External Threat, Internal Rivalry, and Alliance Formation

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History reveals enemies often ally to confront a common threat. In such competitive coalitions actors must balance the simultaneous risk of distrust of their ally against external danger. We model this interactive relationship and generate several novel outcomes. Intra-alliance rivalry forces allying players to preemptively commit more resources to conflict and to free ride less. Consequently, their likelihood of conflict success increases. However, intra-alliance instability forces weaker players to commit a higher proportion of resources to fighting than do their stronger allies. This outcome runs contrary to Mancur Olson's classic collective action result that the "small exploit the great." Furthermore, allies do not demonstrate a uniform preference for bandwagoning or balancing. In general, it is preferable to bandwagon with friends but to balance with enemies. Finally, because rivalry can raise alliance payoffs, actors may rationally seek out risky partnerships with so-called enemies rather than molding more certain alliances with friends.

That allied parties do not always enjoy harmonious relationships is evident, especially in conflictual settings such as international wars or civil conflicts. For instance, the Russo-Turkish alliance signed in 1833 was a formal agreement between two powers with a long and bitter history of conflict. On the day the alliance commenced, the Ottoman Empire had gone to war with Russia no less than 10 times. Indeed, the two powers would do battle thrice more in the next 81 years. But at the time the short-lived alliance was consummated, the Ottoman Empire desperately needed Russian support to repel Egyptian advances, and the Ottomans could offer the Russians something in return—regulation of the flow of foreign warships through the Dardanelles. Alliances, as this example illustrates, are often precarious arrangements of expedience over principle.

Moreover, and as history demonstrates, temporary embraces of adversaries can prove to be fruitful, albeit risk laden, enterprises. Bitter Chinese foes Mao Tse-tung and Chiang Kai-shek formed a strategic alliance during World War II to combat the invading Japanese. Mao attributed his success in China's civil war to the adoption of the principle of "allying with your less eminent enemy to fight off your most immediate threat." And Great Britain's alliance with Stalinist Russia is perhaps the most well-known instance of this hazardous scheme. Churchill's famous quip about making a favorable reference to the Devil if Hitler ever invaded hell brashly revealed the logic behind his strategic embrace of Stalin.

Certainly, alliances of mistrust and dissension are not limited to history and antiquity. In the wake of Iran's 1978–79 Islamic revolution, Saudi Arabia and a collection of smaller Arab countries (Bahrain, Kuwait, Qatar, Oman, and the UAE) faced a dual threat from Ayatollah Khomeini's Iran and Saddam Hussein's Iraq. The former portended the export of its revolution and the latter maintained its long-standing territorial claims to Gulf Arab territory. In response to these simultaneous dangers, the Gulf Arabs balanced against Iran by joining forces with Saddam. Financing his eight-year war against Iran in 1980, they also granted him access to their territories to facilitate attacks. But recognizing that Saddam was a long-term risk, these countries also hedged by establishing the Gulf Cooperation Council as an alliance among themselves and aligning more closely with the United States. This defensive arrangement proved prescient when Saddam invaded Kuwait in 1990.

These aforementioned instances reveal a stark and lasting truth: internal rivalry is an animating attribute of alliances. Members of alliances may share deterrent or wartime objectives against common foes, but they are not necessarily friends; in

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fact, they may even be long-standing foes. Thus states and other actors may forge mutually beneficial relationships to counter shared enemies, but they must also weigh the simultaneous risk of dispute within the alliances they form against these outside dangers. While the observations above are straightforward, and the examples noted are well known, scholars have just started to study the interactive nature of internal discord and external threats.

Empirical efforts to take stock of contested coalitions in both international and civil conflicts have perhaps outpaced theoretical endeavors to understand them.[1] While the traditional formal literature does emphasize that collective action issues frequently bedevil efforts to achieve shared defense (Bloch, Sánchez-Pagés, and Soubeyran 2006; Esteban and Ray 2001; Niou and Tan 1995, 2005; Olson and Zeckhauser 1966; Sandler and Hartley 2001), it still lacks a persuasive account of how intra-alliance competition impacts and interacts with outcomes external to the alliance. Scholars tend to examine each of these issues in isolation. For instance, the prominent discourse in this research program at the international level focuses primarily on the motivations for alliances. Some of the literature highlights external factors—for example, power (Waltz 1979), threat (Walt 1987), or system polarity (Snyder 1997)—as the primary determinants of alignment constellations.[2] Yet another line of research focuses exclusively on internal objectives over external ones in alignment and cooperation calculus. This approach posits that an inherent degree of competition and hostility between allies conditions their behavior. Alliances are as much a means of uniting rivals as a way of linking friends.[3]

Conduct therefore is very often dictated according to conflicting factors within coalitions. States and rival factions, although they may have a common enemy, may (correctly or incorrectly) perceive the intentions of their allies as hostile. In any alliance, uncertainty reigns supreme; there exists at least a minimal expectation that allied groups may fight one another in addition to their common foe. Members within them appreciate this contingency and respond accordingly. Put differently, security dilemmas (Jervis 1978) may actually emerge or transpire within alliances (Snyder 1984). Efforts reflective of these dynamics incorporate strategies for managing conflict within groups (Schroeder 1976). This includes restraining coalition partners from engaging in undesired actions (Pressman 2008) and tethering adversaries to neutralize reciprocated threats (Weitsman 1997). Other studies in this vein of work have gone so far as to argue that alliances may even make conflict more intense (Krebs 1999) or that allies are more likely to fight one another (Bueno de Mesquita 1981; Ray 1990).

There is an endogenous relationship at work between intra- and inter-alliance competitions. That is, the two research strands highlighted above are linked in important regards. The primary goal of this paper is to study the interplay between the two strands in a formal manner and, most importantly, to draw implications and conclusions about how rivalry and instability within coalitions can affect classic problems related to the study of alliances. The game-theoretic analysis we present below demonstrates that rivals can make splendid allies and that such rivalry also impacts classic issues related to the study of alliance politics and economic theories of contest. Fear of dissension can bolster alliance commitment and serves as a check on the incentive to free ride, thereby increasing the likelihood of contest success. It can also reverse traditional patterns of exploitation (Olson 1965) between allies and impact relative power dynamics (Hirshleifer 1991). And surprisingly, some degree of alliance friction can actually be utility promoting. But a trade-off between alliance strength and stability also results. The survivability of fractious alliances is never assured. Pacts between old rivals—"frenemies"—are thus double-edged tools. Finally, our theoretical results also speak to the long-standing debate about balancing and bandwagoning. In general terms, the model indicates that it is preferable to bandwagon with friends but to balance with enemies.

The paper proceeds as follows. First, we introduce a classic model of contest between two players and the assumptions inherent in this setting. Next we fold alliance considerations into this context by embedding additional players. We follow this up by introducing intracoalition rivalry in a formal setting. Propositions we produce from this theoretical extension offer insights related to free riding, exploitation, contest success, and finally the balancing versus bandwagoning dilemma. We conclude with a discussion of avenues for future research and highlight the model's empirical implications, as they directly relate to international and domestic conflict.

A THEORY OF CONTEST

The theory of conflictual behavior is fairly well established within a broad tradition of formal modeling and game-

1. For instance, Long, Nordstrom, and Baek (2007) examine the propensity for allied states to engage in militarized conflict with one another—an outcome that occurred 135 times between 1816 to 2001. And Fang, Johnson, and Leeds (2014) look at the restraining effect of allies. While our effort emphasizes international relations, it also applies to domestic politics as well. On civil conflict between and among allies, see Atlas and Licklider (1999), Cunningham et al. (2012), and Zeigler (2016).

2. For a related typology of alliance formation according to a motivation to deter or compel, see Benson (2011). For work examining reputation dynamics and their impact on war and conflict among states, see Crescenzi (2018).

3. Krebs (2004) makes a similar observation in his cogent review of Patricia Weitsman's *Dangerous Alliances*.

theoretic analysis. Here we begin with a basic model of contest between two agents and expand to consider multiple players, alliance formation, and intra-alliance rivalry. The simplest case is between two players. It is generally assumed that agents, say, A and B, possess exogenously determined resources. We call these resources w and refer to each player's respective resource endowment as w_A and w_B. In a conflictual setting, players must divide their resources between productive purposes and defensive efforts. The former offer economic benefit directly to each player. The latter are used for fighting only. We represent these defense allocations as q and again refer to each player's respective allocations as q_A and q_B. Generally, models assume a productive technology function or marginal rate of transformation between resources (w) and defensive efforts (q). Similar to Bruce (1990) we assume the constant rate of transformation of unity.

Most models in this research program employ contest success functions that translate fighting efforts into the likelihood that each party will prevail. The most common assumption utilized is that the probability of conflict success is a ratio of the respective defensive efforts employed by each player (Garfinkel 2004; Hirshleifer 1988; Powell 1999; Sánchez-Pagés 2007; Skaperdas 1996; Tullock 1967).[4] We therefore assume that A's likelihood of success is $q_A/(q_A+q_B)$ and B's is correspondingly defined as $q_B/(q_B + q_A)$. Such a form preserves the desired trade-off whereby an increase in military expenditure simultaneously raises a player's likelihood of victory but is offset by a decrease in productive assets for that player. Another important supposition related to contest models deals with the spoils of victory. While contest models make various assumptions regarding the contest prize, we assume that agents fight over the sum of the economic resources not converted into fighting efforts. If we normalize the total amount of resources in the system to 1, it must be that $w_A + w_B = 1$. A's expected payoff is $[q_A/(q_A + q_B)](1 - q_A - q_B)$; B's payoff is analogously defined as $[q_B/(q_B + q_A)](1 - q_A - q_B)$.

From the expressions above it is clear that an increase in B's defensive measures q_B has a double impact on A. It both reduces A's chances of success and it also lowers the spoils of victory should A prevail. Payoffs to A are thus a decreasing function of B's war-fighting capabilities. That is, because the winning party exploits the loser's resources the prize of conflict is endogenously determined in the model (Hirshleifer 1988). This aspect distinguishes our game from most contest success models (Baik and Shogren 1995; Esteban and Ray 2001; Garfinkel 2004; Ke, Konrad, and Morath 2015; Sánchez-Pagés 2007; Tullock 1967), which assume that agents expend resources to fight over a prize of fixed value.

According to the assumptions laid out above, both A and B aim to maximize their total economic well-being, treating the mobilization of defensive resources as the key strategic choice variable. Next we extend this simple two-player arrangement to consider n players. A multiple-player setting implies that alliances may form between agents. The possible formation of alliances presents players with the added decision of whether or not to join coalitions and with whom they want to do so. The possible alliance configurations we consider here are the stand-alone system (no alliances) and a two-sided contest with alliance formation (at least one alliance and an external threat). Below, we treat each configuration in turn.[5]

The stand-alone system

The stand-alone system is marked by conflict between all parties, each aiming to defend its own resources and to seize those of the others in the absence of any alliance formation (Hirshleifer 1995). Our basic scenario allows for n players. For ease of interpretation and computation we focus here on the case where $n = 3$. We refer to these three players as 1, 2, and 3. Each party has initial resources w_i, where $w_i > 0$, for $i = 1,2,3$. Any player i has the following payoff function:

$$U_i(q_1, q_2, q_3) = \frac{q_i}{Q}(1 - Q), \tag{1}$$

for $i = 1,2,3$, where q_i is the strategic variable, representing resources devoted to conflict by player i and $Q = q_1 + q_2 + q_3$ the sum of all such expenditures. In equation (1), q_i/Q captures the probability that party i will prevail in the conflict, and $(1 - Q)$ reflects the spoils of victory should it do so—that is, the unconverted resources remaining in the system. As discussed, the probability of victory for any group is represented as the ratio between its fighting capability and the total fighting capacity of all groups.

In the stand-alone system, the equilibrium is determined such that each agent chooses its defense allotment, q_i, to maximize its payoff function as specified in equation (1). But it does so given the investment choices of the other players. It may be shown that in equilibrium, each player in the stand-alone system spends $q_i = 2/9$ and receives the

4. Other functional forms are discussed in the literature on conflict and rent seeking (e.g., Hirshleifer 1989; Neary 1997; Skaperdas 1992).

5. The other possible alliance arrangement is the grand coalition—a singular alliance among all parties. This "grand coalition" is characterized by an absence of conflict. We treat this arrangement in the appendix, available online.

payoff $U_i = 1/9$, provided that the resource constraints are not binding.[6] Therefore, the nonbinding resource constraints require that $2/9 \leq w_i \leq 5/9$ for all i. When some of the constraints are binding, the equilibrium must be recalculated, taking into account the corner solutions.[7]

Alliance formation

The next arrangement we examine is when alliances form. We now use A to denote an alliance consisting of two of the three players; B now denotes the nonaligned player. If alliance A defeats B, the allies divide all resources B has not already converted into military capacity $(w_B - q_B)$. Furthermore, after victory each member in the alliance receives a share of B's resources proportional to its own contribution to the alliance's fighting capacity, q_i/Q_A, where q_i represents player i's military contribution, $0 \leq q_i \leq w_i$.[8] We also assume that the total alliance defense is the simple sum of the separate amounts q_i produced by members of the alliance.[9] By this specification, the payoff to each member of alliance A consist of two parts: the former is each group member's unconverted resources: $w_i - q_i$ and the latter is the portion of B's remaining resources each group member seeks to appropriate: $(w_B - q_B)(q_i/Q_A)$.

An increase in fighting capacity by player i in A has several effects. Any increase in defensive provisions means fewer productive resources $(w_i - q_i)$, a net decrease to utility. However, these defensive contributions improve the alliance's overall chance of winning the conflict $Q_A/(Q_A + q_B)$, a net plus to utility. In consequence, both members in the alliance have better protection for their own resources. Thus q_i is a nonexcludable public good within the alliance. But an increase in q_i also serves to boost group player i's individual share of B's resources should the alliance prevail in a conflict q_i/Q_A, also a net plus to utility. This assumption can be justified thus: once an alliance has won the contest, members within the alliance then compete with each other by force or through negotiation to divide the spoils of their victory. A member's relative strength within the alliance (measured by q_i/Q_A) determines the portion of $(w_B - q_B)$ that he or she expects to gain.[10] In this regard, q_i is also a private good. Thus, in a system where spoils are proportional to efforts, military contributions to the alliance are actually "mixed goods"—simultaneously private and public.[11]

The following payoff or utility function for each member i in A captures these distinctions:

$$U^i_A(q_i, Q_A, q_B) = \frac{Q_A}{Q_A + q_B}\left(w_i - q_i + \frac{q_i}{Q_A}(w_B - q_B)\right), \quad (2)$$

provided $Q_A > 0$ and $q_B \geq 0$.[12] The payoff function for the nonaligned player is analogously specified as:

$$U_B(q_B, Q_A) = \frac{q_B}{Q_A + q_B}(1 - Q_A - q_B), \quad (3)$$

if $Q_A \geq 0$ and $q_B > 0$.[13] Equilibrium is determined such that each member i in alliance A chooses q_i to maximize its utility subject to its resource constraints, $0 \leq q_i \leq w_i$, and given the investment strategies of the other players. Similarly, B, the nonaligned party, chooses q_B to maximize its payoff subject to its own resource constraint $0 \leq q_B \leq w_B$, given the investment strategy of the alliance. The outcome is a Nash equilibrium—given the information at hand, neither the alliance members nor the nonaligned country has an incentive to alter their provisions of conflictual and productive assets.[14]

The interior solution for total military expenditures by alliance A and country B are given by the following two equations:

$$\hat{Q}_A = \frac{1}{9}(1 + w_B)^2, \quad (4a)$$

$$\hat{q}_B = \frac{1}{9}(1 + w_B)(2 - w_B). \quad (4b)$$

We also solve for the defense spending in equilibrium for each player i in alliance A as:

$$\hat{q}_i = \frac{1 + w_B}{9w_B}[(2 - w_B)w_i + 2w_B - 1]. \quad (5)$$

Given the equilibrium levels of investment, we further determine the equilibrium utility for each allied player with

6. For these calculations please refer to the appendix.

7. We may generalize the model above to the n-player setting. Doing so produces the following solution: $Q = (n - 1)/n$; $q_i = (n - 1)/n^2$; and $U_i(q_1, q_2, \ldots q_n) = 1/n^2$.

8. Similar to other models of public goods (e.g., Bergstrom, Blume, and Varian 1986; Cornes and Sandler 1984), we assume that utility depends not only on the aggregate amount of contributions but also on each player's own contribution.

9. For other possibilities, please refer to Hirshleifer (1983).

10. Europe's division after World War II serves as an illustrative example. Other sharing rules are obviously possible. Ueda (2002) considers a rule that is the weighted average between equal and proportional sharing. See Rapoport and Amaldoss (1999) also.

11. This specification differs from noncooperative models that assume contributions are pure public goods (e.g., Bergstrom et al. 1986).

12. Otherwise, $U^i_A = w_i$ if $Q_A = q_B = 0$; and $U^i_A = 0$, if $Q_A = 0$ and $q_B > 0$.

13. Similarly, $U_B = w_B$, if $Q_A = q_B = 0$; and $U_B = 0$, if $Q_A > 0$ and $q_B = 0$.

14. The development here in part follows that of Niou and Tan (1995). Equilibrium calculations may be found in the appendix.

resources w_i as:

$$\hat{U}^i_{\mathrm{A}}(w_i, w_{\mathrm{B}}) = \frac{(1-2w_{\mathrm{B}})^2}{9w_{\mathrm{B}}} + w_i \frac{{w_{\mathrm{B}}}^2 + 8w_{\mathrm{B}} - 2}{9w_{\mathrm{B}}}. \qquad (6)$$

And the payoff for the nonaligned player is:

$$\hat{U}_{\mathrm{B}}(w_{\mathrm{B}}) = \frac{(2-w_{\mathrm{B}})^2}{9}. \qquad (7)$$

The role of internal rivalry

The above reflects a scenario that does not address divisions between allies. In this setup, allies are compelled to adjust their strategic provisions based solely on the size of their external foe. This aspect is a partial reflection of reality among allying states. For instance, the shadow of Israeli power in the 1960s necessitated closer ties between Gamal Abdel Nasser and Hafez al-Assad, presidents of Egypt and Syria. The alliance forged between the Arab leaders was therefore highly predicated on the danger that Israel posed to both nations.[15] However, the agreement between the two leaders was fraught with difficulty from inception. Egypt feared Syria's reaction to the Israeli threat and therefore sought out an arrangement that might control its more belligerent ally.[16] Nasser faced the dual dilemma of maintaining prestige and influence within the Arab league, while also confronting Israel in a manner that did not precipitate a costly war. Nasser's trade-off was evident: a loss of face with his Arab partners over Israel would be nearly as bad as a defeat at the hands of Israel. Syria, moreover, greatly feared Egyptian domination of the Arab league. This reality proved to complicate the relationship between Syria and Egypt. In an effort to incorporate such inherently unstable dynamics between allying parties, below we expand the model to include intracoalition friction.

It is well established throughout coalition literature that allying parties often possess distinct incentives to maximize individual agendas against the collective gains of the alliances they join.[17] It is difficult for players on the same side of contentious issues not to take advantage of one another.[18] However, can such dissension and mistrust actually bind allies together in a way that redounds to their benefit, or does it only portend their doom? In the fourth century BC, Thucydides discerned precisely this type of competitive dynamic at work between the Mytileneans and the Athenians during the Peloponnesian War. In the words of the Mytileneans: "Only a balance of mutual fear guarantees an alliance. . . . And as to trust, what good will above all confirms for others, fear assured for us, and we were both bound as allies more by apprehension than by friendship."[19] How can "mutual fear," in the words of Thucydides, guarantee an alliance? This subsection aims to imbue this observation with a formal logic.

A number of efforts (Esteban and Sakovics 2004; Garfinkel 2004; Ke et al. 2015; Skaperdas 1998; Tan and Wang 2010) have explored this rivalrous alliance dynamic.[20] In all these papers, it is assumed that the winning alliance members will subsequently find themselves in conflict with each other.[21] Importantly, an experimental component of Ke et al. (2015) suggests that even when alliance members make use of ex ante (nonbinding) declarations of nonaggression—by announcing their intention not to attack one another—this does not help to reduce the likelihood of internal conflict. Thus even nonbinding agreements between allies not to attack one another leave the door open that alliance members could do so at any time. Players do not need to wait until they defeat their opponent in the current round to start an attack on their alliance partners. Thus the presumption that alliance in-fighting materializes only after common threats are vanquished is not entirely consistent with expectation or empirical observation. Therefore, we adopt an alternative approach to capture volatile and fissile alliances. We do not assume that conflict between hostile allies is a foregone certainty. When potential allies view

15. Shared ideology as well as Egypt's ambitions to lead the region—that at that time, was split between Arab nationalist republics (of which Egypt and Syria were two) and monarchies that the former viewed as colonial outposts—also played a role in shaping the alliance.

16. Pressman (2008) makes precisely this argument and treats the case in more detail.

17. Bapat and Bond (2012) identify precisely this exploitation as a key problem afflicting allies operating in an anarchic environment. Relatedly, Sandler (1977) includes a brief discussion on the degree and sources of suboptimality associated with defense provisions in the Olson and Zeckhauser (1966) paradigm. And for a discussion of the exploitation hypothesis and its enabling conditions in alliances, see Sandler (1993) and Sandler and Hartley (2001).

18. At the domestic level, Lichbach (1995, 203) notes that a revolutionary's worst enemy is often another revolutionary; a revolutionary's best friend, however, is also often another revolutionary.

19. Passage cited from the Lattimore (1998, 135–36) translation of *The Peloponnesian War*.

20. A related effort by Sánchez-Pagés (2007) employs a conceptualization of rivalry which assumes that individual payoffs are strictly decreasing in the size of the coalition.

21. These efforts differ, however, in other aspects: Skaperdas (1998) and Tan and Wang (2010) assume that players' fighting capacities are exogenously determined; Garfinkel (2004) assumes that the winning alliance members decide how much effort to expend to secure a share of the spoils of victory only after they defeat their opponents, while Esteban and Sakovics (2004) assume that players decide how much effort to expend at the beginning of the game, in anticipation of the sequence of the conflicts ahead. And Ke et al. (2015) assume that winning alliance players either elect to independently and simultaneously split a fixed monetary prize or move into a lottery contest for the entire prize value, whereupon they independently determine levels of effort for the contest.

one another via a prism of enmity there is an unavoidable degree of uncertainty inherent to any pacts they may form. Under such conditions, parties cannot be assured that upon entering into an alliance, they will not fall victim to opportunism and defection. However, conflict between wary allies is by no means an inevitability; it is an extant possibility that animates coalitions in ways that all players must take into consideration.

Formally, we reflect this dynamic by introducing an additional rivalry parameter θ, which represents the probability of intra-alliance conflict, such that $0 \leq \theta \leq 1$. By implication, $1 - \theta$ reflects the probability that the alliance will hold. The rivalry factor alters the payoff function of alliance A. For notational clarity, we now refer to the members of the alliance as *i* and *j*. Each member of alliance A now must take into account the added possibility of conflict with its ally, in addition to the extant dispute with the external actor.[22] Accordingly, the payoff function for each member in the alliance is specified as follows:

$$U^i_A(q_i, Q_A, q_B) = (1-\theta)\frac{Q_A}{Q_A + q_B}\left(w_i - q_i + \frac{q_i}{Q_A}(w_B - q_B)\right) + \theta\left[\frac{q_i}{Q_A + q_B}(1 - Q_A - q_B)\right]. \tag{8}$$

The functional form of equation (8) preserves and combines all the characteristics of the payoff functions in the stand-alone and bipolar systems.[23] Furthermore, if there is no possibility of intra-alliance fighting ($\theta = 0$) the alliance payoff function reduces to equation (2). The payoff function for the nonaligned group remains unchanged from equation (3).

Given the specifications above we can again determine the equilibrium levels of investment and expected payoffs. In equilibrium, the total resources spent on fighting by the alliance and the expenditure by the nonaligned country are represented by the following two expressions:

$$\ddot{Q}_A = \frac{1}{9}(1 + w_B - w_B\theta + \theta)^2, \tag{9a}$$

$$\ddot{q}_B = \frac{1}{9}(1 + w_B - w_B\theta + \theta)(2 - w_B + w_B\theta - \theta). \tag{9b}$$

As intraparty competition decreases, or as θ approaches 0, $\ddot{Q}_A$ approaches $\hat{Q}_A$, and, $\ddot{q}_B$ tends toward $\hat{q}_B$, the respective equilibrium alliance expenditures when there is no intra-alliance rivalry ($\theta = 0$). Additionally, if $\theta = 1$ and intra-alliance conflict is certain, then $\ddot{Q}_A = 4/9$ and $\ddot{q}_B = 2/9$. Once more, this result reproduces those generated in the stand-alone system, where fighting takes place between all groups.[24]

We once more determine specific defense expenditures for each player within the alliance as:

$$\ddot{q}_i = \frac{K+1}{9w_B}[(2-K)w_i + 3w_B - K - 1] - \frac{\theta}{(1-\theta)w_B}\left[\frac{1}{9}(K+1)(2K-1) - q_j\right], \tag{10}$$

where $K = w_B - w_B\theta + \theta$. The security dilemma, now internal to the alliance, is evident in equation (10). In addition to the rivalry parameter θ, a critical difference between equations (10) and (5)—the equilibrium contributions for each member of the alliance—is the inclusion of $\boldsymbol{q_j}$ within the former.[25]

This distinction merits highlighting. When $\theta = 0$ contributions for member *i* within the alliance depend only on w_B and w_i. In the presence of intracoalition rivalry, however, relative capability is twofold. B's endowment (w_B) remains a strategic factor for group *i*. But now member *j*'s defense contribution (q_j) also comes into play as a key strategic component. In the event of alliance collapse, resources converted for fighting by member *j* will not be used for, but against player *i*. This is a formal reflection of the strategic dynamic between alliance partners in the presence of intracoalition competition. Defensive contributions within the alliance are thus double edged, offering both security for the alliance and potential insecurity for mutually suspicious allied parties. Put differently, the shadow of rivalry makes defensive contributions by allies both desirable and potentially threatening—the degree to which this is the case depends on θ.

Substitution of equations (9a), (9b), and (10) into the alliance member objective function produces the following expected payoff in equilibrium for each player in A:

$$\ddot{U}^i_A(w_i, w_B; \theta) = \frac{(2K-1)^2}{9K} + w_i(1-\theta)\frac{(8K + K^2 - 2)}{9K}, \tag{11}$$

where again $K = w_B - w_B\theta + \theta$. The same may be done for the nonaligned country, yielding an expected payoff of:

$$\ddot{U}_B(w_B; \theta) = \frac{(2 - w_B + w_B\theta - \theta)^2}{9}. \tag{12}$$

22. While we employ a different mode of game-theoretic analysis, the motivation and logic employed here runs parallel to Snyder (1984), which embeds the classic security dilemma within an alliance setting.

23. Explicit in this functional form is the simplifying assumption that if an alliance between *i* and *j* (against *k*) falls apart, neither *i* and *k* nor *j* and *k* form a follow-on coalition. For a game more permissive of such interactions, see Smith (1995). We acknowledge that this is the most pessimistic case, but it keeps the computational complexities to a minimum.

24. This result again requires that the resource constraints are not binding. Furthermore, it can be shown that the resource constraints are stronger in the stand-alone system than in the bipolar scenario.

25. Furthermore, as θ tends toward 0, $\ddot{q}_i$ approaches $\hat{q}_i$.

THE IMPACTS OF INTERNAL RIVALRY ON ALLIANCE DYNAMICS

The introduction of internal alliance rivalry has various and differing impacts. The first result we point out is that intracoalition rivalry increases total equilibrium defense contributions in A. That is, by comparing equations (4a) and (9a), it may be shown that $\ddot{Q}_A$ is greater than $\hat{Q}_A$ so long as $\theta > 0$, meaning overall alliance fighting capacity always increases under the rivalry assumption. This result, while plainly intuitive, has important implications for paradigmatic explications of alliance politics and contest theories.

The following three subsections investigate how intra-alliance competition affects three important aspects of coalition theory. The first deals with burden-sharing and free riding issues so common in alliance settings. The second shows how alliance friction contributes to conflict success. And a third looks at alliance preferences to either balance or bandwagon.

Do the small "exploit" the great?

The public good aspect of defense provisions in our model carries with it the well-known incentive to free ride. This is a long-standing dilemma in alliance politics: it is rational for players making individual optimization decisions to exploit the contributions of their coalition partners by contributing less. To solve or ameliorate the free riding problem, some efforts have examined institutional mechanism or designs that induce or promote cooperation between allies.[26] We demonstrate here that—somewhat counterintuitively—internal rivalry can serve as an enforcement mechanism capable of reducing free riding among allying parties. Moreover, our rivalry parameter θ affords a surprising degree of precision to quantify free riding.

Figure 1 shows the equilibrium contributions ($\hat{q}_i$) made by members in the alliance for $\theta = 0$ and the equilibrium contributions ($\ddot{q}_i$) for all values of θ. In this numerical example all players possess equal initial resource endowments ($w_i = 1/3, \forall\, i$). We note that $\ddot{q}_i$ is strictly increasing in θ and constantly above $\hat{q}_i$. We label the difference between $\ddot{q}_i$ and $\hat{q}_i$ "free riding" in the graphic. The propensity to free ride is evident if we conceptualize free riding as the difference between what players contribute for fighting inside and outside of the shadow of rivalry. This example suggests that in the absence of intracoalition friction ($\theta = 0$) players will contribute less to common defense. Put differently, alliance members are inclined to withhold defense contributions when the integrity of the coalition is not in question.[27] Consequently, alliances colored by rivalry jointly comprise more defensive resources than their more sanguine counterparts.

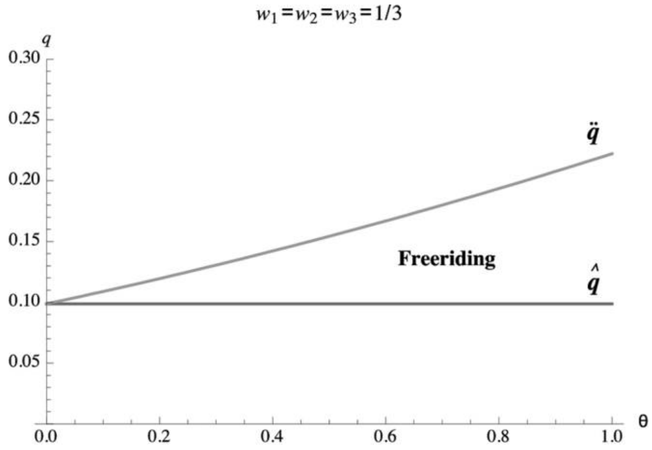

Figure 1. Equilibrium defense contributions for allied player i

However, when alliance members i and j are unequal in their initial endowments, the more powerful may take advantage of the weaker ally by contributing less to the alliance than he did when $\theta = 0$. Figure 2*A* and 2*B* depicts just such a scenario for $w_i = .46$ and $w_j = .29$. Figure 2*A* shows player i's equilibrium contributions $\ddot{q}_i$ for all values of θ. Figure 2*B* shows j's contributions. It is clear in figure 2*A* that for values of θ up to well over 1/2 the stronger player takes advantage of his weaker ally by decreasing defense allocations below the level they are at when $\theta = 0$. Formally, $\ddot{q}_i < \hat{q}_i$. We call this phenomenon "reverse free riding."[28] Because total alliance contributions must rise ($\hat{Q}_A < \ddot{Q}_A$) this leaves the weaker player j to make up the entire difference by contributing considerably more than in the baseline scenario (fig. 2*B*). Stated less formally, the graphics make evident that alliance contributions are a function of the degree to which its members fear their collective arrangement is imperiled.

Moreover, in the numerical example shown in figure 2*A* and 2*B*, intraparty rivalry induces important changes to the ratio of defense expenditures over initial endowment for both allied members. That is, when internal rivalry is not intense, although $\ddot{q}_i < \hat{q}_i$ and $\ddot{q}_j > \hat{q}_j$, the small continues to exploit the great: $\ddot{q}_i / w_i > \ddot{q}_j / w_j$. For low values of θ, the stronger player spends a higher proportion of his resource

26. Greif (1993) offers a paradigmatic example of this approach in an examination of institutions and contract enforceability among ancient trading coalitions.

27. This illustration offers a formal explication for a whole host of experimental studies indicating that in contests with opportunities to punish players that free ride, free riding declines and contribution levels of public goods tend to increase (e.g., Abbink et al. 2010; Fehr and Gachter 2000).

28. The appendix offers a formal explication of the reverse free riding scenario as well as a quantitative measure of free riding defined as $\ddot{q}_i - \hat{q}_i$.

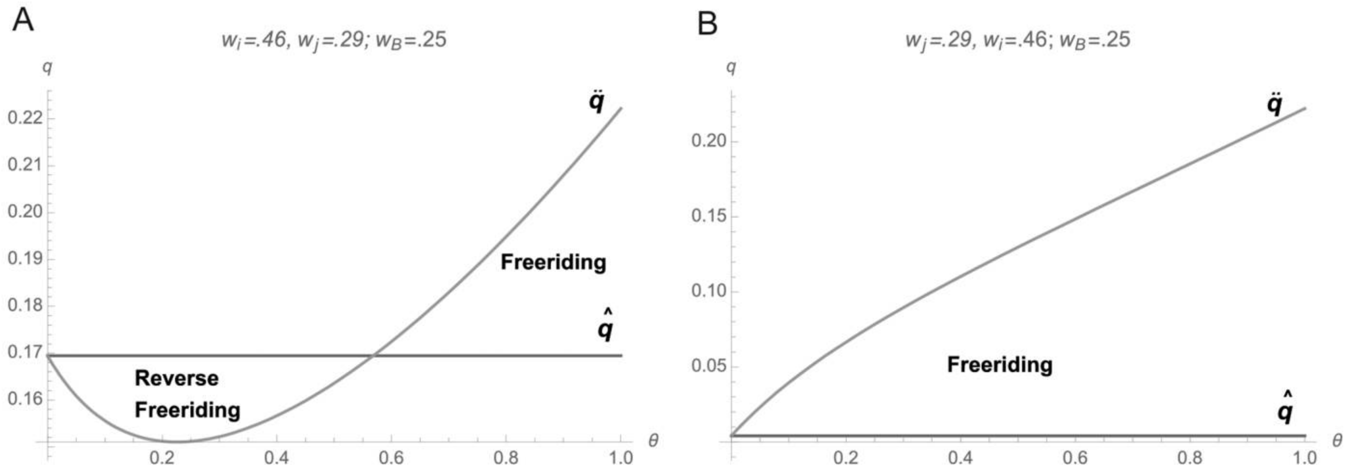

Figure 2. *A*, Equilibrium defense contributions for allied player *i*. *B*, Equilibrium defense contributions for allied player *j*

endowment on fighting than does the smaller. But as rivalry increases, this inequality reverses. Higher values of θ represent a relatively larger threat to *j*, the smaller player, prompting *j* to greatly increase fighting capability.[29] In the numerical example reflected in the figures above, if $\theta = 1/2$, then player *i*'s ratio of defense contributions to endowment is: $\ddot{q}_i/w_i = 0.35$. However, the same ratio for player *j* at $\theta = 1/2$ is $\ddot{q}_j/w_j = .447$. The result represents a reversal to Olson's (1965, 3) famous observation that in cost-sharing efforts, there is "a surprising tendency for the 'exploitation' of the great by the small." In our model, as this example suggests, the great player may at times exploit the small. In fact, it is precisely the relative size of the allied parties and the level of rivalry between them that determine the degree to which a player reduces or increases fighting capacity.

Another important implication we highlight revisits Hirshleifer's (1991) classic "paradox of power" observation that the poorer or weaker contenders often gain from conflict at the expense of larger parties. The reason for this outcome is that smaller or disadvantaged groups are motivated "to fight harder." The result below demonstrates that alliance friction can untwist this paradox. Proposition 1 shows the relative equilibrium defense allocations for A and B, when the former is stronger than the latter ($w_A > w_B$). In the absence of alliance discord ($\theta = 0$), B is driven to invest more in defense than alliance A, in line with Hirshleifer's paradox. However, internal alliance tensions have the capacity to undo this result. When frictions within A are sufficiently pronounced, the two allied players will collectively contribute more to fighting than the smaller nonaligned player.[30]

Proposition 1. If $w_A > w_B$ and $\theta = 0$, then $\hat{Q}_A < \hat{q}_B$; but there exists a $\theta \in (0, 1]$ such that $\ddot{Q}_A > \ddot{q}_B$. There is a degree of intra-alliance competition beyond which the stronger side outspends the weaker.

Internal rivalry and alliance success

The next result we present is in some ways the most counterintuitive. But it is also a clear illustration of how rivalry between allying factions can impel collective action and ultimately facilitate coalition success. The essential, if unexpected, consequence of embedding a security dilemma within the alliance is a coalition better equipped to carry out conflict:

Proposition 2. *The Alliance Paradox*. If $\theta > 0$, then

$$\frac{\ddot{Q}_A}{(\ddot{Q}_A + \ddot{q}_B)} > \frac{\hat{Q}_A}{(\hat{Q}_A + \hat{q}_B)}.$$

Internal alliance competition always improves the likelihood that the alliance will prevail in the conflict.[31]

The potential for intraparty fighting generates an alliance with more resources dedicated to joint defense than alliances where fractionalization is not a possible contingency. Thus when there is a nonnegligible chance of intra-alliance fighting,

29. This result offers a theoretical explanation for recent increases in defense spending by Baltic countries. As uncertainty has grown over US and NATO resolve to come to their defense in the face of Russian aggression, Estonia, Latvia, and Lithuania have all increased their defense budgets.

30. Formally, this implies that there is always exists θ^* (a critical value of internal rivalry) such that for values above θ^*, the paradox of power no longer holds.

31. Proof of this claim is straightforward by a direct comparison of the two ratios.

the overall probability that the alliance will prevail against group B is actually greater than when there is no risk that alliance members will fight one other. The outcome arises specifically owing to the heightened sense of insecurity now associated with the alliance.

The alliance paradox implies that alliance instability translates into alliance strength. From a collective action stance, this result is imperative. The significance being that doubts and internal tensions have an unintended consequence of lessening or considerably mitigating the free rider problem within the coalition. This is because competition and tension within an alliance can serve as its own informal, yet effective, means of punishing the unprepared, that is, those who would otherwise free ride. There is a distinct disincentive to free riding in a coalition of rivals.[32] Thus, potential foes are prone to work harder together in coalitions than do more amicable or trustworthy allies.[33] This result also reflects Hirshleifer's (2001) proposition that cooperation, with a few obvious exceptions, occurs only in the shadow of competition.

The preceding analysis demonstrates that intraparty rivalry forces the alliance to boost defense levels. This in turn increases the chances of contest success. But the question of incentives remains unaddressed. Are the allies better off as a result? Might antagonistic players or states historically opposed to one another find it mutually beneficial to comingle, not in spite of their mistrust but because of it? The following proposition suggests that competition can indeed be utility promoting; allied players may be better off from willingly subjecting themselves to the hazards of competitive coalitions.

Proposition 3. For any $2/9 \leq w_i \leq 5/9$, and w_B, there exists a θ such that $\ddot{U}^i_A(w_i, w_B) > \hat{U}^i_A(w_i, w_B)$. No matter an agent's initial endowment, there is always some degree of rivalry that will increase alliance payoffs.

The permissive conditions generating this type of outcome are rather pervasive. In fact, proposition 3 states that no matter the size of a group's resource endowment and the size of the external player, there is always a degree of intra-alliance competition that will raise player i's utility above its value when

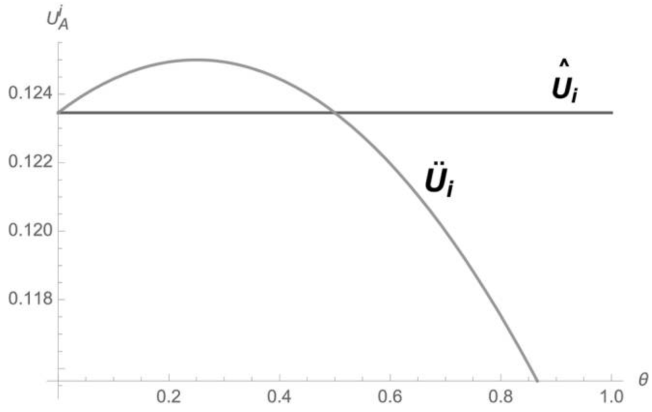

Figure 3. Competitive and noncompetitive alliance utility

there is no possibility of alliance collapse. Even less well-endowed parties of alliance A stand to gain from alliance rivalry. Furthermore, the larger the player, the more likely it is that the rivalry assumption will prove utility promoting.[34]

The following example offers an illustration of proposition 3. When all players are of equal relative strength ($w_i = w_j = w_B = 1/3$), each alliance member considerably raises its respective payoff above the baseline level, even when the internal security dilemma is at fairly protracted levels. Figure 3 depicts graphically the utility of alliance member i for all values of θ. Once more, the horizontal line reflects the payoff in the baseline case ($\theta = 0$). For all values of $\theta < 1/2$, player i strictly prefers an alliance whose stability is not certain over one where there is no internal discord. Only when the threat of intra-alliance collapse is particularly severe does a shift in preference take place. Alternatively put, it is utility promoting for factions to join coalitions they understand to be inherently unstable ex ante. There is an explicit and unequal trade-off between the direct loss of utility when any alliance member (in response to internal competition) raises defense expenditures (q_i), and an indirect gain in utility, which is the result of an increase in the likelihood of victory (produced by the same rise in alliance contributions). The result is a direct consequence of overcoming the free riding problem associated with usual defense sharing arrangements.

This illustration makes evident that there are circumstances under which the security dilemma may be leveraged to the advantage of the alliance members. Allied members may in-

32. The argument developed here runs parallel to the logic articulated in Metternich et al. (2013), which posits that free riding between agents is inversely related to their social proximity or that incentives to free ride are stronger among groups with similar social ties. Gent (2007) relatedly posits that free riding is reduced when states disagree over policies.

33. At the domestic level, this outcome casts the classic rebel's dilemma (Lichbach 1995) in a whole new light. Active participation in internal conflicts marked by multiple actors may be a preferable strategy to free riding if uncertainty and friction is sufficiently high.

34. However, while existence of these equilibria is straightforward to show, such equilibria are sometimes highly subject to perturbations. While $\ddot{U}^i_A$ is approximately quadratic in θ, it also contains a small nonpolynomial term. Practically, this means small shifts in either w_B or θ can alter drastically the desirability of entering into tenuous alliances. That is, the utility inequality $\ddot{U}^i_A(w_i, w_B) > \hat{U}_A(w_i, w_B)$ is easily reversed. See the appendix for proof.

deed prefer nonzero values of θ because bearing such risk is utility promoting. This result helps to shed light on a key aspect of coalition dynamics. It offers a utility-based explanation for seemingly irrational behavior. Parties may have considerably more to gain by joining alliances they know run the risk of collapse. That is, there may be good reason for groups or states to flirt with or court enemy alliances. Viewed from another perspective, this result offers insight as to how parties, groups, and other allying entities may find common cause with their rivals or ideological adversaries.

This result represents an answer to an outstanding inquiry noted by Lichbach (1995): will intense competition among numerous dissident organizations who pursue essentially the same cause encourage collective action and facilitate group success? Proposition 3 indicates that the answer to Lichbach's question is a qualified yes. Competition need not produce ineffective dissidents, but rather the opposite: groups more capable of effecting revolt.

It is also worth highlighting that the alliance paradox has negative consequences for the nonaligned party, represented in the following statement:

> **Proposition 4.** If $\theta > 0$, then $\ddot{U}_B(w_B) < \hat{U}_B(w_B)$. Alliance utility falls for the nonaligned agent when allied parties are marked by internal uncertainty.

Proposition 4 states that in the presence of alliance instability, the nonaligned party is unequivocally worse off.[35] The baseline utility for B is always preferable to situations where the integrity of enemy alliance structures remains uncertain. In short, nonaligned players prefer certainty about the state of the world in which they must do battle. The logic driving this outcome is straightforward: intraparty competition prompts B to shift more resources to defensive efforts because his opponents are jointly increasing their fighting capabilities as well. The net effect is always payoff degrading for the member outside of the alliance, the implication being that friction in a coalition does not necessarily translate to improved outcomes for the nonaligned.

Indeed states and other parties may have more reason for concern when known rivals unite. This result raises the question whether the nonaligned player might not attempt to peel away at least one player from the competitive alliance by offering an alternative alliance. The incentive certainly appears present and would obviously depend on the degree of rivalry between the nonaligned party and the targeted coalition member. Theoretically, for any given bipolar system, if we know the respective rivalry parameters among all the players, we can determine whether any of the alliance members can be made better off by forging an alliance with the nonaligned player. In the subsection below we evaluate a player's propensity to balance or bandwagon and offer numerical examples to show whether an alliance system is stable.[36]

Table 1. Alliance Preference and Utility of i ($w_i = w_j = w_k = 1/3$)

Degree of θ	Player i's Relative Utility Allied with j and k	Alliance Preference of i
$\theta_{ij} = .30$ $\theta_{ik} = .10$	$\ddot{U}_{i(j)} > \ddot{U}_{i(k)}$	j is preferred to k

It bears mentioning that this form of "alliance switching," while possible in theory, may be less straightforward when applied to real world examples. Again, the alliance between Syria and Egypt to confront Israel is illustrative. While the dynamics between Nasser and Assad were bound up in the complex interaction of pan-Arabism with their respective nationalistic agendas, any notion of a formal Israeli alliance with either Syria or Egypt against the other represented an impossibility.[37] This example sheds light on the practical difficulty attached to this strategy. Alliance switching, moreover, tends to transpire after hostilities commence and not beforehand. For example, Italy broke with Germany by joining the Allies after the start of World War I. And Thucydides describes how, in the course of the war between Sparta and Athens, Corcyra changed sides to support the Athenians.

To bandwagon or balance?

In this subsection we demonstrate that preferences for various alliance constellations may be driven not only by power distributions but also by the degree of intra-alliance rivalry. We now assume three players, i, j, and k, and consider the calculus of player i when faced with the dilemma of deciding with whom to ally: player j or player k. However, we allow that player i appreciates differing degrees of rivalry with both j and with k on account of unique histories with each. For-

35. Proof of this claim follows directly from a simplification of the inequality and the rivalry assumption ($\theta > 0$).

36. Our analysis, thus far, is admittedly agnostic to the question of alliance switching. Our primary motivation is to glean insights on how rivalry impacts defense provisions in alliances that do form in the shadow of rivalry and how this in turn affects external outcomes.

37. Of course Sadat's Egypt did eventually conclude a "cold peace" with Israel. But this move was not an Egyptian-Israeli alliance against Syria.

Table 2. Alliance Preference and Utility of i ($w_i = .3, w_j = .3, w_k = .4$)

Degree of θ	Player i's Relative Utility Allied with j and k	Alliance Preference of i
$\theta_{ij} = .50$ $\theta_{ik} = .25$	$\ddot{U}_{i(j)} > \ddot{U}_{i(k)}$	Balance with j

Table 3. Alliance Preference and Utility of i ($w_i = .3, w_j = .3, w_k = .4$)

Degree of θ	Player i's Relative Utility Allied with j and k	Alliance Preference of i
$\theta_{ij} = .95$ $\theta_{ik} = .05$	$\ddot{U}_{i(j)} < \ddot{U}_{i(k)}$	Bandwagon with k

mally, this implies that θ_{ij} need not be identical to θ_{ik}.[38] To demonstrate how intra-alliance dynamics impact alliance formation we walk through a number of numerical examples. The first example we consider builds off of the case above, where each party's power distribution is equal to the others'. The second and third examples deal with asymmetric distributions of resource endowments, where there are two smaller players and a larger player.

Table 1 presents the preferences of player i when confronted with an alliance with j or with k, both of which have equal resource endowments ($w_i = w_j = w_k = 1/3$). The example highlighted in table 1 indicates that for player i, an alliance with j is preferable to one with k even though intracoalition instability between i and j is greater than it is between i and k ($\theta_{ij} > \theta_{ik}$). In this example, we would anticipate an alliance between players i and j not in spite of the uncertainty between them but because of it. Additionally, if player j enjoyed a similar degree of rivalry with k ($\theta_{jk} = .10$) then j too would be worse off forming an alliance with k. This suggests that the alliance system is stable.

The following two examples further demonstrate that high degrees of alliance tension need not diminish alliance prospects even when the distribution of power in the system is uneven. For table 2 we assume the following distribution of power: $w_i = .3$, $w_j = .3$, $w_k = .4$, such that i is the smaller player confronted with the decision of either balancing with j against k, the largest player in the system, or bandwagoning with k against j.[39] The table makes clear that even a relatively high degree of hostility with j ($\theta_{ij} = .50$) does not dissuade i from preferring an alliance with a more sanguine partner in k ($\theta_{ik} = .25$). When i and j are more symmetric in endowment (than are i–k and j–k), balancing is the expected outcome in the system, even though the relationship between coalition partners i and j is far from smooth. The reason for this outcome is the danger associated with bandwagoning with a larger player in the shadow of alliance rivalry. Larger players leverage instability to their favor by taking advantage of smaller and inherently more vulnerable allies. This means that for relatively small values of θ the larger player will contribute fewer resources to the alliance than when $\theta = 0$. This leaves the smaller partner forced to overcompensate by converting more resources for fighting.[40]

The subsequent outcome in table 3 further demonstrates how precarious bandwagoning can be when alliances are unstable. It is only when alliance friction is relatively low that bandwagoning becomes optimal. Table 3 preserves the asymmetric power distribution from table 2 but alters the respective potentials for alliance collapse between the two allied parties. Only when intra-alliance friction with k is quite low ($\theta_{ik} = .05$) does bandwagoning become the optimal strategy for i. Moreover, this outcome requires the balancing alliance with j to be particularly unsecure $\theta_i = .95$. In other words, this example illustrates that players tend to only bandwagon with "friends" but may balance with "enemies." Alliance friction is especially dangerous or unsettling for small players in the bandwagoning scenario.

In sum, the numerical examples offered here reveal how the question of with whom parties ally depends not only on the level of external threat but also on the intraparty dynamics of potential coalitions. There is an interactive relationship at work between the size of the external foe, on one hand, and intracoalition hostility, on the other. Allying players are forced to strike a balance between internal frictions and external threats. And the surprising result to emerge from all of this is how fragile relationships can prove highly advantageous across coalition of various sizes.

CONCLUSION

What are the consequences of competition between allied parties in contentious political settings? Our formal exercise indicates that incorporating intraparty schisms into the alliance calculus generates some interesting outcomes. We have highlighted three of them here. First, competition between

38. We further assume that $\theta_{ij} = \theta_{ji}$. That is, both players within the alliance agree on the same estimation of θ. Relaxing this constraint would be a potentially interesting extension of the model.

39. The bandwagoning scenario requires that the largest player be within alliance.

40. Once again, alliance stability would depend on assumptions regarding θ_{jk}.

allying players may be the unlikely auger of their conflict success. In the shadow of rivalry allying players are forced to commit more of their economic resources to the conflict. As a consequence, their joint chances of emerging victorious against their external foe increase. This anti–free riding impetus is especially strong for smaller players aligning with larger partners. This result offers a twist to Olson's (1965) claim that it is the small that tend to shelter under the protection of the larger. This result also presents an important and empirically testable implication: coalitions marked by competition and internal rivalry may be more effective in generating outcomes favorable to their causes.

Second, the insights stemming from our theoretical results point to competition as an unlikely source of motivation to either balance or bandwagon. The decision to bandwagon or balance depends on the degree to which players appreciate and are beset with internal confrontation. A given player does not have a uniform preference for bandwagoning or balancing. The choice of with whom to ally is informed not only by the relative power configuration but also by intraparty schisms. Again, the relationship is not direct: in some cases balancing is the better option and, in others, bandwagoning is optimal. In general terms, the model indicates that it is preferable to bandwagon with friends but to balance with enemies. Friction and the possibility of fighting in a Hobbesian setting tend to focus the minds of weaker players. Bandwagoning with a large rival becomes highly costly; but when players are relatively equal in power, balancing with a known foe may be a better strategy.

Third, intraparty contention can also affect alliance preferences for alliances partners, often in counterintuitive ways. Alliance rivalry need not be a deterrent to alliance formation. The primary reason for this is because friction within an alliance can raise the payoff to players in competitive coalitions. The relationship between alliance rivalry and alliance utility is not linear or simple in nature. But under some fairly permissive conditions the potential for factionalism within alliances can be utility promoting. The symmetric case we emphasized above ($w_i = 1/3$) is just such an example. All else equal, intraparty friction determines with whom players wish to ally. States may rationally choose or seek out risky partnerships with so-called enemies rather than molding more certain alliances with friends. Empirically, this result helps explain why we so often see rivals form alliances. They do so because they expect higher, albeit riskier, payoffs for casting their lot with potential adversaries.

The premises above already enjoy much empirical confirmation at the domestic level. For instance, this theoretical intuition helps explain why rival opposition parties often unite against long-standing incumbents, especially in oppressive regimes. Civil wars are especially the types of conflictual settings where rivals forge balancing alliances against the governments they fight. In fact, a recent empirical study on rebel alliances in civil conflicts reveals that roughly 75% of all rebel alliances were formed between groups that had either fought one another prior to their alliance or were ideologically opposed (Zeigler 2016). Moreover, these competitive coalitions were significant predictors of civil war relapse. Our theory also accords with and helps explain Atlas and Licklider's (1999, 36; emphasis in the original) observation that one obstacle to achieving negotiated peace settlements in civil wars is "*often a breakdown in relations among former allies, not former foes*." And the theory is also in line with research on groups fighting wars of self-determination. Most such groups are fragmented and must engage in what are described as "dual contests"—balancing the threat of defeat by host governments against the risk of fighting coethnic factions (Cunningham, Bakke, and Seymour 2012). Relatedly, military coups are also the kinds of strategic episodes subject to repetition, usually among coconspirators, where fear of reprisal paradoxically engenders both success and instability. This implicative inquiry deserves future attention.

In sum, seemingly hazardous internal coalition dynamics can work in favor of the alliance. But while internal rivalries may play a profound part in coalition successes, they may do so only at a significant cost. There is an unambiguous tradeoff between alliance strength and alliance stability. By definition, coalition disintegration is also more likely to ensue when there is prevailing uncertainty regarding alliance integrity on account of rivalry. Highly tenuous alliances may be more likely to prevail but they are also more likely to fall apart. The analysis points to a delicate balance between collective capability and cohesion in the presence of intraparty competition. While not explicitly modeled here, the anticipation of victory may even precipitate potential alliance collapse. This process—what Finer (1975) calls "the vice of origin"—may help explain the recurrence of internal conflicts such as civil wars or military coups. Coalitions of rivals, while formidable against common threats, may find it difficult or impossible to avoid struggles among themselves even if they share an enemy.

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