

The Sources of Alliance Treaty Depth

Joshua Alley*

February 14, 2020

Abstract

Why do states form deep alliances? Deep treaties add defense coordination and cooperation to promises of military support. I argue that alliances between democracies tend to have greater treaty depth. Democratic states use treaty depth to reassure allies, because they are less likely to offer unconditional military support. To test this claim, I implement a series of statistical models and offer a short case study of the North Atlantic Treaty Organization. I find that as the maximum polity score of alliance members at the time of formation increases, treaty depth increases, but there is mixed evidence that the probability the treaty offers unconditional military support decreases with allied democracy. Thus, democracies do not uniformly offer limited commitments. The argument and findings have implications for our understanding of how domestic politics shapes institutional design.

*Graduate Student, Department of Political Science, Texas A&M University.

1 Introduction

Why do states make deep alliance treaties? While some alliance treaties include only a promise of military support, others supplement military support with commitments of extensive defense cooperation. To give a well-known example, the NATO treaty commits to setting up a formal international organization to govern the alliance.

Treaty depth is a common policy choice, and it has important consequences. At least half of all ATOP alliances with offensive or defense obligations have at least one source of treaty depth. Deep alliances encourage non-major power members to reduce military spending because treaty depth adds credibility. On the other hand, participation in shallow alliances increases military spending because states use military spending to hedge against abandonment. The issue of military spending shows treaty depth affects alliance politics by shaping treaty credibility and the distribution of military spending burdens among members.

Despite the consequences of alliance treaty depth, we know little about when states add depth to their alliances.¹ In this paper, I explain when states make deep alliance treaties. I argue that domestic politics shape how states use different sources of alliance credibility. Alliance negotiations center on whether prospective members will offer military support and conditions on that support (Poast, 2019). When alliance members are unwilling to offer unconditional military support, depth provides an alternative source of reliability.

Because democracies tend to offer alliances with conditional obligations (Mattes, 2012; Chiba, Johnson and Leeds, 2015), they use treaty depth as a substitute source of reliability. Democracies make conditional promises because leaders fear audience costs of violation, and limited commitments are harder to violate. At the same time, these limited alliances can increase allied fears of abandonment. Therefore, democracies use the costly provisions in deep alliances to reassure their partners.

¹Mattes (2012) examines a few possible causes of military institutionalization.

I test this argument with several statistical models and an illustrative case study of the North Atlantic Treaty Organization (NATO). The statistical models connect decisions about treaty depth and unconditional military support and adjust for unobservable correlates of the two processes (Braumoeller et al., 2018). The case study checks the theoretical process and statistical results (Seawright and Gerring, 2008; Seawright, 2016). I find consistent evidence that greater allied democracy at the time of alliance formation increases treaty depth and decreases the probability of unconditional military support.

My argument and findings have important consequences for research on alliance treaty design. Existing scholarship considers parts of treaty design in isolation (Benson, 2012; Mattes, 2012; Chiba, Johnson and Leeds, 2015). My argument and findings show that sources of credibility in alliance treaty design are connected. Theories and models that address different alliance characteristics in isolation may generate misleading conclusions. For example, previous estimates of the connection between democracy and treaty depth produced null findings, in large part because previous models do not consider the association between depth and conditions on military support.

This paper adds to knowledge of how domestic politics affect alliance politics. Scholars have long acknowledged that democracy and alliances are connected (Lai and Reiter, 2000; Gibler and Wolford, 2006; Warren, 2016; McManus and Yarhi-Milo, 2017). Democratic commitments are often seen as more credible due to audience costs (Gaubatz, 1996; DiGiuseppe and Poast, 2016), but this relationship is disputed (Gartzke and Gleditsch, 2004). Existing scholarship mostly suggests that democracies prefer limited commitments (Mattes, 2012; Chiba, Johnson and Leeds, 2015). My argument suggests that although democracies screen the scope of their commitments carefully, they form deeper alliances on other dimensions. The net effect of these differences on democratic credibility requires further research. My argument also contributes to a rich literature on domestic politics and international cooperation, e.g. (Downs and Rocke, 1995; Fearon, 1998; Leeds, 1999; Mattes and Rodríguez, 2014).

The paper proceeds as follows. In the next section, I lay out the argument and hypothesis. Then

I describe the data and research design. Following that, I provide empirical evidence from several statistical models and a case study of NATO. The final sections discuss the results and implications.

2 Argument

In this argument, I start by defining treaty depth. Then, I show that treaty depth is understudied with a brief review of existing work on alliance treaty design. After that, I describe a general model of the process of alliance treaty negotiations. Finally, I describe how alliance negotiations between democracies often increase treaty depth.

Alliance depth is the extent of defense cooperation formalized in the treaty. Deep alliances require additional military policy coordination and cooperation. While shallow alliances stipulate more arms-length ties between members, deep treaties lead to closer cooperation through intermediate commitments that fall between treaty formation and military intervention. Defense cooperation in a deep alliance takes many forms. Allies can form an integrated military command, provide military aid, commit to a common defense policy, provide basing rights, set up an international organization or undertake companion military agreements.

Depth is therefore an important part of alliance treaty design. Alliances are self-enforcing contracts or institutions (Leeds et al., 2002; Morrow, 2000). Given external threats in an anarchic international system, states form alliances to aggregate military capability and secure their foreign policy interests (Altfield, 1984; Smith, 1995; Snyder, 1997; Fordham and Poast, 2014).

Potential alliance members can design a wide range of treaties (Leeds, Long and Mitchell, 2000; Leeds et al., 2002; Benson, 2012; Benson and Clinton, 2016). Treaty design then shapes the costs and benefits of treaty participation. Beyond the benefit of potential military support, alliances also clarify international alignments (Snyder, 1990) and support economic ties (Gowa, 1995; Li, 2003; Long, 2003; Fordham, 2010; Wolford and Kim, 2017). The costs of alliances include lost foreign policy autonomy (Altfield, 1984; Morrow, 2000; Johnson, 2015), and the potential conse-

quences of opportunistic behavior. Opportunism in alliances includes abandonment, or the failure of alliance members to honor their commitments (Leeds, 2003; Berkemeier and Fuhrmann, 2018), entrapment in unwanted conflicts (Snyder, 1984), and free-riding (Morrow, 2000).

Treaty design can address abandonment and entrapment, but the process of alliance treaty design is understudied (Poast, 2019). Mattes (2012) examined alliance treaty design by using symmetry of capability and history of violation to explain conditions on military support, issue linkages, and military institutionalization in bilateral alliances. She argues that all three design considerations increase treaty reliability. While checking the validity of their latent measure of treaty depth, Benson and Clinton (2016) find that foreign policy agreement, major power involvement and treaty scope are all positively correlated with depth. Their latent measure of scope is based on the type of military support offered and conditions on that support.

We have a better sense of when states offer conditional military support. Benson (2012) shows that foreign policy disagreements and revisionist protege states increase the likelihood of limited military support. (Chiba, Johnson and Leeds, 2015) added to existing work on limited obligations by showing that democracies are more likely to form alliances with conditional military support or consultation. Other work by Poast (2012, 2013) establishes that states often use issue linkages to facilitate alliance formation.

None of these works connect different sources of reliability. Mattes (2012) studies military institutionalization and conditionality as separate sources of reliability. Her argument and research design treat depth and institutionalization as independent. Though Benson and Clinton (2016) use scope to predict depth and depth to predict scope, they do not consider the correlation between the two processes. Perhaps as a result of these theoretical and empirical choices, both works find no association between the democracy of alliance members and treaty depth. Because states can use different foreign policy instruments as substitutes or complements (Starr, 2000; Morgan and Palmer, 2000), treaty depth and conditions on military support are probably related. My argument builds on existing scholarship by placing depth and conditions on military support in a unified

theoretical and empirical framework. I now describe the general process of the argument.

2.1 Alliance Negotiations and Obligations

Alliance treaty design is the result of negotiations between members (Poast, 2019), where states determine conditions on military support and treaty depth.² Both parts of treaty design address the benefits and costs of alliance participation. Depth and conditions on military support have different consequences, however.

Establishing if and when military support will be offered is the essential task for potential alliance partners. Promises of military intervention are the core of alliances. To form an alliance, the members must have sufficient overlap in foreign policy interests (Morrow, 1991; Smith, 1995; Fordham and Poast, 2014), especially their proposed war plans (Poast, 2019).

Promises of military support in an alliance vary widely, however. The extent of shared foreign policy interests shapes whether alliance members offer unconditional or conditional military support. Many alliances limit promises of intervention to particular regions, conflicts, or instances of non-provocation (Leeds, Long and Mitchell, 2000). For example, if alliance members fear entrapment in unwanted conflicts, they will only offer military support in specific circumstances (Kim, 2011; Benson, 2012).³ Conditional treaties reflect less overlap in foreign policy interests.

Offering unconditional military support is thus a strong signal of shared foreign policy interests. Attaching no conditions to a potential intervention means alliance members hazard the reputational (Gibler, 2008; Crescenzi et al., 2012) and audience (Fearon, 1997) costs of treaty violation from many potential conflicts. Accepting these potential costs implies that conflict participation in many circumstances where the alliance could apply is acceptable. This reflects less fear of entrapment and many shared foreign policy interests. Therefore unconditional alliances are a key source of credibility, because they are a costly signal of substantial foreign policy agreement.

²The alliance formation stage is something I will need to model in a later robustness check.

³Such deliberate design of alliances means clear instances of entrapment are rare (Kim, 2011; Beckley, 2015).

Alliance partners also negotiate over how to reinforce promises of military support and put them into action. This determines the depth of the treaty and provides additional evidence of alliance reliability. Depth shapes the perceived reliability of an alliance by providing opportunities for states to fulfill treaty obligations in peacetime. Implementing deep treaty provisions can also enhance joint war-fighting.

Because treaty depth and conditions on military support both add to alliance credibility, they are interdependent decisions. Though depth and conditions on military support are related, they are not equivalent. Depth and military support conditions generate credibility through different costs.

Conditions on military support do not change absent treaty renegotiation, and their costs are hypothetical unless the alliance is invoked. Alliance members and other states use the potential costs of military support to assess treaty reliability. Highly conditional alliances are less costly in expectation, which reduces their credibility.

The costs of depth can be observed without invoking promises of military support. Therefore depth addresses time-inconsistency problems from changing foreign policy interests, which are a major threat to alliance fulfillment (Leeds and Savun, 2007). Under a deep alliance treaty, members can use implementation of defense cooperation and policy coordination to assess allied reliability. Observing that alliance members adhere to peacetime promises indicates they will also honor promises of military support.

This connection between depth and conditions on military support means that understanding how alliance member characteristics affect alliance treaty design must account for both sources of credibility. As I detail below, democracies are more likely to design alliances with conditional military support. As a result, democracies must then use greater treaty depth to address reliability concerns from these limited commitments. Alliances between democracies therefore include limited military support and high depth.

2.2 Alliances between Democracies

I use a strongest-link conceptualization of democracy in the argument and empirical results. Successful alliance negotiations require agreement between all members- so objections from one can have a substantial impact on the outcome. Therefore, the most democratic member is likely to push for conditional obligations and accept higher treaty depth.⁴

There is already ample evidence that democracies often prefer conditional military support. Mattes (2012) and Chiba, Johnson and Leeds (2015) both show that democracies are more likely to design conditional alliances. They attribute this finding to higher audience costs in democracies. Because democratic leaders face substantial audience costs from violating their international commitments, leaders design more limited commitments that are easier to fulfill. Based on this logic, even after accounting for the correlation between depth and scope, increasing the maximum democracy score of alliance members at the time of formation should reduce the probability of unconditional military support.

UNCONDITIONAL MILITARY SUPPORT HYPOTHESIS: AS THE MAXIMUM DEMOCRACY OF ALLIANCE MEMBERS AT THE TIME OF FORMATION INCREASES, THE PROBABILITY THAT THE ALLIANCE WILL INCLUDE UNCONDITIONAL MILITARY SUPPORT WILL DECREASE.

Limiting alliance commitments through conditional military support reduces audience costs because it is easier for democratic leaders to backtrack on military support. Under a conditional alliance, states are not automatically obligated to intervene. As a result, it is possible for leaders to either claim that the conditions for intervention were not met, or that new information obviates the alliance commitment (Levendusky and Horowitz, 2012).

Because allied states understand these limits on conditional alliances, these alliances will increase reliability concerns. Knowing that allies have given themselves an out will increase the fear

⁴I find similar, but somewhat weaker results with an average measure of alliance treaty depth. See the appendix for details.

of abandonment. This may undermine the effectiveness of deterrence from the alliance, as potential challengers pick on unreliable pacts (Smith, 1995). Therefore, democracies may need to find other ways to indicate their commitments are credible.

Democracies can substitute treaty depth for unconditional military support. By including peacetime costs in a deep alliance, democratic states provide a different signal of reliability. Providing regular access to military aid, bases, or policy coordination indicates that alliance members are committed to the treaty. This increases allied confidence that democracies will honor their treaty obligations, even with conditional military support.

Moreover, depth is a flexible way for democratic states to increase the perceived reliability of their alliances. Rather than make a fixed commitment of unconditional military support, democracies can shift their commitment to an alliance if electoral politics requires it. For example, democratic leaders could reduce military aid to an ally if their constituents prefer a more limited foreign policy. Therefore, leaders are less constrained by the alliance choices of previous leaders, as they have some freedom to change how many peacetime costs they bear.

Depth has more flexibility for democratic leaders because there are lower audience costs for not fulfilling peacetime promises. Audience costs, or disapproval of leaders not fulfilling their promises, increase as crises escalate (Tomz, 2007). While military intervention is costly and highly public, the day to day aspects of alliance management are less salient for the public. Any elite dissension about changes in commitment to a deep alliance is unlikely to translate into meaningful public opposition and electoral concerns.

As a result of a preference for conditional military support and the lower audience costs of treaty depth, democracies will often design deep alliance treaties. As the maximum democracy of alliance members at the time of treaty formation increases, treaty depth should increase.

TREATY DEPTH HYPOTHESIS: AS THE MAXIMUM DEMOCRACY OF ALLIANCE MEMBERS AT THE TIME OF FORMATION INCREASES, THE DEPTH OF AN ALLIANCE TREATY WILL INCREASE.

Many democratic alliances combine conditional military support and high treaty depth. Consider a 1960 defense pact between the United States and Japan (ATOPID 3375). This alliance updated a 1951 defense treaty and included conditional obligations of military support. Promises of intervention are conditional on whether the fighting is taking place in East Asia. Moreover, the signatories promised action “to meet the common danger” if a member is attacked, which is not an explicit promise of military support. These kinds of limited promises are common in US alliances. The United States and Japan simultaneously formed a Security Consultative committee and permitted US troop bases in Japan, which are both sources of treaty depth.

There is an important caveat to this argument— I am interested in institutional design, not implementation. Alliance treaty depth is not always implemented fully, as treaty aspirations are not fully realized, or work poorly. To give one example, several deep Arab alliances never realized their full intention due to internal political divisions. If states are to use treaty depth to increase treaty credibility, they must implement some of their alliance promises, however.

Based on the argument and the case example, I expect that more democratic alliance membership will increase treaty depth. This occurs because democracies substitute depth for unconditional military support. In the next section, I describe how I test this claim about the association between democratic alliance membership and treaty depth.

3 Research Design

My argument claims that treaty depth and conditions on military support are outcomes from related processes. I expect that democracy among alliance members will increase treaty depth and decrease the probability of unconditional military support. I examine these claims with a series of statistical models and an illustrative case study of NATO. I start by describing the key variables in the analysis. Then I provide more detail on the estimation strategy.

To examine my expectations that democracies tend to produce conditional alliances with sub-

stantial depth, I employ data on alliance treaty design from the Alliance Treaty Obligations and Provisions dataset (Leeds et al., 2002). My sample includes 289 alliances with either offensive or defensive obligations, which is the set of treaties with military support.⁵

I measured treaty depth using a semiparametric mixed factor analysis of eight ATOP variables (Murray et al., 2013).⁶ This measure of depth is weighted combination of ATOP's defense policy coordination, military aid, integrated military command, formal organization, companion military agreement, specific contribution, and bases variables. Each of these individual indicators increases alliance treaty depth, but defense policy coordination and an integrated command have the largest positive association, as shown in the top panel of Figure 1.

Based on these factor loadings, the measurement model predicts the likely value of treaty depth. The distribution of depth is summarized by the bottom panel of Figure 1. There is substantial variation in alliance treaty depth. Around half of all formal alliance treaties have at least some depth, and once states add some depth, there is a wide range of how much they include.

I measure alliance treaty depth in three ways. First, I take the posterior mean of the latent depth posterior for each alliance. I also fit a statistical model that accounts for posterior uncertainty in the latent measure. Last, I measure alliance treaty depth with a dummy indicator of whether treaty depth in the alliance is above the median value. Results from these three measures are very similar.

The other outcome variable is a dummy indicator of unconditional military support. Using ATOP's information on whether defensive or offensive promises are conditional on specific locations, adversaries, or non-provocation, I set this variable equal to one if the treaty placed no conditions on military support. 123 of 289 alliances in the data offer unconditional military support.

The key independent variable is the maximum democracy of alliance members at the time of treaty formation. I use the POLITY measure of political institutions to measure democracy. An

⁵I plan to assess robustness to adjusting for non-random selection into alliances in the appendix.

⁶See **this paper** for more details on the measure.

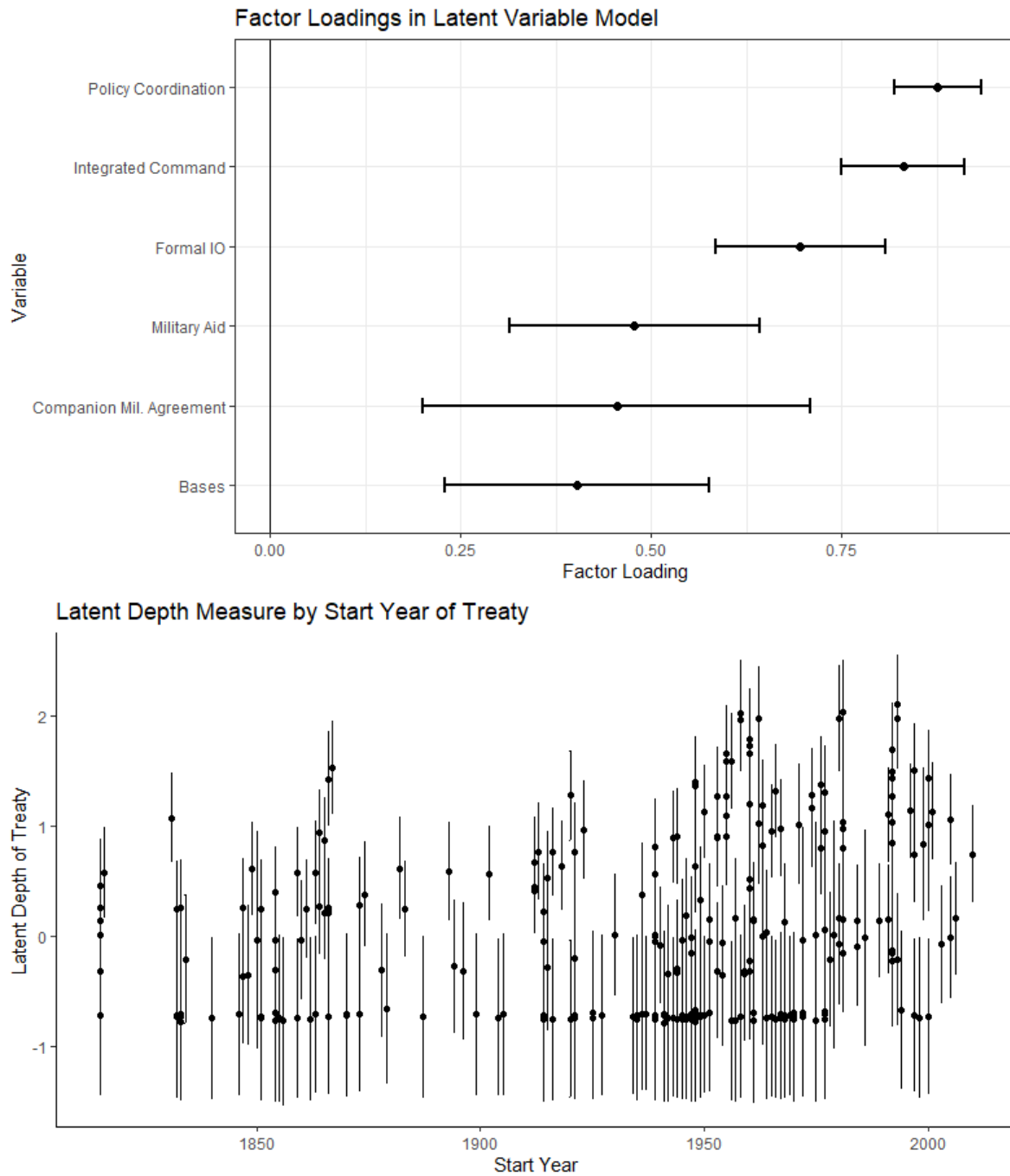


Figure 1: Factor Loadings and posterior distributions of latent alliance treaty depth measure.

alternative measure of allied democracy is a dummy variable which is equal to one if both alliance members have a polity score greater than 5. I prefer the maximum polity score measures because it translates better to multilateral alliances. Moreover, I expect that democracy in one member will affect the conditionality and depth of alliance treaties with less democratic partners. Joint democracy is a slightly different concept.

3.1 Estimation Strategy

I connect these measures with several statistical models. I start with separate models of treaty depth and unconditional military support. But because common unobserved factors may affect depth and conditionality, I specify a statistical model with two equations and correlated errors. This approach is analogous to a bivariate probit model—I do not use depth or unconditional military support as endogenous predictors of the other factor. One model predicts the probability of unconditional military support, and the other predicts treaty depth.

To model unconditional military support, I fit a binomial model with probit link function. The maximum democracy measure is the key independent variable, and I also control for a range of other factors. All of these variables are likely correlates of unconditional military support and allied democracy. Key controls include a dummy indicator of asymmetric alliances between non-major and major powers (Mattes, 2012) and the average threat among alliance members at the time of treaty formation (Leeds and Savun, 2007). I also control for foreign policy similarity (Benson, 2012) using the minimum value of Cohen's κ in the alliance (Häge, 2011). Using the ATOP data (Leeds et al., 2002), I control for asymmetric treaty obligations, the number of alliance members, whether any alliance members were at war and the year of treaty formation. To capture the role of issue linkages in facilitating alliance agreements (Poast, 2012, 2013), I also include a dummy indicator of whether the alliance addressed economic issues. Last, I include a count of foreign policy concessions in the treaty, because concessions can facilitate alliance negotiations (Johnson, 2015).

The model of treaty depth uses the same set of variables as the model of unconditional support. All these variables could conceivably alter the need for additional reliability from treaty depth. Modeling depth is more complicated because the latent measure is skewed. To facilitate model fitting, I transformed latent depth by transforming the variable to range between zero and one, then used a beta distribution for outcome.⁷ The flexibility of the beta distribution helps predict mean latent depth and facilitates fitting models that account for uncertainty in the latent measure, which I describe in more detail below.

First, I fit these models separately. I then fit the two models simultaneously using a generalized joint regression model (GJRM) (Braumoeller et al., 2018). GJRM uses copulas to model correlations in the error terms of multiple equation models, which makes it more flexible than parametric models and facilitates causal inference. Modeling any unobserved correlation between depth and unconditional military support facilitates accurate inferences about democracy and other covariates. Copulas are distributions over functions, and relax potentially problematic assumptions about the shape of the correlation in the error terms. I fit models with all copulas, and selected the best-fitting model using AIC, conditional on that estimator having converged.⁸ The symmetric Plackett copula provides the best model fit.

A third equation models possible heterogeneity in the error term using allied democracy and the start year of the alliance. Figure 2 suggests that regime type may change the strength of the connection between depth and unconditional support may change with the values of democracy. Including the start year of the treaty captures common shocks from the international context and perhaps a stronger connection between depth and unconditional military support after 1945.

GJRM also facilitates checking for non-linear relationships with smoothed terms. I estimated smoothed terms for democracy, mean threat and the start year of the alliance to capture potential

⁷I also considered log-logistic, Dagum and inverse Gaussian distributions for the outcome, but the beta model fit best, based on residuals and AIC.

⁸GJRM is estimated with maximum likelihood, and diagnostics for the gradient as well as the information matrix suggest that the models converged.

non-linear relationships.⁹ Higher effective degrees of freedom on the smoothed term indicate non-linear relationships, and chi-squared statistics give approximate statistical significance. In the next section, I summarize the results of the analysis.

4 Results

My findings are partially consistent with the claim that increasing democracy in an alliance leads to treaties with conditional support and greater depth. I find consistent evidence that democracy increases treaty depth, but less consistent evidence that democracies offer conditional alliances. To begin, I offer some descriptive statistics. Then, I present inferences from separate models. Last, I show evidence from two types of joint models.

First, unconditional alliances tend to have lower democracy values. The average of the maximum democracy measure among alliances with unconditional military support is -1.4. Conversely, the average of the largest polity score in alliances with conditional obligations is 1.62.¹⁰ There is also a slight positive correlation between maximum alliance democracy at the time of formation and treaty depth.

Figure 2 shows the mix of unconditional military support and high treaty depth in alliance design as democracy increases. In Figure 2, democracy is on the x-axis, and treaty depth is on the y-axis. Triangular points mark unconditional military support. At high levels of democracy, there are more conditional treaties, and most alliances have some depth.

These descriptive results do not adjust for potential confounding factors, however. Results from independent models of depth and conditionality support the hypotheses. Table 1 shows results from a beta model of treaty depth and a binomial model of unconditional military support with a probit link function. As expected, more democratic membership when the alliance forms is positively

⁹Fitting models with other continuous terms smoothed returned effective degrees of freedom = 1 for foreign policy similarity, which suggests a linear fit is equivalent. As the results show, the smoothed term for democracy is highly linear.

¹⁰Based on a t-test, the difference between these values is statistically significant.

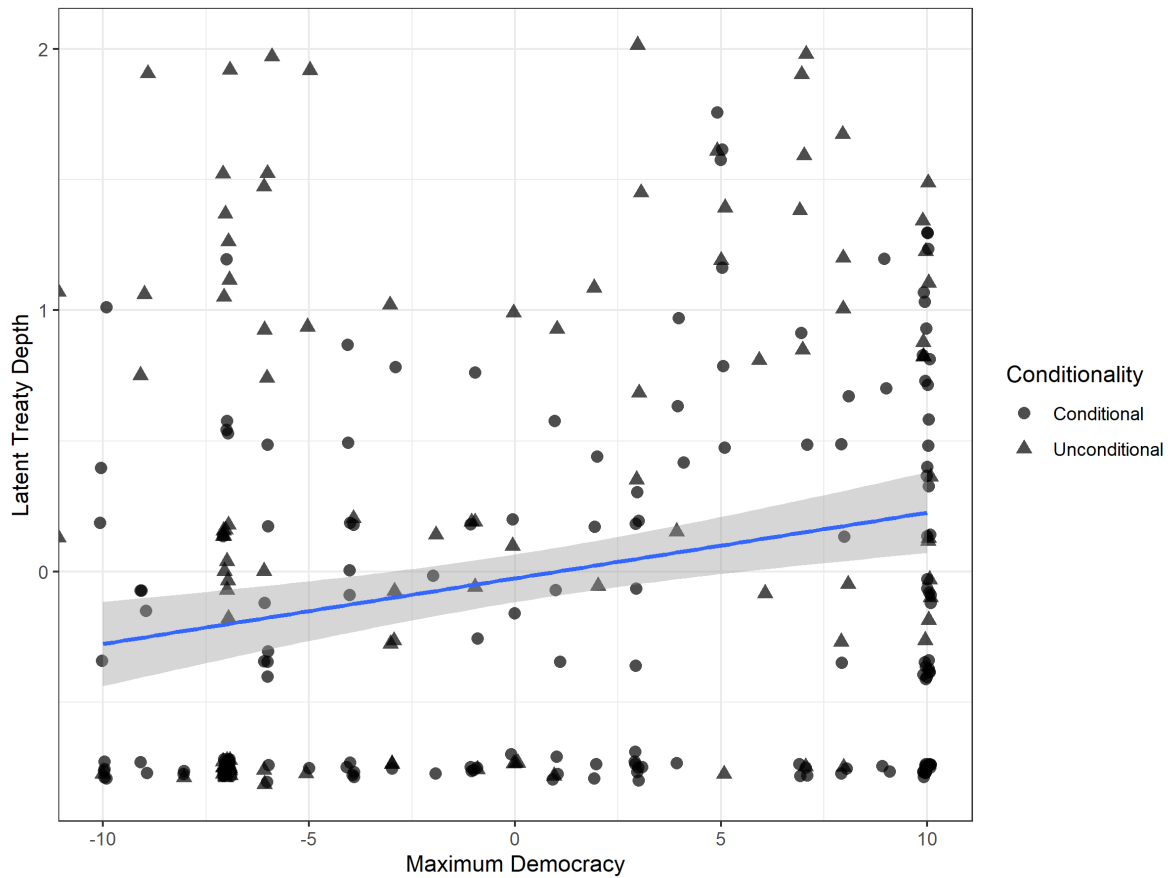


Figure 2: Presence of unconditional military support and depth in alliances from 1816 to 2016. This scatter plot shows mean latent treaty depth on the y-axis and the maximum polity score of founding alliance members on the x-axis. Triangular points mark treaties with unconditional military support, and the smoothed line trend line is fitted with linear regression.

associated with treaty depth, but reduces the probability of unconditional military support.

Table 1:

	<i>Dependent variable:</i>	
	Latent Depth (rescaled)	Unconditional Military Support
	<i>beta</i> (1)	<i>probit</i> (2)
Maximum Democracy	0.025 (0.004, 0.045)	−0.044 (−0.074, −0.015)
Foreign Policy Concessions	−0.039 (−0.188, 0.110)	−0.026 (−0.244, 0.191)
Number of Members	0.016 (−0.011, 0.042)	−0.016 (−0.061, 0.029)
Wartime Alliance	−0.371 (−0.710, −0.032)	−0.943 (−1.548, −0.338)
Asymmetric Obligations	0.215 (−0.113, 0.542)	0.203 (−0.291, 0.696)
Asymmetric Capability	0.179 (−0.101, 0.459)	−0.325 (−0.732, 0.082)
Average Threat	0.920 (0.088, 1.752)	1.366 (0.075, 2.657)
Foreign Policy Disagreement	0.295 (−0.138, 0.727)	0.411 (−0.263, 1.085)
Start Year	0.005 (0.002, 0.008)	0.018 (0.013, 0.024)
Constant	−11.389 (−17.696, −5.081)	−36.246 (−47.337, −25.155)
Observations	277	277
Log Likelihood	58.011	−132.981

Note:

95% Confidence Intervals in Parentheses.

Although the results from separate models are as expected, these models do not account for unobserved correlations between depth and conditions on military support. This omission could easily affect inferences. I now report the results of the joint analysis of depth and unconditional military support. Figure 3 plots the estimated effect of democracy on the two outcomes. The predicted effects of democracy on unconditional military support match the two hypotheses.

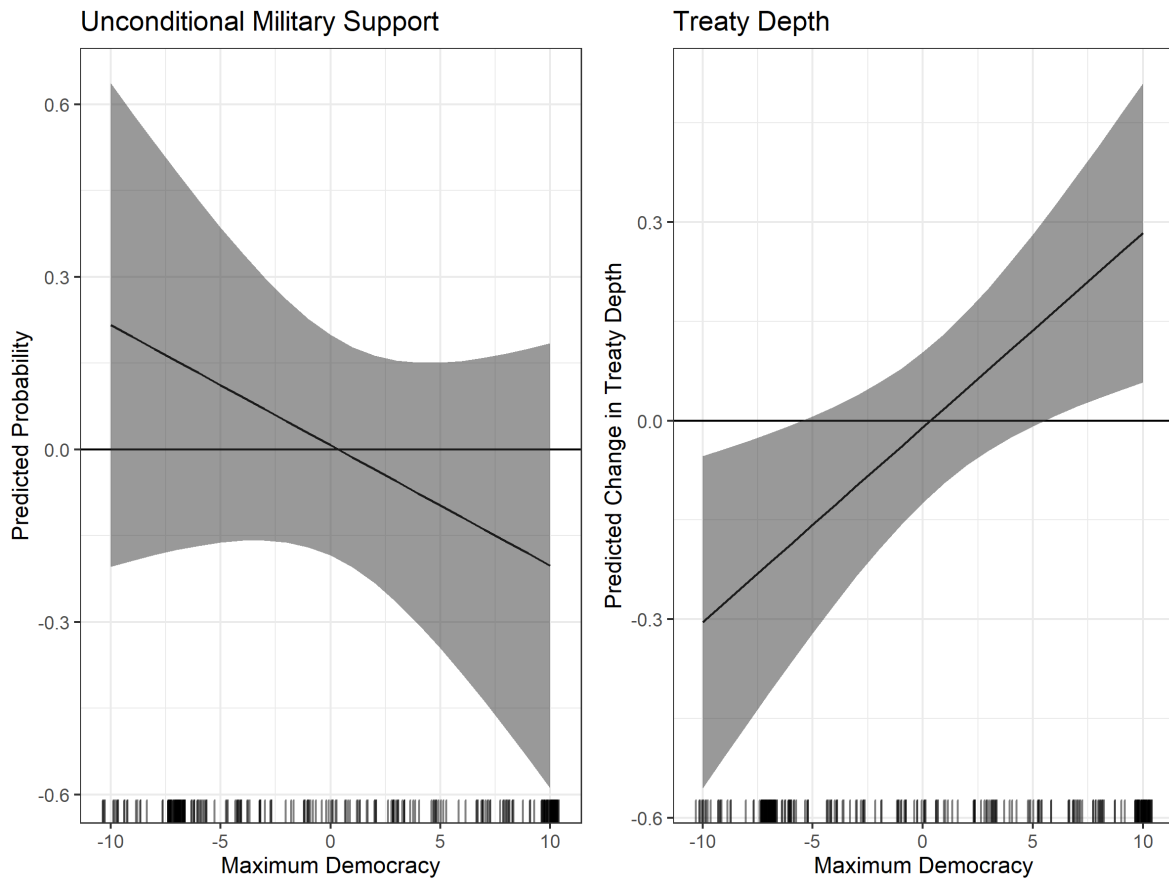


Figure 3: Predicted probabilities of unconditional military support and predicted changes in treaty depth across the range of alliance democracy. The line marks predicted values, and the shaded areas encapsulate the standard errors. The rug plot on the x-axis marks observed values of maximum democracy. Predictions based on the smoothed terms from a joint generalized regression model.

The left-hand plot of Figure 3 shows the association between the maximum democracy of alliance members and the predicted probability of unconditional military support. Although the direction of the relationship is as expected, it is hard to discern a clear difference between high and low democracy. This is weaker evidence about democracy and conditional commitments than previous findings (Mattes, 2012; Chiba, Johnson and Leeds, 2015).

The right-hand plot in Figure 3 shows a positive relationship between democracy at the time of alliance formation and treaty depth. Substantial democracy in an alliance is associated with greater treaty depth. High autocratic alliances are usually more shallow, on the other hand. This trend of greater depth as the democracy of alliance members rises matches the treaty depth hypothesis.

There are some other interesting inferences in the control variables, which I present in Table 2. This table contains results from both equations of the GJRM model, but omits the predictors of the error term correlation. I find that asymmetric capability in a treaty and symmetric non-major power alliances are more likely to have unconditional military support than major power alliances. I also find a negative association between the number of members in the alliance and the probability of unconditional military support.

There are also some notable patterns among the other variables in Table 2. Asymmetric capability and the number of alliance members both increase depth. Last, threat and the year of alliance formation increase unconditional military support and treaty depth.

The GJRM approach I use accounts for the correlation between the error terms due to the impact of unobserved confounding factors. Kendall's τ measures the strength of the correlation between the errors, and is a function of the θ parameter. I used the start year of the alliance and maximum democracy to predict θ . Both time and allied democracy affect correlations in unobservables between depth and unconditional military support.

Figure 4 plots the two smoothed terms I used to predict the correlation in the error terms between treaty depth and unconditional military support. The predicted values in the top row of Figure 4 are on the scale of θ . In the bottom row, I plot predicted τ values against maximum

	Uncond. Mil. Support		Latent Depth	
	Estimate	Std. Error	Estimate	Std. Error
(Intercept)	-0.6285010	0.2601272	-1.0552545	0.1674819
Economic Issue Linkage	0.3365488	0.1512294	0.1916660	0.1184516
FP Concessions	0.0355490	0.0910862	-0.0110692	0.0627758
Number of Members	-0.0765896	0.0241788	0.0180858	0.0122349
Wartime Alliances	-0.2582652	0.2380023	-0.1027588	0.1546220
Asymmetric Obligations	0.0225756	0.2589389	0.2351540	0.1525892
Asymmetric Capability	0.0667023	0.1676058	0.1832084	0.1069639
FP Disagreement	0.7258484	0.2340239	0.1454156	0.1723854
s(Avg. Democracy)	1.0000023	1.3866492	1.0000052	7.8410458
s(Mean Threat)	1.0000018	41.9202497	1.0000027	23.1963515
s(Start Year)	5.1710447	112.7626620	4.1221333	41.5065992

Table 2: Results from joint generalized regression model of treaty depth and unconditional military support. All smoothed terms report the effective degrees of freedom and the chi-squared term. The unconditional military support model is a binomial GLM with a probit link function. The treaty depth model is a beta regression. The error correlation between the two processes is modeled with a Plackett copula.

democracy and the start year of the alliance.

As Figure 4 shows, the predicted association between the error terms varies heavily by year. The association is positive for part of the period between 1850 and 1900, before turning more negative in the interwar period. After 1950, large depth values and unconditional military support are more likely to co-occur. Such cyclical changes in the impact of unobserved confounders shifts are obvious in the predicted τ values of the bottom right panel.

As for democracy, the predicted error correlation θ is positive for a few alliances between highly autocratic states, is somewhat negative for mixed regimes. At high levels of democracy, there is no clear pattern in the errors. This translates into few clear differences, across the range of maximum democracy, as the bottom left panel of Figure 4 shows.

These correlations, which reflect the role of unobserved factors, are responsible for the difference in results between the joint model and the separate models. After accounting for these differences in how unconditional military support and treaty depth are related, I do not draw a strong conclusion about the connection between democracy and unconditional military support.

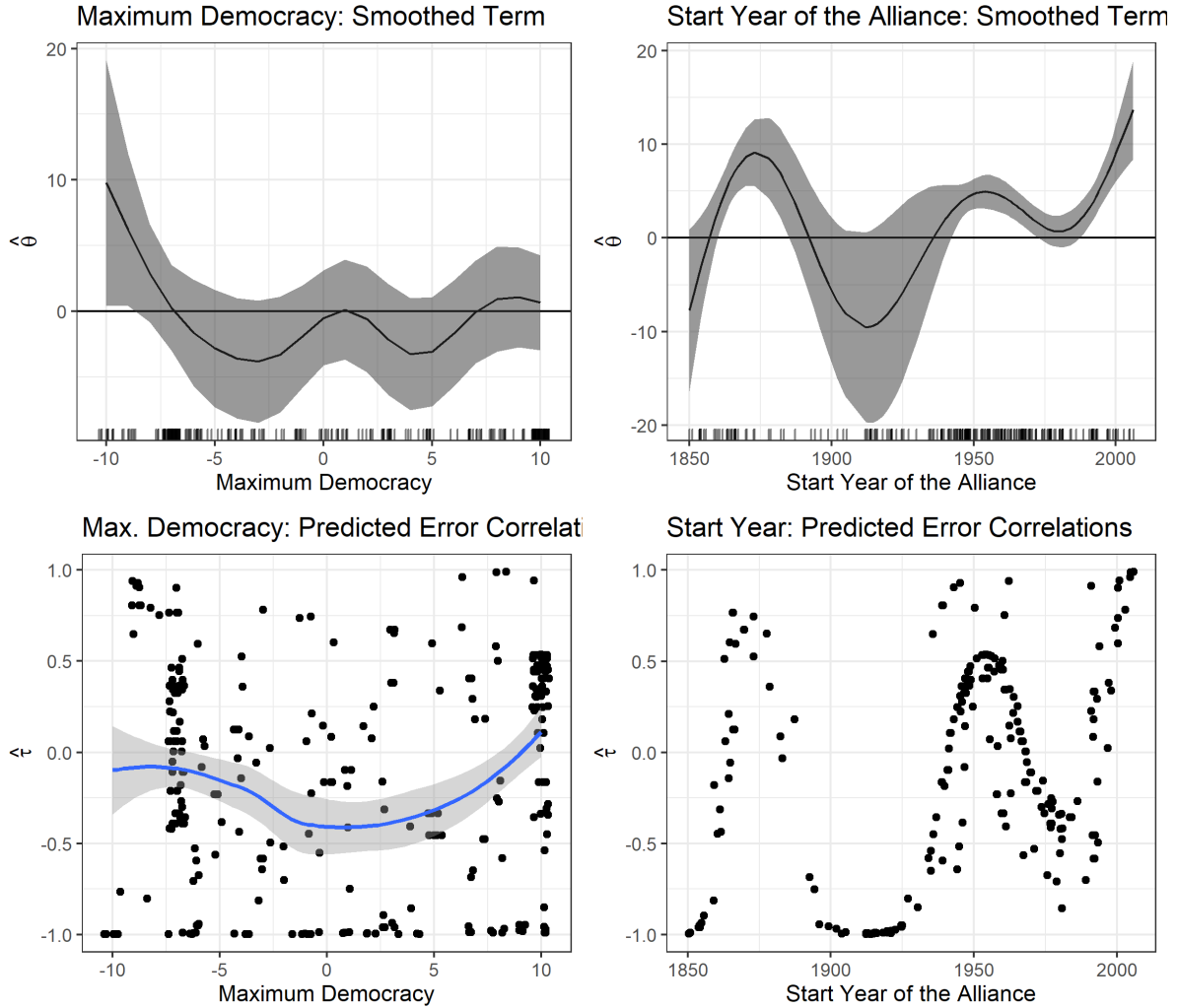


Figure 4: Predicted association between the errors of the unconditional military support and treaty depth models by year and maximum democracy. To make the plot more legible given substantial uncertainty from limited alliance data before 1850, the time plot only includes predictions from after 1850. The rug plot on the x-axis in the top row marks the distribution of each variable. Each point in the bottom row is an estimated τ , one for each of the 277 observations.

Existing findings are sensitive to confounding from unobserved factors, which may be connected to shifts in the international context over time.

The aggregate patterns in these statistical result give some sense of the theoretical process. They do not track the process of alliance treaty negotiation, however. To corroborate my theoretical claim that democracies substitute depth for unconditional support, I now offer a brief case study.

4.1 Case Study: NATO

The case study examines the alliance negotiations behind NATO, which is one of the most important alliances. US foreign policy after World War II illustrates the tendency of democratic states to use treaty depth for reassurance, while also providing conditional obligations. Most US alliances have conditional promises of military support and some depth, and NATO fits this pattern.

After the end of World War II, the US sought a way to protect Europe from the USSR. There were two challenges in negotiating the alliance, however. First, as Poast (2019) details, NATO members disagreed over how to define the North Atlantic area, which was a key condition on military support. The US and other states fought over whether France's Algerian colony and Italy fell under the promises of support in the alliance.

Second, the promises of military support in Article V of NATO are also rather contingent. Isolationists in the US Senate feared that an alliance would force America to intervene automatically if partners were attacked, bypassing the power of Congress to declare war (Acheson, 1969, pg. 280-1). Therefore Article V states that if one member is attacked the others "will assist the Party or Parties so attacked by taking forthwith, individually and in concert with the other Parties, *such action as it deems necessary* (emphasis mine)." Military support was and is not guaranteed by the NATO treaty. Secretary of State Dean Acheson stated as much in a March 1949 press release, where he said that Article V "does not mean that the United States would automatically be at war if one of the nations covered by the Pact is subject to armed attack" (Acheson, 1949).

The absence of automatic US involvement increased demand for reassurance by European

allies. Europeans feared that if the Soviets invaded, the US would decide not to fight. Therefore, the US took other measures to reassure NATO allies. A 1951 presentation by Dean Acheson to Dwight Eisenhower argued European allies “fear the inconstancy of United States purpose in Europe. ... These European fears and apprehensions can only be overcome if we move forward with determination and if we make the necessary full and active contribution in terms of both military forces and economic aid” (Acheson, 1951, pg. 3).

The first part of reassurance was the creation of the Atlantic Council, which is an international organization and the only source of depth in the NATO treaty itself. The United States used participation in this organization and other efforts to coordinate collective defense to increase the perceived reliability of the alliance. By investing in the Atlantic Council and other sources of depth in NATO, the US addressed European fears of abandonment. For example, US officials thought that the British Foreign Minister viewed US provision of a supreme commander in Europe as “a stimulus to European action” (Acheson, 1950).

Many Senators also opposed military aid to Europe (Acheson, 1969, pg 285), which limited other efforts to add treaty depth. Bilateral agreements on troop deployments then became another instrument of reassurance. In 1950 the Germans formally requested clarification on whether an attack on US forces in Germany would be treated as an armed attack on the US- which the US said it would (Acheson, 1969, pg. 395). Even after agreeing to deploy troops, US policymakers hoped Europeans would soon provide more for their own defense, while acknowledging the US “should not dictate what they shall do” (Johnson, 1950, pg. 2). These bilateral arrangements and basing rights are not covered in the NATO treaty, but they added substantial depth.¹¹

NATO negotiations reveal the tendency of democracies to add conditions on military support, but then turn to treaty depth to reassure their allies. The United States preferred conditional military support, but was willing to invest in deep military cooperation. The Atlantic Council and bureaucratic machinery of the NATO treaty are the basis for substantial defense cooperation. Therefore,

¹¹This reveals an important limitation of my statistical approach.

though Article V is more limited than many realize, NATO is still a deep alliance.

5 Discussion

The findings from the statistical models and case study of NATO provide inconsistent evidence. I find regular evidence that democracies tend to form deep alliances. There is mixed evidence that allied democracy decreases the probability of unconditional military support, however. This suggests a modification to the conventional wisdom that democracies make limited alliance commitments. The effect of democracy on conditions for military support may be weaker than previously thought, but they are more prone to increase the depth of their alliances.

The new conclusion about democracy and unconditional military support in this paper comes from a bivariate model of depth and unconditional military support. Without a joint model, my alternative sample finds the expected negative correlation between maximum democracy and unconditional military support. Inferences about democracy and other covariates depend on this theoretical and empirical choice to model depth and unconditional military support together. Again, treaty depth and unconditional military support are not included as independent variables for the other outcome. A fully recursive model that includes depth and unconditional military support as predictors requires valid instruments for identification. The independent models suggest that non-major power symmetry in an alliance could instrument for unconditional military support as a predictor of treaty depth. Given the potential for biased findings from a weak instrument or one that fails the exclusion restriction, and lack of clear instruments for treaty depth, I am hesitant to employ a fully recursive model.

My findings show how different aspects of alliance treaty design are related. Benson and Clinton (2016) use measurement models to show this in a descriptive fashion, but my findings give a sense of the process behind different combinations of depth and conditions on military support. Previous research on the causes of alliance treaty design (Benson, 2012; Mattes, 2012; Chiba,

Johnson and Leeds, 2015) focused on particular characteristics and treated them as independent. This approach can be informative, but it is incomplete.

Although my argument and evidence offer some innovations, they have some limitations. First, I only examine variation in formal treaty design. This omits the implementation of alliance promises, which may be deeper or shallower than the treaty language alone implies. As the NATO case study shows, formal treaty depth is a guide for practical depth, but it may miss some differences between the alliance. At the same time, this study focuses on institutional design. Evolution and changes in practice are a useful subject for future inquiry.

The claims in this paper have important consequences for several branches of scholarship. First, they speak to debates about whether democracies make more credible commitments. This literature could benefit from incorporating these findings about alliance treaty design. The effect of democracy on credibility can be divided into conditions on military support, treaty depth, and the direct effect of institutions and domestic politics. These may have competing or conditional effects, and the net effect will require further explanation.

In general, studies of the consequences of alliance participation should account for alliance design and membership. This study shows that alliance membership and design are closely related. Estimates of only member characteristics, or only treaty design, risk omitting correlated factors that also change the consequences of alliance participation.

6 Conclusion

The key implication for scholarship is that alliance treaty design is the result of a series of correlated decisions. Rather than address each part of treaty design piecemeal, scholars should think about connections between the core aspects of treaty design. For example, future work might examine the connections between conditions on military support, treaty depth, and issue linkages. Debating what promises to include among these core obligations will be a crucial next

step. Any discussion of alliance treaty design must also situate these decisions in the process of treaty negotiations. As such, my findings support calls to correct the comparative neglect of negotiations in existing scholarship (Poast, 2019).

Last, alliances are an international institution, so some of the lessons from this work may apply to other institutions. There is an extensive literature on the design of international institutions (Downs and Rocke, 1995; Martin and Simmons, 1998; Koremenos, Lipson and Snidal, 2001; Koremenos, 2005; Thompson, 2010). Debates about the trade off between breadth and depth (Downs, Rocke and Barsoom, 1998; Gilligan, 2004) reflect correlated design decisions given potential institutional membership. Still, this literature could work to clarify how different aspects of institutional design are related.

In conclusion, democratic alliance membership is a source of treaty depth. This may reflect a desire to substitute for . This shows how different sources of reliability shapes alliance treaty negotiations.

References

- Acheson, Dean. 1949. "State Department Press Release, March 18, 1949."
- Acheson, Dean. 1950. "Telegram, Dean Acheson to Harry S. Truman, September 14, 1950."
- Acheson, Dean. 1951. "Dean Acheson to Harry S. Truman, with attachment, January 5, 1951." Memo.
- Acheson, Dean. 1969. *Present at the Creation*. New York: W.W. Norton.
- Altfield, Michael F. 1984. "The Decision to Ally: A Theory and Test." *Western Political Quarterly* 37(4):523–44.
- Beckley, Michael. 2015. "The Myth of Entangling Alliances: Reassessing the Security Risks of U.S. Defense Pacts." *International Security* 39(4):7–48.
- Benson, Brett V. 2012. *Constructing International Security: Alliances, Deterrence, and Moral Hazard*. Cambridge University Press.

- Benson, Brett V and Joshua D Clinton. 2016. "Assessing the Variation of Formal Military Alliances." *Journal of Conflict Resolution* 60(5):866–898.
- Berkemeier, Molly and Matthew Fuhrmann. 2018. "Reassessing the fulfillment of alliance commitments in war." *Research & Politics* .
- Braumoeller, Bear F, Giampiero Marra, Rosalba Radice and Aisha E Bradshaw. 2018. "Flexible causal inference for political science." *Political Analysis* 26(1):54–71.
- Chiba, Daina, Jesse C Johnson and Brett Ashley Leeds. 2015. "Careful Commitments: Democratic States and Alliance Design." *The Journal of Politics* 77(4):968–982.
- Crescenzi, Mark JC, Jacob D Kathman, Katja B Kleinberg and Reed M Wood. 2012. "Reliability, Reputation, and Alliance Formation." *International Studies Quarterly* 56(2):259–274.
- DiGiuseppe, Matthew and Paul Poast. 2016. "Arms versus Democratic Allies." *British Journal of Political Science* pp. 1–23.
- Downs, George W. and David M. Rocke. 1995. *Optimal Imperfection?: Domestic Uncertainty and Institutions in International Relations*. Princeton, New Jersey: Princeton University Press.
- Downs, George W., David M. Rocke and Peter N. Barsoom. 1998. "Managing the Evolution of Multilateralism." *International Organization* 52(2):397–419.
- Fearon, James D. 1997. "Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs." *Journal of Conflict Resolution* 41(1):68–90.
- Fearon, James D. 1998. "Domestic Politics, Foreign Policy, and Theories of International Relations." *Annual Review of Political Science* 1:289–313.
- Fordham, Benjamin O. 2010. "Trade and asymmetric alliances." *Journal of Peace Research* 47(6):685–696.
- Fordham, Benjamin and Paul Poast. 2014. "All Alliances Are Multilateral Rethinking Alliance Formation." *Journal of Conflict Resolution* 58(27):1–26.
- Gartzke, Erik and Kristian Skrede Gleditsch. 2004. "Why democracies may actually be less reliable allies." *American Journal of Political Science* 48(4):775–795.
- Gaubatz, Kurt Taylor. 1996. "Democratic states and commitment in international relations." *International Organization* 50(1):109–139.
- Gibler, Douglas M. 2008. "The Costs of Reneging: Reputation and Alliance Formation." *Journal of Conflict Resolution* 52(3):426–454.
- Gibler, Douglas M and Scott Wolford. 2006. "Alliances, Then Democracy: An Examination of the Relationship Between Regime Type and Alliance Formation." *Journal of Conflict Resolution* 50(1):129–153.

- Gilligan, Michael J. 2004. "Is There a Broader-Deeper Trade-Off in International Multilateral Agreements?" *International Organization* 58(3):459–484.
- Gowa, Joanne. 1995. *Allies, Adversaries, and International Trade*. Princeton University Press.
- Häge, Frank M. 2011. "Choice or circumstance? Adjusting measures of foreign policy similarity for chance agreement." *Political Analysis* 19(3):287–305.
- Johnson, Jesse C. 2015. "The cost of security: Foreign policy concessions and military alliances." *Journal of Peace Research* 52(5):665–679.
- Johnson, Louis. 1950. "Louis Johnson to Harry S. Truman, with attachment, July 14, 1950." Memo.
- Kim, Tongfi. 2011. "Why Alliances Entangle But Seldom Entrap States." *Security Studies* 20(3):350–377.
- Koremenos, Barbara. 2005. "Contracting around International Uncertainty." *American Political Science Review* 99(04):549–565.
- Koremenos, Barbara, Charles Lipson and Duncan Snidal. 2001. "The Rational Design of International Institutions." *International Organization* 55(04):761–799.
- Lai, Brian and Dan Reiter. 2000. "Democracy, Political Similarity, and International Alliances, 1816—1992." *Journal of Conflict Resolution* 44(2):203–27.
- Leeds, Brett Ashley. 1999. "Democratic Political Institutions, Credible Commitments, and International Cooperation." *American Journal of Political Science* 43(4):979–1002.
- Leeds, Brett Ashley. 2003. "Alliance Reliability in Times of War: Explaining State Decisions to Violate Treaties." *International Organization* 57(4):801–827.
- Leeds, Brett Ashley, Andrew G Long and Sara McLaughlin Mitchell. 2000. "Reevaluating Alliance Reliability: Specific Threats, Specific Promises." *Journal of Conflict Resolution* 44(5):686–699.
- Leeds, Brett Ashley and Burcu Savun. 2007. "Terminating Alliances: Why Do States Abrogate Agreements?" *The Journal of Politics* 69(4):1118–1132.
- Leeds, Brett, Jeffrey Ritter, Sara Mitchell and Andrew Long. 2002. "Alliance Treaty Obligations and Provisions, 1815-1944." *International Interactions* 28(3):237–260.
- Levendusky, Matthew S and Michael C Horowitz. 2012. "When Backing Down is the Right Decision: Partisanship, New Information, and Audience Costs." *The Journal of Politics* 74(2):323–338.
- Li, Quan. 2003. "The effect of security alliances on exchange-rate regime choices." *International Interactions* 29(2):159–193.

- Long, Andrew G. 2003. "Defense Pacts and International Trade." *Journal of Peace Research* 40(5):537–552.
- Martin, Lisa L and Beth A Simmons. 1998. "Theories and Empirical Studies of International Institutions." *International Organization* 52(4):729–757.
- Mattes, Michaela. 2012. "Reputation, Symmetry, and Alliance Design." *International Organization* 66(4):679–707.
- Mattes, Michaela and Mariana Rodríguez. 2014. "Autocracies and international cooperation." *International Studies Quarterly* 58(3):527–538.
- McManus, Roseanne W and Keren Yarhi-Milo. 2017. "The Logic of "Offstage" Signaling: Domestic Politics, Regime Type, and Major Power-Protégé Relations." *International Organization* 71(4):701–733.
- Morgan, T Clifton and Glenn Palmer. 2000. "A Model of Foreign Policy Substitutability: Selecting the Right Tools for the Job(s)." *Journal of Conflict Resolution* 44(1):11–32.
- Morrow, James D. 1991. "Alliances and Asymmetry: An Alternative to the Capability Aggregation Model of Alliances." *American Journal of Political Science* 35(4):904–933.
- Morrow, James D. 2000. "Alliances: Why Write Them Down?" *Annual Review of Political Science* 3:63–83.
- Murray, Jared S, David B Dunson, Lawrence Carin and Joseph E Lucas. 2013. "Bayesian Gaussian Copula Factor Models for Mixed Data." *Journal of the American Statistical Association* 108(502):656–665.
- Poast, P. 2012. "Does Issue Linkage Work? Evidence from European Alliance Negotiations, 1860 to 1945." *International Organization* 66(1):277–310.
- Poast, Paul. 2013. "Can Issue Linkage Improve Treaty Credibility? Buffer State Alliances as a "Hard Case"." *Journal of Conflict Resolution* 57(5):739–764.
- Poast, Paul. 2019. *Arguing about Alliances: The Art of Agreement in Military-Pact Negotiations*. Cornell University Press.
- Seawright, Jason. 2016. *Multi-Method Social Science: Combining Qualitative and Quantitative Tools*. Cambridge University Press.
- Seawright, Jason and John Gerring. 2008. "Case selection techniques in case study research: A menu of qualitative and quantitative options." *Political Research Quarterly* 61(2):294–308.
- Smith, Alastair. 1995. "Alliance Formation and War." *International Studies Quarterly* 39(4):405–425.

- Snyder, Glenn H. 1984. "The Security Dilemma in Alliance Politics." *World Politics* 36(04):461–495.
- Snyder, Glenn H. 1990. "Alliance theory: A neorealist first cut." *Journal of International Affairs* 44(1):103–123.
- Snyder, Glenn H. 1997. *Alliance Politics*. Ithaca: Cornell University Press.
- Starr, Harvey. 2000. "Substitutability in Foreign Policy: Theoretically Central, Empirically Elusive." *Journal of Conflict Resolution* 44(1):128–138.
- Thompson, Alexander. 2010. "Rational design in motion: Uncertainty and flexibility in the global climate regime." *European Journal of International Relations* 16(2):269–296.
- Tomz, Michael. 2007. *Reputation and International Cooperation: Sovereign Debt Across Three Centuries*. Princeton: Princeton University Press.
- Warren, T Camber. 2016. "Modeling the coevolution of international and domestic institutions: Alliances, democracy, and the complex path to peace." *Journal of Peace Research* 53(3):424–441.
- Wolford, Scott and Moonhawk Kim. 2017. "Alliances and the High Politics of International Trade." *Political Science Research and Methods* 5(4):587–611.