ALLIANCE FORMATION AND THE TIMING OF WAR INVOLVEMENT

CHRISTOPHER SPRECHER

Department of Political Science, Texas A&M University
College Station, Texas, USA

The linkages between alliance formation and the occurrence of war are not well understood in the international relations literature. In particular, previous studies have failed to identify the underlying rationale for why certain alliances form. In this paper I examine the underlying grand strategy goals of states within alliances. Testing the theory on the population of alliances from 1816-1945, I find that offensively-oriented alliances are most likely to become involved in wars. Underlying issues such as dispute involvement, territory and capabilities play a large role in determining when an alliance member will become embroiled in conflict.

That alliances are a central component of international politics can scarcely be debated. However, very little is understood regarding the impact that alliance membership has on a state’s involvement in armed conflict. In this paper I build upon previous studies (Gibler and Vasquez, 1998; Levy, 1981; Oren, 1990; Ostrom and Hoole, 1978; Sorokin, 1994; Smith, 1995, 1996; Wayman, 1990) that address the existence of alliances and the occurrence of war. Specifically, I theoretically address entry of a state into an alliance and the timing of war involvement by that state.

Rather than focus on the alliance as the unit of analysis, I examine the impact that alliance membership has on a state becoming embroiled in a war. As I outline below, I view alliances as one mechanism for states to further their foreign policy and grand strategic goals; therefore, studying alliance behavior necessitates an emphasis on state-centric behavior. I am interested in the impact that alliances have on a state’s conflict behavior; in other words, how do alliance characteristics impact a state’s war involvement? Do certain alliance types make states more war prone, or do alliances have a restraining effect on state involvement in war? This paper addresses these issues by examining the underlying rationale for why states ally, and what constraints the alliance places on state behavior. Alliances provide an ordering mechanism for understanding one aspect of a state’s foreign policy behavior.

Address correspondence to Christopher Sprecher, Department of Political Science, 2069 Allen Building, Texas A&M University, College Station, TX 77843-4348, USA. E-mail: sprecher@polisci.tamu.edu
In the next section of this paper I review the existing literature on alliances and war involvement. I then turn to linkages between alliance formation and state foreign policy goals within the context of a state’s grand strategy. The third section develops a theory and derives hypotheses concerning alliance formation and timing of war involvement. The theory explicitly incorporates state goals, constraints, and dissatisfaction with the status quo. The fourth section discusses the data and methodology used. The fifth section provides empirical results and conclusions.

LITERATURE

Early work conducted by Singer and Small (1966a, 1966b, 1968) was the first to systematically examine the relationship between alliance membership and the occurrence of war. Their initial findings suggested that alliances are particularly correlated with certain factors pertaining to war, including number of wars a state is involved in and the number of years of war a state is involved in.

In the aftermath of these initial studies, a number of other writings sought to clarify this relationship. In particular, much of the focus changed to an examination of alliance reliability; namely, under what conditions would states actually honor the pledges they had made to other states. However, different studies produce dramatically different results, depending upon how they conceptualize and treat alliance reliability. For example, Holsti, Hopmann, and Sullivan (1973), Singer and Small (1966a, 1966b, 1968) found that alliances tend to be honored, especially if their *casus foederis* is invoked. In contrast, Sabrosky (1980) finds that 73 percent of all alliances are unreliable, and Bueno de Mesquita (1981) finds that allies are as likely to attack each other as they are to come to each other’s aid. In addition, Siverson and King (1979, 1980) examined the effects that an existing alliance had on the expansion of war. They find that a state is five times more likely to become involved in a war if it is allied with one of the disputants than if the war involves states with which it has no alliance ties. And, within a context of extended immediate deterrence, Huth (1988, 1994, 1998) discerns that defenders who are allied with beleaguered states are more likely to militarily intervene when a crisis erupts.

Of special interest to this study are the findings of Ostrom and Hoole (1978). In an examination of defense alliances for the years 1816–1960, they discern that alliance formation leads to an increased probability of war involvement within three years, and then the probability decreases after four years. Additionally, Levy (1981) determines that alliance formation has a tendency to be followed within five years by war. To summarize these results, John Vasquez (1987, p. 119) notes “First, alliances do not prevent war or promote peace; instead they are associated with war, although they are probably not a cause of war. Second, the major consequence of alliances is to expand war once it has started; in the war alliances are important in accounting for the magnitude and severity of war.”

These contradictory findings are quite disconcerting when it comes to determining when an ally will honor its commitments, and the causal link between alliance membership and state war involvement is never fully established. I argue that much of the problem surrounding this question is that the reason for alliance formation has never been adequately addressed in these studies. If we are to understand how and
why alliances have an impact on state involvement in war in some way, then we need to theoretically specify why they exist in the first place.

A THEORY OF ALLIANCE FORMATION AND WAR INVOLVEMENT

If states are to pursue goals in the international system, then they require some sort of grand plan, or strategy. Grand strategy, as defined by Posen (1984, p. 13) as how a state can best ‘cause’ security for itself, is central to why states form alliances. Grand strategy differs from military strategy (Reiter and Meek, 1999; Stam, 1996) in that it refers to a state’s goals internationally, whereas military strategy refers more generally to how a state will act in order to attain victory in a conflict. In pursuing international goals, states can have three different strategies. They can have offensive or defensive grand strategies, or they can seek to manage behavior in a region, which mixes offensive and defensive aims. States, I argue, form alliances in order to pursue grand-strategic goals. These can be either offensive or defensive in nature, or they can help to manage issues between the members.

Offensive strategies, as advanced in the writings of Levite (1989, p. 61) are those that advocate the initiation of war, particularly in pursuit of territory. They seek to disrupt the international status quo in an attempt to alter it in a state’s favor. The best example of an alliance adopting this strategy is the Nazi-Soviet Non-Aggression Pact of 1939, in which both sides secretly agree to dismember Poland between themselves. Both states, despite their political differences, were interested in altering the international status quo in their favor.

Having discussed what grand strategy is, and the fact that states utilize either offensive or defensive goals to attain desires in the international system, I move now to a discussion of a theory that unites alliance formation with a state’s grand strategic goals. I maintain that a state’s involvement in war, as shaped by alliance membership, is a function of three issues: state goals; state dissatisfaction with the international status quo; and constraints placed upon a state’s actions, both by the alliance structure and the state’s domestic environment. More formally,

\[ \text{Alliance war involvement} = f (\text{state goals}; \text{state dissatisfaction}; \text{state constraints}). \]

I assume, first of all, that states join an alliance as an expression of their national grand strategic goals. This keeps in line with more traditional realist (and neorealist) interpretations of alliance formation that view them as forming in order to balance against power inequalities in the international system. (Morgenthau, 1985; Walt, 1987; Waltz, 1979). In a world characterized by an anarchic international system, states are responsible for their own survival. Thus, security is an important component of why alliances form. However, this is not necessarily the only reason. Why would a state such as the United States, with an overwhelming abundance of power capabilities, ally with a smaller state with limited capabilities? Such an arrangement would, in traditional views of alliances, only serve to entangle the United States, without providing any extra security for the more powerful state.

As Altfeld (1984) and Morrow (1991, 1993) describe it, a trade-off exists between forming an alliance and building up arms as a means of ameliorating security
concerns of a state. However, these are not the only concerns that a state has when it determines its alliance policies. Larger states do not necessarily acquire security benefits from smaller states. Smaller allies receive benefits in the form of increased security (through the policy of extended deterrence), while the larger ally receives autonomy benefits, in terms of military bases, or increased advantages in terms of trade.

If one looks at alliances from this angle, then one can surmise that they form for security purposes, as Lalman and Newman (1991) argue, or for benefits of trade (Gowa, 1994). Either way, I conceptualize states as forming alliances for the purpose of advancing national policy goals, which may be ideological, security related, or related to trade.

These policy goals, be they offensive or defensive in nature, drive alliance formation. While there is debate (Siverson and Emmonds, 1991; Simon and Gartzke, 1996) over what regime types ally with one another, I maintain that it is similarity of goals that drive states to aggregate resources and join together in alliances. NATO forms out of a common concern with communist aggression in Europe. Germany and the Soviet Union ally in 1939 under a common offensive desire for territorial expansion. These are all national goals that states gear their individual grand strategies toward, and alliances are a vehicle to propel these goals forward. This discussion of goals leads to my first set of hypotheses.

**Hypothesis 1.0 (Goals hypothesis)**
As the aggregate goals for an alliance become offensive (defensive), the likelihood that an alliance member will become involved in a war increases (decreases).

**Hypothesis 1.1**- states with specific offensive alliance goals will be more likely to become involved in a war.

**Hypothesis 1.2**- Alliances that seek territorial change as a goal will be more likely to have a member become involved in a war.

Secondly, I maintain that foreign policy decisions are not made in a vacuum. There exist constraints upon leaders regarding the choices they make. States are constrained by both domestic politics at home and by the nature of the alliance treaty they sign.

The decision to enter into an alliance is just merely one of the many policy choices that state leaders face on a regular basis. In many democratic societies, for example, foreign treaties are subject to some formal ratification process by the legislative branch. As these restrictions increase on an executive, he or she is more likely to face opposition to various policies that are proposed.

Alternatively, greater restrictions placed upon an executive indicate that greater amounts of bargaining may transpire in order to have a treaty of alliance ratified. As the United States discovered in 1954, there existed a fair amount of debate within the Senate regarding the exact nature of the treaty of alliance to be signed with Taiwan. Such domestic divisions do not exist within countries whose executives are less constrained, and signal (in some cases wrongly), a lack of resolve on the part of a defending state.

A second consideration is over the type of alliance that has been established between the members. Different types of alliance ties exist. I distinguish between de-
defense pacts, ententes, and nonaggression pacts. The defense pact is the tightest form of commitment, for it pledges military assistance in the case a signatory is attacked. Formalizing the alliance commitment in such a tight manner sends a strong signal that the alliance is determined to defend itself and its members.

Ententes and neutrality agreements, on the other hand, provide much more flexibility to their members. Neither alliance type requires military intervention, and may often merely require that signatories don’t fight with each other, aid an adversary, or consult in times of crisis. Hence, such arrangements among allies tend to grant individual states with more latitude in their foreign policy actions.6

Third, the number of members in a given alliance will have a tendency to make it more difficult to arrive at a decision to go to war. As any student of group behavior realizes, the larger the group, the more difficult it is to arrive at a decision (i.e., Riker, 1962). Hence, I maintain that states that are members of larger alliances, or have a larger number of alliance partners, should be less likely to become involved in conflictual relations with adversaries than states with fewer alliance partners. If alliance membership does constrain a state, then more partners should make this restraint more evident.

Fourth, the distribution of power and hence decision-making ability within an alliance is an important constraint. In a hierarchical alliance, the power is distributed unequally, and corresponds to what Morrow (1991, p. 914) terms an asymmetric alliance. In such a structure, the major power is generally assumed to be able to set the agenda for the alliance as a whole. In a nonhierarchical alliance (or symmetric one, to use Morrow’s distinction), power is distributed relatively equally among all the members. It stands to reason from this that if power is equally dispersed, then all members will have an equal share in making alliance decisions. Hence, it will be more difficult in a symmetric alliance for any one member to embroil its fellow compatriots in a war.

Hypothesis 2.0 (Constraints hypothesis)
States within alliances that face greater constraints on their decision-making processes will be less likely to become involved in war.
Hypothesis 2.1- Democratic members of alliances will be less likely to become involved in a war.
Hypothesis 2.2-Defense pacts are less likely to have a member become involved in a war.
Hypothesis 2.3-Ententes have a greater likelihood of one of their members becoming involved in a war.
Hypothesis 2.4- Neutrality pacts have a greater likelihood of one of their members becoming involved in a war.
Hypothesis 2.5- states with a greater number of alliance partners have a lesser likelihood of becoming involved in a war.
Hypothesis 2.6- States within symmetric alliances will be less war prone than their asymmetric counterparts.
Hypothesis 2.7- Great power states will be more war prone than their minor power counterparts.

Finally, we turn to a discussion of dissatisfaction with the international status quo. War arises between states due to differences of opinion and an inability to resolve
differences without resorting to force.\textsuperscript{7} In order to prepare for a possible conflict, states need to build up their military strength.

This scenario deals with the long-term resources that a state can draw upon over a long period of time. These capabilities can help a state prevail in the case of a drawn out conflict, or a war of attrition. In such instances, states must delve deep into the resources they have available, other than manpower. The percentage of global military capabilities that an alliance controls serves as an indicator of its preparedness for war. As an alliance increases its capabilities, one can surmise that it is preparing for hostilities.\textsuperscript{8}

Besides building up military capabilities, states can also express their dissatisfaction with the status quo by becoming involved in militarized disputes. More dispute involvement indicates on the part of an alliance indicates that its members are dissatisfied with the way the international order is structured.

Hypothesis 3.0 (Dissatisfaction hypothesis)
As dissatisfaction within an alliance with the international status quo increases, the likelihood of an alliance member becoming involved in a war increases.

Hypothesis 3.1- As a state increases its aggregate proportion of military capabilities; it is more likely to become involved in a war.

Hypothesis 3.2- As a state becomes more involved in militarized disputes on an annual basis; the more likely it is to become involved in a war.

**METHODOLOGY AND DATA**

To test the hypotheses outlined above, I utilize an econometric technique known as duration analysis.\textsuperscript{9} Duration modeling analyzes the underlying hazard rate within a process. The hazard rate is best described as the rate at which events terminate at a specified time \( t \), given that they have survived to time \( t \).

Duration analysis allows many different functional forms to be specified, including exponential, Gompertz, and Weibull specifications. In this analysis I use a Weibull specification. Such a specification allows me to include time-varying covariates (independent variables) and to test for hazard rates that change over time.

Formally, a Weibull specification is

\[
h(t) = \lambda p (\lambda t)^{p-1}[S(t)]
\]

where \( \lambda \) is a constant, \( S(t) \) is the survival function specifying the probability that a case will have duration greater than or equal to \( t \), and \( p \) is the duration parameter. If \( p>1 \), the distribution demonstrates positive duration dependence. If \( 0<p<1 \), then the distribution demonstrates negative duration dependence.

Covariates (independent variables) are added into the model as impacts upon the hazard rate and are specified as

\[
\lambda = e^{Rei}
\]
Using a Weibull specification allows me to include independent variables that vary over time. In the theory specified above, variables such as power, territorial claims, or the democratic nature of a state often differ on an annual basis. Since the theory predicts that these variables will have an influence on the involvement of an alliance member in war over time, it is imperative that their dynamic properties be captured. A Weibull specification is flexible enough to capture these dynamics and analyze the impact that they have. The temporal domain of the data set is 1815–1945.

The Set of Alliances and Wars

Having developed the theoretical conditions under which we would expect states within an alliance to become involved in a war, I now turn to a description of the data used to test the hypotheses enumerated above.

The first step in the analysis is to determine the set of alliances to be examined. Using data from the Alliance Treaty and Obligations Project (ATOP) (Leeds, Long, and Mitchell, 2000), I have identified the population of alliances for the time period spanning 1815–1945. According to the ATOP data, there are 172 alliances during this time period. Because the question of interest is time between alliance formation and state involvement in war, I have omitted wartime alliances from this population.

Next, I had to determine a unit of analysis. Because the theory above is interested in the impact that alliance membership has on a state’s behavior, I examine the state as my central unit of analysis. There exist in the analysis below 3901 state years. Again the data is from ATOP (Leeds, Long, and Mitchell, 2000).

Since the question and theory examines alliance formation and the timing of war involvement by a member of the alliance, it is appropriate to measure the variables of interest on an annual basis. If we fail to do so, then we can lose important information, as variables such as capabilities, interests, or regime types can and do change. Thus, in the alliances that are examined in this paper, I measure each variable on an annual basis. This approach is known as the time-varying covariates approach, and it allows us to analyze the dynamic, nonlinear properties of the modeling process that is so central to hazard analysis.

Dependent Variable

The dependent variable in this analysis is duration. I measure duration as the number of years that pass once the alliance has been formed, until a state becomes involved in a war, or the alliance ends. In the cases that involve alliances continuing past 1945, the data are censored. Censoring occurs in this dataset if the alliance has met two criteria. First of all, it has not become involved in a war after its formation and the alliance continues after 1945. Since my dataset ends in 1945, the alliances that continue to exist after this date are censored.

Once a state becomes embroiled in a war, I code this as a failure (in duration modeling terminology) and note how long the duration between alliance formation and the onset of war endured. It should be noted that I am working with single failures, not multiple ones. Hence, I do not analyze the alliance’s continued duration beyond the point of first war involvement. Hence, different alliances can have differ-
ent members involved in different wars.

To determine whether or not a state was involved in a war I use the Correlates of War (COW) interstate war dataset. Between 1815 and 1945 there were a total of 55 interstate wars (Sarkees, 2000).

Independent Variables

Below are descriptions of how the various independent variables used in the duration analysis were coded.11

Goals

Below I outline how I measured the two variables that represent state goals in the models tested below.

Offensive Goals

I coded first a simple variable in an attempt to capture the goals underlying the reason for the state’s rationale for joining an alliance. This is simply a dichotomous measure of whether the alliance is offensive or defensive in nature. I code this variable offensive as a 1 if the alliance has offensive goals and 0 otherwise. Data for this variable came from the ATOP data (Leeds, Long, and Mitchell, 2000).

Territory

In constructing this variable I coded territory as a 1 if a state was either interested in territorial expansion or in protecting territorial sovereignty. Of special interest was whether the state made a territorial claim explicit in its foreign policy goals. In addition to the sources listed above concerning alliance goals, data was taken from Gibler (1996) and Tir, Schafer, Diehl, and Goertz (1998).

Constraints

Below are the measures I devised to measure constraints placed upon states within an alliance.

Type of Alliance

I code three separate dichotomous variables for type of alliance. Defense pact is coded as a 1 if the alliance is a defense pact, and 0 if otherwise. Entente is coded as a 1 if the alliance is an entente, and 0 if otherwise. Nonaggression pact is coded as a 1 if the alliance is a nonaggression/neutrality agreement, and 0 if otherwise. All of these data come from Singer and Small (1966a, 1966b) and Leeds, Long, and Mitchell, 2000).

Democratic level of the state

I code whether a state is democratic or not using the Polity IV data (Jaggers and Gurr, 1995). I code the democracy-autocracy score (Maoz and Russett, 1993) for each state. This can range from –10 (least democratic) to +10 (most democratic). Values above +6 are coded as democratic.

Number of Members

On an annual basis I counted the number of members that belonged to a given
alliance. Data is taken from Bennett (1997) and Leeds et al. (2000).

**Alliance Symmetry**

An alliance is coded 1 if it is a symmetric alliance and 0 if it is asymmetric. A symmetric alliance is one in which the members are all of roughly equal power, whereas an asymmetric alliance is one in which power is distributed hierarchically. Data is taken from Bennett (1997).

**Dissatisfaction**

Below are the two measures used to determine alliance satisfaction with the international status quo.

**MID Involvement**

For any given year, I count the total number of disputes that each alliance member is involved in. According to Gochman and Maoz, (1984, p. 587; see also Jones, Bremer, and Singer, 1997), “a militarized international dispute is a set of interactions between or among states involving threats to use military force, displays of military force, or actual use of military force.”

**Capabilities**

I utilize the Correlates of War’s measure of national capabilities (CINC) (Singer, Bremer, and Stuckey, 1972) in constructing the long-term balance of military capabilities. I calculate the CINC score for each state in the alliance.

**EMPIRICAL RESULTS**

Table 1 present the Weibull regression results of alliance formation and war involvement. I estimated three different sets of models. Model 1 concerns itself with defense pacts, Model 2 substitutes ententes for defense pacts, and Model 3 examines the impact of nonaggression pacts on war involvement.

I organize the analyses in this manner for two reasons. First of all, it allows the impact of alliance goals to be tested in a systematic fashion. Secondly, it allows the results to be compared to previous studies that examine alliances and war, since most of these works attempted to distinguish the impact on war involvement that the different classes of alliances had.

At first glance, the empirical models predict alliance involvement in war quite well. It should be noted in hazard analysis that positive coefficients indicate longer duration, and negative coefficients indicate shorter duration. In more substantive terms, this means that variables with negative coefficients are more likely to influence a state becoming involved in a war. Positive coefficients indicate a greater propensity for avoiding war. In the following paragraphs I summarize the findings, and in the next section provide detailed analysis and implications of the results.

As first cut at analysis I examine the three models regarding statistical significance and direction of the coefficients. Across all three models the coefficients are in the predicted direction, but there exists some interesting results in the significance of some of the coefficients. As can be seen, alliance type (defense pact, entente, nonaggression pact) is not significant in any of the three models. It is interesting that the
more “traditional” means of classifying alliances are not significant. However, if we classify them as offensive or defensive, we find that the variable is significant and in the hypothesized direction. This is an interesting contrast, especially since so much of the alliance literature through the years has focused on the traditional categorization of alliance types, rather than examining the specific goals of the states that form alliances.

If we examine the other goal variable, territory, we see that territorial concerns do increase the likelihood of war on the part of a state, as does dispute involvement. These are consistent with more realist views on alliances and war involvement. National capabilities also have an impact on war involvement, which is not surprising.

### Table 1

**Duration Results of Alliance Formation and State War Involvement**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1 (defense pacts)</th>
<th>Model 2 (ententes)</th>
<th>Model 3 (non-aggression pacts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>5.507 (.3532)***</td>
<td>5.4065 (.3164)***</td>
<td>5.9458 (.5869)***</td>
</tr>
<tr>
<td>Capabilities</td>
<td>-2.6255 (.9369)***</td>
<td>-2.7119 (.8969)***</td>
<td>-3.0849 (1.174)***</td>
</tr>
<tr>
<td>MID Involvement</td>
<td>-.0791 (.0273)***</td>
<td>-.0771 (.0279)***</td>
<td>-.0892 (.0304)***</td>
</tr>
<tr>
<td>Democracy</td>
<td>.1038 (.0211)***</td>
<td>.1121 (.02100)***</td>
<td>.1186 (.0252)***</td>
</tr>
<tr>
<td>Symmetric</td>
<td>.7030 (.2805)***</td>
<td>.8204 (.2543)***</td>
<td>.5577 (.3501)</td>
</tr>
<tr>
<td>Offensive Goals</td>
<td>2.4133 (.5229)***</td>
<td>2.3892 (.5408)***</td>
<td>2.296 (.5877)***</td>
</tr>
<tr>
<td>Number of Members</td>
<td>-.0707 (.0451)</td>
<td>-.0674 (.0378)*</td>
<td>-.0799 (.0409)**</td>
</tr>
<tr>
<td>Defense Pact</td>
<td>-.0452 (.3496)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entente</td>
<td></td>
<td>.7338 (.7191)</td>
<td></td>
</tr>
<tr>
<td>Non-Aggression</td>
<td></td>
<td></td>
<td>-.4619 (.3339)</td>
</tr>
<tr>
<td>Pact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Territory</td>
<td>-.4888 (.2892)**</td>
<td>-.4996 (.2332)**</td>
<td>-.5431 (.2263)***</td>
</tr>
<tr>
<td>p</td>
<td>.4783 (.2243)***</td>
<td>.4799 (.2274)***</td>
<td>.4388 (.2211)**</td>
</tr>
<tr>
<td>N</td>
<td>3901</td>
<td>3901</td>
<td>3901</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>-44.399</td>
<td>-44.399</td>
<td>-44.197</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses accounting for clustering by state. *** p<.01; ** p<.05; *p<.10. All tests are one-tailed.
What is interesting is the impact of the constraint variables, democracy, symmetry and number of members. Democracy tends to have a pacifying impact regardless of alliance type, and this is consistent with the literature regarding regime type and war. What is more interesting is that alliance symmetry matters for defense pacts and ententes, but is insignificant when it comes to nonaggression pacts. This could be due to the nature of nonaggression pacts, which pledge nonintervention rather than coordination among members in times of war. Number of members also has a differing impact upon alliance types. It does not appear to matter in the case of defense pact, but is very statistically significant in ententes and non-aggression pacts. This is interesting, since defense pacts tend to be the type of organization that most people associate with an alliance, and the most common type of alliance structure.

**ANALYSIS AND IMPLICATIONS**

Significance and direction are useful in deciphering empirical results, but of greater interest is the impact that individual variables have on the likelihood of war. In this section I address model specification and marginal effects of each variable on the likelihood of an alliance member becoming involved in a war.

The results of the duration analysis suggest, in all model specifications, that a Weibull specification is correct. Analysis of the p parameter indicates that the models are properly specified, and the Weibull is not over fitting the data in any manner. If p had been greater than 1, there would have been a problem with positive duration dependence. Given that 0<p<1, we can maintain that alliance pacificity become institutionalized, i.e., there is negative duration dependence. In other words, the likelihood of state involvement in war decreases over time. This lends support to the findings of Ostrom and Hoole (1978), who suggest that in the initial time period after alliance formation, an alliance member is more likely to become involved in a war, and then the probability decreases dramatically after five years.

Interpreting the implications of the models is a bit more difficult. A Weibull specification is nonlinear, so we cannot simply assume that a one-unit change in an independent variable leads to a specific change in the dependent variable. To better interpret the coefficients’ impact on the timing of war involvement by an alliance member; I calculate the marginal impacts of each independent variable on duration. Table 2 presents the marginal effects of the independent variables on the three models outlined in Table 1.

If we examine the role of capabilities first, we see that across different categories of alliances they have the same impact. Greater military capabilities indicate a greater probability of a alliance member becoming involved in a war. Ententes, surprisingly, are impacted most by increasing capabilities. If the capability measure for ententes is fluctuated from its empirical low to its empirical high, the mean duration of time between the entente’s formation and state involvement in war decreases by 3.6 years. Even in the case of defense pacts and nonaggression pacts, the duration of time between alliance formation and war decreases by one full year. This is in accordance with the hypothesis presented above, suggesting that increased national capabilities are a sign of dissatisfaction with the international system.

A second variable that has a major impact on alliance member involvement in war
is dispute involvement. Again, ententes seem to fare the worst for involvement in wars, with the likelihood of war involvement by a state in an entente increasing by 6.3 years after formation given dispute involvement on an annual basis. Defense pacts and nonaggression pacts are not immune from this phenomenon, however, as the marginal effects demonstrate. From the analysis it can be seen that the hypothesis stating that increased dispute involvement leads to greater likelihood of war involvement on the part of an alliance is borne out.

In contrast to the above two variables, increasing the democracy level of an alliance member substantially increases the likelihood that the state stays out of wars. In both defense pacts and ententes the average is close to four years beyond the mean duration. In nonaggression pacts, by contrast, the impact is still positive, but increases the likelihood of staying out of war by six months. This lends credence to many of the suggestions that state that democracies are less war prone and more constrained in their foreign policy behavior.

Alliance symmetry is a variable that provides mixed findings, as the empirical

<table>
<thead>
<tr>
<th>Variable</th>
<th>Defense Pacts</th>
<th>Ententes</th>
<th>Non-Aggression Pacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>9.62 years (base case-mean duration)</td>
<td>10.75 years (base case-mean duration)</td>
<td>8.64 years (base case-mean duration)</td>
</tr>
<tr>
<td>Capabilities</td>
<td>-.99</td>
<td>-3.69</td>
<td>-1.09</td>
</tr>
<tr>
<td>MID Involvement</td>
<td>-2.86</td>
<td>-6.34</td>
<td>-3.8</td>
</tr>
<tr>
<td>Democracy</td>
<td>3.80</td>
<td>3.92</td>
<td>.55</td>
</tr>
<tr>
<td>Symmetric</td>
<td>1.82</td>
<td>-.83</td>
<td>1.43</td>
</tr>
<tr>
<td>Offensive Goals</td>
<td>-7.36</td>
<td>-1.14</td>
<td>-1.63</td>
</tr>
<tr>
<td>Number of Members</td>
<td>-2.56</td>
<td>-1.04</td>
<td>.99</td>
</tr>
<tr>
<td>Defense Pact</td>
<td>-1.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entente</td>
<td></td>
<td>-3.61</td>
<td></td>
</tr>
<tr>
<td>Non-Aggression Pact</td>
<td></td>
<td></td>
<td>3.91</td>
</tr>
<tr>
<td>Territory</td>
<td>-1.49</td>
<td>.89</td>
<td>-5.64</td>
</tr>
</tbody>
</table>
results indicated. Symmetric alliance members tend to avoid war for longer periods of time in defense pacts and nonaggression pacts (1.8 years and 1.4 years month increases in mean duration, respectively). However, alliance symmetry has a negative impact when it comes to entente members, increasing the probability of war involvement by almost a full year. Additionally, the number of alliance partners increases the likelihood of war by 2.5 years and 1 year respectively in defense pacts and ententes, but has a pacifying effect in nonaggression pacts. This implies that alliances are not necessarily “tools of management” as Schroeder (1976) has suggested, but that they are vehicles that promote war-proneness of their members (Oren, 1990).

Finally, the issue of territory emerges. In defense pacts and nonaggression pacts it is significantly related to war involvement, but in ententes it is the opposite. An issue that emerges from all of this analysis suggests that ententes behave differently than do defense pacts and ententes. Kann (1976) makes this argument as well, and suggests that ententes may truly not be considered alliances in the classic sense. The evidence presented here definitely leaves room for future speculation on this matter.

CONCLUSION

This paper has examined alliance formation and war involvement from a more theoretically focused standpoint, and with advanced modeling techniques. It suggests, first of all, that previous studies of alliance formation and war are correct in their assessments, but that there is a grave amount of fluctuation across categories of alliance types. It may behoove alliance researchers to step back and reexamine what is exactly meant by an alliance, and focus more on the goals of the alliance, rather than just lumping them into one of three distinct categories. Of importance here, however, is that it is a combination of issues (dissatisfaction, constraints, goals) that motivate whether or not an alliance member becomes embroiled in a war or not. Too often these issues are not dealt with and are swept under the table. Hopefully this paper provides a spark for future directions in alliance behavior research and scholarship by emphasizing the rationale behind why alliances form, what their grand-strategic goals are, and what limitations are placed upon their individual members.

NOTES

1. Although Bremer (1992) demonstrates that this finding is the result of a flawed research design.
2. An exception to this would be pieces by Sorokin (1994) and Smith (1995). Both of them use formal models to address the rationale behind alliance formation and war involvement. However, neither article actually addresses why a state becomes involved in a war after joining an alliance.
3. Also see Liddle Hart (1962) for a discussion of the differences between military strategy and grand strategy.
4. The concept of a challenger in power transition theory (Organski and Kugler, 1980) is one that ascribes offensive goals to a revisionist state.
5. Gowa (1994) and Mansfield and Bronson (1997) argue that alliances that form for trade purposes tend to provide security externalities, which are unintended security benefits of the trading relationship.
6. See Singer and Small (1966a, 1966b) for descriptions and coding rules on the types of alliances that exist.
7. See Fearon (1995) for an elaboration of this rationalist explanation for war.
8. See Lemke and Reed (1998) and Oneal, de Soysa and Park (1997, 1998) on the debate surrounding whether power is a good measure of satisfaction.

9. Duration analysis is also known as event history analysis, survival analysis, or hazard models. Good technical explications can be found in Allison (1984), Greene (1993), Kiefer (1988), and Lancaster (1990). Within political science, Bennett (1997, 1999), Bennett and Stam (1996), Box-Steffensmeier and Jones (1998), and Warwick (1992) are good examples of using this modeling technique. Box-Steffensmeier, Arnold, and Zorn (1997) is a good example of applying duration techniques to a timing issue.

10. While I measured alliance duration by year, I also estimated the models below using monthly measures of duration for the time that an alliance was in effect. The statistical results, available from the author, are virtually identical to the results reported below.

11. Much of the data were constructed using the EUGene program developed by D. Scott Bennett and Allan Stam. For a description of this program, see Bennett and Stam (2000).

12. All estimations were conducted using the stweib command in Stata 8.0, with robust standard errors and clustering on the individual alliances.

13. The formula used to calculate the marginal impacts on mean duration is $E[t|\lambda] = (1/\lambda) \Gamma(1/p + 1)$. The source for this formula is Greene (1993, p. 722) as corrected by Bennett (1997, p. 859). In all cases the variables were held at their means and the value of each individual was fluctuated from its maximum value to its minimum.

REFERENCES


585–616.


**CONTRIBUTOR**

Christopher Sprecher (PhD 1999, Michigan State University) is an assistant professor of political science at Texas A&M University. He has research interests in alliances, deterrence and the military use of force. He has published work in the *Journal of Conflict Resolution* and the *Journal of Peace Research*. 