



## Sanctions, Uncertainty, and Leader Tenure\*

WILLIAM SPANIEL AND BRADLEY C. SMITH

*University of Rochester*

When do states impose sanctions on their rivals? We develop a formal model of domestic power consolidation, threats, escalation, and imposition of sanctions. With complete information, the target regime's consolidation of power determines the result—leaders with stable control can weather sanctions and thus deter their imposition, while vulnerable leaders concede the issue. However, when an imposer is uncertain of a foreign leader's consolidation, vulnerable types have incentive to bluff strength. Foreign powers sometimes respond by imposing sanctions, even though the parties would have resolved the crisis earlier with complete information. We then hypothesize that opponents of newer leaders—particularly in autocracies—are more likely to suffer from this information problem. Employing the Threat and Imposition of Sanctions (TIES) data set and carefully addressing selection problems common to the sanctions literature, we show that sanctioners are indeed more likely to follow through on threats against such leaders.

In 1963, Oswaldo López Arellano's coup put the military in control of the Honduran government. The United States quickly demanded elections and threatened sanctions if López Arellano failed to comply. However, Honduran officials believed that Washington overestimated the new regime's sensitivity to sanctions and expected that economic relations would return to the status quo within 6 months (Euraque 1996:113–114). They were right. López Arellano stayed in office for 8 years, while the futile sanctions faded away.

As this brief example illustrates, uncertainty about Oswaldo López Arellano's grip on power contributed to the willingness of the United States to levy costly economic sanctions. More importantly, the example points to a specific source of uncertainty: López Arellano's status as a new leader. In particular, because López Arellano's regime had only recently gained power, its precise inner workings and degree of power consolidation remained unclear to US intelligence officials at the time they threatened sanctions. This suggests that while sanctions can destabilize leaders (Marinov 2005), uncertainty may remain about the degree to which sanctions will prove effective, particularly against new leaders. Thus, while the Honduran coup crisis represents but a single case, it highlights the importance of leader tenure as a specific, measurable source of uncertainty in sanctions episodes. By identifying leader tenure as an empirically observable and measurable source of uncertainty, this study unifies theory and empirics to provide clear findings about the role of uncertainty in the process of international economic coercion.

Existing theoretic work recognizes the role of uncertainty in sanctions imposition. It demonstrates that the

presence of uncertainty provides an explanation for why states impose costly sanctions—even though they may fail to alter the target state's behavior—and that Pareto-improving settlements often exist (Eaton and Engers 1992, 1999; Langlois and Langlois 2010). The literature, however, lacks precision: What kind of uncertainty leads to sanctioning behaviors? And how do we empirically measure such uncertainty? By focusing on the role of leader tenure as a specific source of uncertainty, we provide a fuller account of the role of asymmetric information in sanctions episodes. Specifically, we argue that foreign powers may overestimate the effectiveness of sanctions. Further, this miscalculation proves especially likely against newer leaders as less is known about them. In turn, we demonstrate that this source of uncertainty results in the imposition of inefficient sanctions both theoretically and empirically.

To develop this argument, we first construct a model of complete information, power consolidation, and sanctions. When a leader is extremely vulnerable to sanctions, foreign powers seize the opportunity and threaten their rival. Internalizing the danger, the leader concedes the issue, knowing that failure to comply will lead to an even worse outcome. In contrast, if a leader holds a tight grip on power, sanctions are unlikely to coerce compliance. Foreign powers thus fail to threaten sanctions because they know that the strategy will prove ineffective. In either case, sanctions do not occur and efficiency prevails.

However, leaders are more likely to know how strong their hold of office is than foreign opponents of the regime. The corresponding uncertainty gives weaker leaders incentives to bluff strength. As a result, it remains unclear a priori how uncertainty affects sanctioning behavior; much of the relevant learning could take place during the threat stage of bargaining. We therefore formally investigate such an environment. Upon a foreign power issuing a threat, weaker leaders sometimes concede the conflict and sometimes continue the crisis. Strong types, in contrast, always continue. In turn, continuation of the crisis is *not* an unambiguous sign of the target

William Spaniel (williamspaniel@gmail.com; williamspaniel.com) is a PhD candidate at the University of Rochester.

Bradley C. Smith (bradley.carl.smith@gmail.com; bradleycarlsmith.com) is a PhD student at the University of Rochester.

\*We are grateful to Phil Arena, Tony Boyles, Rob Carroll, Nikolay Marinov, Cliff Morgan, Scott Wolford, two anonymous reviewers, and the editors of *International Studies Quarterly* for helpful feedback.

leader's strength. Foreign powers respond to the signal by sometimes conceding and sometimes calling potential bluffs by implementing sanctions. Because stronger types are more likely to escalate the crisis all the way to the sanctions stage, foreign powers counterintuitively impose sanctions against leaders more capable of surviving them.<sup>1</sup>

Building upon this equilibrium analysis, we consider how variation in the presence of uncertainty influences the probability of observing sanctions in equilibrium. To do this, we exploit two conceptions of uncertainty embedded in the model. First, we demonstrate that as the sanctioner's prior belief approaches certainty about the target's type, the probability that sanctions are observed in equilibrium vanishes. We further measure uncertainty by noting that as the "bandwidth" of possible sanctions outcomes converges to the same outcome, the probability of observing sanctions goes to 0. These findings indicate that as uncertainty disappears, the probability of sanctions correspondingly diminishes.

We then test whether environments with greater uncertainty are more likely to escalate to sanctions given the observation of a threat. Ordinarily, such tests about uncertainty are difficult to conduct due to selection problems. Fortunately, comparative statics from our theoretic model allow us to anticipate how states act once in a crisis. In turn, we employ the Threat and Imposition of Sanctions (TIES) data set (Morgan, Batpat, and Kobayashi 2014) to empirically test a number of hypotheses.

In particular, following Wolford (2007) and Rider (2013), we use leader tenure as a useful proxy for incomplete information. As Wolford (2007:784) argues, "private information is introduced each time a new leader enters office" because foreign intelligence organizations must discard their knowledge of the previous leader and build a profile of the new leader's preferences. Consequently, we would expect informational issues to be most problematic earlier in a leader's tenure and dissipate as foreign powers better understand the leader's preferences and reputation.

Given that hypothesis, we compile leader data from Archigos (Goemans, Skrede Gleditsch, and Chiozza 2009) and sanctions data from TIES. Controlling for other critical factors, we find that increasing the length of leader tenure decreases the probability of the imposition of sanctions. The effects are substantively significant. Indeed, holding other independent variables at their medians, we estimate that the probability that foreign powers impose sanctions on a leader is 22% points less likely if the crisis occurs during the leader's fourth year in office rather than if the crisis occurred following the leader's entry into power.

In addition to these results, we derive another empirical expectation from our "bandwidth" argument about uncertainty. We provide microfoundational support consistent with existing arguments about regime type and information<sup>2</sup> for the idea that the bandwidth of possible sanctions outcomes is significantly greater for autocratic targets than democratic targets. This suggests an interactive effect between regime type and leader

tenure's influence on uncertainty. Our empirical analysis confirms the hypothesis. Moreover, and again in line with our theoretic expectations, leader tenure matters more in these autocratic cases than the democratic cases.

Taken as a whole, our findings provide precise theoretic expectations about how a specific source of uncertainty, namely leader tenure, affects sanctions episodes, along with empirical findings that are consistent with the implications of this theoretic argument. As such, our work speaks to three disparate but important literatures in international relations.

First, early research on sanctions suggested that their imposition rarely influenced the behavior of targets (Pape 1997; Hufbauer, Schott, Elliott, and Oegg 2007). A strand of game-theoretic work pointed to selection effects as an explanation for this ineffectiveness (Tsebelis 1990; Smith 1996; Drezner 1999, 2003; Nooruddin 2002; Lacy and Niou 2004). Most relevant to our argument, another strand of game-theoretic work introduced the role of uncertainty as a cause of economic sanctions (Eaton and Engers 1992, 1999; Langlois and Langlois 2010). These studies demonstrate how, in the presence of uncertainty, sanctions can arise from rational gambles in which the sanctioning state imposes costly sanctions in the hope that the target is a weak type that will fold quickly. However, scholars have overlooked how this uncertainty might arise in practice. Consequently, the role of uncertainty in the context of economic sanctions lacks statistical assessment. By modeling uncertainty both theoretically and empirically, we bring clarity to the literature on economic sanctions.

Second, our work speaks to the broad literature on uncertainty and its influences on international conflict outcomes. Theoretic scholarship from the past twenty years or so indicates that incomplete information provides a major cause of many types of inefficient behaviors (Banks 1990; Fearon 1994, 1995; Schultz 1998, 2001; Wagner 2000; and Slantchev 2003), yet statistical analyses rarely account for the presence of uncertainty. Our use of leader tenure as a proxy for incomplete information provides a solution.

Finally, a growing number of scholars argue that leaders, rather than states, constitute the central actor in international relations (Goemans 2000; Bueno de Mesquita, Smith, Siverson, and Morrow 2004; Goemans and Fey 2009; Debs and Goemans 2010; Chiozza and Goemans 2011). While a large portion of this literature focuses on militarized conflict between states, this study provides additional evidence that leaders also play a critical role in the process of economic coercion. Because existing scholarship shows that economic sanctions destabilize leaders (Marinov 2005), our work helps unite the sanctions literature with that on leader-based explanations of international relations.

With selection bias a real problem, we push forward in two ways. Primarily, we move away from strength and resolve of the state and focus instead on the targeted leader's grip on power. If rivals impose sanctions to destabilize leadership, then uncertainty over consolidation of power should influence the probability of sanctions. But since weaker types concede at the threat stage, rivals impose sanctions more frequently against robust leaders than they would via a random draw. Additionally, the theoretic model allows the parties to resolve the conflict before the crisis stage. As a result, we can analyze the comparative statics of the game

<sup>1</sup> This holds empirically, with observed sanctions often resulting in brutally repressive countermeasures (Wood 2008).

<sup>2</sup> See Schultz 1998, 2001; Alexseev and Bennett 1995; and Zaller and Chiu 1996 for illustrative examples.

| Foreign          | Home          | Foreign                  |                              |
|------------------|---------------|--------------------------|------------------------------|
| Threaten         | Continue      | Sanctions                | $1 - S(q - s) - c, S(q - s)$ |
| Quit             | Back Down     | No Sanctions             |                              |
| $1 - S(q), S(q)$ | $1, S(q - l)$ | $1 - S(q + r), S(q + r)$ |                              |

FIG. 1. The Complete Information Game's Extensive Form

given that the states are in a crisis (Wolford and Ritter 2015). Indeed, the TIES data set gives us a way to test hypotheses about sanction imposition even without knowing the full domain of relevant cases.<sup>3</sup>

### Modeling Sanctions and Power Consolidation

Due to selection effects arising from strategic interaction, the correlates of sanction episodes are not always obvious. Thus, to obtain a valid understanding of how private information about leader vulnerability affects the imposition of sanctions, we turn to a formal model. Game theory provides a useful tool for the analysis of strategic interaction, allowing for the development of arguments that explicitly tie assumptions about preferences and strategic interdependence to conclusions about rational behavior. Using a formal model, we intend to establish "accounting standards" (Powell 1999:32–33) that map uncertainty to expectations about sanction behavior during a crisis. Specifically, this section begins with a complete information model of sanctions in the shadow of potential regime change. The complete information model makes the strong assumption that foreign powers have equal knowledge of the target regime's stability as that target regime. Consequently, we next investigate an incomplete information version of the model. Using the equilibria, we then derive theoretic expectations about the frequency of sanction imposition that we subject to statistical testing.

#### Complete Information Preliminaries

As Figure 1 illustrates, the game consists of two states, F (oreign) and H(ome) in an escalating crisis that could result in sanctions. *F* begins by choosing whether to quit or threaten sanctions. We conceptualize this as *F* attempting to coerce *H* into yielding on some policy issue. Quitting ends the game, while threatening forces *H* to back down and concede the policy issue or continue the crisis. Backing down also ends the game, while continuing the crisis leads *F* to decide whether to impose sanctions or not. The game then ends.<sup>4</sup>

We model *H* as a political leader seeking to maintain office and who is responsive to her selectorate. To represent this, we use the function  $S(x)$  to reflect the probability that the leader stays in power at the end of the game.

This function is a mapping  $S$  from the real line to the  $[0, 1]$  interval and as such produces a probability of reelection for each value of its argument. The leader only derives utility from office rents, which we standardize to 1. Thus, her payoff at each information set equals the value of  $S$ .<sup>5</sup> Additionally, let  $S$  be strictly increasing and continuous.

We parameterize the game with arguments for the function  $S$ , which shift the probability of maintaining office after a given set of actions. First, the argument  $q$  determines a leader's baseline level of office security. More precisely, *H* survives with probability  $S(q)$  if *F* maintains the status quo. Next,  $l$  parameterizes the loss of office security that a leader suffers if she backs down from threatened sanctions. Formally, *H* earns  $S(q - l)$  by backing down. The parameter  $r$  denotes the amount that *H*'s selectorate rewards its leader for winning the crisis. Thus, *H*'s payoff  $S(q + r)$  if *F* does not apply sanctions after issuing a threat. Finally, the value  $s$  parameterizes the loss of office security that results from the imposition of sanctions. Formally, *H* receives  $S(q - s)$  if *F* ultimately imposes sanctions. Throughout, we assume that the  $q$ ,  $l$ ,  $r$ , and  $s$  are all strictly positive. Because  $S(x)$  is strictly increasing in  $x$ , the leader more frequently survives if she prevails in the crisis than if *F* maintains the status quo and more frequently survives if *F* maintains the status quo than if *H* loses the crisis. Whether the leader is more likely to survive sanctions than if she backs down varies and will partially determine the equilibrium outcome of a given parameter space.

These payoffs reflect our empirical understanding of sanctions and crises. Sanctions may never deterministically remove leaders from power. Rather, their economic ramifications shift selectorate preferences, which triggers turnover in leadership or forces the current government to terminate the policy. American sanctions on the Israeli military, for example, tipped the electoral scales in favor of the Labor party in 1995 (Drezner 1999:2). In a more grizzly case, American sanctions against Rafael Trujillo's regime in the Dominican Republic helped inspire a group of political opponents to assassinate him. Thus, even if sanctions fail to rank as the most important factor in leadership turnover, they have a non-negligible effect on regime survival (Kirshner 1997:59), though their strength may vary by regime type (Escribà-Folch and

<sup>3</sup> We nevertheless run robustness checks using selection models and find that our central claims still hold.

<sup>4</sup> This general set of moves is common in the literature on sanctions (Drezner 2003).

<sup>5</sup> Throughout, we assume that the leader's utility is represented by a von-Neumann Morgenstern function  $u$  (sometimes also referred to as a "cardinal utility function"), and we normalize  $u(\text{holding office}) = 1$  and  $u(\text{losing office}) = 0$  and assume that the leader is risk neutral over these two outcomes. Therefore, the leader's utility over any lottery between these two outcomes is equal to her utility of the expectation of the lottery, which allows us to simply write the leader's payoffs as equal to the probability of maintaining office.

Wright 2010). Marinov (2005) finds similar evidence in a large- $n$  study, which estimates that the imposition of sanctions increases the likelihood of removal from office by 28%. Our model operationalizes this by having sanctions with stronger effects on the selectorate increase the value of  $s$  and in turn decrease  $S(q-s)$ .<sup>6</sup>

Meanwhile,  $F$  wants to achieve its policy goals, which we standardize to value 1.<sup>7</sup> If  $H$  maintains power and keeps the policy,  $F$ 's payoffs are therefore zero. In contrast, if  $H$  loses power or concedes the policy issue,  $F$  obtains 1.<sup>8</sup> Additionally, if  $F$  imposes sanctions, it suffers a cost  $c > 0$  to reflect lost economic productivity (Martin 1992). Given  $H$ 's likelihood of staying in power for each outcome,  $F$  therefore most prefers  $H$  backing down and least prefers not imposing sanctions after a crisis starts. Whether  $F$  prefers quitting or imposing sanctions depends on the effectiveness of sanctions and their cost to implement, which vary in the model (Table 1).<sup>9</sup>

#### Description of the Complete Information Equilibria

Since the game requires a trivial application of backward induction to solve for its subgame perfect equilibria, we instead focus on the substantive results. Figure 2 illustrates equilibrium outcomes as a function of  $H$ 's payoff for sanctions and its payoff for backing down.<sup>10</sup>

On the right side, when the sanctions insufficiently sway  $H$ 's selectorate (or the costs of imposing them are too high),  $F$  cannot credibly threaten their imposition.  $H$  then knows it can continue the crisis and force  $F$  to give up. Anticipating this,  $F$  maintains the status quo to avoid trapping itself in an unwinnable conflict.

The interaction becomes more interesting when the probability of  $H$  surviving sanctions proves small. Indeed, on the left side of the figure,  $F$  prefers imposing sanctions if  $H$  challenges it by continuing the crisis. When sanctions bring  $H$ 's leader a worse fate than backing down, as in the top left of the figure,  $H$  responds by conceding the issue and accepting the selectorate's punishment. Knowing that it can obtain its goals,  $F$  initiates the crisis.

<sup>6</sup> Of course, and as our formal analysis will later corroborate, the situations where leaders are most fearful of sanctions are also the situations where crises end during the threat stage. This is perhaps most apparent in attempts to keep South Korea (Drezner 1999:260–261; Pollack and Reiss 2004:262–263) and Ukraine (Drezner 1999:199–202; Reiss 1995:122) from developing nuclear weapons. In both cases, economic development was too important domestically to risk sanctions. The threat of losing power also influences behavior during sanctions episodes. Following World War II, Yugoslavia under Josip Broz Tito began drifting away from Moscow's foreign and domestic policy agenda. Joseph Stalin's response was to cut trade and aid to Yugoslavia. Facing deep economic upheaval at a time of reconstruction, Tito compromised to avoid risking destabilization of his regime (Freedman 1970:33).

<sup>7</sup> This may be because  $F$  is also trying to appeal to some selectorate that values the policy goal. However, the model is agnostic here— $F$  could also be a traditional unitary actor.

<sup>8</sup> This assumes that  $H$ 's successor will certainly concede the policy issue. We could obtain similar results by relaxing this assumption. The net effect is that sanctions look comparatively more valuable in the case we analyze.

<sup>9</sup> Most critically, this means that sanctions are completely insurmountable— $F$  receives no benefits for expression or gains by using sanctions as costly signals (Kishner 1997:34).

<sup>10</sup> Note that throughout we assume that the cost of sanctions are sufficiently high to avoid "deadlock" scenarios in which sanctions occur even under complete information. Formally, we assume that  $c > S(q) - S(q-s)$ . Deadlock represents situations in which the foreign power threatens the target state despite knowing that the target state will not back down.

TABLE 1. Notation for the Model

| Notation   | Description  |
|------------|--|
| $S(\cdot)$ | $H$ 's office security function, which is continuous and strictly increasing |
| $q$        | $H$ 's status quo level of office security                                   |
| $l$        | $H$ 's loss of office security after backing down from a threat              |
| $r$        | $H$ 's office security reward for winning sanctions episode                  |
| $s$        | $H$ 's loss of office security after sanctions are imposed                   |
| $c$        | $F$ 's cost of implementing sanctions  |

In the contrasting case in the bottom-left of the figure, backing down causes  $H$  to lose office so frequently that the leader would prefer to weather sanctions. Knowing this,  $F$  does not impose sanctions as  $H$  is simply too resolved; similar to the right-hand side of the figure, sanctions are not worth their cost in this case.

#### How Uncertainty Triggers Sanctions

The complete information model only provides a partial story. It assumes that  $F$  precisely knows the effectiveness of sanctions. Yet, in practice, such knowledge often remains hidden. As Kirshner (1997:42) states, "[i]dentifying and targeting the right groups is the key to maximizing the chances the sanctions will be successful." Such identification proves challenging. Foreign powers consequently must weigh the possibility that sanctions will only have a minimal impact. We now consider such a dynamic.

Nature begins the interaction by choosing whether  $H$  is "strong" with probability  $p$  or "weak" with probability  $1-p$ . The only difference between these two types is their ability to weather sanctions. If imposed, the strong type and weak types maintain power with respective probabilities  $S(q-s)$  and  $S(q-s')$ , with  $s' > s$ . Put differently, the strong type stays in power more frequently than the weak type if and only if  $F$  imposes sanctions. Consistent with the observation that leaders better understand their consolidation of power than foreign adversaries,  $H$  observes its true strength after the draw but  $F$  only has the prior.

As usual for these types of signaling games, we search for strong perfect Bayesian equilibria (PBE). A strong PBE is a set of strategies and beliefs such that the strategies are sequentially rational and players update beliefs through Bayes' rule wherever possible both on and off the equilibrium path. Ordinarily, PBE yields multiple equilibria because various off the path beliefs can justify a variety of different moves. The situation we analyze, however, lacks this problem because the strong type of  $H$  has a strictly dominant strategy to continue the crisis in the non-trivial cases. This ensures that the players reach all information sets with positive probability once updating becomes necessary. In turn, the equilibria we describe are unique to their parameter spaces.

First, note that we restrict attention to regions of the parameter space in which strong and weak types behave differently in equilibrium. In particular, if both types of  $H$  prefer suffering sanctions to backing down,  $F$  knows that the crisis will prove fruitless even if it is actually facing the weak type. As a result,  $F$  quits. On the other hand, if both types of  $H$  prefer backing down to sanctions,  $F$  knows that initiating a crisis will succeed regardless of its

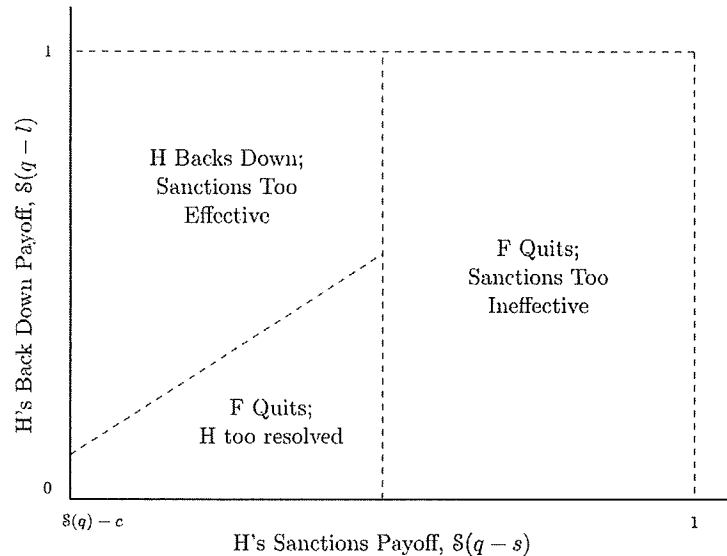


FIG. 2. Equilibrium Outcomes of the Complete Information Game as a Function of  $H$ 's Payoffs for Sanctions and Backing Down

specific opponent. In turn, both types back down, and the interaction again ends without sanctions.<sup>11</sup> Put differently, it takes a very specific type of incomplete information for sanctions to result. Namely, the strong type must prefer imposed sanctions to backing down, while the weak type must prefer backing down to imposed sanctions. This observation leads to a critical testable hypothesis below, as it indicates that incomplete information only leads to sanctions when  $F$  cannot distinguish the consequences of sanctions on  $H$ 's subsequent behavior. Consequently, we focus on this case for the remainder of the paper.

We can now describe the game's equilibria, organized by the prior probability  $H$  is strong:

**Proposition 1:** *If the probability  $H$  is strong is sufficiently low,  $F$  issues a threat. The strong type continues the crisis with certainty, while the weak type mixes between backing down and continuing the crisis (bluffing strength).  $F$  responds by sometimes imposing sanctions (calling the potential bluff) and sometimes conceding.*

The appendix details the full proof. For intuition, consider the subgame beginning with  $H$ 's decision whether to back down or continue the crisis. Since the strong type prefers suffering sanctions to backing down, it must escalate the conflict. It appears that the weak type has an incentive to pool with the strong type and bluff its strength. However, this will not work. Weak types sufficiently outnumber strong types for Proposition 1's parameter space. Consequently, if all weak types pool by continuing the crisis,  $F$  would impose sanctions, making backing down better for the weak type in retrospect. The weak type responds to this strategic constraint by only sometimes bluffing strength.

Seeing the weak type's temptation to bluff more frequently,  $F$  responds by sometimes imposing sanctions if the game reaches its final stage. This successfully deters

the weak type from bluffing any further. However, it also comes at the cost of sometimes mistakenly imposing sanctions against the strong type. Notably, since some percentage of the weak types have filtered themselves out after the threat stage,  $F$  more frequently imposes sanctions on stronger types in equilibrium than it would if it blindly imposed sanctions at the start.

Additionally, the probabilistic bluffing and sanctioning behavior in Proposition 1 helps explain why foreign powers sometimes threaten sanctions but fail to follow through even though the opponent has maintained the undesirable policy.<sup>12</sup> Given that such actions only further stabilize the opposing position,  $F$  would never fail to follow through with complete information. Nevertheless, when  $F$  contends with potential bluffers, it sometimes issues threats it will ultimately regret.

**Proposition 2:** *If the probability  $H$  is strong is sufficiently high,  $F$  quits without issuing a threat.*

The appendix contains a full proof. Essentially, the relatively high frequency of strong types creates two possible dynamics. First, the population of strong types is so great that weak type of  $H$  can pool with the strong type and always feign strength. This forces  $F$  to give up without imposing sanctions; even though  $H$  is possibly weak, the more likely possibility that  $F$  is strong does not justify the cost of sanctioning. In more moderate cases, issuing the threat leads to the occasional bluff from weak types as described in the intuition for Proposition 1. However, the probability that  $H$  is strong remains relatively high in this case. This inflates the cost of scaring away weaker types and causes  $F$  to quit. In either case, no sanctions occur since the crisis never begins.

<sup>11</sup> We omit proofs for each of these cases because they follow the analogous situations of the complete information game.

<sup>12</sup> Such an outcome is surprisingly frequent. The TIES dataset contains 1,413 incidents. 567 ended without sanctions. Of these, 207 (36.5%) saw the sender fail to gain any ground against their targets.

### Comparative Statics: Sanctions and Uncertainty

Deeper analysis of the incomplete information model allows us to draw three key implications from the model, which we test empirically in the following section. More specifically, we first derive results showing that, for two reasonable conceptualizations of uncertainty, the probability that sanctions occur in equilibrium approaches zero as uncertainty vanishes. Additionally, we derive a result from the model that demonstrates that, counter to the logic of deterrence, the probability of sanctions increases as  $H$ 's cost of backing down increases.

We start with measuring uncertainty based on  $F$ 's prior about  $H$ 's type:

**Proposition 3:** *As  $F$ 's uncertainty about  $H$ 's type goes to 0 (that is, as  $p$  goes to 0 or 1), the probability  $F$  imposes sanctions goes to 0.*

Put differently, as  $F$ 's belief ventures away from the greatest uncertainty (that is,  $p = 1/2$ ) and approaches the extremes that have the least uncertainty, the probability of observing sanctions goes to 0.<sup>13</sup> While the appendix includes a detailed proof, consider the following intuition. Per Proposition 2, if  $F$  believes that  $H$  is sufficiently likely to be strong, the expected ineffectiveness of sanctions compels  $F$  to quit the crisis. Therefore,  $F$  never imposes sanctions. The more interesting case lies on the other end of the spectrum, when  $F$  believes  $H$  is almost certainly a weak type. Here, sanctions still occur with positive probability. Per Proposition 1, weak types sometimes bluff strength by continuing the crisis.  $F$  combats this behavior by sometimes imposing sanctions. However, the mixing probabilities show that the likelihood  $F$  imposes sanctions still goes to 0 in this case. Intuitively, this holds because only a very small minority of weak types can bluff if  $H$  is almost certainly weak. In turn,  $F$  very rarely reaches its decision whether to impose sanctions.

Note, though, that the value of  $F$ 's prior belief about  $H$  is only one measure of uncertainty. Another conceptualization of uncertainty involves the degree of dissimilarity between the possible types of  $H$  that  $F$  faces. In the context of the model, this quantity is the variance in the effectiveness of sanctions, which  $S(q-s) - S(q-s')$  measures. Using this conceptualization of uncertainty, we draw a second comparative static similar to Proposition 3:

**Proposition 4:** *As the effectiveness of sanctions against both types approaches being identical (that is, as  $S(q-s) - S(q-s')$  goes to 0), the probability  $F$  imposes sanctions goes to 0.*

Unlike Proposition 3's result, which requires a simple calculation of equilibrium probabilities, the mechanism behind Proposition 4 is not immediately apparent. However, the logic that differentiates the behavior of each type in equilibrium helps. Recall that  $F$  does not impose sanctions in equilibrium if both types prefer backing down to sanctions. In essence, a cutpoint exists that separates these two preferences. For sanctions to occur with incomplete information, the sanctions payoffs for the types must lie on separate sides of this cutpoint. But as the bandwidth of possible sanctions outcomes approaches 0, the probability of straddling a single point goes to 0. The game

then folds into the complete information case, with  $F$  quitting if both types prefer sanctions and  $F$  forcing  $H$  to back down in the other case.

Overall, these comparative statics assure us that regardless of whether one conceptualizes the degree of uncertainty as  $F$ 's prior belief or the difference in the types of possible targets  $F$  faces, sufficiently reducing uncertainty shrinks the likelihood of sanctions.

Next, we turn from information to an interesting implication of the model that runs counter to the traditional logic of deterrence. Typically, the logic of deterrence suggests that as the payoff for backing down decreases for a target state, the credibility of a threat to fight increases, reducing the attractiveness of initiating a conflict against the target. The logic of deterrence might lead to an expectation that leaders with low payoffs for backing down can more readily commit to hold firm, deterring  $F$  from issuing a threat in the first place. However, Proposition 5 demonstrates that this intuition does not hold here.

**Proposition 5:** *As  $H$ 's payoff for backing down decreases, the probability of observing sanctions in equilibrium increases.*

While this result is counterintuitive, it follows immediately from the equilibrium strategies outlined in Proposition 1. The intuition comes from the logic of  $H$  and  $F$ 's rational gambles in this equilibrium. Because the weak type of  $H$  probabilistically bluffs to mimic the strong type,  $F$  must probabilistically implement sanctions to prevent the weak type from always bluffing. To do this,  $F$ 's probability of sanctions must strike a balance. Because the weak type's payoff if  $F$  subsequently declines to impose sanctions trumps its payoff for backing down, a decrease in the payoff of backing down requires  $F$  to increase the probability that it imposes sanctions to maintain the weak type's indifference. Thus, Proposition 5 demonstrates how, counter to the logic of deterrence, the probability that sanctions occur in equilibrium increases as backing down becomes less attractive for  $H$ .

### Empirical Evidence of Sanctions and Uncertainty

We now turn to investigating the empirical record on sanctions, beginning by detailing our hypotheses and their connection to the theoretic results of the previous section. Next, we outline an empirical strategy which allows us to operationalize concepts that have proven difficult to measure in previous research on international crises. After, we describe the data and present the results of our statistical analysis. We conclude this section by addressing potential concerns about the robustness of these results, ultimately demonstrating that they hold under a bevy of alternative model specifications.

#### Research Design and Hypothesis

The analytical results derived from our theoretic model provide a set of clear implications. First, Propositions 3 and 4 indicate that as uncertainty about the leader of a target state's preferences becomes present, sanctions become more likely. Next, Proposition 5 indicates that as the leader of a target state's cost for backing down increases, the probability of observing sanctions also increases. In this section, we take these clear theoretic results and, using the existing literature as a guidepost for operationalizing uncertainty and costs, tie them to

<sup>13</sup>  $p = 1/2$  maximizes uncertainty because the variance of a Bernoulli distribution maximizes at that value.

specific, empirically testable hypotheses which we evaluate with a statistical analysis.

The primary empirical obstacle in assessing these theoretic propositions arises in evaluating the first implication, which requires us to operationalize a sanctioning state's uncertainty about its target country. This problem is not unique to our inquiry, as it has plagued empirical researchers in international relations over the past twenty years. Fortunately, recent theoretic advances point to leader tenure as a suitable proxy for uncertainty (Rider 2013). As leaders advance in their tenure, they inevitably take publicly observable actions. As a leader's tenure increases, these publicly observable actions accumulate to produce patterns of behavior ready for analysis by the intelligence services of observing states. This accumulation of information provides foreign powers with confidence in their assessment of the preferences of a target state's leader. Thus, we expect that information about the preferences of a target state is increasing in tenure length. This allows us to evaluate our prediction concerning uncertainty with the following hypothesis:

**Hypothesis 1:** *Sanctions are less likely to be imposed as tenure increases.*

Given the complexity of the international system and the flexibility states enjoy in terms of choosing how to pursue a given international action, multiple factors might influence the informational structure of potential sanctions cases. Because of this, we evaluate a second hypothesis consistent with the informational mechanism outlined in the theoretic section. More specifically, we expect that when an international institution participates in a conflict, the likelihood of sanctions decreases. This argument crucially relies on our expectation that, in general, international institutions serve to increase the level of information sanctioning states possess about potential targets.<sup>14</sup>

This expectation follows the existing literature on transaction costs and international institutions. Generally, the literature argues that states rationally design international institutions, often to reduce transaction costs (Koremnos, Lipson, and Snidal 2001). Facilitating the transfer of information fulfills that purpose.

To tie this expectation more explicitly to the implications of our game-theoretic model, one might conceptualize the foreign state,  $F$ , as working through an international institution. In this case, the guidance of the literature on international organizations suggests that, by working in conjunction with an institution, the foreign state should gain information about the preferences of the sanctions target that would not have been available otherwise. So, building on our game-theoretic model's guidance and the expectations of this literature, we have our second empirical expectation:

**Hypothesis 2:** *Sanctions are less likely to be imposed if the sender works through an international institution.*

While we primarily wish to empirically evaluate the role of uncertainty in sanctions episodes, the analytical results derived from the game-theoretic model demonstrate that sanctions occur more often both when uncertainty about

a leader's preferences is high and when a leader's payoff from backing down in the face of threatened sanctions, denoted  $S(q-l)$ , is low. While Hypotheses 1 and 2 focused on our theoretic finding that uncertainty over a leader's payoff if sanctioned increases the probability of imposition, neither of these hypotheses test the model's implication that sanctions occur more frequently when a target state's leader has a low payoff for backing down, embodied in Proposition 5.

Testing this implication introduces an additional difficulty, as it requires us to operationalize a leader's payoff for backing down. Fortunately, the existing literature on the incentives of leaders in international crises provides us with a guidepost. A large body of existing work has tied regime type to the incentives of leaders in interactions with external states. This literature has shown that these regime-type effects, which alter the incentives of leaders and therefore a broad range of international interactions such as foreign aid provision (Licht 2009), war (Goemans 2000; Chiozza and Goemans 2011), and international trade agreements (Mansfield, Milner, and Rosendorff 2002). Particularly important for our purposes, previous work has indicated that failure in foreign policy crises leads to greater consequences for autocratic leaders than democratic (Debs and Goemans 2010).

Existing work has established a relationship between leader incentives, regime-type, and economic sanctions (Allen 2008a,b). Taken along with Debs and Goemans's (2010) argument, this suggests that regime type should play a significant role in determining a leader's payoff for backing down from sanctions. Furthermore, autocratic leaders often engage in behavior that results in the imposition of sanctions to consolidate power domestically. For example, as Lake (2010) argues, Saddam Hussein likely valued a reputation for possessing WMDs as a means of suppressing domestic threats to his regime such as coups or a potential Shiite rebellion. Thus, in this case, backing down would have resulted in the withdrawal of sanctions, but would also have revealed information about Hussein's actual WMD capabilities, which might have served to undermine his regime's ability to deter internal challenges. In sum, the payoff for backing down in the face of threatened sanctions appeared bleak, and Hussein stood firm as a result.

The above discussion indicates that, relative to autocratic leaders, a leader of a democratic state's payoff for backing down is relatively high and the difference in possible utilities in the event of sanctions is low. Therefore, the implications of Proposition 5 suggest the following hypothesis:

**Hypothesis 3:** *Sanctions are less likely to be imposed against more democratic states.*

In addition to the influence of regime type in determining a leader's payoff for backing down, regime type should also influence the information structure of a given sanctioning episode. In particular, the existing literature on democracy and international conflict, combined with our theoretic expectations about uncertainty, suggests an *interactive* effect between the level of democratization and leader tenure.

A large body of literature has tied domestic political institutions to conflict outcomes (for example, Leeds and Davis 1999; Reiter and Stam 2003). While some of this literature focuses on the ability of domestic institutions to

<sup>14</sup> This information may itself be strategically manipulated. Despite this, our theoretical argument only relies upon the degree of uncertainty, and as a result, we expect the effect of institutions to hold even if they provide poor or biased information.



create "audience costs" (Fearon 1994), a second strand argues that domestic political institutions might influence conflict outcomes by mediating the process of information transmission. Schultz (1998, 2001), for example, provides both theoretic and empirical support for an argument demonstrating that *democratic* institutions facilitate credible information transmission and allow states to avoid conflict. Furthermore, the literature on political media coverage has demonstrated that free presses in democratic states result in media coverage that reveals more information about preferences and power consolidation at the elite level versus closed, autocratic regimes (Alexseev and Bennett 1995; Zaller and Chiu 1996).<sup>15</sup>

An example supporting this basic argument appears in Kirshner's (1997) discussion of the failure of US sanctions against Panamanian dictator Manuel Noriega. Kirshner argues that while the United States anticipated that sanctions would devastate Noriega, they ultimately failed to sufficiently harm his domestic allies. This indicates a large bandwidth of possible outcomes, and the closed nature of the Panamanian regime during this time likely attributed to Washington's overly optimistic beliefs. In the absence of such uncertainty, the United States likely would not have imposed sanctions in the first place. In a similar argument applied to US sanctions against Slobodan Milosevic, Brooks (2002) demonstrates that sanctioning states' miscalculations about this autocratic leader's ability to weather sanctions contributed to the failure of the policy in contrast to the success of similar sanctions levied against South Africa at the same time. Thus, we expect that the openness of democratic institutions contributes to the provision of information about domestic power consolidation in the manner Proposition 4 discusses. This means that an autocrat's tenure should provide relatively more information than a democrat's.

In short, this discussion suggests that democratic states have smaller bandwidths of uncertainty about regime security due to the information available through channels other than a leader's publicly observable actions. As such, leader tenure should provide less information against a democracy relative to an autocratic state. Thus, Proposition 4's bandwidth argument (combined with results from the existing literature) indicates that leader tenure should have the strongest effects when the state in question is autocratic. Since we theorize that uncertainty about the bandwidth of effectiveness of sanctions against a democracy is smaller than against an autocracy, each extra day of tenure should prove more important in resolving a crisis versus autocracies.

**Hypothesis 4:** *There is an interaction effect between tenure and regime type: The marginal effect of tenure in reducing the probability of sanctions is greater for more autocratic targets.*

#### *Data and Statistical Model*

We draw data primarily from three sources. The base set of sanctions cases we analyze are from the Threat and Imposition of Sanctions (TIES) data set, version 4.0 (Morgan et al. 2014). This data set compiles information on both conflicts in which one or more states imposed sanc-

tions on a target and lower level conflicts in which the crisis ended at the threat stage. Thus, the population of cases includes conflicts that exhibit the variation necessary to evaluate our theoretic claims regarding the imposition of sanctions.<sup>16</sup>

Additionally, we draw data from two sources familiar to international relations scholars. Leadership data come from the Archigos data set (Goemans et al. 2009), which contains information relevant to the duration of a given leader's tenure as well as the means through which they obtained office. Finally, we draw on a set of standard control variables from the Correlates of War (COW) project.

#### *Dependent Variable*

Our dependent variable is a dichotomous outcome entitled *Imposition* that takes a value of 1 if sanctions were imposed and a value of 0 if they were not. This variable originates from the aforementioned TIES 4.0 data set. According to the TIES coding manual, a case appears in the data if an opponent threatens or imposes sanctions. Approximately 61% of the cases in the sample analyzed here resulted in the imposition of sanctions. Clearly, the coding rule raises concerns over sample selection issues, as inclusion in the data the mention of sanctions by a threatening state. We address these concerns in the robustness section below.

#### *Independent Variables*

##### **Tenure**

The first independent variable of substantive interest in this analysis, which allows us to evaluate Hypothesis 1, is the tenure of leaders. While we implement several measures as robustness checks (none of which alter the results), we include the common log of days in office at the time of crisis as the main measure. This measure comes from Archigos (Goemans et al. 2009) and simply reflects a measure of the tenure of a target state's leader at the time the case was included in the TIES 4.0 data set.

We opt for days because of the fine-grained nature of information transmission. There is a major substantive difference between a leader having spent 30 days in office at the time of crisis versus 300. Yet a less fine-grained measurement such as years in office would treat this identically. In this regard, we are lucky that the Archigos data set records the exact date of the beginning of tenure. The TIES data set similarly records exact dates of crises, though some cases only include the beginning of the month or the year. We exclude these cases in our initial analysis but discuss them further in the robustness checks.

Note that we log days in office for theoretic reasons.<sup>17</sup> Information gathering has diminishing marginal returns. For intelligence organizations, a rival's first day in office provides more information than the second, the second provides more than the third, and so forth. Naturally, then, the derivative of the information accumulation

<sup>15</sup> Given our argument that the effectiveness of sanctions is closely related to a leader's power consolidation, it is reasonable to believe that these regime-specific information dynamics, and their interaction with leader tenure are especially relevant to economic sanctions, perhaps more than in comparison to militarized conflict.

<sup>16</sup> In relating the empirical analysis to our model, one potential issue is that sanctions are sometimes imposed without an identified threat. If we exclude these cases, regressing only on observations that had a recorded threat, the results are unchanged.

<sup>17</sup> We add 1 to the day count to ensure that all values of the tenure measure are greater than 0.



function should be positive while its second derivative should be negative. Logging days in office ensures that our measure of tenure has these features. It also reduces the long right tail of the distribution.

### Institutions

Use of an institution is our second independent variable of interest and evaluates Hypothesis 2. *Institutions* thus appears as a dichotomous measure of whether an international institution was involved in the crisis. It originates from the TIES 4.0 data. Following TIES 4.0, we code this variable as a 1 if, during the conflict, there was explicit mention of sanctions or support for sanctions among members of an international institution (including formal military alliances such as NATO) or the sanctions were carried out multilaterally through a formal international institution.

### Polity

Hypothesis 3 stated that democracy serves to both raise a leader's payoff for backing down from sanctions while simultaneously reducing uncertainty about the crisis. To address this in the model, we include a *Polity* score from the POLITY IV data set. Polity scores normally range between -10 (complete autocracy) and 10 (complete democracy). To keep the values consistent in magnitude with our other key independent variables, we rescale these scores between 0 and 1, still increasing in democratic institutions.<sup>18</sup>

### Controls

We also control for several factors that ought to influence the imposition of sanctions. First, to account for the possibility that sanctions occur more frequently against states whose leaders have obtained office through "irregular" means such as military coups or subversion of election results, we include the variable *Regular*, which is a dichotomous variable that takes a value of 1 if a leader obtained office through regular means and 0 otherwise. This variable appears in Archigos and is coded according to each individual country's laws at the time of each observation. Next, we control for the military strength of the target by including *CINC* scores from the COW data. Additionally, we control for the number of states involved in threatening or imposing sanctions in a particular case by including the variable *Senders*, which is a simple count of sanctioning states pulled from the TIES data. Finally, to account for the possibility that the sanctions process might play out differently for similar states than for dissimilar ones, we include the *S-Score* (Signorino and Ritter 2002) of the target country and the primary sender as identified in the TIES data.

### Statistical Model

The analysis we present below implements a logit model to estimate the relationships outlined in the previous sections. However, because of the nature of these data (and international relations data more generally), we note the importance of accounting for sample selection issues in our estimation.

To avoid the problems associated with selection bias, we also estimate a bivariate probit selection model (Dubin and Rivers 1989).<sup>19</sup> We provide a more thorough discussion of this selection model in the robustness section. While we demonstrate robustness of the results with the selection model later in the paper, we utilize the simpler model for the analysis in the following section.

### Results

The results provide broad support for our hypotheses. Figure 3 presents point estimates of the coefficients on our three main explanatory variables of interest, along with the bounds of a 95 percent confidence interval. The point estimates and confidence intervals presented in this plot originate from a logistic regression including all controls described in the previous section, the results of which appear in the fifth column of Table 2.

Consistent with our hypotheses, Figure 3 indicates a negative relationship between leader tenure and sanctions. Additionally, the negative coefficients on institutional involvement and polity score are consistent with Hypotheses 2 and 3. Furthermore, the bounds of the 95 percent confidence interval does not cross zero on either of these coefficient estimates. As such, these results provide initial support for both Hypotheses 2 and 3. Taken together, support for these hypotheses is consistent with our theoretic argument that an increase in the quality of information reduces the probability of observing sanctions.

Looking to Table 2 presents a fuller picture of the results across a variety of model specifications including each individual explanatory variable of interest. The primary takeaway from this table in terms of our argument is that the sign and significance of our three explanatory variables of substantive interest remain unchanged across these model specifications with the exception of Polity, which only attains significance in the full model found in the fourth column. This provides an initial indication of the robustness of the results presented below.

However, sign and statistical significance do not necessarily indicate real substantive importance. To address this concern, we consider some predicted probabilities generated from the full model to demonstrate the influence of these variables on the probability of sanction imposition.

First, holding all other variables at their median, a move across the interquartile range of polity scores in the data results in a 9.3% point reduction in the probability of sanction imposition. Thus, increasing levels of democratization has a non-negligible influence on the probability of a sanctions episode under the full model, providing support for Hypothesis 3.

Next, to demonstrate the influence of leader tenure, Figure 4 shows predicted probabilities of sanction imposition across 5 years in office, holding all other

<sup>18</sup> We also run robustness checks by differentiating autocratic regimes (personalist, monarchic, military, and party) from Ceddes, Wright and Frantz (2014) and find that our results hold.

<sup>19</sup> Although the strategic nature of the selection in this substantive application is apparent, we do not use a strategic model (Signorino 1999, 2002) because the multilateral nature of many crises makes it quite difficult to identify a "first mover" in many cases. As identifying the sequence of moves is absolutely crucial to identifying a strategic model, we forgo an explicit statistical modeling of the strategic nature of the selection process in favor of avoiding the imposition of unnecessary structure on the problem. Consequently, we view the probit selection model as sufficient to address concerns with sample selection while also not requiring unnecessary and potentially unjustifiable assumptions necessary for estimation.

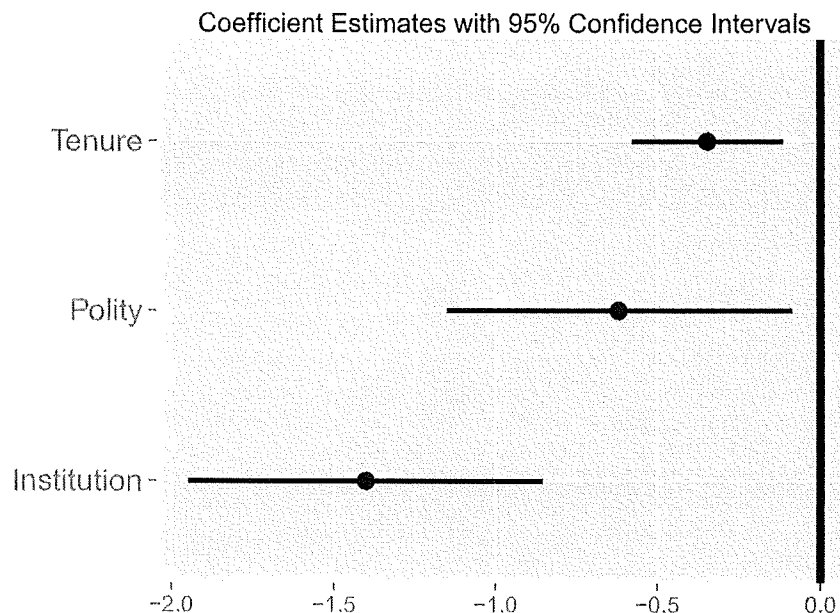


FIG. 3. Coefficient Estimates of Our Three Independent Variables of Interest with 95% Confidence Intervals. The Empirical Model Supports Each of Our Hypotheses

TABLE 2. Statistical Results

|                   | <i>Dependent Variable</i>  |                      |                     |                      |                      |
|-------------------|----------------------------|----------------------|---------------------|----------------------|----------------------|
|                   | <i>Sanction Imposition</i> |                      |                     |                      |                      |
|                   | (1)                        | (2)                  | (3)                 | (4)                  | (5)                  |
| Tenure            | -0.282**<br>(0.110)        |                      |                     | -0.347***<br>(0.119) | -0.874***<br>(0.276) |
| Institution       |                            | -1.154***<br>(0.238) |                     | -1.400***<br>(0.279) | -1.408***<br>(0.281) |
| Polity            |                            |                      | -0.095<br>(0.218)   | -0.618**<br>(0.272)  | -3.065***<br>(1.140) |
| Regular           | -0.290<br>(0.224)          | -0.324<br>(0.214)    | -0.232<br>(0.241)   | 0.041<br>(0.271)     | 0.085<br>(0.276)     |
| Senders           | 0.328***<br>(0.091)        | 0.567***<br>(0.108)  | 0.299***<br>(0.085) | 0.634***<br>(0.122)  | 0.639***<br>(0.124)  |
| CINC Score        | 2.174<br>(1.604)           | 1.290<br>(1.435)     | 1.408<br>(1.407)    | 1.887<br>(1.668)     | 2.204<br>(1.682)     |
| S Score           | 0.433<br>(0.274)           | 0.578**<br>(0.263)   | 0.560**<br>(0.264)  | 0.586**<br>(0.292)   | 0.608**<br>(0.294)   |
| Tenure*Polity     |                            |                      |                     |                      | 0.766**<br>(0.342)   |
| Constant          | 0.902**<br>(0.442)         | -0.105<br>(0.278)    | 0.042<br>(0.276)    | 0.999**<br>(0.486)   | 2.674***<br>(0.945)  |
| Observations      | 894                        | 1,003                | 1,003               | 873                  | 873                  |
| Log Likelihood    | -572.966                   | -637.505             | -651.609            | -542.479             | -539.806             |
| Akaike Inf. Crit. | 1,157.931                  | 1,287.009            | 1,315.218           | 1,100.958            | 1,097.612            |

(Note. \* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .)

variables at their medians. We obtained predicted probabilities from the full model, including all controls. The plot illustrates how our main empirical model predicts a substantively significant impact of leader tenure on the probability of sanction imposition, as moving

across the full range of values results in a 30% point reduction in the probability of observing sanctions. Thus, in a typical case, the reduction in uncertainty that accompanies an increase in leader tenure has a substantively important impact on the probability of

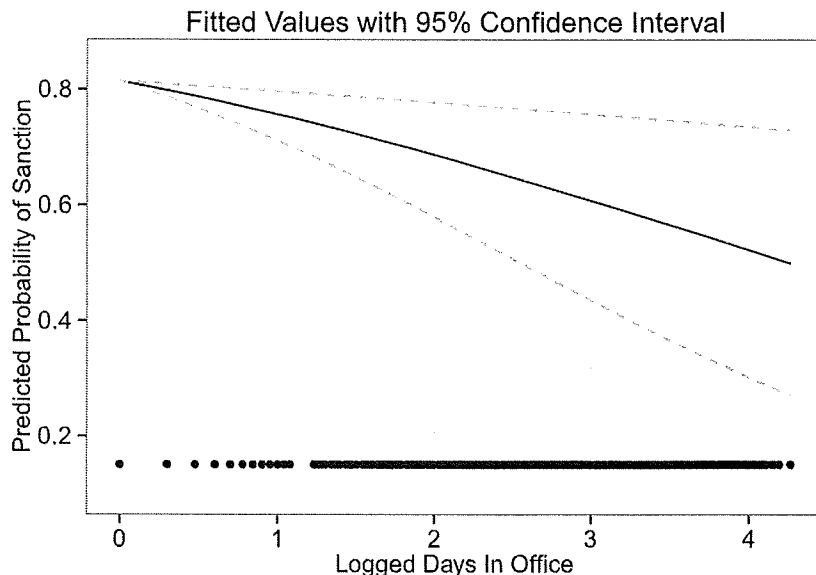


FIG. 4. Fitted Values of the Probability of Sanctions by a Leader's Tenure in Office, Holding all Other Independent Variables at Their Medians. As Tenure Increases, the Probability that Threats Escalate to Sanctions Decreases Greatly. Rug Indicates Distribution of Tenure Measure in the Data Used

sanction imposition according to our model, lending support to Hypothesis 1.

In addition to the visual representation in the plot, considering some predicted probabilities across substantively interesting values of leader tenure proves instructive. For example, one might be interested in how the predicted probability of sanction imposition differs for a leader that has only just been elected (spending 1 day in office) versus a leader that has been in office for 4 years. Holding all other variables at their medians, the model predicts that a new leader will have sanctions imposed against them with probability 0.814, while a leader that has held office for 4 years will have sanctions imposed against them with probability 0.594. Thus, maintaining office for 4 years leads to a 22% point reduction in the probability that a given leader suffers sanctions, all else held equal. This provides further evidence of the substantial impact that leader tenure, and the reduction in uncertainty that accompanies it, has on the outcome of sanctions episodes.

#### *Interaction Effects: Democracy, Autocracy, and Information Transmission*

We now turn to the interaction between tenure and regime type. In particular, we evaluate Hypothesis 4 by including an interaction of democracy and leader tenure in our statistical model. The fifth column of Table 2 contains the results. They are somewhat difficult to interpret due to the interaction term, so we opt for the graphical representation of Figure 5. It presents predicted probabilities of sanction imposition across the full range of tenure for the 25th and 75th percentile values of Polity. The plot indicates that, although increases in tenure reduce the probability of sanctions against both autocratic and democratic states, the influence is much sharper for autocracies, as the relatively

steep slope of the line corresponding to autocratic states in Figure 5.

To elaborate further, the data are consistent with our theoretic understanding of the informational consequences of autocracy and democracy. While the intelligence services of sanctioning states can take advantage of the relative openness of democratic states to ascertain information with regard to the consequences of sanctions for a targeted leader of a democratic state, the same does not hold for targeted autocratic leaders. As a result, intelligence analysts in sanctioning states must rely on alternative sources of information such as publicly observable actions by autocratic leaders. As we have argued, leader tenure provides a proxy for this type of information transmission. These statistical results indicate that leader tenure indeed appears to have more of an influence on the probability of sanctions against autocratic states relative to democratic states.

#### *Robustness*

While the results presented in the previous section are consistent with our hypotheses, we ought to check alternative specifications to guard against the possibility that another mechanism drives them. Accordingly, in this section, we discuss several robustness checks to our empirical analysis to demonstrate the validity of the inferences we draw from the data and the plausibility of our theoretic claims. We include more complete results in this paper's supplementary materials.

First, the results are robust to multiple measures of leader tenure. Beyond the specifications above, we conducted analyses using year, months, and weeks, and non-logged days in office. The substantive results are unchanged.

Next, the TIES data set has a number of cases missing the specific date or month of sanctions imposition. We

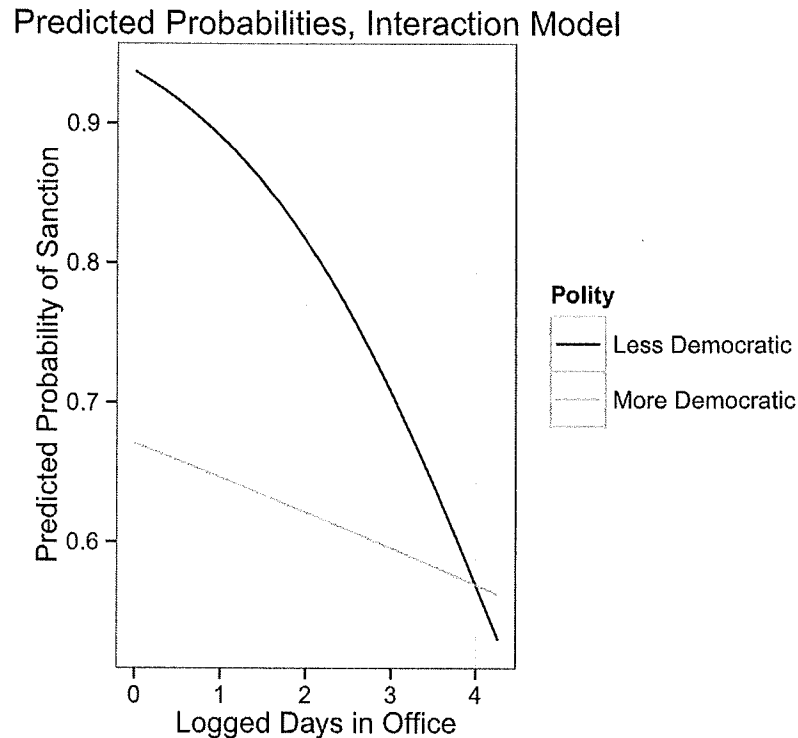


FIG. 5. Fitted Values of the Probability of Sanctions for the 25th and 75th Percentile Values of Polity, all Other Variables Held at Their Respective Medians. As this Plot Indicates, Tenure's Influence on the Probability of Sanctions is Much Stronger for Autocracies than for Democracies

omitted these cases in the original model because we cannot calculate a precise leader tenure without that information. However, we tried using the first, the middle, and the last day of the period as the date of sanctions imposition to obtain data for leader tenure in the cases where we know the leader in office at the time of sanctions. These alternative coding rules do not influence the results.

An issue with our finding that institutions reduce the likelihood of sanctions by transmitting information could be an interaction between the presence of an institution and the number of senders, as Miers and Morgan (2002) argue. To guard against this possibility, we fit a model that included an interaction term between senders and institutions. In this model, our institutions variable remained negative and statistically significant, while the interaction term did not achieve statistical significance at any conventional level. Thus, interacting institutions and the number of senders does not influence our results.

Another concern is the particular issue under dispute. Recent studies have considered both the likelihood of observing sanctions as well as the influence of sanctions across specific issue areas such as human rights (Peksen 2009; Nielsen 2013; Peterson 2014) and democratization (Peksen and Drury 2010; Grauvogel and von Soest 2014). A survey of this work suggests that the issue under dispute may have unique influences on the probability of sanctions, as well as the incentives created by the imposition of sanctions for leaders of target states. To account for this possibility, we exploit the issue variable from TIES. When the model controls for issue area, our results of interest are unchanged. Furthermore, and somewhat surprisingly, the issue dummies themselves do not

achieve statistical significance at any conventional level in the model. As another check to guard against the possibility that issue area might drive our result, we also subset the data by issue area and run our analysis on each subset. In each of these regressions, our substantive findings persist.

Although we focus on the incentives of a target state's leader, which the economic costs imposed upon a state by sanctions may or may not affect, it is worthwhile to consider the relationship between the anticipated cost of sanctions and probability that sanctions are imposed. While we lack comprehensive data on costs for senders and receivers, TIES includes measures of the anticipated costs of sanctions. We utilize both of these measures and find that the substantive results of the models presented earlier in the paper are unchanged as a result.

Another concern for the findings is the possibility that sanctions are more effective against leaders early in their tenure, before they have consolidated power.<sup>20</sup> This concern is especially relevant for our estimation strategy because it calls into question the use of leader tenure as a proxy for uncertainty. To address this concern, we repeated the analysis from the previous section, dropping all observations in which the leader's tenure was less than 1 year. This guards against the possibility that the findings are entirely a consequence of sanctions imposed on leaders very early in their tenure, when leaders are especially vulnerable and have not yet had time to consolidate power. The results of this analysis remain substantively identical to those presented above, suggesting that while consolidation of power in the target state may be a

<sup>20</sup> See Wolford 2012 for a similar argument about war onset.

relevant feature of the sanctioning process, it does not confound the inferences we draw about leader tenure and uncertainty.

A final concern for the robustness of our results stems from the nature of the data that we implement. In particular, as is usual in international relations data, the set of cases represents a selection process through which, prior to considering whether to impose sanctions, states face a decision over whether to escalate or initiate a crisis to the point which sanctions become a viable option. To account for this possibility, we employ a bivariate probit selection model (Dubin and Rivers 1989) as a robustness check. In this model, the set of directed-dyad years forms the base set of cases, and the selection equation includes the controls discussed above, as well as a measure of political relevance and distance between the target state and the primary sender. The results of the outcome equation prove substantively identical to those of the models presented in the earlier sections, and thus, in the interest of brevity, we omit these results.

### Conclusion

Why can't states settle disputes short of economic sanctions? This paper identified uncertainty about a leader's consolidation of power as an important reason. When foreign opponents are certain of a leader's relative strength, the parties can reach a mutually preferable outcome short of sanctions. However, leaders know their own security better than do international opponents. Given the asymmetry, weaker leaders have incentives to bluff strength and escalate crises. Faced with this uncertainty, foreign powers sometimes impose sanctions to catch potential bluffers.

Our formal model demonstrates that those foreign powers impose sanctions less frequently when their uncertainty diminishes. Statistical tests conform with these predictions. Specifically, threats prove less likely to escalate to sanctions when leaders have been in office for longer periods of time. The results persist when controlling for other factors that could cause a connection between shorter tenures and more sanctions; they are also robust to alternative specifications of leadership tenure. In addition, and consistent with the informational logic, sanctions are less likely against democracies and when the crisis involves international institutions.

As such, our findings provide theoretic and empirical contributions both to the literature on economic sanctions, as well as the international relations literature more broadly conceived. While these literatures point to uncertainty as a key driver of inefficient conflict, existing studies pay little attention to the specific sources of asymmetric information. Rather, they take uncertainty as given; they favor general results that depend only upon the presence of uncertainty instead of providing more specific predictions based upon particular sources of uncertainty. In contrast, our work specifically highlights the role of leader tenure.

More broadly, we believe that the empirical approach we adopt has potential across a broader range of substantive applications. Our statistical findings indicate that leader tenure is a useful proxy for incomplete information in international environments. The connection has strong theoretic support (Wolford 2007) and prior empirical application (Rider 2013). As such, this suggests that leader tenure may prove useful for empirical analysis across a wide range of international relations applications where

theory points to uncertainty as a key component of the interaction.

Our results also entail important implications for policymakers. In particular, both our theoretic and empirical findings suggest that policymakers should exercise caution when choosing to levy sanctions against leaders who have recently obtained office. As our arguments suggest, actors likely face the most uncertainty when a leader has just entered office. Correspondingly, intelligence reports concerning the expected behaviors of new leaders require additional scrutiny. This implication is especially important given that economic sanctions sometimes have dire consequences for the publics of states subjected to them (Gibbons and Garfield 1999). If policymakers pursue sanctions in the face of uncertainty about their effects, bystanders could possibly suffer while the targeted leader remains unscathed. We find that the resolution of uncertainty is a key factor in avoiding ineffective and potentially counterproductive sanctions.

Moreover, our results suggest that policymakers who wish to avoid the imposition of costly but ineffective sanctions should consider the different informational characteristics of autocracies and democracies when shaping their coercive strategies. Our statistical findings imply that policymakers will gain little additional informational from waiting to observe the leader of a democratic state. But they will gain a great deal from longer observation of autocratic rulers. Thus, when the issue under dispute requires no immediate action, policymakers should adopt a "wait-and-see" approach toward autocratic states before deciding to impose sanctions. This may allow them to overcome the informational hurdles they face and therefore increase the probability of an efficient resolution to the dispute.

### References

- ALEXSEEV, MIKHAIL A., AND W. LANCE BENNETT. (1995) For Whom the Gates Open: News Reporting and Government Source Patterns in the United States, Great Britain, and Russia. *Political Communication* 12 (4): 395–412.
- ALLEN, SUSAN HANNAH. (2008a) The Domestic Political Costs of Economic Sanctions. *Journal of Conflict Resolution* 52 (6): 916–944.
- ALLEN, SUSAN HANNAH. (2008b) Political Institutions and Constrained Response to Economic Sanctions. *Foreign Policy Analysis* 4 (3): 255–274.
- BANKS, JEFFREY SCOTT. (1990) Equilibrium Behavior in Crisis Bargaining Games. *American Journal of Political Science* 34 (3): 599–614.
- BROOKS, RISA A. (2002) Sanctions and Regime Type: What Works, and When? *Security Studies* 11 (4): 1–50.
- BUENO DE MESQUITA, BRUCE, ALASTAIR SMITH, RANDOLPH M. SIVERTSON, AND JAMES D. MORROW. (2004) *The Logic of Political Survival*. Cambridge: MIT Press.
- CHIOZZA, GIACOMO, AND H. E. GOEMANS. (2011) *Leaders and International Conflict*. Cambridge: Cambridge University Press.
- DEBS, ALEXANDRE, AND H.E. GOEMANS. (2010) Regime Type, the Fate of Leaders, and War. *American Political Science Review* 104 (3): 430–445.
- DREZNER, DANIEL W. (1999) *The Sanctions Paradox: Economic Statecraft and International Relations*. Cambridge: Cambridge University Press.
- DREZNER, DANIEL W. (2003) The Hidden Hand of Economic Coercion. *International Organization* 57 (3): 643–659.
- DUBIN, JEFFREY A., AND DOUGLAS RIVERS. (1989) Selection Bias in Linear Regression, Logit, and Probit Models. *Sociological Methods and Research* 18 (2): 360–390.
- EATON, JONATHAN, AND MAXIM ENGERS. (1992) Sanctions. *The Journal of Political Economy* 100 (5): 899–928.
- EATON, JONATHAN, AND MAXIM ENGERS. (1999) Sanctions. Some Simple Analytics. *The American Economic Review* 89 (2): 409–414.

- ESCRIBÀ-FOLCH, ABEL, AND JOSEPH WRIGHT. (2010) Dealing With Tyranny: International Sanctions and the Survival of Authoritarian Rulers. *International Studies Quarterly* 54 (2): 335–359.
- EURAQUE, DARIO A. (1996) *Reinterpreting the Banana Republic*. Chapel Hill: University of North Carolina Press.
- FEARON, JAMES D. (1994) Domestic Political Audiences and the Escalation of International Disputes. *American Political Science Review* 88 (3): 577–592.
- FEARON, JAMES D. (1995) Rationalist Explanations for War. *International Organization* 49 (3): 379–414.
- FREEDMAN, ROBERT OWEN. (1970) *Economic Warfare in the Communist Bloc: A Study of Soviet Economic Pressure Against Yugoslavia, Albania, and Communist China*. New York: Praeger.
- GEDDES, BARBARA, JOSEPH WRIGHT, AND ERICA FRANTZ. (2014) Autocratic Regimes and Transitions. *Perspectives on Politics* 12 (2): 313–331.
- GIBBONS, ELIZABETH, AND RICHARD GARFIELD. (1999) The Impact of Economic Sanctions on Health and Human Rights in Haiti, 1991–1994. *American Journal of Public Health* 89 (10): 1499–1504.
- GOEMANS, H.E.. (2000) *War and Punishment: The Causes of War Termination and the First World War*. Princeton: Princeton University Press.
- GOEMANS, H.E., AND MARK FEY. (2009) Risky but Rational: War as an Institutionally-Induced Gamble. *Journal of Politics* 71 (1): 35–54.
- GOEMANS, H.E., KRISTIAN SKREDE GLEDITSCH, AND GIACOMO CHIOZZA. (2009) Introducing Archigos: A Dataset of Political Leaders. *Journal of Peace Research* 46 (2): 269–283.
- GRAUVOGEL, JULIA, AND CHRISTIAN VON SOEST. (2014) Claims to Legitimacy Count: Why Sanctions Fail to Instigate Democratization in Authoritarian Regimes. *European Journal of Political Research* 53 (4): 635–653.
- HUFBAUER, GARY CLYDE, JEFFREY J. SCHOTT, KIMBERLY ANN ELLIOTT, AND BARBARA OEGG. (2007) *Economic Sanctions Reconsidered*, 3rd edition. Washington, DC: Peterson Institute for International Economics.
- KIRSHNER, JONATHAN. (1997) The Microfoundations of Economic Sanctions. *Security Studies* 6 (3): 32–64.
- KOREMENOS, BARBARA, CHARLES LIPSON, AND DUNCAN SNIDAL. (2001) The Rational Design of International Institutions. *International Organization* 55 (4): 761–799.
- LACY, DEAN, AND EMERSON NIOU. (2004) A Theory of Economic Sanctions and Issue Linkage: The Roles of Preference, Information, and Threats. *Journal of Politics* 66 (1): 25–42.
- LAKE, DAVID A. (2010) Two Cheers for Bargaining Theory: Assessing Rationalist Explanations of the Iraq War. *International Security* 35 (3): 7–52.
- LANGLOIS, CATHERINE C., AND JEAN-PIERRE LANGLOIS. (2010) Costly Interference: A Game Theoretic Analysis of Sanctions. *Peace Economics, Peace Science, and Public Policy* 16 (1): 1–34.
- LEEDS, BRETT ASHLEY, AND DAVID R. DAVIS. (1999) Beneath the Surface: Regime Type and International Interaction, 1953–1978. *Journal of Peace Research* 36 (1): 5–21.
- LICHT, AMANDA. (2009) Coming Into Money: The Impact of Foreign Aid on Leader Survival. *Journal of Conflict Resolution* 54 (1): 58–87.
- MANSFIELD, EDWARD D., HELEN V. MILNER, AND B. PETER ROSENDORFF. (2002) Why Democracies Cooperate More: Electoral Control and International Trade Agreements. *International Organization* 56 (3): 477–513.
- MARINOV, NIKOLAY. (2005) Do Economic Sanctions Destabilize Country Leaders? *American Journal of Political Science* 49 (3): 564–576.
- MARTIN, LISA. (1992) *Coercive Cooperation: Explaining Multilateral Economic Sanctions*. Princeton: Princeton University Press.
- MIERS, ANNE, AND T. CLIFTON MORGAN. (2002) Multilateral Sanctions and Foreign Policy Success: Can too Many Cooks Spoil the Broth? *International Interactions* 28 (2): 117–136.
- MORGAN, T. CLIFTON, NAVIN BAPAT, AND YOSHIHARU KOBAYASHI. (2014) Threat and Imposition of Economic Sanctions 1945–2005: Updating the TIES Dataset. *Conflict Management and Peace Science* 31 (5): 541–558.
- NIELSEN, RICHARD A. (2013) Rewarding Human Rights? Selective Aid Sanctions Against Repressive States *International Studies Quarterly* 57 (4): 791–803.
- NOORUDDIN, IRFAN. (2002) Modeling Selection Bias in Studies of Sanctions Efficacy. *International Interactions* 28 (1): 59–75.
- PAPE, ROBERT A. (1997) Why Economic Sanctions Do Not Work. *International Security* 22 (2): 90–136.
- PEKSEN, DURSUN. (2009) Better or Worse? The Effect of Economic Sanctions on Human Rights *Journal of Peace Research* 46 (1): 59–77.
- PEKSEN, DURSUN, AND A. COOPER DRURY. (2010) Coercive or Corrosive: The Negative Impact of Economic Sanctions on Democracy. *International Interactions* 36 (3): 240–264.
- PETERSON, TIMOTHY M. (2014) Taking the Cue: The Response to US Human Rights Sanctions Against Third Parties. *Conflict Management and Peace Science* 31 (2): 145–167.
- POLLACK, JONATHAN D., AND MITCHELL B. REISS. (2004) South Korea: The Tyranny of Geography and the Vexations of History. In *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, edited by Kurt M. Campbell, Robert J. Einhorn and Mitchell B. Reiss. Washington, DC: Brookings Institution Press.
- POWELL, ROBERT. (1999) *In the Shadow of Power: States and Strategies in International Politics*. Princeton: Princeton University Press.
- REISS, MITCHELL B. (1995) *Bridled Ambition: Why Countries Constrain Their Nuclear Capabilities*. Baltimore: Johns Hopkins University Press.
- REITER, DAN, AND ALLAN C. STAM. (2003) Identifying the Culprit: Democracy, Dictatorship, and Dispute Initiation. *American Political Science Review* 97 (2): 333–337.
- RIDER, TOBY J. (2013) Uncertainty, Salient Stakes, and the Causes of Conventional Arms Races. *International Studies Quarterly* 57 (3): 580–591.
- SCHULTZ, KENNETH A. (1998) Domestic Opposition and Signaling in International Crises. *American Political Science Review* 92 (4): 829–844.
- SCHULTZ, KENNETH A. (2001) *Democracy and Coercive Diplomacy*. Cambridge: Cambridge University Press.
- SIGNORINO, CURTIS S. (1999) Strategic Interaction and the Statistical Analysis of International Conflict. *American Political Science Review* 93 (2): 279–297.
- SIGNORINO, CURTIS S. (2002) Strategy and Selection in International Relations. *International Interactions* 28 (1): 93–115.
- SIGNORINO, CURTIS S., AND JEFFREY M. RITTER. (2002) Tau-b or Not Tau-b: Measuring the Similarity of Foreign Policy Positions. *International Studies Quarterly* 43 (1): 115–144.
- SLANTCHEV, BRANISLAV L. (2003) The Principle of Convergence in Wartime Negotiations. *American Political Science Review* 97 (4): 621–632.
- SMITH, ALISTAIR. (1996) The Success and Use of Economic Sanctions. *International Interactions* 21 (3): 229–245.
- TSEBELIS, GEORGE. (1990) Are Sanctions Effective? A Game-Theoretic Analysis *Journal of Conflict Resolution* 34 (1): 3–28.
- WAGNER, R. HARRISON. (2000) Bargaining and War. *American Journal of Political Science* 44 (3): 469–484.
- WOLFORD, SCOTT. (2007) The Turnover Trap: New Leaders, Reputation, and International Conflict. *American Journal of Political Science* 51 (4): 772–788.
- WOLFORD, SCOTT. (2012) Incumbents, Successors, and Crisis Bargaining: Leadership Turnover as a Commitment Problem. *Journal of Peace Research* 49 (4): 517–530.
- WOLFORD, SCOTT. (2014) *National Leaders, Political Security, and International Military Coalitions*. University of Texas.
- WOLFORD, SCOTT, AND EMILY H. RITTER. (2015) *National Leaders, Political Security, and the formation of Interstate Military Coalitions*. Manuscript: University of Texas and University of California Merced.
- WOOD, REED M. (2008) A Hand upon the Throat of the Nation: Economic Sanctions and State Repression, 1976–2001. *International Studies Quarterly* 52 (3): 489–513.
- ZALLER, JOHN, AND DENNIS CHIU. (1996) Government's Little Helper: US Press Coverage of Foreign Policy Crises, 1945–1991. *Political Communication* 13 (4): 385–405.

### Supporting Information

Additional Supporting Information may be found in the online version of this article:

#### Appendix S1:

**Table S1.** Results with non-threat sanctions cases dropped

**Table S2.** Models with estimated tenure where precise data was missing

**Table S3.** Model with issue-area controls

**Table S4.** Model subsetted for security issue sanctions

**Table S5.** Subsetted for economic disputes

**Table S6.** Subsetting on human rights disputes

**Table S7.** Model with leader tenure less than one year  
dropped

**Table S8.** Bivariate Probit Selection Model

**Appendix S2.** Proof of the Complete Information  
Game

**Appendix S3.** Complete Proofs for the Formal Model