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Research Article

Rivalry, Uncertainty, and Militarized Compellent Threats

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Abstract

Rivalry scholars have done much to explain how rivalries begin and how they end, but little explanation has been given to how rivalries are maintained over long periods of time. Existing theories treat maintenance as simply the absence of termination or the continuing presence of structural conditions that birthed the rivalry, but we argue that this is an unsatisfying conceptualization that does little to tell us what mechanisms keep rivalries going. We argue that rivalry maintenance is not a passive condition of nontermination. Rather, rivalries persist because uncertainty about an opponent's resolve periodically surfaces, and states eliminate this uncertainty by issuing threats designed to compel the enemy to make concessions on the underlying issue. States issue threats to signal their commitment to continue disputing the issue or to force their opponent to reveal their level of resolve. States must remain resolved if they do not wish to concede the issue(s) at stake. Rivalry maintenance is therefore a conscious decision by states to continue their rivalry in order to avoid granting concessions.

Keywords: rivalry, threats, power

Shortly after the colony of India received its independence from the United Kingdom in 1947 and was partitioned into the countries of India and Pakistan, disputes over various pieces of contested territory led to an intense rivalry between India and Pakistan. The Indo-Pakistani rivalry has been especially conflict-prone, with wars being fought in 1947, 1965, 1971, and 1999. In addition to the wars fought between the two countries, there have been a number of low-level conflicts that occurred over this time. Despite the repeated conflicts and the fact that the two states have been rivals for almost seventy years, an end to their rivalry is nowhere in sight. In fact, as recently as September 2016, the two states engaged in a militarized crisis.

From the perspective of bargaining theory, this behavior is puzzling: the continued use of threats should do relatively little to resolve the long-running dispute and brings with it considerable costs and risks. As such, what leads rivals to periodically choose to engage in militarized behavior? States engaged in a rivalry should already possess extensive information about their opponent's willingness and capabilities and have previously failed to resolve their differences using force. At the same time, issuing threats risks military confrontation and serves to perpetuate an adversarial relationship. Why do rivals engage in this behavior when it is not likely to end the rivalry?

Although scholars of international rivalry have spent considerable time explaining how rivalries begin (Hensel 1999; Diehl and Goertz 2000; Colaresi 2001; Stinnett and Diehl 2001; Maoz and Mor 2002; Vasquez 2009, 2012; Rider and Owsiak 2015) and how rivalries end (Bennett 1996; Diehl and Goertz 2012; Owsiak and Rider 2013), relatively little attention has been paid to precisely when rival states choose to engage in militarized behavior that prolongs the rivalry. Rivalries represent protracted contests of resolve, in which two disputants compete over some underlying dispute or conflict

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of interest. Rivalries continue until states can settle the underlying disputes that foster competition between them (Bennett 1998; Owsiak and Rider 2013). However, because rivalries involve a costly investment of time and resources, states have an incentive to bring the rivalry to an end, if possible. We argue that, within rivalries, states *militarize*, or use (the threat of) force, during periods of uncertainty over changes in the costs of war. If one rival suspects that the opponent's ability to continue to pay the costs of rivalry has diminished, they have an incentive to test this uncertainty by threatening to use military force. For example, the Pakistani decision to initiate the Indo-Pakistan War of 1965 was motivated in part by the belief that India would be unable or unwilling to defend Kashmir in the wake of its military defeat at the hands of China in 1962 (Sarkar 1999). Most of what scholars know about interstate rivalries tells us about why India and Pakistan developed a rivalry and what factors might make a peaceful resolution more likely, but what leads India, Pakistan, or some other state to suddenly engage in militarized action against their rival? We argue that the answer to this question lies in periods of uncertainty.

Based on this argument, we identify three factors that create uncertainty about the rival's ability to bear the costs of continuing the dispute: changes in leadership, rapid shifts in relative capabilities, and the addition of a new rivalry. We contend that, when rival states face these conditions, they are more likely to issue threats against their rival in order to signal their ability or willingness to bear the continued costs of the dispute or force their opponent to reveal information about their ability to continue the dispute. We test our argument using data from the Militarized Compellent Threats (MCT) dataset (Sechser 2011). Our results demonstrate that rivals are indeed most likely to issue compellent threats under conditions of uncertainty.

This article makes several contributions to the study of international rivalry. Our theory helps explain why and when states threaten to use force within the context of rivalry as well as why some rivalries experience more frequent and more intense conflicts than others. In contrast to previous work, which has explored the effects of structural conditions and past behavior on rivalry maintenance, our theory provides an understanding rooted in the dynamics of changes in the rivalry itself. Moreover, our theory may provide a foundation for explaining the conditions under which exogenous shocks or changes in structural conditions are likely to influence rivals' behavior.

Second, we contend that rivalry militarization is the result of a conscious choice to continue rather than a result of structural changes. By introducing agency into the process of rivalry militarization, our theory provides a more compelling explanation for why states continue to engage in costly rivalries despite their previous failures to successfully resolve the dispute. In doing so, our theory provides the theoretical foundations to understand the decision to perpetuate a costly and inefficient rivalry.

Third, this article builds on a number of recent studies that use bargaining theory to develop a unified account of the rivalry process (Owsiak and Rider 2013; Rider and Owsiak 2015). We contribute to this enterprise by explicitly extending this logic to obtain a better understanding of when and why rival use militarized threats. This framework provides an account of the rivalry process that integrates the current literature on rivalry onset, maintenance, and termination.

What Do We Know About Rivals and Threats?

Previous research exploring rivalries has largely thought of rivalry as a process broken up into the stages of onset, maturation, stasis, and termination (Diehl and Goertz 2000; Colaresi et al. 2008). Researchers have developed a vast amount of knowledge concerning rivalry onset (Colaresi 2001; Valeriano 2013; Rider and Owsiak 2015), how rivalries escalate and mature (Hensel 1999; Diehl and Goertz 2000; Colaresi et al. 2008), and how they terminate (Bennett 1996; Owsiak and Rider 2013). Rivalries develop between two states when they have competing interests over salient issues. Each state desires a certain distribution of the issue and will seek to achieve this distribution of the issue using whatever means it has at its disposal (Vasquez 2009). Since the salience of the issue under dispute is high, states know that resolution of the dispute will take a relatively long, but unknown, amount of time (Klein, Goertz, and Diehl 2006).

Previous research regarding intrarivalry behavior has suggested that rival states learn over time as to what their opponent's behavior will likely be, given certain international and dyadic contexts, and behave according to these anticipated actions (Leng 1983, 2000; Maoz and Mor 2002). In line with this thinking, scholars have found that, in instances where early militarized disputes within the rivalry ended in a stalemate, the likelihood for militarized conflict in the future increases. Additionally, if the rival states initially experience especially intense levels of conflict early in the rivalry, conflict at later points in the rivalry is less likely (Hensel 1996, 1999; Goertz, Jones, and Diehl 2005). And finally, scholars have found that, if states are even in terms of relative power, the rivalry will be more likely to experience conflict and will

endure much longer (Maoz and Mor 2002). Each of these findings suggest that during periods of uncertainty the likelihood of militarized conflict increases as the rival states gather new information regarding their rival's ability to bear the costs of continuing the dispute. However, uncertainty over relative power and resolve can occur at various moments throughout the life of the rivalry, not just at the outset. How states respond to these moments of uncertainty during a rivalry have been understudied.

Bargaining, Resolve, and Rivalry Maintenance

Rivalry is a protracted bargaining contest between two states over a highly salient issue (Colaresi et al. 2008). When states are locked into a rivalry, they repeatedly engage in hostile interactions, and this usually forces them to expend considerable resources in an effort to win the issue. States spend great amounts of money on military expenditures and risk even more costly endeavors such as arms races and even wars. States will prefer not to begin a rivalry, but when states *are* in a rivalry, it is because achieving a state's desired distribution of the issue is worth paying the high costs associated with a protracted dispute. This also implies that not obtaining their desired distribution of the issue is costly, so states only exit a rivalry when continuing to uphold their claim becomes more costly than the effort needed to obtain this distribution.

When states bargain over an issue, they attempt to learn two pieces of information about their opponent: their opponent's capabilities and their opponent's resolve, or willingness, to expend resources on the dispute. While the information problem—the difficulty of learning the level of another state's capabilities and resolve—can prevent states from locating a mutually acceptable agreement (Fearon 1995), rivals tend to be relatively well-informed about their capabilities and resolve relative to their opponent. Rivals have experienced repeated disputes (and possibly wars), providing each side with information about their opponent's capabilities and willingness to pay costs to achieve their ends. Thus, at most points in time, the information problem will not be meaningful, since both states have repeatedly shown that their rival cannot force them to make concessions.[1]

Information problems arise over two sources: changes in relative capabilities and changes in the willingness of the state to bear the costs of the dispute. Of these two, we argue that rivals are more likely to be uncertain about each other's resolve. Because states generally orient their foreign policy around their rivals and are likely to have been involved in military disputes in the past, states are likely to have a general sense of their rival's capabilities.[2] By contrast, resolve is more likely to change substantially over time. For a variety of reasons, states may become less committed to the costly endeavor of sustaining a long-term antagonistic relationship with another state as well as the repeated hostile interactions that accompany this relationship. While capabilities are determined by tangible factors that can either be observed or are unlikely to substantively change in a short period of time, a state's willingness or ability to bear the costs of fighting can increase or decrease suddenly. When states suspect that their rival's ability or willingness to bear the costs of conflict has decreased, or when they suspect that their own ability or willingness is questioned, they will attempt to eliminate this uncertainty.

When uncertainty about a state's ability or willingness to continue the dispute exists, states have an incentive to issue military threats. Because threats are costly, they can effectively serve two purposes for rival states. First, threats may be used to test the ability or willingness of a rival state to bear the costs of continuing the rivalry. If a challenger suspects that its rival may no longer be willing to pay the costs to maintain the rivalry, it has an incentive to force the target to make concessions and terminate the rivalry. By issuing a compellent threat, a state may force its target to reveal its ability or willingness to continue bearing the costs of the dispute. While states with a high willingness/ability to bear the costs will take on the risks of noncompliance (i.e., the potential for military escalation), states that are unable or unwilling to bear these costs will comply with the concessions demanded. Alternatively, threats may be used by a challenger state to signal its own ability/willingness to bear the costs of the dispute. Because threats are costly, states can use them to credibly signal their own commitment to obtaining their desired distribution of the issues if they believe their own resolve is in question.

1 There are notable exceptions where rival states have experienced prolonged uncertainty regarding their opponent's capabilities, such as the case of the United States and the Soviet Union. These periods of prolonged uncertainty are the result of a prolonged military arms race.

2 Moreover, changes in capabilities tend to shift gradually over time and are rarely large enough to force the disadvantaged state to concede the issue. For the most part, the determinants of military power (e.g., economic resources and population) do not change very rapidly. Thus, even in the event of a shift in relative capabilities, an information problem with respect to the costs of war is not likely to appear.

If this argument is true, the threat and use of force within a rivalry occur because of a state's desire to eliminate uncertainty about the costs they are willing to pay to obtain their desired distribution of the disputed issue. It is not simply a matter of the structural conditions that created the rivalry still being present or that the rivalry has failed to terminate. Rivalries are maintained through states' conscious decisions to keep it going by choosing to either test their opponents willingness to bear costs or update their opponent of the costs they are willing to pay for the issues under dispute.

Our theory predicts that when uncertainty is introduced to the rivalry, rivals will actively attempt to signal that they remain committed to obtaining their desired distribution of the issue by taking military actions designed to alter the status quo relationship with their rival. Identifying instances of such behavior is difficult since the threat or use of force may be directed toward preserving the status quo instead of actively stoking tensions with a rival state. In particular, Schelling (1966) distinguishes between threats intended to deter behavior by another state and those intended to compel another state to take a particular course of action. Deterrent threats are those designed to prevent a state from taking a certain course of action. In the context of rivalry, states may issue deterrent threats to dissuade their rivals from attempting to alter the distribution of the issue(s) at stake. For example, if a state involved in a territorial dispute believes its rival may occupy contested land in the near future, it may increase its military spending with the intention of making the attack riskier due to the higher costs of war. Higher costs of war should make the opponent less likely to attack.

By contrast, compellent threats are those designed to actively persuade an opponent to change its behavior and alter the status quo against its will (Schelling 1966). For example, if one state within a rivalry fueled by a territorial dispute gains a relative power advantage, it may issue a compellent threat in an attempt to alter the status quo to its advantage—it may try to use its power to coerce its rival into conceding the territory. Compared to deterrent threats, compellent threats represent a clearer signal that states are attempting to impose costs on the other state. Although deterrent threats may represent a reaction to aggressive behavior by an opponent, compellent threats represent a clear attempt to alter the status quo. For this reason, we focus on compellent threats as costly signals of resolve.

What are the factors that create uncertainty where none existed before? We identify three factors that are likely create moments of uncertainty about the relative willingness of rival states to bear the costs of continuing the rivalry: (1) shifts in relative power, (2) changes in leadership, and (3) the number of rivalries. From these factors we derive a series of hypotheses. We chose these factors because they are easily identifiable and relatively sudden moments in the life of a rivalry when uncertainty regarding the willingness of states to the pay costs of continuing the rivalry will likely exist. Existing scholarship also shows that these factors affect various other interstate rivalry phenomena. While this list is not exhaustive, it still allows us to thoroughly test our argument.

The first is related to the relative balance of military capabilities between two disputants. Because the distribution of power can be closely connected to states' ability to obtain their preferred outcomes, shifts in this distribution will influence the willingness of the states to bear the costs of continuing the rivalry.[3] Although shifts in capabilities are less likely to produce uncertainty about capabilities (as most shifts in power can be monitored and observed by a rival), changes in the distribution of power may lead to uncertainty as to whether the opposing state will be willing to continue the dispute in light of the increased costs that their opponent is capable of inflicting upon them. All else equal, a state that becomes weaker relative to its rival will face higher costs in the event of a conflict.

Regardless of whether the state in relative decline is stronger or weaker than their opponent, decreases in their relative capabilities should make it less likely that they will obtain their desired distribution of goods at the same costs as before the shift in power occurred. When a preponderance of power exists to the extent that it is implausible that the weaker state will go to war with the stronger state, the rivalry is likely to end since the weaker state cannot credibly commit to expending the resources needed to uphold its claim on the disputed issue. As such, the state that gains relative its opponent has an incentive to convey this information to their rival state in hopes of leading the disadvantaged state to reevaluate their commitment to maintaining the rivalry in light of the higher costs that will be paid by the disadvantaged state.

H1: *A state is more likely to issue a compellent threat against a rival after gaining power relative to that rival.*

3 Resolve and capabilities are separate dimensions, as we discuss above, but they do interact in some way, which is what we try to capture here. States with less relative power should generally be less willing to go to war than if they had equal or greater relative power. Resolve can certainly vary holding capabilities constant (as we test in other hypotheses), but we argue that it should also covary with capabilities and test that in Hypothesis 1.

Our second hypothesis examines changes in leadership of rival states. While rivalries have their roots in interstate politics, hostile international interactions produce domestic constituencies within the rival states that push for the continuation of the rivalry (Vasquez 2009, 2012). When a new leader comes to power, they are likely to have different levels of willingness to pay the costs needed to continue the rivalry based upon the makeup of their domestic constituency and the subsequent response of their constituency to demonstrations of their willingness to pay these costs (Colaresi 2004). This suggests that after a leadership change, leaders interested in maintaining the rivalry will have incentives to demonstrate their willingness to bear the costs of continuing the rivalry.

To this end, Wolford (2007) and Rider (2013) argue that uncertainty over the cost the state is willing to expend on obtaining their desired distribution arise after a turnover in leadership. Wolford (2007) suggests that new leaders initiate conflicts to show their resolve, while Rider (2013) argues that rivals increase their military expenditures when their opponent's leadership changes, forcing the new leader to reveal whether they are resolved or unresolved. If the new leader also arms, an arms race occurs, signaling whether the new leader is resolved to continue the rivalry. However, since even the most rapid arms buildups are relatively long-term processes, rival states that have experienced a leadership turnover will look for a short-term solution to clear up uncertainty. In the short term states will have incentives to send a compellent threat to clear up the information problem. However, this is not an either/or proposition. In order to show long-term commitment to sustaining the rivalry, states will have incentives to issue militarized compellent threats in conjunction with arms buildups.

Our logic suggests that leadership changes in both the challenger and target will increase the challenger's incentives to issue an MCT. When the challenger experiences leadership changes, the new leader has an incentive to issue threats as a means of demonstrating that they remain committed to paying the costs of continuing the dispute.[4] Likewise, when the target experiences a leadership turnover, the challenger has incentives to issue an MCT in order to test whether the new leader in the target state is committed to pursuing the rivalry or not.

H2: *A state is more likely to issue compellent threats against a rival after there has been a change in leadership.*

Finally, we argue that the number of rivals a state has should affect the likelihood of issuing militarized compellent threats. Scholars have argued that having multiple rivals creates pressure on a state to focus on one opponent by resolving the dispute with others, mainly to avoid a strategic dilemma or a strain on military resources (Bennett 1998; Cox 2010; Diehl and Goertz 2012; Akcinaroglu, Radziszewski, and Diehl 2014). It appears that states are often willing to pay the costs of having one rival, but multiple rivals are too costly to maintain, leading states to settle with one (some) opponent(s) to focus on their most salient dispute.

Any state involved in a rivalry will of course be familiar with the extraordinary costs of maintaining it. When a government has multiple opponents to contend with, that state's resources will be divided and possibly strained between its various opponents. The opponents will understand this fact, but while the opponent will know that their rival must divide their resources among their various opponents, they may be uncertain about the amount of resources that their opponent is currently bringing to bear against one particular rival. In other words, a state will infer from the fact that their rival has multiple rivalries that the military resources being used by their opponent to maintain the rivalry is less than their opponent's total resources available, since the opponent must expend some resources addressing rivalries with other states.

Because the resources a state can bring to bear on a conflict directly informs the costs that it can pay to continue to fight, states with multiple rivals must not only be mindful of the resources they allocate among their rivals; they must also be mindful of the costs they can tolerate to maintain each rivalry. This dynamic of resource division and cost-balancing will be public information to the rival, since they will understand the costs associated with an ongoing rivalry.[5] In other words, when a state's opponent has multiple rivals, they are more likely to be uncertain about their opponent's ability to continue to bear the costs of all of their rivalries. As a result the state may

4 Furthermore, scholars elsewhere have discussed how a rivalry affects domestic politics in a state by political candidates making the rivalry issue a campaign issue. Candidates campaign on taking aggressive actions against the rival, then they win office, then they use or threaten force (Diehl and Goertz 2012, 92).

5 Note that we are only claiming here that when a target state has one rival, the (approximate) costs it can bear in one rivalry is relatively easy to know. When a target has multiple rivals, the costs it can bear in any given rivalry is less clear than the former scenario, since the former simply involves approximating the state's total capabilities, while the latter involves a strategic division of resources, and the proportion of those resources allocated to any given rivalry is (probably) unknown.

issue an MCT against its opponent to attempt to coerce concessions.

H3: *A state is more likely to issue a compellent threat against a rival as the number of total rivalries their opponent has increases.*

Research Design

The unit of analysis for our study is the directed rivalry year. This provides two observations for each year a dyad is coded as a rivalry, one in which State A is coded as the challenger and State B as the target, and vice-versa. Because our argument concerns variation in behavior within the context of rivalry, our analysis is limited to all years in which two states are coded as rivals. We test our argument on a sample of rivalries defined by Klein et al. (2006), who define rivalries as pairs of states that have been involved in at least three militarized interstate disputes (MIDs) over similar issues. They code rivalries as beginning in the year of the first MID for dyads that meet these criteria and terminating the year of the last military dispute between these rivals.[6]

Dependent Variable

Our dependent variable is based on the Militarized Compellent Threat (MCT) dataset (Sechser 2011). Using this data, we code a binary indicator of whether the challenger within a directed dyad issued an MCT against the target in a given year (Sechser 2011). MCTs are defined as attempts by one state to coerce or compel another state to alter their behavior. This measure of force is designed to exclude military actions that are designed for purely defensive or deterrent purposes and focuses on attempts to actively pursue changes in the status quo. Operationally, MCTs occur when one state (the challenger) makes an explicit demand backed by the threat of force against another state (the target) for a material change in the status quo. This excludes attempts to reverse policies that have yet to be implemented or threats related to military actions that have already been taken. By contrast, the MID dataset includes both compellent and deterrent threats/uses of force. Thus, MCTs represent a subset of MIDs.

Although two states must be involved in multiple MIDs to be coded as rivals according to Klein et al.'s (2006) definition of rivalry, rivals may not necessarily experience an MCT during the duration of their rivalry. This should mitigate traditional concerns about using the Klein et al. (2006) data to predict the onset of conflict, since we are interested in only whether those states issue MCTs. Moreover, rather than simply predicting whether rivals threaten or use force, we are interested in determining when rivals resort to particular types of force during their time as rivals.

Since our dependent variable is binary, we use binomial logistic regression to model the probability that the challenger initiates an MCT against the target state in a given year. The overall time span for our study is from 1918 to 2001, the period covered by the MCT dataset. During this period there are a total of 9,290 directed rivalry years in our sample. Of these, a total of 134 observations experienced MCTs.

Independent Variables

To test Hypothesis 1 regarding the uncertainty introduced by changes in the distribution of power between rivals, we use the lagged yearly change in the Composite Index of National Capability (CINC) score from the National Material Capabilities dataset (Singer 1988). We measure the relative power of each state by calculating the ratio of the challenger's military capabilities to the sum of the challenger and target's capabilities. We then calculate the yearly percent change for this variable to capture changes in the challenger's power relative to the target. Positive values of this variable indicate that the challenger has gained power relative to the target, while negative values indicate that the challenger has lost power. We predict that the challenger is most likely to issue a threat when this variable is positive and the challenger wants to convey this information to their opponent. To avoid the possibility of simultaneity bias (i.e., the threat or use of force produces shifts in the distribution of power), this measure is lagged by one year.

To test Hypothesis 2 regarding changes in state leadership, we use separate dummy variables indicating when there changes in the leadership of the challenger and target states. This measure is based on version 4.1 of the Archigos dataset (Goemans, Gleditsch, and Chiozza 2009). We predict that these variables will be associated with an increase in the probability of militarized threats. To avoid the possibility of simultaneity bias (i.e., changes in leadership precipitated by MCTs), these measures are lagged by one year. Finally, to test Hypothesis 3 regarding the relationship between the number of rivalries states are engaged in and MCTs, we construct count variables of the number of rivalries that each state is engaged in outside of the dyad. We expect these variables to be positively associated with the probability that the challenger issues an MCT.

6 Although Klein et al. (2006) code beginning and ending dates based on the first and last MIDs, they believe that rivalries actually begin 10–15 years before the first MID and end 10–15 years after the last MID.

Control Variables

We control for a number of other dyadic characteristics that may influence the propensity for states to make threats against each other. First, to control for the influence of relative military capabilities, we include the raw ratio of the challenger's capabilities to the dyad's capabilities (the measure we use to test Hypothesis 1 is the percent change in this variable). Second, since dyads containing two democracies are less likely to use force against each other, we include a dummy variable coded 1 if both states have Polity scores greater than 5 using data from the Polity IV dataset (Marshall et al. 2002). Third, states that are allies are more likely to have common security interests and are thus less likely to threaten each other. To control for this, we code a dummy variable equal to 1 if states have any kind of military alliance between them using data from the Correlates of War (COW) Formal Interstate Alliance Dataset (Gibler and Sarkees 2004).

Fourth, since major powers are more likely to be able to make and follow through on threats, we include a dummy variable equal to 1 if the challenger state is a major power.[7] Fifth, the distance between two states affects their ability to credibly threaten military action against each other. We control for this by including the distance in miles between capital cities (this variable is coded 0 for states that share a land border). Sixth, the presence of nuclear weapons may cause states to be less likely to engage in threatening behavior. Since nuclear weapons enhance a state's ability to deter threats, we include a dichotomous indicator for whether each state is a nuclear power using data on nuclear status from Jo and Gartzke (2007).

Seventh, we control for the history of conflict within a dyad by including a variable for the number of previous MIDs between the two states. Eighth, to control for recent conflict behavior between two states, we include the fatality level of the last MID between disputants. Finally, to control for temporal dependence in the dependent variable, we include cubic polynomials of the number of years since the last militarized compellent threat between two states (Carter and Signorino 2010).

We also control for a number of political events or "shocks" that may produce rapid changes in the dyadic relationship between two states. Goertz and Diehl (1995) identify a number of domestic and international shocks that may alter the way states behave toward each other. At the domestic level, ongoing civil wars in either state may influence the relationship between dyad members. We account for this using data on intrastate wars from version 4.1 of the COW Intra-State War dataset (Sarkees and Wayman 2010). Another important domestic factor is whether either state has become newly independent. We control for this using data on state independence from version 5.0 of the COW Territorial Change Dataset (Tir et al. 1998). In addition, major changes in the international system may affect how rivals behave toward each other. These include World War I, World War II, and the end of the Cold War. All shock variables are dummy variables coded 1 if a shock occurs within that year or has occurred in the past ten years. Descriptive statistics for all variables are included in the appendix.

Results

Table 1 presents the results of our analysis. Model 1 tests Hypothesis 1 by including our measure of changes in the balance of material capabilities. Model 2 tests Hypothesis 2 regarding the relationship between leadership changes and the probability of initiating MCTs. Model 3 introduces the variables measuring the number of rivalries each state is engaged in to test Hypothesis 3. Model 4 presents the results of the full model with all variables and controls.

Hypothesis 1 states that increases in the challenger's share of dyadic capabilities relative to the target will make the challenger more likely to initiate MCTs. Our capability change variable is positive and significant in both Model 1 and Model 4, indicating that increases in the challenger's share of military capabilities are associated with an increase in the probability that the challenger issues an MCT. To assess the substantive effects of these variables, we present the predicted probabilities associated with changes in each primary variable using the full model (Model 4).[8] An increase from two standard deviations below the mean to two standard deviations above the mean of capability change produces an increase in the predicted probability from 0.0115 to 0.0177, an increase of 54 percent. These results suggest that challengers are more likely to test their opponent's resolve in order to test whether the target wants to pursue the rivalry following changes in the distribution of power.

Hypothesis 2 predicts that leadership changes are associated with an increased probability of MCTs. Although we find support for this hypothesis with respect to the challenger state, we do not find support for this with respect to the target. The coefficient on leadership change in the challenger state is positive and significant in both

7 This coding is based on the 2011 version of the COW major powers list, available at http://cow.dss.ucdavis.edu/data-sets/state-system-membership.

8 Predicted probabilities are calculated with all other variables held at their observed values using the margins command in Stata 13.

Table 1. Binomial logit of militarized compellent threat initiation within rivalries

	(1)	*(2)*	*(3)*	*(4)*
Primary independent variables				
Percent change in challenger's share of capabilities	0.007*			0.008**
	(0.003)			(0.003)
Leader change (challenger)		0.518*		0.449*
		(0.211)		(0.212)
Leader change (target)		0.054		0.089
		(0.215)		(0.218)
Third-party rivalry (challenger)			−0.107*	−0.097*
			(0.043)	(0.042)
Third-party rivalry (target)			0.053*	0.057*
			(0.024)	(0.024)
Dyadic controls				
Capability ratio	0.795	0.778	0.783	0.873
	(0.518)	(0.480)	(0.509)	(0.489)
Challenger nuclear weapons	−0.682*	−0.671*	−0.479	−0.492
	(0.320)	(0.312)	(0.294)	(0.294)
Target nuclear weapons	−1.581**	−1.586**	−1.628**	−1.608**
	(0.539)	(0.523)	(0.497)	(0.494)
Democratic dyad	−0.682	−0.778	−0.930	−0.989
	(0.523)	(0.521)	(0.574)	(0.564)
Alliance	−0.001	−0.058	0.088	0.115
	(0.263)	(0.269)	(0.298)	(0.297)
Major power challenger	0.986**	0.950**	1.163**	1.155**
	(0.369)	(0.342)	(0.397)	(0.376)
Distance	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Cumulative MIDs	0.066**	0.064**	0.065**	0.066**
	(0.007)	(0.007)	(0.007)	(0.007)
Fatality level of last dispute	0.063	0.061	0.052	0.044
	(0.059)	(0.058)	(0.061)	(0.061)
Shock variables				
World War I	0.643	0.501	0.603	0.571
	(0.373)	(0.366)	(0.381)	(0.389)
World War II	−0.461	−0.546	−0.542	−0.471
	(0.459)	(0.455)	(0.466)	(0.466)
Cold War	−0.209	−0.158	−0.311	−0.323
	(0.323)	(0.310)	(0.276)	(0.280)
Civil War in dyad	0.987**	1.016**	1.078**	1.024**
	(0.327)	(0.328)	(0.336)	(0.339)
Newly independent state in dyad	−0.001	−0.032	0.000	0.066
	(0.244)	(0.249)	(0.235)	(0.239)
Peace years				
Peace years	−0.054**	−0.056**	−0.041*	−0.039
	(0.021)	(0.020)	(0.020)	(0.020)
Peace years^2	0.001	0.001	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Peace years^3	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	−5.217**	−5.268**	−5.265**	−5.500**
	(0.646)	(0.608)	(0.669)	(0.669)
Observations	8922	9044	9044	8922
Log-likelihood	−595.105	−602.826	−595.781	−583.132

Notes: (1) Entries are binomial logit coefficients. (2) Standard errors clustered by directed dyad in parentheses. (3) Statistical significance levels: *$p < 0.05$, **$p < 0.01$ in a two-tailed test.

Model 2 and Model 4, indicating that leader turnover in the previous year increases the probability that the challenger state issues an MCT. The predicted probability of MCT initiation in these years is 0.0198, compared to a predicted probability of 0.0130 when leadership change equals 0. Thus, leadership changes are associated with a 53 percent increase in the probability of an MCT. These results suggest that leaders are more likely to initiate MCTs early in their time in office in order to signal to their rivals that they are committed to maintaining the rivalry after a regime change.

We do not find support for the argument that leadership changes in the target state will lead the challenger to issue MCTs in order to test the target's resolve. We believe this reflects the challenger's uncertainty over whether a leadership change in the target state produces a change in the target state's resolve. Regardless of whether a new leader in the challenger state is more or less resolved than their predecessor, the challenger always has an incentive to act resolved and signal to the enemy that they are committed to the rivalry. However, the challenger can never be certain about whether a new leader in the target state is more or less resolved than their predecessor (or neither). As a result, challengers who issue threats against new leaders may actually end up in a worse position than before if they find that the new leader is more prone to escalation than the last. Given that this is the case, challengers are unlikely to respond to leadership changes in the target state.

Hypothesis 3 predicts that states will be more likely to issue MCTs against each other as the number of their opponent's rivals increases. We find support for this hypothesis with respect to the target state but find that the number of additional rivalries the challenger is involved in decreases the probability of an MCT. The estimated coefficient on the number of the target's rivalries is positive in both Model 3 and Model 4. This indicates that challengers are more likely to issue MCTs against a given target when the target has more enemies to deal with. The predicted probability of MCT initiation is 0.0118 when the target has no additional rivals, but increases to 0.0214 when the target has eleven additional rivalries (two standard deviations above the mean). This represents an 81 percent change in the predicted probability of MCT initiation. The size of this effect is the largest of any of our variables, indicating that challengers pay considerable attention to the strategic environment of their opponents when deciding whether to issue an MCT.

We also find that the number of rivalries the challenger is involved in decreases the probability of militarization. Although this runs contrary to our initial hypothesis, we believe this result is consistent with our theoretical logic. As the number of rivalries the challenger is engaged in increases, the resources that they have to dedicate to each dispute becomes lower. As a result, challengers should actually be less likely to pursue military solutions against their opponent. The predicted probability of MCT initiation is 0.0166 when the challenger has no additional rivals but decreases to 0.0104 when the challenger has eleven additional rivalries. This represents a 37 percent decrease in the probability of issuing an MCT.

Taken together, the results of the rivalry count variables demonstrate that the challenger states behave opportunistically when deciding whether to initiate compellent threats against rivals, as predicted by our theory. The more rivals a target state has, the less likely the target is to remain committed to pursuing any given rivalry. Thus, challenger states will issue MCTs to test the resolve of these targets. However, the more rivals a challenger has, the less capable they themselves are of sustaining the rivalry. As such, the challenger will be less likely to pursue MCTs.

In general, the control variables that have a significant effect on the probability of MCT initiation behave as expected. Our variables for each state's nuclear status are negative and significant across most of our models. This suggests that both targets and challengers have a greater ability to successfully deter enemies from attempting to compel changes in their behavior. In addition, our results indicate that challengers are more likely to issue MCTs when they are major powers and can therefore make highly credible threats to use force against their enemies. We also find that the number of previous MIDs between disputants is positively associated with the probability of issuing an MCT.

In general, our indicators for political shocks produce null findings, except for our indicator for recent civil wars. This comports well with our theory, since a civil war in either state is likely to create uncertainty about the resolve of the disputant experiencing a civil war. This suggests that rivalry maintenance is driven by the explicit choices of states under conditions of uncertainty, rather than simply being a product of exogenous shocks.

Conclusion

When do states use force within the context of rivalry? Although rivalrous relationships involve the latent possibility of militarization, previous research has not developed a full account of when these states threaten each other and why some rivalries produce more intense conflict than others. We contend that states threaten and use force within the context of rivalry as a means of testing the extent to which their enemies are committed or able

to continue competing over a disputed issue. In the event that one state's capabilities resolve changes, they might no longer be willing to pursue a costly and inefficient rivalry to obtain their ends. Uncertainty over this proposition is associated with issuing compellent threats.

Our empirical results generally provide support for our theory by demonstrating that the probability of compellent threats is highest during periods when uncertainty over the resolve of the disputants arises. We find that both changes in the relative balance of power and changes in the leadership of the rival states increase the probability that states issue compellent threats against their rivals. We also find that challenger states are more likely to issue MCTs when the target is involved in many rivalries, introducing uncertainty about the target's resolve.

Compared to previous research, our explanation makes the mechanism of rivalry maintenance more explicit. Previous explanations of rivalry maintenance are often offered alongside discussions of rivalry termination, which assume rivalries continue until an exogenous event prompts termination. Instead, we argue that the rivalries are maintained when states make the conscious decision to continue engaging over a costly dispute over a disputed good. This explanation provides a more comprehensive account of rival's behavior within the context of rivalry. Based on our findings, we argue that future research should focus more on explaining the variation in behavior among rival states. In addition, while prior research has emphasized the importance of exogenous shocks, our theory suggests that states should be more susceptible to exogenous change during some periods than others. Future research should examine this issue more fully.

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Appendix 1: Summary Statistics for all Variables

In Table 2, we present the summary statistics for all independent and dependent variables.

Table 2. Summary statistics for all variables

	Observations	*Mean*	*Standard deviation*	*Minimum*	*Maximum*
Militarized compellent threat issued	9290	0.01	0.12	0.00	1.00
Percent change in challenger's Share of capabilities	9082	1.08	13.91	−75.26	335.41
Leader change (challenger)	9246	0.18	0.39	0.00	1.00
Leader change (target)	9246	0.18	0.39	0.00	1.00
Third-party rivalry (challenger)	9290	3.79	3.94	0.00	24.00
Third-party rivalry (target)	9290	2.88	3.97	0.00	24.00
Capability ratio	9228	0.50	0.33	0.00	1.00
Challenger nuclear weapons	9290	0.15	0.36	0.00	1.00
Target nuclear weapons	9290	0.15	0.36	0.00	1.00
Democratic dyad	9088	0.06	0.25	0.00	1.00
alliance	9290	0.24	0.43	0.00	1.00
Major power challenger	9290	0.26	0.44	0.00	1.00
Cumulative MIDs	9290	2.65	6.35	0.00	52.00
Fatality level of last dispute	9290	0.31	1.15	0.00	6.00
distance	9228	1035.67	1786.96	0.00	7390.00
World War I	9290	0.07	0.25	0.00	1.00
World War II	9290	0.12	0.32	0.00	1.00
Cold War	9290	0.22	0.41	0.00	1.00
Civil War in dyad	9290	0.84	0.36	0.00	1.00
Newly independent state in dyad	9290	0.68	0.47	0.00	1.00