

Keeping Your Friends Close, But Acquaintances Closer: Why Weakly Allied States Make Loyal Coalition Partners

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Abstract

What determines the degree of alliance contributions to conflict theaters? France’s military budget was twice the size of Italy’s at the outbreak of the Gulf War, yet their troops contribution was ten times the size. This disparity demonstrates a simple but consequential point: alliance commitments are always unequal. We shed light on this important but under-explored topic by exploring the determinants of the degree of alliance contributions to conflict theaters. Through a new data set of relative country-level military contributions to the war in Afghanistan (2001-2014), we measure the extent to which states committed troops to the war during its early years, relative to how many troops they could have contributed. Drawing upon measures of position within the alliance network we argue that states contribute to ongoing conflicts in proportion to their potential gains in the broader security community. Countries that are already closely aligned with the central coalition actors and those stranded on the periphery alike tend to under-commit troops relative to the largest contributors, whose moderate alignments leave substantial room for subsequent gains to be had from signaling their commitment to the leading coalition actor.

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1 Introduction

In 2001 the United States launched the war in Afghanistan with the goal of overthrowing the Taliban and dismantling Al Qaeda. But it did not do so alone; instead it led a coalition of 50 other states that fought alongside the United States until it formally ended in 2014.¹ Not every state contributed equally. While the United States sent thousands of troops for the duration of the conflict, others contributed only a handful to fulfill their contractual alliance obligations under NATO. Yet some states had no formal alliance obligations and still incurred significant costs by sending troops. New Zealand lost almost a dozen troops in the Afghanistan conflict; a difficult thing for a state leader to justify to their public when the outcome of the conflict is largely immaterial to the state at hand.

This is exemplary of a broader trend in coalition warfare. Some states contribute forces to coalition wars because they care about the material outcome of the conflict and hope to influence that outcome in some significant way. Others contribute forces because alliance obligations or expectations create a cost to free riding. But what motivates some states to pay a heavy cost to fighting alongside another country when traditional security calculations or alliance obligations don't exist? Neither of those theories explain contributions like that of New Zealand to the war in Afghanistan; states that are unaffected by the outcome of the conflict, that have no notable ability to influence the outcome of the war, that experience no reputational cost from refusing to participate, and yet willingly risk high costs from their participation. Table 1 shows that New Zealand is not an isolated incident. Many of the states that made the most personally costly contributions were not those that had the largest stake in the outcome.

This paper explains such contributions by developing a new theory about coalition warfare participation by states whose primary objective in fighting is not to influence the outcome of the conflict or maintain their current reputation as reliable allies who fulfill their contractual obligations. We develop a new theory of states who contribute forces to coalition warfare in

¹This refers to Operation Enduring Freedom, not the ongoing Operation Freedom's Sentinel, which has been conducted far more unilaterally.

State	Contribution
Denmark	0.66
New Zealand	0.65
United States	0.53
Romania	0.53
Netherlands	0.44
Germany	0.44
Norway	0.34
Australia	0.29
Turkey	0.27
Spain	0.20

Table 1: Top 10 contributors to ISAF (2001) by percent of armed forces. Source: IISS Military Balance (2002). Canada's conflict-leading contributions are omitted because this data only references 2001.

order to *develop* their reputation as reliable allies. These states make costly contributions not because they have close relationships with the coalition leader, but because they have room to gain. As such, their contribution is disproportionately costly relative to the size of their armed forces to signal their desire for a strong relationship with their coalition partner. We find that if state military contributions are measured not by the number of troops they contributed, but the proportion of their military forces they contributed, that states seeking to develop a stronger relation with the central actor in the coalition network are more likely to have higher proportional troop contributions.

In other words, states that wish to increase their ties to central actors in the coalition network seek to do so by over-contributing, sending a larger portion of their armed forces than other states that were formally obligated to partake in coalition operations. This finding has important implications for understanding the costly means by which states seek to re-align themselves in international alliance networks. Conflict is generally understood as a costly tool which states employ to achieve their international objectives. One of those objectives can be unrelated to the outcome of the conflict itself. States may rely on war efforts to serve as a signal of willingness to undergo large costs in the hopes that this will improve their relationship with central states in the future. This can help explain the ways that states use conflicts which are

not of immediate strategic importance to gain the attention and (hopefully) respect of central players in the international system. Simply put, war can be a good excuse for improving ties with important states. As such, these calculations alter conflict outcomes because the quality of coalitions impacts factors like military skill, coordination, and legitimacy (Auerswald and Saideman 2014; Saideman 2016; Cranmer and Menninga 2017). But having more eager partners is not always an obvious gain. Receiving coalitional support from acquaintances rather than close allies could reduce the ease of coordination and increase the cost of side payments (Papayouanou 1997; Morrow 1991; Wolford 2015). During the Korean War, for example, the United States turned down Pakistan's offer of coalition forces because of fears it reduce US control over the conflict and cause operational inefficiency (Stueck 1997). This points to the importance of understanding who joins military coalitions and why (Wolford 2015). Our theory also has broader implications for theories about institutionalization. States are willing to incur costs in an institutional context not when they are already well embedded in those institutions, but when they have the most to gain from further institutionalization.

This paper proceeds in five parts. In part two we explore existing explanations for coalition warfare, which thus far have focused on the manner in which states fight together rather than explaining why they bother fighting together at all. Part three develops our theory by applying the costly signaling theory to coalition warfare through a novel measure of the costliness of a state's contribution to coalition warfare: the relative pressure of that mobilization based on the size of its available armed forces. Part four empirically test this finding by examining coalition contributions during the war in Afghanistan (2001-2014), which presents a ripe test case for our theory given variation in the alliance obligations of the states that participated as well as their level of participation. Section five includes a discussion of the generalizability of our results for the broader theory, explaining how states seek to alter and leverage their position within the network of capable international actors. Section six concludes and discusses areas where we are particularly interested in receiving feedback.

2 Existing Explanations for Contributions to Coalition Warfare

An alliance between two actors constitutes a promise to take a certain action in the event of a particular contingency (Altfeld 1984). In the international security context, an alliance is thus often a promise to defend the other actor in the event of a threat to their security (Waltz 1979; Walt 1987) or to facilitate mutually beneficial cooperation when states have common objectives (Keohane 1984; Wolford 2014). Attempts to explain why countries contribute to alliances to varying degrees can be divided into four different categories; theories of collective action, the balance of threat, alliance dependence, and domestic politics (Bennett, Lepgold and Unger 1994; Haesebrouck 2016a). The *collective action hypothesis* introduced by Olson and Zeckhauser (1966) argued that dominant states will end up making the largest contributions because smaller states can simply free ride while continuing to garner the benefits of the alliance relationship writ large. These dominant states, with larger economies and militaries, end up paying a disproportionate burden to secure goods even when the public benefits of those goods are reaped by states that made little contribution themselves. The *balance of threat hypothesis* argues that state contributions should be proportional to the gravity of the threat an issue presents to a state. When faced with a larger threat, a state will contribute more to an alliance coalition that they anticipate mitigating that threat (Walt 1987; Sandler and Shimizu 2014; Baltrusaitis 2010). The *alliance dependence hypothesis* argues that states in an alliance must balance two competing fears; the fear of abandonment and the fear of entrapment (Snyder 1984). Problematically, reducing one of these risks necessitates an increase in the risk of the other. Allied support is thus explained by how a state feels about these relative risks; a states will contribute to an alliance when the fear of abandonment exceeds the fear of entrapment. States that most fear abandonment will be those that are most dependent on the other partner in the alliance meaning the military and economic payoffs of the alliance relationship would be difficult to replace. This theory has been expanded by scholars who note

that “alliance value” explains contributions by states who believe they can leverage their allies partner in their favor (Davidson 2011b). The *domestic hypotheses* of alliance contributions take multiple forms (Tago 2009; Ashraf 2011; Pilster 2011; Wolford and Ritter 2016). Theories of state autonomy and domestic society predict that leaders that can insulate themselves from external constraints on their decision-making about alliance contributions are consequently able to do so even when these leaders’ preferences regarding contributions differ from those of the public (Saideman 2016; von Hlatky and Massie 2018). Theories of bureaucratic politics instead examine the relationship within the government. Bureaucratic decision-making requires negotiations and bargaining among relevant actors and as such state contributions are the outcome of these bargaining decisions and the environment shaping the bargaining framework (Rathbun 2004; Mello 2014).

Other literature on state contributions to joint efforts have examined topics like UN peacekeeping. Here, research has found that states that are more centrally located within the international network as measured by policy preferences will contribute the most troops to that peacekeeping mission because they gain private benefits from fighting alongside like-minded states (Dorussen, Gartzke and Westerwinter 2016). While theoretically important, these findings do not explain the costliness of a state’s contribution nor whether that contribution was used as a signal to improve a state’s ties with other actors in the network. Their network position is assumed as a static factor explaining the level of contribution when in reality it is a position that states want to actively manipulate. The costliness of UN peacekeeping contributions as a signal is harder to measure considering the risk of casualties and collateral damage is lower and domestic publics are less attuned to their state’s participation in UN peacekeeping than active military operations. Although the importance of theorizing differing contributions has been recognized in the context of US-led coalition efforts, this work has focused on single-dyad case studies that would benefit from broader analysis that could confirm the generalizability of their findings (Mello and Saideman 2018).

3 Theory of Signaling via Coalition Contributions

3.1 Relative Contribution Cost and Dynamic Interstate Alliances

Coalitions and alliances are not the same thing. Coalitions can be a manifestation of an alliance promise or be an ad hoc relationship oriented toward an immediate goal rather than a broader security arrangement (Weitsman 2010). Our theory lies at the intersection of research on coalitions and alliances to explain why states contribute more or less to coalitions than we would expect (Saideman 2016). We argue that the former are used as a costly signal by a state that is dissatisfied with an alliance relationship they regard as too weak.

While most of the recent research on contributions to coalition warfare has focused on explaining the magnitude of state contributions, the foundational literature argued that support for all four theories was empirically observed because they explained different phenomena. External pressures like collective action, the balance of threat, and alliance dependence explain *whether* a state contributes to coalition warfare but *how* that state contributes has been argued to be explained by internal constraints (Bennett, Levgold and Unger 1994). As such, differences between these theories can be reconciled by examining the actual resources a state contributes to a coalition effort rather than just whether they contribute (Cranmer and Menninga 2017). The problem throughout much of this previous work is in how it measures the size of a state's contribution. Almost all prior analysis has measured a state's contribution in absolute terms; the number of troops, financial contributions, foreign aid, or peacekeepers sent a particular operation (Mello 2014; Haesebrouck 2016b). This measure makes sense for theories interested in explaining who contribute the most, since absolute terms describe the highest contributors. But this does not describe the expected cost a state faces for making a contribution. It is less costly for the United States to send 1,000 forces into a conflict theater than for Poland to do the same. The former has a substantially larger military force and thus experiences a lower national cost in terms of the burden such a contribution places on its military

forces and the zero-sum trade-off of this contribution relative to other security needs. Figure 1 shows that these two measures – total troops contributed and percent of troops contributed – provide different baselines about which states had the most costly contributions to the war in Afghanistan.

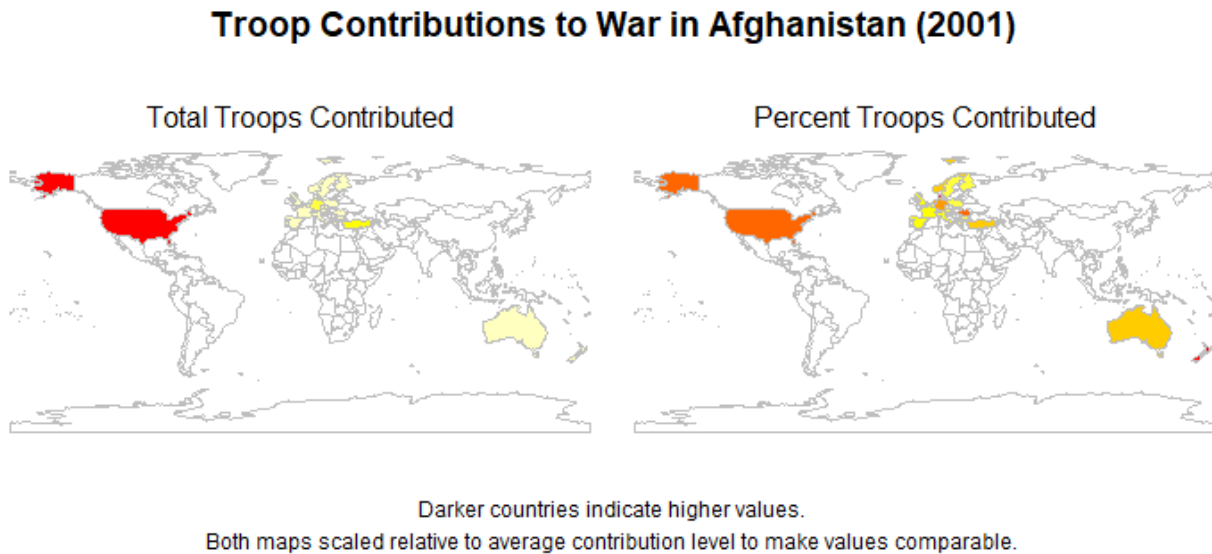


Figure 1: Country Troop Contributions to war in Afghanistan (2001) Source: IISS Military Balance report

The second problem is how current hypotheses think about alliances. These theories anticipate the highest contributions coming from states that are dependent on the security guarantee of the central coalition actor and those that perceive a special relationship with the United States (Haesebrouck 2016a; Howorth 2014; Græger and Haugevik 2009; Biehl, Giegerich and Jonas 2013). However, this views the alliance relationship as temporally indistinct and oriented towards maintaining continuity in the current relationship, not seeking change. As such, the assumption is that countries that fight together do so because they already have closely aligned interests. What this misses is how fighting together can be a method for altering the perceived

alignment of interests.

3.2 Benefits of Over-contributing Forces

We argue that a state can use over-contributions to coalition warfare as a costly signal to the central coalition actor that it desires a closer relationship with that central actor. Over-contributing is a way to send a separating signal that even though a state may be less closely aligned with the central actor prior to or at the outset of the conflict, it is willing to incur costs for the benefit of the central actor. As such, the most costly contributions do not come from those with the most well-established ties with the coalition lead (Ringsmose 2010), those who care about their broader international reputation (Pedersen 2018), or those who are capitulating to demands from the coalition leader (Schweller 1997).

A few factors must be true for this theory to hold. First, the over-contributing state must not be seen as participating in the conflict because it garners security benefits from the conflict's outcome. If this were the case, the central coalition actor would be less likely to interpret the over-contribution as a sign of good will and would instead interpret it as self-interest. Second, the over-contributing state must be dissatisfied with the current state of the alliance relationship. For an over-contribution to be a costly signal of one's commitment to their ally, the private incentives to contribute cannot be egoistic security (Davidson 2011a). While the current alliance hypotheses argues that the highest contributions will come from states that have a special relationship with the United States or that are currently dependent on the security guarantee, we argue instead that states that would benefit from an increased security dependency or that want a more tightly linked relationship with the United States will have more costly contributions. States that already have a special relationship or a reliable security guarantee do not need to over-contribute because their relationship is, in some sense, locked in. These states have some flexibility in their expected contributions and are unlikely to lose their special relationship status simply because they did not go above and beyond in contributing to the coalition effort. They just need to contribute enough that they are not seen as free

riders.

Rather, states will over-contribute to coalition warfare when they expect their contribution to serve as a costly signal of their expectations for future alliance value. The cost of contributing to coalition efforts is salient in the minds of policymakers and noticed by coalition leaders (Ringsmose 2010). US Secretary of Defense Gates noted during the war in Afghanistan that there was a “two-tiered alliance” that noted a distinction between “allies willing to fight and die to protect people’s security and others who are not”. This has been observed with Nordic states who make costly contributions to improve their relationship with the US because that relationship improves their international status (Pedersen 2018). Our theory differs importantly from the “alliance value” explanation provided by Davidson (2011a) and Massie and Bloomfield (2016) who hypothesize that it’s about present alliance value. States with a high, but stable current alliance value have no incentive to over-contribute because they don’t get any additional payoff from doing so and there is a lower risk of fallout from making a normal contribution since their ties are already close (Davidson 2014). This is why small states are able to free ride and take the relationship for granted as pointed out by Keohane (1971), but we don’t always see that because those that desired an improved tie won’t free ride and will in fact try to signal the opposite. In these cases, you have less of a need to signal your value for the relationship than when you are acquaintances that would benefit from signaling a change in your desired alignment tie (Gartzke 2012; Gibler and Rider 2004).

Hypothesis 1 *A state with an interest in improving relationship ties with the central coalition actor will make more costly contributions than a state without an interest in improving relationship ties.*

Our theory, presented in figure 2, thus predicts a non-linear relationship between the current strength of a state’s alliance with the central coalition actor and that state’s expected cost of contributing to the coalition war effort. Previous work about alliances expects this relationship to be linear (Massie and Bloomfield 2016; Haesebrouck 2016b; Ringsmose 2010). The closest allies of the central coalition actor may make the highest absolute contributions by virtue of

their size and military strength, but they are not the states that make the highest relative contributions since they have no incentive to incur the costs that high relative contributions entail. Instead, it's those that want to be closer allies, relatively speaking, that contribute the most.

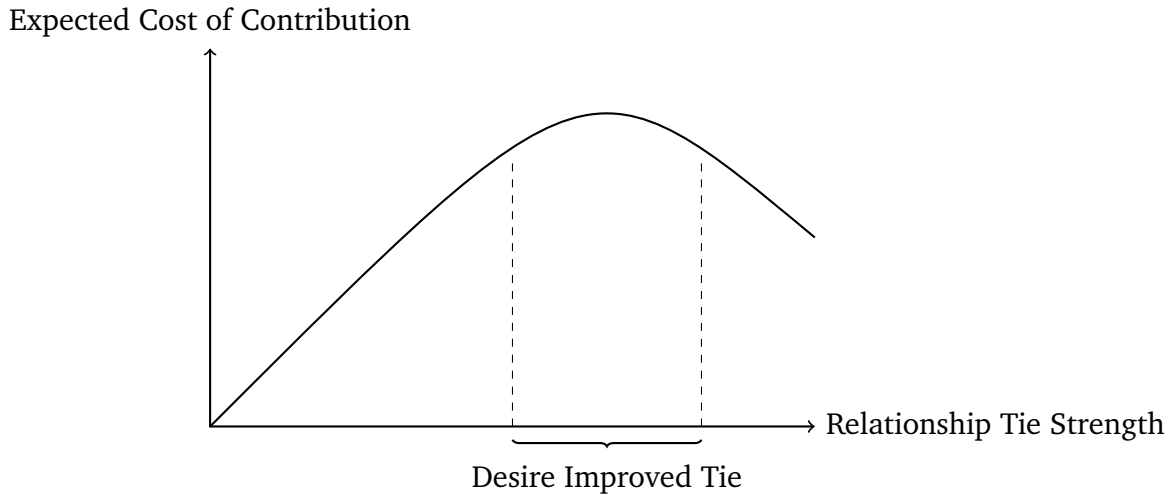


Figure 2: Theory of State Contributions to Wartime Coalitions

Though there is an extensive literature on the ways in which states aggregate their capabilities to bolster their security against foreign threats (Waltz 1979), the security benefits of an alliance do not precisely map onto the security benefits of joining a wartime coalition. The former is an example of a public good; the benefits of the alliance can be reaped even if a participant in the alliance free rides (Olson and Zeckhauser 1966). During wartime coalitions, however, there are more clear private benefits to states from participating in that coalition. Advocates of the balance of threat perspective point to private incentives actors have to ensure that the aggregate contributions to defense are sufficient to deal with the threat (Bennett, Lepgold and Unger 1997; Baltrusaitis 2010; Davidson 2011b). States get private good benefits from coalition war-fighting. For some states, that private good is a desirable war outcome. For others, the private good to be gained from coalition war-fighting is improving the quality of your relational tie with the central actors leading that conflict. This tie is most improved when a state's contribution to the coalition effort is a costly signal of their commitment to the conflict which happens when they have over-contributed relative to the contribution that would

be expected from a state with their military capacity. Since alliances are a costly signal of one's intention to cooperate, it should also be true that fulfilling alliance-like obligations even when you are not bound by those alliance obligations would also be a signal of your desire to cooperate more in the future (Warren 2010).

Besides security, there are other reasons state seek and maintain alliances with other states. There are domestic benefits to establishing yourself as a closer ally with a powerful country as was witnessed with Egypt in the 1960's (Barnett and Levy 1991) and the United Kingdom during the Iraq War (Davidson 2011a). In these cases, political leaders who fear domestic opposition from other government actors like bureaucrats or non-partisans or from non-government actors like voters or interest groups may use alliances with other states to demonstrate competent policymaking.

This private goods theory of coalition conflict, as distinct from alliances, explains why states would vary in the *degree* of their contribution. Acquaintances make a costly contribution when they could have chosen to free ride because their interest is not in the public good of security achieved via victory in the conflict but private interests like a security umbrella down the road or closer economic or diplomatic ties with the state to whom they sent a costly signal of support. Previous literature has noted that you should get a payoff from signaling that you honored an alliance commitment and states that do so get more allies in the future because they are seen as reliable (Gibler 2008). This is consistent with our logic where you hope that your signal of strongly valuing the relationship causes the other actor to later take actions that recognize that.

Because the value of the signal is determined by its cost, not by its effect, it does not matter if the signaling state sends forces that can materially influence the outcome of the conflict (Davidson 2011a). It only matters that the signal is interpreted as one that was costly for the sender irrespective of its effects. In most cases, the powerful state not only does not need support from smaller state in order to win the conflict, but may actually want to maintain control of the forces that will determine the conflict outcome. This is consistent with alliance theories

about the autonomy benefits one actor gets from asymmetric alliances (Morrow 1991). As such, smaller states do not want to make contributions that are too influential in the conflict's outcome because of the risk of intruding upon the powerful state's decision-making. Importantly, this differs from other perspectives like Bennett, Levgold and Unger (1994) since the US is not exercising leverage over smaller states to induce their contributions, instead the momentum comes from the smaller states whose contribution does more to serve their interests than the interests of the powerful state.

4 Research Design

4.1 Data

Our dependent variable is country-year troops contributions to the war in Afghanistan. For the first model, we measure this as a binary variable coded 1 if the country-state contributed any military forces and coded 0 otherwise. The second model measures country-year contributions as a ratio of the count of troops contributed divided by the number of troops in that country-years armed forces. As such, the second dependent variable is a measure of the cost a state accepts for a given contribution. To focus on the decision to commit troops, as opposed to a country's resilience to casualties – which are not necessarily synonymous – we focus on the opening stage of the war from 2001-2005. The costliness of a state's contribution is measured using troop ratios as opposed to financial cost since the risk of casualties and collateral damage are two costs unique to personnel contributions that states are attentive to when deciding whether and to what extent they should participate in coalition warfare (Ringsmose 2010; Chivvis 2014; Haesebrouck 2017). The troop data was gathered from the International Institute for Strategic Studies' (IISS) annual "Military Balance" reports (International Institute for Strategic Studies N.d.) which includes detailed information on every country's current military portfolio and overseas commitments. Not only does the Military Balance include the number of troops each country contributed to the War in Afghanistan, it also contains information on the

total number of troops in each country's military at the time. Figure 3 shows the total number of troops in Afghanistan during the initial years of the war and figure 4 shows the distribution across states. Some states like Denmark, New Zealand, the United States and Romania contributed roughly 3 times the size of their armed forces than did the median contributor.

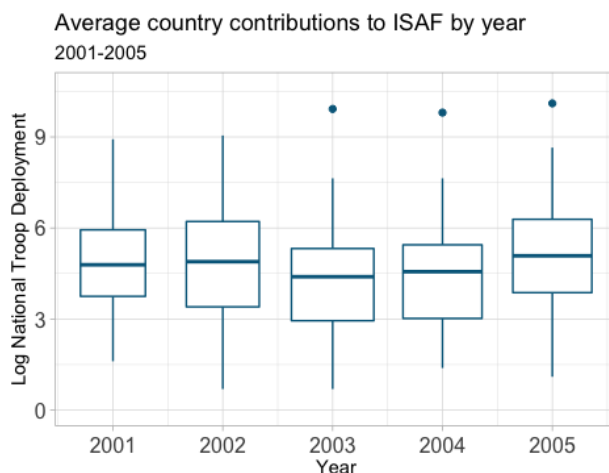


Figure 3: Total Foreign Troops in Afghanistan (2001-2005) Source: IISS Military Balance Report

Our explanatory variable concerns a state's relationship with the United States. We predict that states that have a weaker relationship with the US than they desire are more likely to choose costly contributions to signal that dissatisfaction to the United States in the hopes that such a signal will curry favor and result in an improved relationship. States that are satisfied with their current relationship with the US, regardless of the strength of the current relationship, are less likely to make unexpectedly costly contributions.

As 5 demonstrates, the relationship between structural equivalence and troop contributions follows our expectation reasonably well, with a curvilinear relationship between a country's average contribution and their structural equivalence with the United States. However, it is important to note that the curvilinear relationship captures all countries well, except for Canada, who after 2002 actually contributed a far greater proportion of all troops *and* is the most structurally equivalent country with the United States. Prior research on Canada's contribution to ISAF is consistent with our theory. There was a consensus among elites about the need to

Troop Contributions to ISAF (2001-2005)

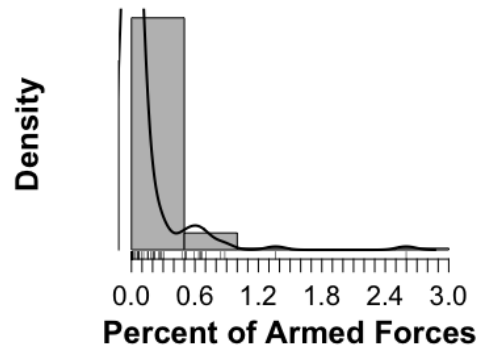


Figure 4: Distribution of Country Contributions to Afghan war (2001-2005) Source: IISS Military Balance report

boost Canada's reputation as a reliable and valued ally so they contributed more troops than they would have otherwise (Massie and Zyla 2018). Throughout the rest of the paper, we fit all models with and without Canada to show that its inclusion includes substantial leverage on the conclusions reached, though in all other observations the hypothesized curvilinear relationship holds.

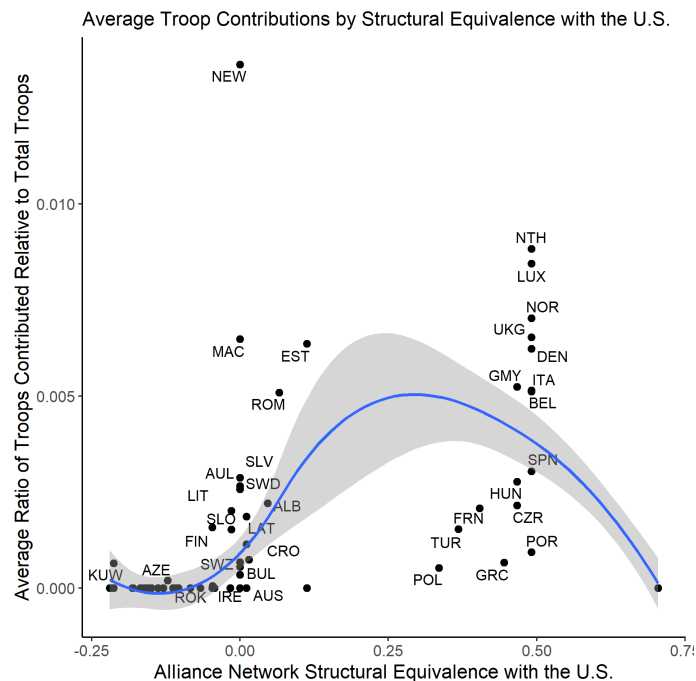


Figure 5: Troop Ratio by Structural Equivalence with the United States

4.2 Measures

There are a variety of ways to measure burden sharing including the number of troops as a share of population size, armed forces size, armed forces in the coalition, and share of GDP (Hartley and Sandler 1999). We use the number of troops as a share of the size of armed forces because that best captures the security burden a country has willingly undertaken to fight in another state's war.

We operationalize this using network statistics from the yearly alliance network. Also because of the potential benefits of signaling reliability to the United States, we compiled data on ideal point estimates relative to the United States in each year which is consistent with operationalizations used in previous work on coalition warfare (Wolford 2015). Our primary network statistic of interest is a country's structural equivalence with the United States in the alliance network. This serves as a useful means of capturing the degree to which the country is deeply embedded within or sits on the periphery of the initiating state's security community.

4.3 Methods

Our unit of analysis for these models is the country-year, spanning from 2001-2005. Though we include and are primarily interested in measures of network statistics, because our outcome of interest is a node-level attribute, we employ generalized linear models and generalized additive models (GAMs) as opposed to methods for modeling tie formation (e.g. exponential random graph and latent space models).² For each dependent variable, we estimate a baseline model focused only on effects of interest and then a second which includes controls for distance and democracy. In the former, we first fit a GLM with a polynomial term. But because a polynomial term forces a specific curvilinear relationship upon the data, we also fit a generalized additive model with smoothing terms to see if a similar relationship emerges under a less restrictive

²We are also considering extensions of network models for node formation, i.e. Fosdick and Hoff (2015), at least as a robustness check of sorts. The only issue with the network approach being that said models are not designed to have the same effect flexibility as GAMs.

format.

4.3.1 Model 1: Decision to Commit Troops

The curvilinear relationship in figure 5 largely results from the data likely capturing two separate processes. First, capturing why the data is zero-inflated, states initially decide whether or not they will contribute any troops. In this section we model that choice, leaving the amount of troops provided for the next part. Our model for sending troops is represented by equation (1), where ‘equiv’ represents structural equivalence in the alliance network with the United States³. A state’s distance from the U.S. in terms of its ideal point estimate is captured by ‘ideal’. (Bailey and Voeten 2018) Last we include terms controlling for democracy and the state’s distance from Afghanistan.

$$\text{Contribution}_{it} = \beta_0 + \beta_1 \text{equiv}_{it} + \beta_2 \text{ideology}_{it} + \beta_3 \text{dem}_{it} + \beta_4 \text{dist}_{it} \quad (1)$$

4.3.2 Model 2: Decision to Over-commit Troops

Next, we subset the data to only look at contributors and then examine the predictors of how many troops a country commits, relative to its available number of troops. Here our equations are almost the same, but we include a squared employ linear, as opposed to logistic, regressions because the dependent variable is continuous. With respect to the linear model, we avoid polynomial terms because they force the specified relationship onto the data, instead testing for the expected positive relationship if a linear model is fit.⁴ After confirming these results we switch to a generalized additive model to explicitly capture non-linear effects.

$$\text{troop_ratio}_{it} = \beta_0 + \beta_1 \text{equiv}_{it} + \beta_2 \text{ideology}_{it} + \beta_3 \text{dem}_{it} + \beta_4 \text{dist}_{it}$$

³There are multiple possible measures of structural equivalence. We draw upon the Pearson coefficient, which compares the number of actual shared numbers to that one would expect in a truly random network.

⁴Note that we expect strong ties to commit more than weak ties, meaning an expected positive slope.

5 Results

With respect to a state's decision to commit any troops to Afghanistan, we see that estimates for structural equivalence and ideal point distance are robust to specification and move in the expected directions. In particular, when it comes to the decision to commit troops at all, we see that ideological similarity with the United States is particularly powerful as a predictor. Figure 7 demonstrates that the relationship is quite clear, with almost all contributors sitting close to the United States ideologically. Moreover, the predicted probabilities, which we derive from our logistic regression estimates, map on relatively cleanly to the actual data. However, it is important to note that our theory is focused on the *amount* of troops contributed, meaning the curvilinear relationship corresponds to the next set of models.

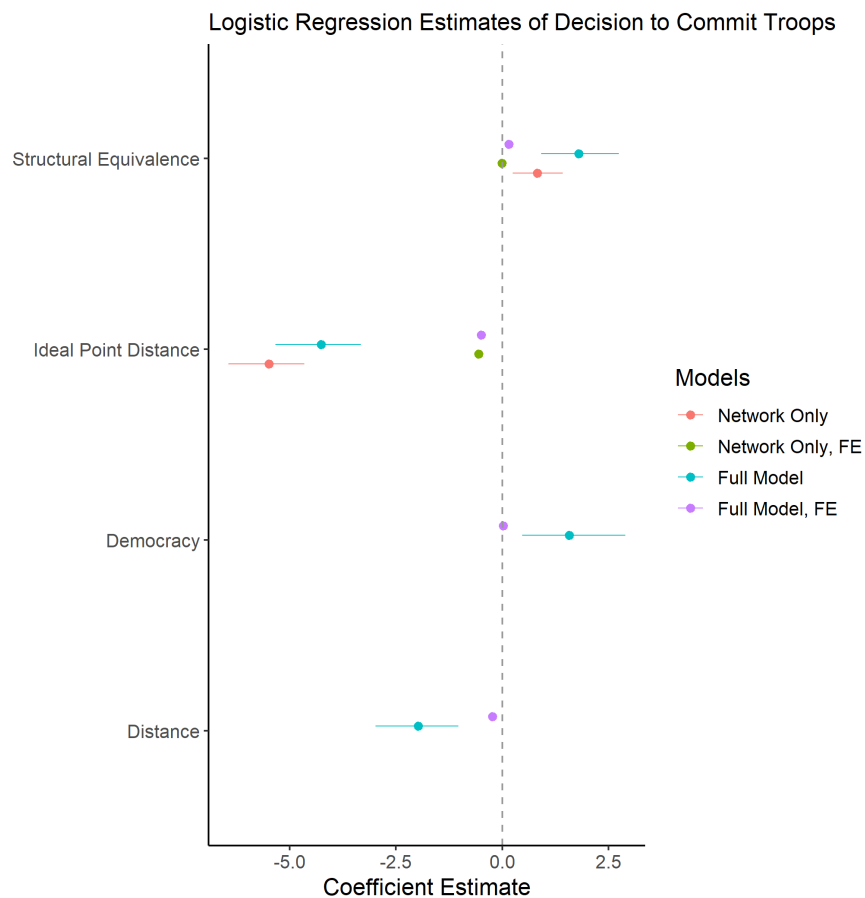


Figure 6: Model 1: Decision to commit any troops. FE corresponds to fixed effects.

Now that we are looking solely at the size of a state's contributions, we see that structural equivalence emerges clearly as the primary predictor. Though some of the largest contributors, such as New Zealand, sit on the periphery of the alliance network, the more deeply a state is embedded in the United States' security community, then the greater its expected contribution, on average. This fits generally with our expectation, where, even though the relationship is not perfectly linear, we expect states that are closely aligned with the initiating state to contribute more than those weakly aligned.

Interestingly, democracy is associated with a lower troop contribution than non-democracies. This actually aligns with work that has argued that democracies are less reliable allies and more likely to pull out of coalition conflicts early (Massie 2016; Gartzke and Gleditsch 2004). While a slightly different context than our theory, these arguments provide a logical extension as to why we should expect that democracies may actually be less likely to over-contribute.

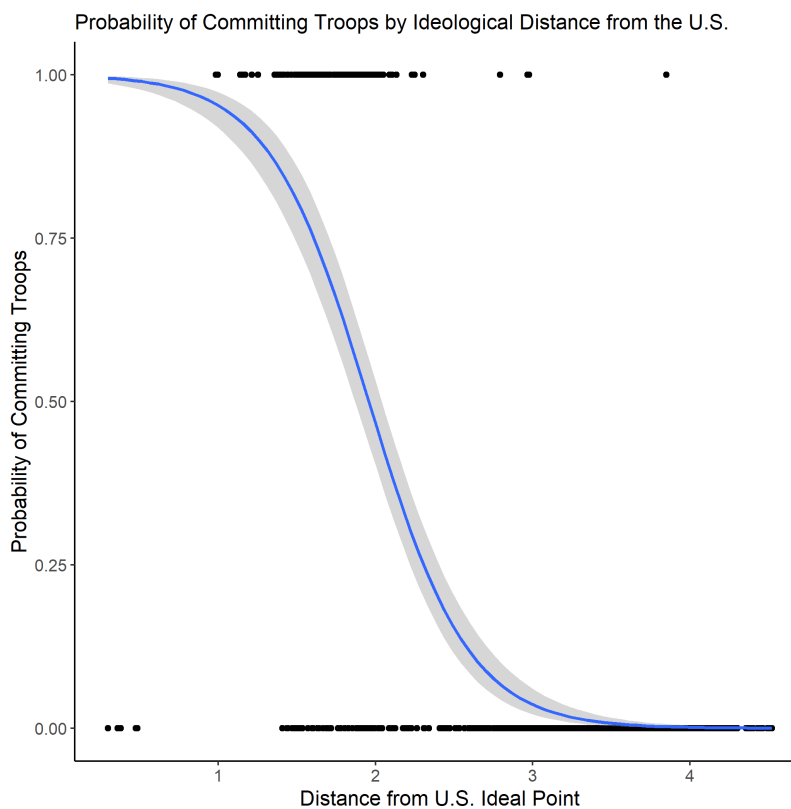


Figure 7: Predicted probability of committing troops against actual decision

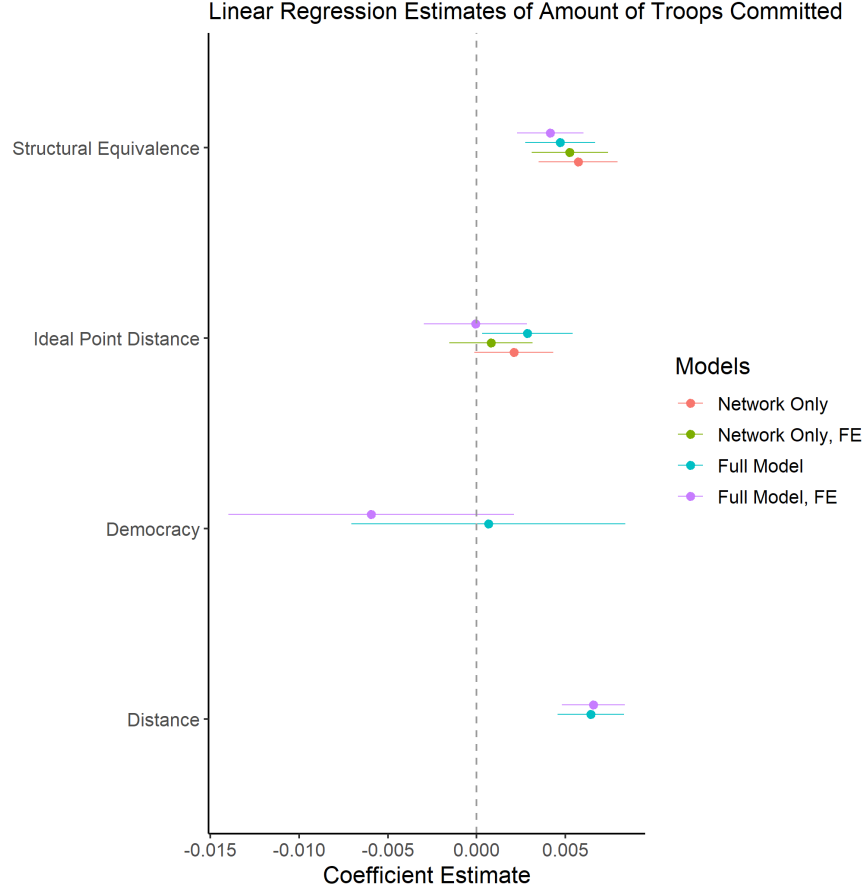


Figure 8: Model 2: Number of troops contributed, relative to number of available troops

Moving forward, we estimate a series of GAMs to test our core curvilinear hypothesis. GAMs are similar in structure to GLMs, but model relationships as a result of functions (which can be non-linear) rather than a constant coefficient. This generally takes the form of:

$$f(x) = y_i = \alpha + f_1(x_{i1}) + f_2(x_{i2}) + \dots + f_p(x_{ip}) + \varepsilon_i$$

where each function, $f_1, f_2, f_3, \dots, f_p$ models the relationship between predictor and outcome, but can easily accommodate linear and non-linear effects.

Across both models – with and without Canada – we find that smoothing function is statistically significant and the function corresponds well to the hypothesis, with a non-linear curve corresponding to moderately structurally equivalent states.

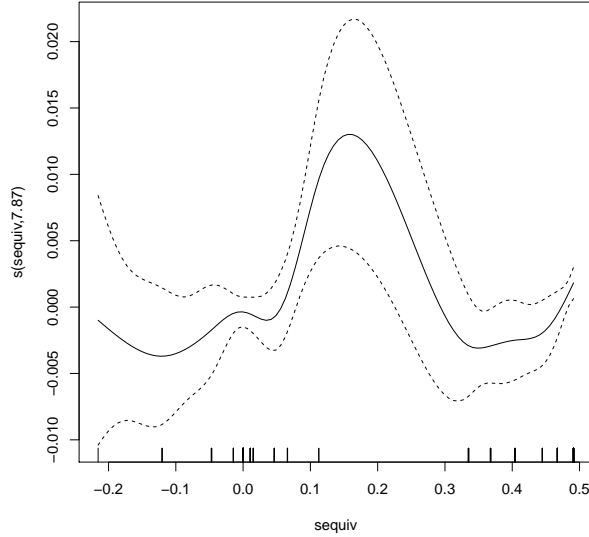


Figure 9: GAM without Canada

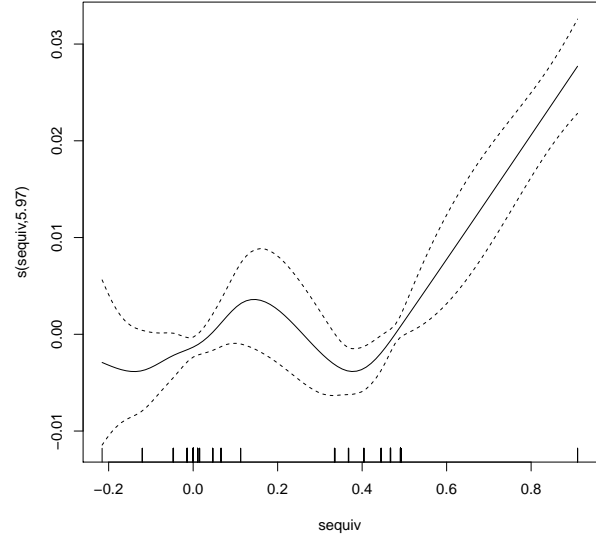


Figure 10: GAM including Canada

6 Discussion

Because alliance membership is a club good, not a pure public good, worries about being excluded from the security benefits of an alliance can incentivize a state to try to shore up the alliance by sending a costly signal of their commitment to their alliance partners. "Today, we should expect the European allies to find that the best way to strengthen (or avoid weakening) their bonds with the United States is to contribute to out-of-area operations like ISAF. According to this line of reasoning, the allies who put the highest premium on NATO's traditional products should be the ones – together with the United States – shouldering the heaviest burdens in Afghanistan" (Ringsmose 2010).

Our findings runs counter to that expected by theories about the balance of threats. For the balance of threat hypothesis, the states with the highest contributions are those that are most concerned about the threat the opposing state presents to their security (Haesebrouck 2016a). Yet, when contributions are measured as internal costs relative to the contribution a state could have made, the highest contributions are from states that appear to be opting into

a war in which they have no material stake. Denmark, New Zealand, and Romania, 3 of the top 4 contributors to ISAF in 2001 by our measure, are not the states that are most concerned about the threat that the Taliban and Al Qaeda posed to their national security. This empirical observation is not explained by the theory that states enter an alliance in order to balance against threats (Walt 1987).

Our findings also contrast those who have tested domestic politics explanations in the context of the war in Afghanistan. NATO's formal institutional structure was supposed to render public opinion less relevant as an explanation for coalition participation (Kreps 2010). However, we find that while NATO membership and its accompanying obligations to avoid accusations of defection may be sufficient to explain why states do not free ride, that does not explain why states like New Zealand that are not bound by alliance obligations end up over-contributing.

Previous theories described under the rubric of the alliance hypothesis also fail to explain this findings. For previous theories, ally support is expected when you can leverage your allies' power in your favor and is thus a measure of closeness (Davidson 2011b). This expects states that are the closest allies with the United States to be the largest contributors to US war efforts. Yet the relationship we see appears non-linear. These states do not over-contribute because the United States is their best protector or because they think they have the ability to influence the United States through their international clout as Ringsmose (2010) finds. Rather, it is the states that want the United States to be their best protector or that *want* the ability to influence international relations with the United States that are most likely to over-contribute. It's also not the case that the US coerced its closest allies into participating as argued by Kupchan (1988) because those are not the states that ended up doing the most participating relative to what they could have contributed. Thus, desire for stronger ties and the expectation that over-contribution will positively signal that desire explains our findings in a way that differs from previous theories.

While this analysis is limited to an examination of the war in Afghanistan, there is suggestive

evidence that the theory holds for other coalition conflicts. During the war in Libya, Denmark make a concerted effort to over-contributed forces, particularly air forces to the bombing campaign, in order to demonstrates their “relevance and trustworthiness to its great power allies in NATO, especially the United States” (Jakobsen, Ringsmose and Saxi 2018; Dicke et al. 2013). This effort appears to have paid off. US Secretary of Defense Robert Gates commended Denmark for its costly contribution to the conflict when he publicly noted that Denmark “...with their constrained resources, found ways to do the training, buy the equipment, and field the platforms necessary to make a credible military contribution.”

7 Conclusion

A state’s closest allies will not be the states most invested in fighting alongside that state. Rather, weakly aligned states that desire a closer relationship are most likely to overcontribute forces to coalition warfare. This finding produces a different list of contributors than what current theories predict.

The study of state contributions to coalition warfare provides unique insights if those contributions are measured relative to the cost they impose onto the contributor rather than the utility they provide regarding the conflict outcome. Not every state contributes to a war effort in order to influence the outcome of the war as theories of balance of threats predict. But it is also not the case, as predicted by the collective action hypothesis do states simply free ride when the conflict outcome is immaterial or, as predicted by the alliance dependence hypothesis, that the stronger your alliance, the more you contribute.

Rather, because war is costly, it can serve as a signaling function for states that want to convey their desire to improve their relationship with other states in the international system. By accepting comparatively large costs to fighting alongside another state, especially when such fighting does not otherwise benefit you, states can signal how much they value an alliance relationship in a way that they anticipate generating reciprocity and payoffs down the

road. Future work should examine whether states are making a smart bet in anticipating future payoffs from costly over-contributions; it is possible their gamble is incorrect. But for now, it suffices to say that states with the most interest in future payoffs from a better alliance relationship are the same states most likely to separate themselves from the rest of the coalition pact by over-contributing to wartime coalitions in the hopes that doing so signals their reliability.

References

- Altfield, Michael F. 1984. "The Decision To Ally: A Theory and Test." *Western Political Quarterly* 37(4):523–544.
- Ashraf, A. S. M. Ali. 2011. *The Politics of Coalition Burden-Sharing: The Case of the War in Afghanistan* Dissertation University of Pittsburgh.
- Auerswald, David P. and Stephen M. Saideman. 2014. *NATO in Afghanistan: Fighting Together, Fighting Alone*. Princeton University Press.
- Bailey, Michael A. and Erik Voeten. 2018. "A Two-Dimensional Analysis of Seventy Years of United Nations Voting." *Public Choice* 176(1):33–55.
- Baltrusaitis, Daniel F. 2010. *Coalition Politics and the Iraq War: Determinants of Choice*. Boulder, Colo: FirstForumPress. OCLC: ocn425960185.
- Barnett, Michael N. and Jack S. Levy. 1991. "Domestic Sources of Alliances and Alignments: The Case of Egypt, 1962–73." *International Organization* 45(3):369–395.
- Bennett, Andrew, Joseph Lepgold and Danny Unger. 1994. "Burden-Sharing in the Persian Gulf War." *International Organization* 48(1):39–75.
- Bennett, Andrew, Joseph Lepgold and Danny Unger. 1997. *Friends in Need: Burden Sharing in the Persian Gulf War*. St. Martin's Press.

- Biehl, Heiko, Bastian Giegerich and Alexandra Jonas. 2013. *Strategic Cultures in Europe: Security and Defence Policies Across the Continent*. Springer Fachmedien Wiesbaden.
- Chivvis, Christopher S. 2014. *Toppling Qaddafi: Libya and the Limits of Liberal Intervention*. Cambridge University Press.
- Cranmer, Skyler J. and Elizabeth J. Menninga. 2017. "Coalition Quality and Multinational Dispute Outcomes." *International Interactions* 0(0):1–27.
- Davidson, J. 2011a. *America's Allies and War: Kosovo, Afghanistan, and Iraq*. Springer.
- Davidson, Jason. 2014. "Heading for the Exits: Democratic Allies and Withdrawal from Iraq and Afghanistan." *Democracy and Security* 10(3):251–286.
- Davidson, Jason W. 2011b. A Neoclassical Realist Explanation of Transatlantic Alliance Burden-Sharing. In *America's Allies and War*. Palgrave Macmillan, New York pp. 11–30.
- Dicke, Rachel A., Nicholas Anson, Phillip A. Roughton and Ryan C. Henrickson. 2013. "NATO Burden-Sharing in Libya: Understanding the Contributions of Norway, Spain and Poland to the War Effort." *Polish Quarterly of International Affairs* 22:29–54.
- Dorussen, Han, Erik A. Gartzke and Oliver Westerwinter. 2016. "Networked International Politics Complex Interdependence and the Diffusion of Conflict and Peace." *Journal of Peace Research* 53(3):283–291.
- Fosdick, Bailey K. and Peter D. Hoff. 2015. "Testing and Modeling Dependencies Between a Network and Nodal Attributes." *Journal of the American Statistical Association* 110(511):1047–1056.
- Gartzke, Erik. 2012. "Contracts Between Friends: Alliances, Reputation, and International Politics.".
- Gartzke, Erik and Kristian Skrede Gleditsch. 2004. "Why Democracies May Actually Be Less Reliable Allies." *American Journal of Political Science* 48(4):775–795.

- Gibler, Douglas M. 2008. "The Costs of Reneging: Reputation and Alliance Formation." *Journal of Conflict Resolution* 52(3):426–454.
- Gibler, Douglas and Toby Rider. 2004. "Prior Commitments: Compatible Interests versus Capabilities in Alliance Behavior." *International Interactions* 30(4):309–329.
- Græger, Nina and Kristin M. Haugevik. 2009. The Revival of Atlanticism in NATO?: Changing Security Identities in Britain, Norway and Denmark. Technical report Norwegian Institute for International Affairs (NUPI).
- Haesebrouck, Tim. 2016a. "Democratic Participation in the Air Strikes Against Islamic State: A Qualitative Comparative Analysis." *Foreign Policy Analysis* pp. 1–22.
- Haesebrouck, Tim. 2016b. "Explaining the Member States' Varying Military Engagements: The Potential of a Strategic Culture Perspective." *Journal of Contemporary European Research* 12(3).
- Haesebrouck, Tim. 2017. "NATO Burden Sharing in Libya: A Fuzzy Set Qualitative Comparative Analysis." *Journal of Conflict Resolution* 61(10):2235–2261.
- Hartley, Keith and Todd Sandler. 1999. "NATO Burden-Sharing: Past and Future." *Journal of Peace Research* 36(6):665–680.
- Howorth, Jolyon. 2014. *Security and Defence Policy in the European Union*. The European Union series 2. ed ed. Basingstoke: Palgrave Macmillan. OCLC: 883290816.
- International Institute for Strategic Studies. N.d. *The Military Balance*. Oxford: Oxford University Press. OCLC: 440259871.
- Jakobsen, Peter Viggo, Jens Ringsmose and Håkon Lunde Saxi. 2018. "Prestige-Seeking Small States: Danish and Norwegian Military Contributions to US-Led Operations." *European Journal of International Security* 3(2):256–277.

- Keohane, Robert O. 1971. "The Big Influence of Small Allies." *Foreign Policy* (2):161–182.
- Keohane, Robert O. 1984. *After Hegemony: Cooperation and Discord in the World Political Economy*. Princeton, N.J.: Princeton University Press.
- Kreps, Sarah. 2010. "Elite Consensus as a Determinant of Alliance Cohesion: Why Public Opinion Hardly Matters for NATO-Led Operations in Afghanistan." *Foreign Policy Analysis* 6(3):191–215.
- Kupchan, Charles A. 1988. "NATO and the Persian Gulf: Examining Intra-Alliance Behavior." *International Organization* 42(2):317–346.
- Massie, Justin. 2016. "Why Democratic Allies Defect Prematurely: Canadian and Dutch Unilateral Pullouts from the War in Afghanistan." *Democracy and Security* 12(2):85–113.
- Massie, Justin and Alan Bloomfield. 2016. Democratic Allies' Followership Patterns: A Constructivist Explanation of Military Support to US-Led Coalition Operations. In *24th World Congress of Political Science of the International Political Science Association*. Poznan, Poland: .
- Massie, Justin and Benjamin Zyla. 2018. "Alliance Value and Status Enhancement: Canada's Disproportionate Military Burden Sharing in Afghanistan." *Politics & Policy* 46(2):320–344.
- Mello, Patrick A. 2014. *Democratic Participation in Armed Conflict: Military Involvement in Kosovo, Afghanistan, and Iraq*. Palgrave Macmillan UK.
- Mello, Patrick A. and Stephen M. Saideman. 2018. "The Politics of Multinational Military Operations." *Contemporary Security Policy* 0(0):1–8.
- 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.
- Olson, Mancur and Richard Zeckhauser. 1966. "An Economic Theory of Alliances." *The Review of Economics and Statistics* 48(3):266–279.

- Papayoanou, Paul A. 1997. "Intra-Alliance Bargaining and U.S. Bosnia Policy." *Journal of Conflict Resolution* 41(1):91–116.
- Pedersen, Rasmus Brun. 2018. "Bandwagon for Status: Changing Patterns in the Nordic States Status-Seeking Strategies?" *International Peacekeeping* 25(2):217–241.
- Pilster, Ulrich. 2011. "Are Democracies the Better Allies? The Impact of Regime Type on Military Coalition Operations." *International Interactions* 37(1):55–85.
- Rathbun, Brian C. 2004. *Partisan Interventions: European Party Politics and Peace Enforcement in the Balkans*. Cornell University Press.
- Ringsmose, Jens. 2010. "NATO Burden-Sharing Redux: Continuity and Change after the Cold War." *Contemporary Security Policy* 31(2):319–338.
- Saideman, Stephen M. 2016. "The Ambivalent Coalition: Doing the Least One Can Do against the Islamic State." *Contemporary Security Policy* 37(2):289–305.
- Sandler, Todd and Hirofumi Shimizu. 2014. "NATO Burden Sharing 1999–2010: An Altered Alliance." *Foreign Policy Analysis* 10(1):43–60.
- Schweller, Randall L. 1997. "New Realist Research on Alliances: Refining, Not Refuting, Waltz's Balancing Proposition." *The American Political Science Review* 91(4):927–930.
- Snyder, Glenn H. 1984. "The Security Dilemma in Alliance Politics." *World Politics* 36(4):461–495.
- Stueck, William Whitney. 1997. *The Korean War: An International History*. Princeton University Press.
- Tago, Atsushi. 2009. "When Are Democratic Friends Unreliable? The Unilateral Withdrawal of Troops from the 'Coalition of the Willing'." *Journal of Peace Research* 46(2):219–234.

- von Hlatky, Stefanie and Justin Massie. 2018. "Ideology, Ballots, and Alliances: Canadian Participation in Multinational Military Operations." *Contemporary Security Policy* 0(0):1–15.
- Walt, Stephen M. 1987. *The Origins of Alliance*. Cornell University Press.
- Waltz, Kenneth N. 1979. *Theory of International Politics*. Waveland Press.
- Warren, T. Camber. 2010. "The Geometry of Security: Modeling Interstate Alliances as Evolving Networks." *Journal of Peace Research* 47(6):697–709.
- Weitsman, Patricia A. 2010. Wartime Alliances versus Coalition Warfare: How Institutional Structure Matters in the Multilateral Prosecution of Wars. Technical report OHIO UNIV ATHENS, OHIO UNIV ATHENS.
- Wolford, Scott. 2014. "Showing Restraint, Signaling Resolve: Coalitions, Cooperation, and Crisis Bargaining." *American Journal of Political Science* 58(1):144–156.
- Wolford, Scott. 2015. *The Politics of Military Coalitions*. Cambridge University Press.
- Wolford, Scott and Emily Hencken Ritter. 2016. "National Leaders, Political Security, and the Formation of Military Coalitions." *International Studies Quarterly* 60(3):540–551.