strong>Time Until Dispute</strong></td>
</tr>
<tr>
<td>Independent Variables</td>
</tr>
<tr>
<td>Arbitration Commission</td>
</tr>
<tr>
<td>Organization</td>
</tr>
<tr>
<td>Non-aggression</td>
</tr>
<tr>
<td>Mediate Disputes</td>
</tr>
<tr>
<td>Military Institutionalization</td>
</tr>
<tr>
<td>Control Variables</td>
</tr>
<tr>
<td>Relative Capabilities</td>
</tr>
<tr>
<td>Major Power</td>
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<tr>
<td>Similarity</td>
</tr>
<tr>
<td>Shared Border</td>
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<tr>
<td>Joint Democracy</td>
</tr>
<tr>
<td>Wartime Alliance</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Number of Episodes</td>
</tr>
<tr>
<td>Number of Failures</td>
</tr>
<tr>
<td>ρ (Duration Dependence)</td>
</tr>
<tr>
<td><strong>Alliance Formation</strong></td>
</tr>
<tr>
<td>Regime Similarity</td>
</tr>
<tr>
<td>Major Power</td>
</tr>
<tr>
<td>Distance</td>
</tr>
<tr>
<td>Strategic Rivalry</td>
</tr>
<tr>
<td>International Interaction</td>
</tr>
<tr>
<td>Similarity</td>
</tr>
<tr>
<td>External Threat</td>
</tr>
<tr>
<td>Total Number of Allies i</td>
</tr>
<tr>
<td>Total Number of Allies j</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Number of Observations</td>
</tr>
<tr>
<td>Chi-square</td>
</tr>
<tr>
<td>ρ (Error Correlation)</td>
</tr>
</tbody>
</table>

* = p < .05; in two-tailed tests of statistical significance.

Note: Substantive effects (the change in the hazard rate) in the third column are calculated as e^β - 1 for a one unit change in dichotomous (or categorical) variables and e(β*sd) - 1 where sd is a change of one standard deviation in the Relative Capabilities or Similarity variables.

Our research supports the claim that military alliances have consequences beyond the traditional view of capability aggregation for deterrence (Krebs 1999; Weitman 2004). Four hypotheses are generated from our argument and tested to determine which aspects of alliance treaties hold up against the historical record on intra-alliance disputes; the results generally support the idea that conflicts between allies are less likely to emerge when mechanisms to signal peaceful intentions and increase transparency are incorporated into an alliance treaty. Our finding that military institutionalization increases the duration of peace supports evidence in previous studies (Bearce, Flanagan, and Floros 2006; Weitman 2004). However, organiza-
tional features—permanent arbitration commissions and links to political organizations—did not make alliances more effective in promoting peace between members. In fact, the association of organizations with shorter durations of peace runs counter to the results of Boehmer, Gartzke, and Nordstrom (2004). Future research into the process that leads states to form military alliances within, or as part of, standing organizations with permanent bureaucracies and organizations whose mission is dispute adjudication is clearly warranted. Perhaps the formation of these alliances is evidence that states are desperate to create international institutions to resolve their disagreements, but the underlying tension between the members overpowers the ability of organizations to generate peaceful settlements. Additional studies should attempt to identify whether all organizations are destined to fail at conflict prevention or the particular design of the organizations is inadequate.

Policymakers and scholars interested in the design of international institutions for security cooperation will observe that some “institutionalist” claims can be supported by our findings. Foreign policy experts may want to negotiate future alliances that include institutional features to prevent conflict, while maintaining appropriate skepticism about the capacity of permanent organizations to facilitate peace. For international relations scholars, the prevalence of military alliances in history and their structural variety present a significant opportunity to test arguments about institutional efficacy in an issue-area that has been traditionally considered the domain of realpolitik arguments. As Lake (1999) argues, the pursuit of national security involves trade-offs between various institutional arrangements, of which alliances are only one option available to states.

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References


