Hand-Tying versus Muscle-Flexing in Crisis Bargaining*

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Abstract

Theories of crisis bargaining suggest that costly signals can enhance the credibility of one's coercive threats. In particular, engaging in conspicuous military mobilizations or demonstrations of force are thought to communicate one's resolve in a crisis. Yet there is disagreement about why this might be the case. One set of theories emphasizes the hand-tying political and reputational effects of visible military action. A different collection of theories argues that mobilizations create bargaining leverage by shifting the balance of power in favor of the mobilizing side. This paper uses new data on coercive threats in international crises to discriminate between these two explanations. It makes two key contributions. First, it presents systematic evidence that military mobilizations during a crisis bolster the effectiveness of coercive threats. Second, it demonstrates that such signals are likely effective because they alter the local balance of military power, not because they tie the hands of political leaders.

Introduction

What makes coercive threats credible? In military crises, states generally hope to achieve their political objectives without fighting costly wars. Coercive threats can help accomplish this by convincing the adversary that it is better to back down than to fight. How then can states make these threats more effective? One common answer is that conspicuous military mobilizations or demonstrations of military force can communicate the credibility of a state's threats during a crisis (e.g., Fearon 1997; Yarhi-Milo, Kertzer, and Renshon 2018; Lai 2004; Slantchev 2005, 2011). Yet while public military maneuvers are widely considered to be effective signals of resolve, there is disagreement about why this may be the case.

One view argues that military maneuvers make it politically costly for leaders to back down.[1] These costs, known as "audience costs," are a form of political punishment imposed on a leader if they fail to follow through on a public threat. The prospect of losing political support—or even political office—is thought to discourage leaders from reneging on commitments after escalating a dispute through public statements or conspicuous shows of force. In one version of this story, states face reputation costs from international audiences. The further the state moves along the escalation chain, the higher these costs, and the more credible the threat. In another interconnected logic, the political sanctioning mechanisms in democracies (and some non-democracies) are institutionalized and therefore observable to outsiders, thereby allowing these states to more effectively communicate private information about their resolve through military signals. According to this literature on audience costs, which we term "hand-tying", public military mobilizations or demonstrations of force tie the hands of leaders, creating incentives to risk war rather than back down and face the criticism of international or domestic audiences. This commitment process demonstrates that the actor is highly resolved, thereby alleviating uncertainty about the state's willingness to fight.

A different perspective argues that military actions during crises bolster bargaining leverage by altering the payoffs for war by shifting the local balance of military power in favor of

[1] See, for example, Fearon (1994*a*); Gelpi and Griesdorf (2001); Kertzer, Renshon, and Yarhi-Milo (2019); Schultz (1998); Weeks (2008).

the mobilizing side.[2] According to this logic, which we term "muscle-flexing," military signals improve an actor's probability of prevailing on the battlefield if war breaks out. Military maneuvers that entail the actual movement of forces to the potential theater of operations both create and message new information about the willingness to wage war. In this view, military action increases the mobilizer's readiness for war, raises the opponent's predicted costs of fighting, and reduces uncertainty about the probable outcome of war (Slantchev 2011). This shift in the balance of power signals new information about the expected payoff for war, which increases the credibility of the state's threats. This perspective expects that military mobilizations and deployments, which change the balance of power, will be more effective signaling devices than symbolic displays of military force, which do not shift the balance of power.

In short, these two theoretical explanations offer different predictions about when military signals will make coercive threats more effective. The first explanation points to the role of both domestic and international political processes, arguing that actions which can generate higher levels of audience costs will more effectively demonstrate resolve. The logic of muscle-flexing implies that military signals that have a higher impact the local balance of power will improve threat effectiveness.

In this paper, we attempt to discriminate between these two sets of arguments by analyzing the effects of military signals on the outcomes of compellent threats (Sechser 2011). When do target states acquiesce to threats and when do they resist? While political and military effects both likely contribute to the increased effectiveness of coercive threats, this paper aims to determine which of these two effects dominates in crisis bargaining. Using data on over 210 compellent threats between 1918 and 2001, quantitative analyses demonstrate that military mobilizations seem to work mainly through changes in the local balance of power, not through hand-tying processes. We think it likely that military maneuvers signal resolve through several channels, but we conclude that they are effective primarily when they alter adversaries' estimates of the probable winner in wartime.

The paper proceeds as follows. First, we outline the conceptions of military mobiliza-

[2]See, for example, Slantchev (2011); Tarar (2013).

tion according to the logics of muscle-flexing and hand-tying as they exist in the current literature. We then derive hypotheses from these two logics concerning the conditions under which military signals are most likely to affect the credibility of threats. The second section describes the paper's research design, which introduces new data on military signals during cases of compellence. In the third section we conduct a series of empirical tests on how military signals impact the success of coercive threats. We find that military signals are effective signals of resolve but that these signals are most effective when they alter the local balance of power. The fourth section concludes with implications of these findings for theories of military mobilization and costly signaling more generally.

Military Signals and Coercive Threats

One of the most debated issues in international relations scholarship is how a state can establish the credibility of its commitments—in particular, threats that would be costly to execute (e.g., Fearon 1994*a*, 1997; Lupton 2020; McManus 2017). When states have complete information about each other's resolve and capabilities, they should be able to resolve their disagreements without resorting to force. However, when information is distributed asymmetrically—if either side has private information about their resolve or capabilities—then states may be unable to agree on a mutually beneficial settlement. To overcome the problem of incomplete information, actors can reveal their true resolve (their willingness to wage war over the issue) if the signals they send are costly in such a way that a resolved type is more likely to bear the costs of those signals than an unresolved type. Highly resolved types can distinguish themselves from unresolved types by taking actions to increase the probability of war that a state with a low expected utility for war would generally shy away from. Less resolved states may occasionally risk these actions in an effort to convince audiences that their resolve is high in an effort to gain additional concessions.

These theories of crisis bargaining suggest that costly signals can enhance the credibility of one's coercive threats. A military signal, which can entail a military exercise, troop mobilization, show of force, deployment of military assets, or other military maneuver, is

one form of costly signal. According to a number of theories,[3] military signals demonstrate resolve and increase the probability of coercive threat success. This paper evaluates two sets of theories that attempt to explain *why* military signals are effective. Both agree that militarized signals increase threat credibility, but they disagree on how they influence the crisis participants' incentives and calculations. One view is that military signals alter the political incentives of leaders, creating disincentives for backing down. This *hand-tying* political or reputational effect commits the mobilizing state to stand firm, and it confronts the adversary with the choice of either making concessions or escalating the dispute to war. On the other hand, military signals may generate bargaining leverage by shifting the balance of power in favor of the mobilizing side, creating incentives for the mobilizing state to stand firm. This *muscle-flexing* military effect also puts the adversary at a disadvantage should the dispute escalate to war. Based on either logic, the high costs of war suggest that when the target is faced with a resolved challenger willing to issue such a military signal, the target should be more likely to make the concessions necessary to resolve the dispute peacefully. By outlining the implications of these two logics, we seek to understand whether military signals influence crisis outcomes primarily through these hand-tying political effects or the bargaining leverage created by muscle-flexing.[4]

Hand-Tying versus Muscle-Flexing

According to the logic of hand-tying, military maneuvers work as costly signals by creating political costs that a leader will suffer if he fails to follow through on his foreign policy promises. In the context of coercive threats, a leader will incur audience costs—from either domestic or international audiences—if he threatens publicly and subsequently reneges on his threat without achieving the stated policy goals. In turn, public military mobilization is a visible threat of military action that audiences can use to assess crisis performance. These

[3]Fearon (1997); Lai (2004); Slantchev (2005, 2011)

[4]We acknowledge that military signals might also have cost-sinking effects in crisis bargaining. However, the sunk costs perspective renders the apparent success of military signals puzzling. Military mobilization gains its signaling value through its influence on states' strategic calculations and incentives to follow through on a threat, not through its monetary cost (Fearon 1994*a*; Slantchev 2005). See Altman and Quek (2021) for evidence that sunk costs do not operate in empirical reality.

actions tie hands because they further commit the leader to a policy position, and that leader will have to pay costs if he gets caught in a bluff.

The mobilization of the military, according to this set of theories, amounts to a dramatic public declaration to an opponent about the state's willingness to wage war. The publicizing of the commitment through a military signal presents the opponent with a highly resolved challenger, so the target should be more likely to concede and avoid escalation to war (Kertzer, Renshon, and Yarhi-Milo 2019). Most theories of hand-tying argue that audiences view a leader who does not follow through on his threats in international crises as incompetent or having tarnished the nation's "credibility, face, or honor."[5] At each level of escalation, the leader incurs higher levels of audience costs, increasing the likelihood of target concessions.

Hypothesis 1 (Hand-tying)**.** *Military signals, both shows of force and military mobilizations, increase the effectiveness of coercive threats.*

Theories in the vein of "muscle-flexing" argue that military mobilization creates bargaining leverage by shifting the balance of power in favor of the mobilizing size. Military mobilization contributes positively to the probability of victory in a dispute and thus increases the expected utility for war (Slantchev 2005). By increasing a state's expected value for fighting, such moves also increase its willingness to fight. Conversely, it decreases the opponent's probability of victory in war, thereby decreasing that state's value for fighting. Military moves shift the "immediate balance," acting as an *ex post* indicator of resolve, which "reflects new information about the... [actor's] willingness to resist and how effectively it would be able to resist" (Fearon 1994*b*: 925). Muscle-flexing theories focus primarily on military moves that effect a discernible change in the local balance of power. Moves that entail a shift in the balance of power are risky because they increase incentives for war, sending a strong signal that separates the resolved from the unresolved challengers.

This logic implies an important distinction among military signals. Actual mobilizations or deployments of military assets are likely to have a stronger effect, according to this view, compared to public displays of preexisting military forces. Those military moves that strongly

[5]Fearon (1994*a*: 581).

shift the balance of power will be more effective at inducing compliance. For example, when bombers fly over an adversary's capital city as a show of force, this does not shift the balance of power in the same way as, say, the deployment of naval vessels or movement of ground forces to the potential theater of operations. As Schelling (1966: 91) argues, some demonstrations of force are purely efforts to manipulate risk by increasing the chance of an accident—they do not alter the balance of power between the disputants.[6] On the other hand, the movement of thousands of troops to the arena of operations generates a local military advantage that did not exist previously.

Hypothesis 2 (Muscle-Flexing)**.** *On average, only military signals that entail a movement of military assets will increase the effectiveness of coercive threats.*

Hand-tying and muscle-flexing theories of military signaling are similar in an important respect: they both emphasize the importance of a public signal.[7] For hand-tying theories, signals need to be public in order to engage political audiences. For muscle-flexing theories, signals need to be visible to the adversary so it can update its beliefs about the local balance of power. States that merely want to prepare for war—and are less concerned about resolving problems of asymmetric information—can mobilize secretly to gain the advantage of a surprise attack (Lai 2004; Slantchev 2010). For example, some scholars argue that China chose not to clearly demonstrate its willingness to enter the Korean War in order to prepare a surprise attack against American forces in 1950 (Jervis 1970; Slantchev 2010). States that publicly mobilize their military, however, may be trying to communicate their willingness to accept concessions short of war by sacrificing the element of surprise.[8]

[6]See also Post (2019).

[7]We are aware that what we classify as "muscle-flexing" can be consumed under the umbrella definition of "hand-tying." Both hand-tying and muscle-flexing tie hands by altering future payoffs and creating incentives to continue the crisis. However, the two effects described in this paper tie hands in very different ways, one through manipulating *political* incentives and the other by creating and communicating *military* advantages. Political hand-tying through audience costs motivates the leader to continue the crises, and the mechanism relies on the political process of signaling states. Military hand-tying signals resolve by altering the pay-offs for war, and the mechanism relies on shifting the local balance of power. We term the latter "muscle-flexing" to distinguish it from political hand-tying.

[8]To be sure, shifting the balance of power—even locally—can create commitment problems in bargaining (Fearon 1995: 381). Revising the crisis balance of power may narrow or even close off the bargaining range if it creates large first strike or offensive advantages (Rector 2003; Tarar

Muscle-flexing and certain versions of hand-tying theories diverge on their expectations regarding the role of regime type. There is evidence that certain regime types have an advantage in accruing *domestic* audience costs. Some theories argue that democracies have an easier time generating and revealing audience costs (Fearon 1994*a*; Schultz 2001), with others arguing that domestic political groups in both democracies and certain autocracies can coordinate to sanction and thereby impose audience costs on their leaders (Weeks 2008, 2012). According to domestic hand-tying logic, as regimes capable of generating audience costs escalate from verbal threats to military signals, they should more easily and quickly signal resolve. Theories of "democratic credibility" predict that a democracy can credibly communicate its preferences with fewer escalatory steps than an equivalent nondemocracy (Fearon 1994*a*: 585). In line with these theoretical predictions, Gelpi and Griesdorf (2001) show that democracies tend to win international crises more frequently when they demonstrate resolve through military action. Weeks (2008) revises this thesis to demonstrate that the true distinction is between personalist and non-personalist regimes, with non-personalist regimes better able to generate audience costs than personalist regimes.[9] This literature assumes that the domestic audiences strongly prefer consistency between a leader's statements and a leader's actions.

Hypothesis 3 (Domestic Hand-tying)**.** *Military signals from domestic audience cost capable regimes will increase threat success, on average, more than military signals from other regimes.*

To assess whether military signals increase threat effectiveness through their influence on the local balance of power or through political hand-tying, we distinguish between military signals that involve the actual movement of military assets into a conflict theater and demonstrations of force that have no meaningful effect on the local balance of power (Table 1). In this set-up, the differing factor is the expectations regarding shows of force: muscle-flexing theories do not expect them to increase threat effectiveness because they do not shift

2013; Slantchev 2011). Tarar (2013: 343) finds that military mobilization can generate bargaining leverage up to a certain point—but past a certain threshold, the power shift caused by the signaler's mobilization "overwhelms the signaling role and mobilization leads to certain war" waged by the target (Powell 2004).

[9]We are agnostic as to which set of theories is correct and test both interpretations.

	Muscle-flexing	*Hand-tying*
No Military Signal	Baseline	Baseline
Show of Force	None	Increase (+)
Mobilization	Increase (+)	Increase (+)
Show of Force x Accountable Regimes	None	Increase (+)
Mobilization x Accountable Regimes	None	Increase (+)

Table 1. *Predicted effect of military signals on coercive threat success.*

the balance of power, while hand-tying theories expect them to increase threat effectiveness because they engage political audiences.

We also test whether any version of the domestic political hand-tying story rings true by examining the role of regime type in the military signaling process. In particular, the logic of domestic hand-tying would expect audience costs capable regimes to be particularly adept at utilizing symbolic military signals. For theories of muscle-flexing, however, "it does not necessarily follow that democracies would be able to signal their resolve any better in a crisis in which military means are available to autocracies as well" (Slantchev 2005). According to the logic of muscle-flexing, no particular regime type should outperform the other in the utilization of military mobilization.

Methods and Data

To evaluate these hypotheses, we turn to a dataset of coercive threats. The Militarized Compellent Threat (MCT) dataset contains information about 210 "compellent" threats issued between 1918 and 2001. The dataset defines a compellent threat as "an explicit demand by one state (the challenger) that another state (the target) alter the status quo in some material way, backed by a threat of military force if the target does not comply" (Sechser 2011: 380). In other words, the dataset contains episodes with two components: a verbal

coercive *demand* issued from one state to another, coupled with the *threat* of military force. Each observation in the dataset contains a single challenger and target, so that episodes involving multiple participants on one side are broken up into dyads.

The MCT dataset offers important advantages, as well as limitations, for testing the hand-tying and muscle-flexing logics of military action in international disputes. One key advantage is that it allows for the straightforward evaluation of the outcomes of dispute episodes. Each episode is triggered by a coercive demand, which must be issued verbally in order to be included in the dataset.[10] The advantage of this feature is that it mitigates ambiguity about what was demanded, so that scholars can easily determine whether the demand was successful or not. At the same time, it is important to acknowledge that many—perhaps even most—coercive demands in international crises are not made explicitly. This feature therefore enhances the internal reliability of the analysis, though at some cost to generalizability.

Second, there are advantages to evaluating the mechanisms of military signaling in compellence episodes, rather than deterrence episodes. As Schelling notes, compellence is distinct from deterrence in that the objective of the threatening state is to change the status quo, rather than maintain it. In other words, for the target to comply, it must take some conspicuous action—for example, relinquish a possession or institute a policy change.[11] By contrast, in deterrence, compliance involves simply refraining from action. Deterrence episodes therefore create a difficult inference problem: a target that appears to "comply" with a deterrent demand may have never planned to act at all. We therefore cannot necessarily attribute compliance to the threat. Using deterrence episodes to evaluate the effects of military signaling therefore could lead to mistaken inferences. In compellence, by contrast, this inference problem is less severe, since it would occur only if a target was threatened when it already planned to act. While such instances may exist, it seems likely that they are rarer than their deterrence counterpart. At the same time, compellent threats represent only a narrow slice of the coercive diplomacy spectrum, so we cannot necessarily extrapolate the findings below

[10]Note that the MCT dataset requires only that the demands be made verbally; the threat of force can be made either verbally or via a demonstrative military signal.

[11]See also Greenhill and Krause (2017); Powers and Altman (2022).

to deterrent threats. We leave the analysis of military signaling in deterrence episodes for future research.

Dependent Variable

Military signaling during crises is designed to influence crisis outcomes: states employing such signals are, in principle, more likely to achieve their objectives without a fight. The dependent variable in the analyses below is therefore the success or failure of a coercive threat. A successful threat meets two conditions: first, the target complies voluntarily with the challenger's demands, and second, the challenger does not engage in military action that inflicts more than 100 fatalities on the target. The second criterion ensures that we are able to distinguish coercive victories from victories achieved by the successful use of military force. The logic of military signaling argues that signals ought to induce action by the target, so it would be inappropriate to include "victories" that are won through military campaigns, since they achieve their objectives through physical force rather than through fear (Downes and Sechser 2012).[12]

Independent Variables: Military Signals and Regime Type

Our primary measurement of military signaling comes from the MCT dataset. The variable MILITARY SIGNAL indicates whether the challenger employed a military exercise, troop mobilization, show of force, deployment of military assets, or other military signal to bolster its verbal threat. To be coded as 1, each military signal had to be public and observable to both domestic and international audiences. This variable offers a rough picture of the frequency with which challengers employ military signals during coercive diplomacy. In the MCT dataset, challengers employ some form of military signal roughly 75% of the time, electing to rely on verbal threats of force the remaining 25% of the time.

Given that both sets of theories argue that military signals increase the credibility of

[12]We reestimate all models with ordered logit using an alternative trichotomous specification of the dependent variable in Appendix C of the Supplemental Files. All results are consistent with the models included in the main text of the paper. Figures include the binary logit model results using black bars and the ordered logit models using gray bars.

threats, however, we cannot simply examine how states respond to general demonstrations of force: we must distinguish between hand-tying and muscle-flexing signals. As we discussed earlier, military signals can come in at least two varieties: measures that involve the deployment of military forces to the potential conflict zone, and public maneuvers that are designed to showcase the challenger's forces but not alter the local balance of power. The MCT dataset, however, does not distinguish between different types of military signals. For this more fine-grained data, we coded two new variables. The first variable, MOBILIZATION, indicates whether a challenger moved military assets into the likely zone of conflict during a dispute. We considered mobilization to be one of three things: troops moved to the border of the target state, troops moved to the area of the disputed issue (i.e., territory), or troops mobilized domestically during a dispute involving a neighboring state. The second variable, SHOW OF FORCE, indicates military signals that do not involve additions to the challenger's local military forces. These signals most often include displays or shows of force, such as missile tests, bomber overflights, putting troops on alert, or exercises involving troops already present in the conflict zone.

The military signals in the MCT dataset vary in size and scope, although the mobilizations generally reflected a substantial shift in the balance of power. For example, in June 1919, the United States deployed the *USS Castine* to the port of Limon and landed marines, successfully inducing Cuba to reverse their recent military coup (an example of a successful, albeit limited, mobilization).[13] In a similar case, President Bill Clinton deployed a large numbers of ground troops and two aircraft carriers to Haiti when he issued an ultimatum to Haitian dictator Raoul Cedras.[14] After this significant mobilization, the disputing parties reached an agreement shortly before the invasion was scheduled to begin.[15] As a more standard illustration, Adolf Hitler often mobilized troops to buttress his coercive threats. For example, in 1938, Germany concurrently mobilized over 36 land divisions along the

[13]MCT-008

[14]MCT-196

[15]Although naval movements reflect a substantial shift in the balance of power, they are also easily removed. We include robustness checks in Appendix C both removing and recoding sea observations to assess the robustness of our findings when ease of movement is accounted for. The substance and significance of the results do not change.

Czechoslovakian border to induce Czechoslovakia to cede Sudetenland.[16] Finally, in a classic show of force (rather than a mobilization), Argentina underscored its demand that Chili recognize Argentine sovereignty in the Atlantic by increasing the activities of its air and naval forces off the coast of Chile in 1977.[17] This threat failed.

To better contrast the two variables, consider two cases of compellence during the Soviet-China border clashes. In 1969,[18] the *New York Times* reported on March 9, "The Soviets put their military in the Far East on alert as an additional warning to the Chinese." There was no evidence of further mobilization in the primary or secondary sources, so this was coded as a show of force. In the following episode,[19] the *New York Times* reported on August 14 that the Soviet Union "sent two helicopters, dozens of tanks and armored vehicles and several hundred troops into Chinese territory." This was coded accordingly as a mobilization. We include a list of all cases in Appendix B, fully describing the signal issued, a brief description of the military movement(s), the basic sources used to validate the movement, and any uncertainties surrounding the coding.

Note that these variables are mutually exclusive: if an actor mobilized *and* issued a show of force, that counts as a mobilization. There are some cases in which verbal threats failed and the challenger subsequently escalated to military force; and some cases in which shows of force failed and the challenger escalated with a full military mobilization. To reduce coding irregularities, we coded the highest level in each case. This unfortunately reduces the number of shows of force and verbal threats, with 58 verbal threats (24%), 15 shows of force (6%), and 169 (70%) mobilizations.[20] Because of the coding rules, this data may overestimate the effectiveness of verbal threats (since many of the failures escalated with military signaling) and shows of force (since many of these failed and escalated to full mobilization), biasing the results away from the logic of muscle-flexing.

The logic of domestic hand-tying emphasizes that some governmental regimes are better

[16] MCT-068
[17] MCT-158
[18] MCT-141
[19] MCT-142
[20] As Schelling (1966) notes, compellence is more difficult than deterrence, thereby demanding more costly efforts to make compellent threat credible—this may explain why there were so many mobilization in this dataset.

able to tie their hands through public actions than others. We employ a standard indicator of democracy, using the 21-point Polity scale to denote states whose overall regime score is 16 or above. We also create a second measure which indicates a challenger's *relative* ability to generate audience costs, compared to its target, to test the hypothesis that democracies enjoy a signaling advantage only if they are able to generate more audience costs than their opponent (Gelpi and Griesdorf 2001). The variable CHALLENGER DEMOCRATIC ADVANTAGE therefore indicates whether the challenger has a higher Polity score than its target. We also test whether the distinction between personalist and non-personalist regimes has an effect. The variable NON-PERSONALIST CHALLENGER indicates whether the challenger is a non-personalist or personalist regime based on Week's (2012) dichotomous coding.[21] We describe all other control variables in Appendix A.

Results

What makes coercive threats work? Below we present two sets of logistic regressions to evaluate the hypotheses described in the first section of this paper. The first set of tests distinguishes between signals that have primarily symbolic effects versus signals that carry more meaningful consequences for the local balance of power. If the muscle-flexing logic is correct, then only military mobilizations, which effect a shift in the balance of power, will increase threat effectiveness. If the hand-tying logic is correct, shows of force should also increase the success of coercive threats. The second set of tests evaluates the interactive effects of regime type and demonstrations of military force during crisis bargaining. If the domestic hand-tying logic of military signaling is accurate, then audience cost capable regimes should accrue larger advantages from engaging in military actions during crises than other actors. In each set of tests, the result is the same: military signals appear to be effective primarily because of their military consequences, rather than their hand-tying effects.

The first set of tests, contained in Table 2, considers the effects of military signals on

[21] Weeks (2012) codes forward from 1945, so we use the coding rules listed in her online appendix to extend the data back to 1918. Please see Appendix D for her full coding rules and our coding process.

coercive threat success. Note first that MILITARY SIGNAL in Models 1 and 2 is positive and statistically significant at the 99% level or above. For example, in Model 1, a state employing military signals while issuing a coercive threat can more than triple its chance of success, from less than 16% to more than 52%.[22] This suggests that military signals indeed have a strong positive effect on the success of coercive threats: states which employ them during crises are much more likely to succeed.

While these results support the theoretical consensus that military signals increase threat success, they do not test the competing theoretical logics of hand-tying versus muscle-flexing. The reason is that the analysis thus far has conflated signals with primarily military effects with those that ought to have mainly hand-tying effects. The analysis tells us little about military signals that alter the balance of forces versus those that have a more symbolic effect. Models 3 and 4 reported in Table 2 attempt to correct this limitation by distinguishing between these two kinds of signals. Signals that involved the actual movement of military assets into a conflict theater are coded 1 by the variable MOBILIZATION, while signals that involved only shows of force by preexisting military units are coded 1 by the variable SHOW OF FORCE.

A first glimpse comes from comparing the marginal effects of the variables MOBILIZATION and SHOW OF FORCE in Models 3 and 4. In both models, both variables are positive, but the coefficient for MOBILIZATION is larger and statistically significant. Indeed, the marginal effect for MOBILIZATION on the likelihood of success is roughly six times as large as the effect of SHOW OF FORCE: changing MOBILIZATION from 0 to 1 increases the absolute likelihood of success by 37%, whereas changing SHOW OF FORCE from 0 to 1 does so by 6%. This offers some initial evidence that the muscle-flexing effects of military signals dominate their hand-tying effects. Figure 1 illustrates these findings, and the difference between SHOW OF FORCE and MOBILIZATION is statistically significant. In Model 4, for example, the difference is significant at the 99% level. The small number of observations for the SHOW OF FORCE

[22]For this and all marginal effects reported here, other variables are held at their mean or median values. When describing the effect of the MOBILIZATION variable, we set the SHOW OF FORCE variable at 0; and when estimating marginal effects for the SHOW OF FORCE variable, we set the MOBILIZATION variable at 0 (since the two are mutually exclusive). Marginal effects are statistically significant at the 95% level or above unless otherwise noted.

	1	*2*	*3*	*4*
	Any Military Signal	*Any Military Signal*	*Mobilization v. Show of Force*	*Mobilization v. Show of Force*
MILITARY SIGNAL	1.782***	2.117***		
	(0.371)	(0.433)		
SHOW OF FORCE			0.683	0.606
			(0.632)	(0.588)
MOBILIZATION			1.873***	2.261***
			(0.380)	(0.440)
DEMOCRATIC CHALLENGER		-0.199		-0.204
		(0.408)		(0.418)
DEMOCRATIC TARGET		1.135**		1.204**
		(0.407)		(0.418)
LEADER HAWKISHNESS		-0.410		-0.482†
		(0.251)		(0.266)
BALANCE OF POWER		-0.674		-0.622
		(0.625)		(0.653)
TERRITORY		-0.614†		-0.591†
		(0.332)		(0.347)
REPARATIONS		0.008		-0.088
		(0.484)		(0.488)
LEADERSHIP		2.178***		2.247***
		(0.603)		(0.629)
POLICY		-0.012		0.042
		(0.320)		(0.322)
CONTIGUITY		-0.003		0.023
		(0.364)		(0.375)
CONSTANT	-1.695***	-1.455*	-1.695***	-1.563*
	(0.351)	(0.733)	(0.351)	(0.736)
N	242	242	242	242
Pseudo R^2	0.080	0.193	0.093	0.211

NOTE: Robust standard errors in parentheses.
† p <0.10, * p <0.05, ** p <0.01, *** p <0.001.

Table 2. *Logit estimates of coercive threat success.*

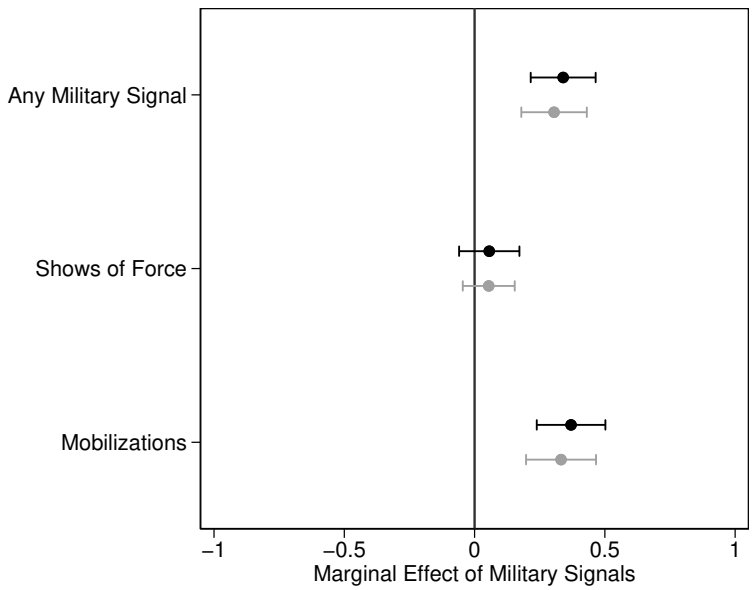

Figure 1. *Marginal effect of coercive threat success (95% confidence intervals shown).*

variable somewhat limits our inferences, but keep in mind that our MOBILIZATION variable necessarily included a number of failed shows of force. Ultimately, we cannot conclude that military signals have no political effects, only that the military effect seems to dominate during cases of compellence.

While these results have somewhat undermined Hypothesis 1 in support of Hypothesis 2, they have said little (except by default) about Hypothesis 3. Our next set of tests explores the interactive effects of regime type and military signals to assess the role of domestic hand-tying in coercive bargaining.[23] Model 5 therefore includes the interaction term MILITARY SIGNAL × DEMOCRATIC CHALLENGER, which carries a value of 1 only if the challenger in a crisis was both a democracy and employed a military signal. Regime type appears to have no substantial effect: both DEMOCRATIC CHALLENGER and MILITARY SIGNAL × DEMOCRATIC CHALLENGER are not statistically significant in Model 5. In other words, the effect of military signals is equally strong for both democracies and non-democracies. This is evidence against Hypothesis 3, which expected the effect of military signals to be especially

[23]Since Hypothesis 3 focuses on the *interactive* effect of regime type and military signaling, we only report the interactive models here. Please see Appendix C for models that report the raw effects of regime type.

strong for democracies due to their audience costs generating abilities.

One might plausibly argue, however, that it is inappropriate to examine the monadic effects of regime type. Rather, it might be the case that the hand-tying advantages of military signals accrue only to democracies that can generate audience costs to a greater extent than their opponents (e.g., Gelpi and Griesdorf 2001). Model 6 evaluates this proposition, including the variable CHALLENGER DEMOCRATIC ADVANTAGE, which is coded 1 whenever the challenger has a higher Polity score than the target. However, in Model 6, neither CHALLENGER DEMOCRATIC ADVANTAGE nor its interaction with MILITARY SIGNAL reaches statistical significance, casting further doubt on the logic of hand-tying.

Another potential objection to this previous analysis is that democracy versus nondemocracy is an inappropriate way to test for hand-tying and audience costs. This brings us to Week's (2008) argument that it is not all nondemocracies that have the disadvantage. Rather, it is personalist regimes—what we typically think of when we consider autocracies—that suffer from an audience costs disadvantage. In this case, non-personalist regimes should be able to more effectively tie their hands than personalist regimes. Model 7 evaluates this proposition, including the variable NON-PERSONALIST CHALLENGER, which is coded 1 whenever the challenger is a non-personalist regime and 0 when it is a personalist regime. When we interact the variable with MILITARY SIGNAL, the regime variable nearly reaches statistical significance when *not* accompanied by a military demonstration. This is the opposite of what we would expect from the logic of hand-tying. Audience costs-capable regimes should accrue advantages when they use military signals.

However, since mobilizations and military asset movements may have *both* military and political effects, this is insufficient evidence to declare a verdict. A deeper look is offered by assessing interacting the SHOW OF FORCE and MOBILIZATION variables with the challenger's regime type. Another way of looking at it is that if the logic of hand-tying is correct, then shows of force should be uniquely effective when conducted by audience costs capable regimes. Conversely, if military signals are effective mainly due to their effects on the local balance of power, then mobilizations should have a greater effect—and that effect should be consistent across regime types. In other words, the military effects of signaling might dominate when

	5 *Democratic Challenger*	*6* *Democratic Advantage*	*7* *Nonpersonalist Challenger*	*8* *Democratic Challenger*	*9* *Democratic Advantage*	*10* *Nonpersonalist Challenger*
MILITARY SIGNAL	1.772***	2.017**	2.718**			
	(0.507)	(0.656)	(0.958)			
SHOW OF FORCE				0.249	1.257	1.910
				(0.763)	(0.835)	(1.221)
MOBILIZATION				1.918***	2.178**	2.796**
				(0.507)	(0.673)	(0.965)
DEMOCRATIC CHALLENGER	-0.974	-0.048		-0.966	-0.066	
	(0.821)	(0.499)		(0.820)	(0.520)	
DEMOCRATIC ADVANTAGE		-0.413			-0.332	
		(0.856)			(0.881)	
NONPERSONALIST CHALLENGER			1.386			1.397
			(1.064)			(1.076)
MILITARY SIGNAL × DEMOCRATIC CHALLENGER	0.939					
	(0.858)					
MILITARY SIGNAL × DEMOCRATIC ADVANTAGE		0.127				
		(0.857)				
MILITARY SIGNAL × NONPERSONALIST CHALLENGER			-0.693			
			(1.075)			
SHOW OF FORCE × DEMOCRATIC CHALLENGER				0.950		
				(1.270)		
SHOW OF FORCE × DEMOCRATIC ADVANTAGE					-1.837	
					(1.120)	
SHOW OF FORCE × NONPERSONALIST CHALLENGER						-1.612
						(1.394)
MOBILIZATION × DEMOCRATIC CHALLENGER				0.923		
				(0.864)		
MOBILIZATION × DEMOCRATIC ADVANTAGE					0.158	
					(0.876)	
MOBILIZATION × NONPERSONALIST CHALLENGER						-0.602
						(1.083)
CONSTANT	-1.142	-1.140	-3.129**	-1.252	-1.424	-3.299**
	(0.813)	(0.930)	(1.160)	(0.816)	(0.958)	(1.170)
CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes
N	242	242	242	242	242	242
Pseudo R^2	0.196	0.195	0.203	0.214	0.217	0.223

NOTE: Robust standard errors in parentheses. Coefficients and standard errors for nine control variables not reported.
† p <0.10, * p <0.05, ** p <0.01, *** p <0.001.

Table 3. *Logit estimates of coercive threat success by regime type.*

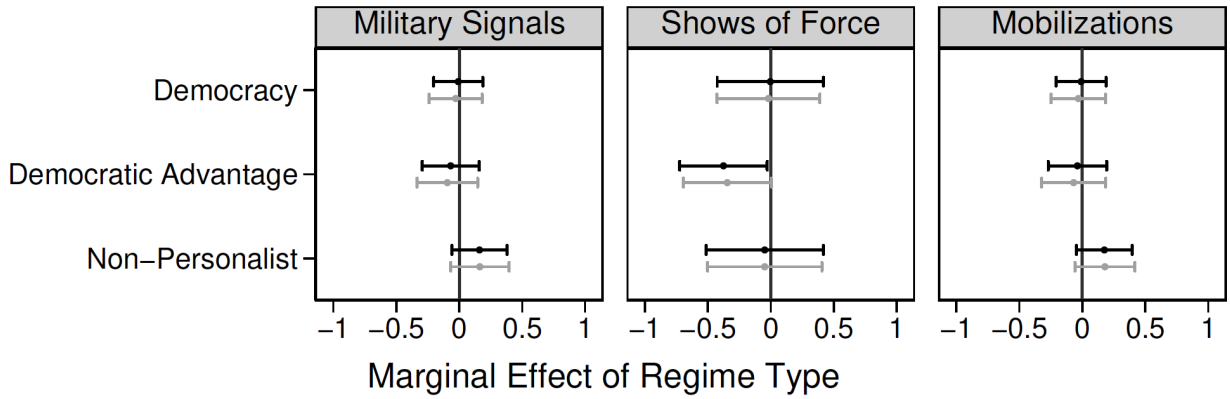

Figure 2. *Marginal effect of coercive threat success (95% confidence intervals shown).*

the military signal shifts the balance of power, but the political effects should emerge when we isolate those effects. This second set of tests considers the interactive effects of regime type and the breakdown of military signals.

In Model 8, both military signal variables are interacted with DEMOCRATIC CHALLENGER to test the hypothesis that democracies have a unique advantage when issuing these kinds of signals. However, neither DEMOCRATIC CHALLENGER nor the interaction terms achieve statistical significance in this model. In addition, the variable for shows of force still does not achieve 95% statistical significance in this model, while the variable for military mobilizations does. This suggests that the movement of military assets is a more effective way to signal one's intentions than using public displays. This is further evidence against the hand-tying hypothesis, and in favor of the logic of muscle-flexing.

Model 9 repeats these analyses, but with the inclusion of the DEMOCRATIC ADVANTAGE term. The results, however, remain the same: military mobilizations appear to improve a state's likelihood of prevailing in a crisis, while shows of force do not, even when interacted with regime type variables. The same goes for Model 10, in which we include the NON-PERSONALIST CHALLENGER term. The effects of military maneuvers are unaffected by the challenger's regime type, regardless of how we measure the concept. Overall, this collection of findings casts doubt on the argument that military signals are uniquely effective due to their domestic hand-tying effects.

Figure 2 illustrates these findings, reporting the predicted probability that a coercive threat will succeed under a variety of conditions. The chart demonstrates that the effects of military signals are virtually equal by regime type, although nonpersonalist regimes seem to have a slight advantage with military mobilizations. However, the effect is quite small and does not reach statistical significance. These signals have a positive and reliable effect on the likelihood a threat will succeed, but importantly, this effect does not vary by the challenger's regime type.

To sum up, the regressions in Tables 2 and 3 suggest three main findings. First, military signals do indeed help states prevail in international crises. Second, moving new military assets into a conflict theater has a considerably greater effect on crisis outcomes than public displays of preexisting military forces. Third, the effects of military signals do not significantly differ by regime type, casting doubt on the logic of hand-tying. Overall, the weight of the evidence points in the direction of muscle-flexing, and away from the logic of hand-tying.

Conclusions and Implications

When states issue coercive threats during military crises, do military signals make those threats more effective? If so, why? This paper has offered preliminary answers to both of these questions. Specifically, it evaluated two distinct (though not necessarily competing) theoretical explanations for why military signals might communicate credibility in crisis confrontations. The first explanation holds that military actions during crises are effective signals primarily because they create political costs for backing down that would not have existed otherwise. A second explanation offers a different logic, arguing that the primary benefit of military signals is not that they engage domestic or international audiences, but rather that they signal new information to the target about the local balance of military power. A military signal is most likely to be effective, in this view, when it involves the movement of military assets to a conflict zone and signals improved chances that a state will prevail if the crisis escalates to war.

These findings offer new evidence that military signals matter in international crises.

While theoretical scholarship has long emphasized the importance of signaling, data limitations have often forced empirical studies to rely on indirect measures of signals to demonstrate the impact of intra-crisis signaling. This study uses data created explicitly for testing theories about military signaling, ultimately confirming the intuition of scholars that costly signals of resolve can have a positive effect on one's crisis fortunes. Military signals appear to be effective largely because of their effects on the balance of military power, rather than their political effects—although data limitations prevent us from concluding that political dynamics play no role. In other words, the logic of "muscle-flexing" seems to dominate the logic of "hand-tying" in military signaling. Military signals that involved the movement of military forces to the conflict zone had a substantially larger effect on crisis outcomes than signals that acted as purely symbolic displays of military force. In addition, democracies and other non-personalist regimes appeared to enjoy no special advantage when issuing military signals of any type.

One thing to note is that this dataset only includes observations of *militarized*, *compellent* threats, in which the threat of military force is explicitly signaled either via a conspicuous military signal or the verbal threat of military force. This feature of the data may help us understand apparently disparate findings within the literature. For example, Fuhrmann and Sechser (2014) find that defense pacts are effective hand-tying signaling devices during cases of extended deterrence, while our data reveals a diminished role for the hand-tying effects of military movements. In cases of general deterrence, however, hand-tying signals may be more effective because they set a "trip-wire" for the opponent. Once the wire has been tripped and extended deterrence has failed, states must signal their resolve during the immediate crisis. Our findings imply that it is these threats in particular face unique credibility problems that may require a more extensive military commitment. Thus the effect of military signaling is likely pronounced during cases of compellence.

This paper suggests an avenue for future research that examines the conditions under which military signals fail and succeed. For example, Russia's 2022 invasion of Ukraine is a notable case of failed compellence. Our analysis would suggest that Russia sufficiently mobilized its military to coerce the West—why then did it fail? A limitation of our analysis

points to a possible explanation: our empirical specifications mostly bracket actions taken by the target state(s). However, Sechser (2010) argues that the target state may have strategic incentives such as reputation not to capitulate in the face of overwhelming odds, and Powers and Altman (2022) point to the role of psychology in understanding why targets of threats choose to resist a clearly resolved challenger. The disposition of leaders also shapes perceptions of threat credibility, particularly when public threats are accompanied with military action (Yarhi-Milo, Kertzer, and Renshon 2018).[24] Taking a closer look at the targets of compellent threats may provide more complete insights into the conditions under which threats succeed during international bargaining.

[24]Please see Appendix E for a discussion of leader characteristics during crisis bargaining.

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