Inferring Secret Diplomacy*

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Abstract

Testing a theory on secret diplomacy is challenging because it is not systematically observable. This paper offers two types of observational evidence for a theory that explains when, why, and how a private threat works in international crises. First, I assess the necessary condition for the private diplomacy equilibrium as a falsifiable hypothesis—private diplomacy works if the defender incurs political costs if it concedes to the challenger’s demand in public. I use the structural approach to estimate the underlying payoffs in crisis diplomacy and test if the target’s payoff from the public concession is statistically less than zero. Second, I examine one of the key aspects of the causal mechanism of private diplomacy — the defender beliefs that the challenger’s threat is less credible when challenged privately. Because successful private diplomacy is observationally equivalent to the status quo in the eyes of analysts, I estimate the amount of belief updating and test if the belief is revised downward when a potential crisis episodes ends with the status quo outcome. The statistical results so far appear to offer some support.

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1 Introduction

“Public speeches are a dangerous diplomatic weapon,” A.J.P. Taylor (1954) concludes in describing how a British (public) warning caused the escalation of the Agadir Crisis in 1909. He notes that “The Mansion House speech was read by the German and French public, as well as their statesmen; and in both countries it made compromise impossible. Kiderlen had to screw up his demands . . . and to talk seriously of war; Caillaux had to retreat from the compromise that he had prepared” (p. 471). Conversely, secret diplomacy provides more efficient mechanisms for political bargaining. This is because secrecy often allows leaders to make compromises necessary for reaching an agreement and settling a dispute that would otherwise not be attainable without secrecy. The burgeoning literature suggests that leaders can, and often do, credibly communicate to the adversary through private channels the relevant information necessary to produce political bargains (e.g., Stasavage 2004; Leventoğlu and Tarar 2005; Kurizaki 2007; Yarhi-Milo 2013; Ramirez 2011). Theories also indicate that political accountability and incentives for political survival makes secret diplomacy and private politics a rational choice.

Scholars often assume that international processes and outcomes are public events and hence observable to political audiences as well as to us as observers. Theories on secrecy, however, suggest that strategic politicians can control when and to what extent to expose their choices and consequences to public scrutiny and record. What we can possibly observe, therefore, is unlikely to represent a random sample unless we account for the mechanism by which leaders strategically choose to go public or stay private. This implies that the vast majority of the conventional scholarship may suffer from massive selection bias. It may well be that secret diplomacy constitutes another class of the political reality in world politics that scholars of international relations have overlooked. This suggests that there may be ample research questions to be addressed and discoveries to be made in the investigations into secret diplomacy. But we cannot rest assured of its promise because empirical evidence still remains thin and elusive. The literature offers only a limited set of anecdotal evidence, and no systematic, quantitative evidence of secret diplomacy exist. Testing secret diplomacy is difficult because of an obvious obstacle: secret diplomacy by definition is unobservable. We have no way of knowing if any (observable) sample of secret diplomacy—either in case studies or statistical data—is representative of the entire population of secretive diplomatic episodes.\footnote{A notable exception is Gill and Spirling (2015).} As a result, inferring secret diplomacy appears beyond reach.

In the absence of a systematic test of secret diplomacy, it remains unclear if the existing anecdotal cases represent anomalies or a hidden class of politics under the vail of secrecy. Just like the “dark matter” in the universe, unless we uncover politics behind closed doors and its interaction with publicly observable politics, we may not comprehend the full picture of world politics. Thus, the main burden of proof upon the scholars of secrecy is to demonstrate systematic evidence—whether
quantitative or qualitative—that there exists a class of secret, unobservable cases of politics.

In this article, we offer statistical evidence of secret diplomacy. Since secret diplomacy is not systematically observable, our strategy of empirical analysis is to look for evidence of secret diplomacy in the existing data on observable choices and outcomes in international crises. We can use the data on publicly observable process to detect evidence of unobservable aspect of private diplomacy as long as we devise a hypothesis about private diplomacy that can be rejected or accepted with data on public crises.

More specifically, from a theory that explains when and why secret diplomacy works, we derive observable implications that cannot be explained by the conventional theory alone. We focus on two hypotheses. First, we derive a necessary condition for private diplomacy to exist. We demonstrate that in equilibrium the defender would suffer some political or diplomatic costs if it publicly capitulates to a diplomatic challenge before the watchful eyes of political audiences, in addition to the loss of the contested good. The conventional rationalist model, which concludes that private diplomacy is inconsequential, assumes that there is no such additional political or diplomatic costs from public concessions. We show empirically that the defender suffers additional political costs, which corroborates a theoretical claim that private diplomacy emerges as a new equilibrium in the conventional models (especially common audience costs models) if we permit the defender to incur such political costs (Kurizaki 2007). This evidence is substantively appealing because anecdotal evidence suggests that attempts at secretive tactics in crisis diplomacy are successful if the motivation for the challenger to go private with their challenge is to make it easier for the defender to concede. Theodore Roosevelt used private threats of war coupled with the political coverup of arbitration in 1903 in order to let Canadian Premier Lourier to save face with his domestic constituents (Nevins 1930, 193). Similarly, Richard Nixon and Henry Kissinger avoided going public with the Cienfuegos Crisis in 1970 because they believed that “quiet diplomacy was best suited to giving the USSR an opportunity to withdraw without humiliation” (Kissinger 1979, 651). On the other hand, if the challenger goes private solely to avoid its own domestic consequences, private tactics appear to be unsuccessful. When Nixon ordered the secrecy in the JCS Readiness Test because he and his staff were concerned about the domestic upheaval epitomized by the upcoming Vietnam Moratorium in October 1969.

The second evidence deals with learning, or the amount of belief-updating, that occurs in private diplomacy. The conventional wisdom suggests that crisis bargaining is a communication process in which the adversaries learn about each other’s resolve through the exchanges of threats and other costly acts of coercion and provocation (Fearon 1994; Morrow 1989; Schelling 1960, 1966). In this process, the states in crises learn about each other’s strength and resolve, so that they will revise their “beliefs” upward about the adversary’s strength and resolve as a crisis escalates. However, our theoretical model indicates that in equilibrium, upon receiving a chal-
lenge in private, the defender must revise its belief about the challenger’s resolve *downward* when and if private diplomacy works, while the defender does not change its belief, upon receiving a private challenge, if private diplomacy does not work. Since the unobservable process and consequence of private challenge in secret diplomacy is observationally equivalent to the status quo in the observational data, we estimate the amount of the defender’s belief-updating about the challenger’s resolve and test if the defender revises its belief downward if there is no publicly observable challenge being made to the status quo. If private diplomacy does not exist, we should not observe any statistically discernable consequence of the challenger’s apparent choice of maintaining the status quo. If there is a statistically discernable consequence in the status quo observations in line with the prediction of the model of secret diplomacy, such a result is smoking gun evidence that is highly suggestive of the existence of some non-negligible class of secretive crisis diplomacy.

Baum (2004) shows that American leaders do have incentives to go private in international crises. This is the only existing empirical work that has come closest to showing private dealings with observational data on international crises. However, his empirical work falls short of delivering systematic evidence of secret diplomacy. As Kurizaki (2007) demonstrates, the key to the success or failure of secret dealings is the agreement to maintain secrecy by the party to crisis diplomacy that concedes to a secret demand or accepts a private concession; not the party that initiates secrecy. Showing that some states have incentives against going public is not sufficient to demonstrate that secret diplomacy works. Thus, our two hypotheses address the payoff and belief-updating of the defender in crisis diplomacy.

In what follows, we first introduce a theoretical model that describes the way in which crisis diplomacy unfolds both in public and in private. We then discuss two major obstacles in testing the equilibrium model of secret crisis diplomacy, which is followed by our solution and corresponding research design. We then present our estimation results.

2 A Model of Secrecy in Crisis Diplomacy

Theories that assume crises are public events help explain why leaders have incentives to go public with military coercion and create public confrontations in an attempt to secure better bargaining outcomes. Theories that incorporate political accountability and incentives for political survival also help explain why leaders can rationally escalate a crisis and sometimes go to war in an attempt to avoid political defeat and diplomatic humiliation. Taken together, these theories imply that going public can have both beneficial and detrimental effects on crisis outcomes. From these theories, it is possible to derive a rationality of secret diplomacy, or *efficient secrecy*.

The logic of efficient secrecy posits that the *ex post* inefficiency of going public opens up a range of bargaining settlements *ex ante* through private communications.
This makes the choice of going private preferable to the option of going public. As a result, a private threat in crisis diplomacy is effective if the adversary must also agree to capitulate in private, rather than dismiss a private challenge as an indication of weakness or non-seriousness. Going private with one’s challenge in crisis diplomacy can not only effectively compel the adversary to capitulate, but also make both parties in crisis diplomacy better off than going public. Thus, this logic offers a reason why leaders cannot rationally ignore private communication simply because they avoid the costs of going public. Kurizaki (2007) derives this logic of efficient secrecy from a game-theoretic model of crisis diplomacy in which a challenger can either go public or stay private in making a threat to the defender. The crisis diplomacy game has the following structure.

2.1 The Model

Two states, State 1 and State 2, are in a dispute over some international good whose value to both states is normalized to one. This good belongs to State 2 in the status quo. At the onset, State 1 decides either to go public (Pub) or stay private (Pri) in challenging the status quo. State 1 has no option of retaining the status quo (SQ) at this stage. When challenged by State 1, State 2 either concedes or resists. If State 2 concedes, the status quo changes to State 1’s favored position and the game ends. If State 2 resists, State 1 must decide whether to back down or stand firm. If State 1 backs down, the status quo prevails and the game ends. If State 1 stands firm, war occurs. Note that if State 1 went public in making a challenge, State 2’s decision in response will always remain in private. Thus, conceding to a private challenge (CDpri) results in a private concession, and conceding to a public challenge (CDpub) leads to a public concession. Likewise, if State 2 resists in response to a private challenge (RSpri), State 1’s decision on whether to back down (BDpri) will always remain in private, while State 2’s resistance in public means that State 1 must decide whether to stand firm (SFpub) or back down (BDpub) in public.

This sequence of moves produces six crisis outcomes. Of six, four outcomes are observable for political audiences as well as for us as analysts: war when State 2 stands firm in public, war when State 1 stands firm in private, State 2’s concessions, and State 1’s backing-down. If State 1 backs down in public, the disputed good remains the status quo ante, so that State 1 receives no benefit from it but pays “audience costs”—some political cost from diplomatic humiliation or its political repercussion, while State 2 keeps the status quo payoff of 1. This results in the utility of $-a_1 \leq 0$ for State 1 and of 1 for State 2. When State 2 makes a public concession, State 1 obtains the disputed good, while State 2 not only loses the good but also incurs “audience costs” from suffering diplomatic humiliation. Thus, the
utilities are 1 for State 1 and \(-a_2 \leq 0\) for State 2.

Two other outcomes are not publicly observable: private concessions by State 2 and private withdrawal by State 1. That is, if State 1 brings crisis diplomacy private, neither side incurs audience costs from backing down or conceding. Hence, when State private concedes, the utilities are 1 for State 1 and 0 for State 2. If State 1 backs down in private, the game ends as if the crisis never happened, yielding the utility of 0 for State 1 and 1 for State 2.¹

In the event of war, State 1’s payoff is given by its expected value for war \(w_1 = p - c_1\), where \(p \in [0, 1]\) and \(c_1 \geq 0\) respectively represent State 1’s probability of victory and expected costs. Notice that the costly lottery assumption underlies the definition of war payoffs, and that the \(c_1\) term captures State 1’s costs of war relative to the value of the disputed good. Similarly, State 2’s war payoff is given by \(w_2 = 1 - p - c_2\). This crisis diplomacy game has two-sided uncertainty: each side has private information about its value for war \(w_i\).²

2.2 The Equilibrium

The crisis diplomacy game has two perfect Bayesian equilibria: the public and private equilibria. The public equilibrium describes a well-known standard audience cost story (e.g., Fearon 1994; Schultz 1999, 2001). It posits that only public threats can credibly reveal State 1’s private information, that private threats always result in the private back-down outcome, observationally indistinguishable from the status quo, and that crisis diplomacy changes the status quo only if public coercion carries credible signals. The private equilibrium, on the other hand, represents a new result, in which secret diplomacy can be effective in that a private threat can credibly affect State 2’s behavior and the prospect for peaceful settlements is improved. In particular, State 1’s private threats can compel State 2 to accept private concessions, this equilibrium Pareto dominates the public equilibrium, and State 2 revised downward its belief about the credibility of State 1’s public threats, meaning that State 2 believes that State 1 is less resolved than before.

³Note that once State 1 goes private, entire crisis diplomacy will be carried out in private. This assumption implies that State 2 has no power to bring crisis diplomacy public or private. However, one might argue that it is more plausible that both parties to a crisis would need to agree on keeping a crisis private. For example, when State 2 receives a private threat, she could conceivably have an option to bring private diplomacy public and use this option as a threat against State 1. Likewise, State 1 could try relatively harmless private diplomacy first and then go public with a military threat if the initial attempt of private diplomacy does not work. To be sure, these processes are plausible and that there are many intriguing historical cases involving more complicated variations of a simple stylization of secret tactics in this model. We restrict the analysis to the simplest model to elucidate the central strategic logic of private diplomacy. While a more complicated model may allow us to arrive at a more “nuanced” conclusion, that would not add much to the central logic that we advance below. It is easy to demonstrate that the logic of private diplomacy derived in our minimalist model remains the same in other variations. Indeed, the equilibrium logic of these variations always goes back to the incentives and implications of private threats and their associated credibility conditions that we analyze here.

⁴See Kurizaki (2007) for the formal description of the information structure and beliefs.
2.3 The Proposition to Test

We say that secret diplomacy works or is successful in the crisis diplomacy game if State 1 makes a private challenge and State 2 in response concedes privately. Similarly, we say that secret diplomacy does not work or is ineffective if State 2 resists State 1’s private challenge and State 1 backs down in response. A private challenge in this game is considered as a tactic that allows State 1 to save a leeway to retreat from its challenge quietly without any political consequences, and as a tactic that helps State 2 to concede because it also insulates it from its political audience. A public challenge, on the other hand, is designed to coerce State 2 to capitulate by enhancing the credibility of threat through public mobilization and putting its political reputation in line.

The primary theoretical proposition to test is the existence of private diplomacy. Ultimately, we want to know if private diplomacy works and how evidence of private diplomacy can be traced in observational data on international crises. Since the equilibrium shows that private diplomacy works only in the private equilibrium, we must empirically establish that the private equilibrium exists to demonstrate that private diplomacy exists. This is important for two reasons. First, the conventional (rationalist) account suggests that the private equilibrium proposed above does not exist. Second, the public equilibrium, which represents conventional rationalist model, indicates that private diplomacy cannot work. Hence, the most important theoretical proposition to test is the private equilibrium itself. If we fail to empirically establish that the private equilibrium exists, we must conclude that private diplomacy does not work.

3 Challenges in Testing

In testing the existence of the private equilibrium or comparative static hypotheses drawn from the private equilibrium, we face two major obstacles. The first challenge is the (un)observability of secret crisis diplomacy and the second is the multiplicity of the equilibrium.

3.1 Unobservable Outcomes

Secret diplomacy is by definition unobservable or partially observable at best. In the crisis diplomacy game, if State 1 goes private in challenging the status quo, such a challenge and its consequences are unobservable for a political audience. Figure 1 illustrates the unobservable choices and outcomes with the gray dotted lines. In particular, an audience as well as an observer cannot distinguish between the success and failure of the attempt at private diplomacy. That is, a political audience cannot distinguish between State 2’s concession to a private challenge (i.e., the success) or State 1’s backing-down in a response to State 2’s private resistance (i.e., failure). Moreover, for a political audience as well as for a political scientist, these outcomes
are observationally equivalent to the status quo. Thus, in observational data, the cases coded as the status quo ante may well contain the success and failure of secret diplomacy.

The only exception is when private crisis diplomacy breaks down into the outbreak of military confrontation. Since this outcome (i.e., war) is often a public event, an audience and an observer are unable to discriminate the war outcome resulting from the failed private challenge from the war outcome resulting from a public crisis. This further implies that what might appear as a “surprise” attack or preemptive strike may be preceded by failed attempts at private diplomacy.

3.2 The Multiple Equilibria

Since the private and public equilibria can simultaneously exists under broad conditions and they have different comparative static predictions, testing point predictions in a reduced-form is cumbersome. Since each equilibrium describes a data generating process, the multiplicity of the equilibria implies that the observational data on international crises are a product of the combination of two data generating processes. It follows that we observe a militarized dispute episode in a given data set, there is no way of knowing ex ante if this observation belongs to the public equilibrium or the private equilibrium.

This complicates any empirical tests of private diplomacy in two ways. First, a given data set most plausibly contains both the class of observations in which private diplomacy is successful (generated by the private equilibrium) and another class of observations in which private diplomacy is unsuccessful (generated by the
public equilibrium). If this is the case and both public and private equilibria are simultaneously data generating processes for a single database, we cannot detect the existence of successful private diplomacy unless we have a reliable method to decompose observational data into the respective equilibrium.\footnote{A recent literature in econometrics proposes two-step procedures to discriminate the predictions in the presence of multiple equilibria under some restrictive conditions. See, for example, Aguirregabiria and Mira (2007); Bajari, Benkard and Levin (2007).}

Second, if we are interested in testing reduced-form comparative static hypotheses, the multiplicity of the equilibrium renders a standard practice of hypothesis-testing meaningless whether each of the equilibria has identical point predictions or the opposite predictions. If identical, the data carry no empirical leverage in evaluating the empirical validity of the model. If contradictory, we will at best obtain the mixed result in the data. To illustrate this point, consider the predicted (equilibrium) probability that State 2 resists in public, \( \Pr(RS_{\text{pub}}) \), in the crisis diplomacy game. The (conditional) probability of public resistance is given by a product of the probability that State 1 makes a threat in public and State 2 (publicly) resist in response:

\[
(1 - F_1(\kappa^*)) \times (1 - F_2(\gamma^*)).
\]

Note that as I detail in the appendix, the equilibrium parameters \( \kappa^* \) and \( \gamma^* \) take different values in each equilibrium. This means that the probability that State 2 resists in public varies across the two equilibria. The left panel in Figure 2 shows these probabilities: the dark solid curve shows the equilibrium probability of public resistance in the public equilibrium as a function of State’s audience costs, \( a_2 \) and the gray curve plots the probability of public resistance in the private equilibrium. As evident from this panel, each of the two equilibria has a distinctive point prediction. However, if we are unable to discriminate one equilibrium from another in observational data, the effect of State 2’s audience costs on the probability of public resistance will represent the mixture—or a weighted average of some form—of the two effects. The right panel of Figure 2 schematically represents this mixed effects. If our statistical analysis picks up this combined effect shown in the right panel, we will draw an erroneous conclusion about the data generating process(es).

\section*{4 Research Design}

To overcome the inferential problems, my empirical strategy is to accept that the process of private diplomacy is not systematically observable and work from there.\footnote{For an attempt to estimate the characterization of the sample of classified documents disclosed by the WikiLeaks organization, see Gill and Spirling (2015). Beyond their study on the WikiLeaks U.S. diplomatic cables disclosure, the extent to which secret diplomacy is censored remains uncertain. While there is abundance of anecdotal evidence for secret diplomacy, there is little systematic effort to describe secret diplomacy. See Katagiri and Min (2015) for an example.} Instead of directly observing secret diplomacy, I will use the available observational...
data of military crises to look for evidence that secret diplomacy actually takes place in a way that my theoretical model suggests.

Accepting that private diplomacy is systematically unobservable in principle means that we are assuming that any observational data on international crises only contains the information about observable choices and outcomes indicated in the crisis diplomacy game in Figure 1. Similarly, we cannot discriminate the war outcome resulting from public diplomacy from the war outcome resulting from private diplomacy. Thus, I assume that the empirical crisis diplomacy game depicted in Figure 3 is the data generating process for any available observational data of international crises. We obtain this empirical game by assuming away the process of crisis diplomacy following private challenge (because it is unobservable) and by collapsing the two war outcomes collapsed into one outcome (because they are indistinguishable). This empirical game is essentially identical to a canonical crisis game, in which State 1’s decision to go private is observationally equivalent to maintaining the status quo.

Note that the resulting empirical game is consistent with the observable portion of the original game depicted by the dark solid branches in Figure 1. The empirical game would be inconsistent if State 2’s decision to resist is actually a response to State 1’s private challenge rather than its public challenge because it would mean that this empirical game does not fully capture the data generating process of the observable crisis diplomacy episodes. However, as I demonstrate in the Appendix, State 2 will never take State 1’s private challenge public in equilibrium, meaning that State 1 will never publicly resist if State 1 challenges privately. Hence, whenever we observe State 2’s resistance in data, we will infer that State 2 is responding to a public challenge rather than private one.

The advantage of discarding unobservable subgames (highlighted in gray dotted branches) in Figure 1 is that the problem of the multiple equilibria offers an opportunity to overcome the problem of the limited observability of private diplomacy. Recall that the private equilibrium also describes the publicly observable outcomes of crisis diplomacy. If observational data on international crises are a
product of the two equilibria and if the private and public equilibria respectively generate different predictions, we can look for a trace of the private equilibrium in observational data that clearly differs from the prediction that the private equilibrium does not exist and hence the public equilibrium is the sole data generating process (i.e., a unique equilibrium). Hence, the first task in designing the empirical test is to devise a hypothesis or a set of hypotheses that will allow us to falsify the claim that private diplomacy takes place before we design an empirical test to conduct hypothesis-testing.

4.1 Empirical Strategy: Designing the Test

To answer the question of whether private diplomacy actually takes place, I translate this question into the one of the existence of the private equilibrium in the crisis diplomacy game. To test if the private equilibrium exists, we look for two types of evidence in observational data. First, we derive a necessary condition for the existence of the private equilibrium as a falsifiable hypothesis that enables us to use the observational data to reject (or confirm) the theoretical proposition about secret diplomacy. Proposition 3 in Kurizaki (2007) shows that the private equilibrium exists if (i) a public threat is always credible and (ii) State 2 incurs sufficiently high (political) costs if it makes a public concession, in addition to losing the con-
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trol of the disputed good. Since public threats are also predicted to be credible in the public equilibrium, we focus on the second condition on State 2’s political costs from public concessions. This focus on the second condition is useful because the conventional (rationalist) account typically assume that State 2 incurs no additional (political) costs in public concessions, though incurring the cost of losing the disputed good, $u_2(SQ)$. Kurizaki (2007) also proves that if we introduce State 2’s additional political costs for the public concession outcome of the conventional crisis game, the private equilibrium is possible in which private diplomacy can be effective.

Since the multiplicity of the equilibrium implies that the observational data is a mix of the two equilibria, if the private equilibrium exists, then the observable payoff for State 2 from public concessions must be a convex combination of $u_2(CD) = 0$ (as required in the public equilibrium) and some negative value $u_2(CD) = -a_2 < 0$ (as required in the private equilibrium). Hence, if the observable payoff $u_2(CD)$ is statistically different from zero and negative, then we can reject a null hypothesis that private diplomacy does not exist.

**Hypothesis 1** (necessary condition for the private equilibrium). The observable payoff for State 2 from public concessions is strictly less than zero.

Second, to obtain evidence for the mechanisms behind the private equilibrium (or private diplomacy) that is observationally distinguishable from the predictions of the public equilibrium, we look for the evidence that State 2 revises its belief about State 1’s resolve in the status quo observations. Corollary 4.2 in Kurizaki (2007) shows, and as we noted above, that State 2 revises its belief about State 1’s resolve downward if it receives a private challenge. Since in the empirical game in Figure 3, State 1’s choice of going private with its challenge is observationally equivalent to the status quo ante, the amount of State 2’s belief-updating about the credibility of State 1’s public threat should be strictly negative. The public equilibrium predicts that State 2 does not change its belief about State 1’s resolve in public diplomacy if the status quo ante is observed. Hence, if the observable amount of belief-updating in the status quo outcome is statistically different from zero and negative, then we can reject a null hypothesis that the private diplomacy does not exist.

**Hypothesis 2** (causal mechanism in the private equilibrium). In the status quo outcome, State 2 revises downward its belief about the credibility of State 1’s public challenge.

### 4.2 Structural Approach

Testing Hypothesis 1 calls for estimating preferences of States 1 and 2 in the underlying empirical crisis diplomacy game depicted in Figure 3. Testing Hypothesis 2 also requires estimation of state preferences because State 2’s prior and posterior beliefs about State 1’s resolve are characterized by state preferences over crisis outcomes. Specifically, State 2’s prior belief is given by the ex ante probability that
State 1 is of a type that prefer standing firm to backing down in response to State 2’s resistance. Formally, the prior belief is given by

$$\Pr(SF_{pub}) = \Pr(u_1(SF_{pub}) \geq u_1(BD_{pub})).$$

That is, the ex ante probability that State 1 will choose to stand firm is the probability that $u_1(SF_{pub}) \geq u_1(BD_{pub})$. Similarly, when State 2 receives State 1’s public challenge, it will update its belief about State 1’s resolve utilizing the new information that State 1 did challenge in public. This posterior belief therefore is defined in an analogous fashion:

$$\Pr(SF_{pub}|Pub) = \Pr(u_1(SF_{pub}) \geq u_1(BD_{pub})|E[u_1(Pub)] \geq u_1(SQ)).$$

This shows the probability that State 1 prefers standing firm to backing down, given that State 1 has already chosen a public challenge over the status quo in the equilibrium.

The primary task in the statistical analysis, therefore, is to recover the underlying state preferences from the data on international crises. Using observational data on choices and outcomes in international crises, we construct a maximum likelihood estimator to analyze what preferences would make the observed choices and outcomes most likely, according to the equilibrium logic that links preferences to optimal choices. Note that the equilibrium (theoretical) analysis of the game is deduction of behavior and outcomes from given preferences. That is, we look for how states play the game given the preferences and other parameters. The statistical (empirical) analysis of the game, on the other hand, involves mapping from given behavior and outcomes to preferences. That is, we look for a set of preferences, given the observed distribution of choices and outcomes in international crises. Hence, our statistical analysis will first estimate the probability of choices and outcomes in the game. Based on these choice probabilities and outcome probabilities, we will estimate the (average) payoff that states receives from each outcome of the game. Then, using the estimates of choice probabilities and preferences, we estimate the prior and posterior beliefs.

### 4.3 Statistical Model of Crisis Diplomacy Game

To construct the maximum likelihood function to estimate the underlying state preferences in the empirical crisis diplomacy game, we use a statistical perfect Bayesian equilibrium (PBE) model developed by Whang (2010) that corrects for a downward bias in the estimation of beliefs found in Lewis and Schultz (2003a). A statistical PBE translates the game-theoretic model of crisis diplomacy to a statistical one. As Figure 3 shows, we assume that observable payoff for the states in the game is a linear function of the average (observable) payoff and the stochastic (unobservable) shocks that is independently and normally distributed with mean zero and unit variance. Further, we also assume that the average payoff in turn is assumed to be
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estimable as a linear combination of a set of variables that explain each payoff and coefficients. For example, the payoff that State 2 receives if it publicly concedes is given by

\[ u_2(CD) = CD_2 + \epsilon_{CD_2} \]
\[ = X_{CD_2} \beta_{CD_2} + \epsilon_{CD_2} \]  

where \( \epsilon_{CD_2} \sim N(0, Var(\epsilon_{CD_2})) \). The average payoff \( CD_2 \) will be estimated with a set of covariates \( X_{CD_2} \) and coefficients \( \beta_{CD_2} \). For each crisis outcome in Figure 3, we construct a statistical payoff with this scheme. Note that, as is generally the case in random utility (discrete choice) models, not all the \( \beta \)'s can be estimated. A certain number of identifying restrictions must be made. First, nothing can be estimated with respect to \( u_2(SQ) \). This is because the strategic calculus of the game does not in any way depend on this payoff and, thus, nothing about this payoff can be revealed through the observation of the crisis outcomes. Second, other independent variables and constants must be omitted from at least one payoff for each state. We construct a log-likelihood function as a nominal discrete choice model, which consists of equilibrium outcome probabilities, independent variables, and payoff specifications:

\[ \ln L = \sum_{i=1}^{N} [Y_{SQ_i} \ln P_{SQ_i} + Y_{CD_i} \ln P_{CD_i} + Y_{BD_i} \ln P_{BD_i} + Y_{WAR_i} \ln P_{WAR_i}] , \]  

where \( Y_z \) denotes a binary variable that represents crisis outcome \( z \in \{SQ, CD, BD, WAR\} \), and \( P_z \) denotes the equilibrium probability of outcome \( z \). Note that we use perfect Bayesian equilibrium as the equilibrium concept for the statistical model of the crisis diplomacy game.

Note that the Whang model (2010) is a generalized version of the Lewis-Schultz model (2003a), and Jo (2011) shows that there can be multiple equilibria in the Lewis-Schultz model. It is, hence, possible that there are multiple equilibria in our model characterized by the \( \ln L \) equation in (4). We used multiple root-finding algorithm in estimating our model as well as a number of different initial values to get the maximum likelihood. In calculating maximum likelihood values, we also checked if the sum of State 1’s expected payoffs (the mean estimates thereof) is greater than other cases, as recommended by Jo (2011) as a refinement.

4.4 Data

To estimate the empirical crisis diplomacy game, we need data that contain the information on the structure of the empirical crisis diplomacy game depicted in Figure 3. In particular, the data must contain the distribution of all the four crisis conditions.
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outcomes as well as the sequence of moves specified in the empirical game. Conventional data sets such as the Militarized Interstate Disputes (MID) data (Jones, Bremer and Singer 1996; Ghosn, Palmer and Bremer 2004) or the International Crisis Behavior (ICB) data (Brecher and Wilkenfeld 1997) do not provide codings necessary to characterize the structure of crisis bargaining. In particular, no existing data base on international crises or disputes provides the sequence of moves or the observed frequency of the status quo outcome—the case where a potential challenger (i.e., State 1) could have challenged the status quo but chose not to do so. Using these conventional datasets, we would have to impose assumptions about the sequence of moves, which would deviate tremendously from the scope of these data sets. Similarly, empirical inference would also suffer from selection bias caused by the lack of information about the status quo outcomes. This is because a (potential) challenger (i.e., State 1 in the model) non-randomly selects into a crisis; it takes into account information that it knows at the beginning of the crisis (including the magnitude of audience costs that it might incur) in deciding whether or not to issue a threat.

We use a database on international crises during the interwar period (1919-1939), compiled by Jeffrey Lewis and Kenneth Schultz, which consists of 77 international crises as well as 2,025 status quo observations. This data set explicitly incorporates the structure of the empirical crisis diplomacy game. For each crisis episode, it identifies which outcome is realized, with the resulting distribution of the crisis outcomes being $SQ = 2025$, $CD = 35$, $BD = 11$, and $WAR = 35$. Moreover, for each crisis episode, Lewis and Schultz used the primary and secondary sources to identify the state that initiated a challenge. They define a challenge as “any act that is made deliberately by a central state authority with the intent of altering the pre-crisis relationship between itself and at least one other state and that is backed by the threat of military force. The threat of force may take the form of a diplomatic ultimatum, a show of force, or a limited use of force.” The unit of analysis is the dyadic interaction with a potential military crisis.\footnote{Note that the SQ outcomes are the one in which State 1 did not initiate an international dispute. Lewis and Schultz (2005) generated non-crisis observations according to the coding rule similar to the one established by Huth and Allee (2002). Lewis and Schultz use the (modified) “politically relevant” dyad as a plausible set of States 1 and 2, i.e., population of dyads that can be involved in a military conflict. Because there are still too many dyads in the population, they “collapse the 21-year time period covered by the data into seven three-year periods.” Then, one SQ observation is created when a “politically relevant” dyad does not undergo a militarized interstate dispute within a given three-year period.}

4.5 Empirical Specification

The specification of our statistical model is primarily derived from the payoff specification in the empirical crisis diplomacy game. In addition, the identification issue requires that we normalize a constant term in at least one of the payoff specifications for each player. Moreover, we must consider the covariates that are not directly
derived from the theoretical payoff specification but necessary for testing existing conjectures about audience costs.

The war payoffs in the theoretical model are given by \( u_1(WAR) = p - c_1 \) and \( u_2(WAR) = 1 - p - c_2 \), both of which are a function of the probability that State 1 prevails in armed conflict and the cost of fighting. The probability of winning, \( p \), in the costly lottery formulation of the war outcome is commonly interpreted as the relative share of military capabilities (e.g., Powell 2002). Hence, we use \( \text{CapShare}_i \) to measure State 1’s share of capabilities in the dyad. The cost of war, \( c_i, i = 1, 2 \), is often understood to be smaller if state \( i \) is economically more developed because superior military technologies reduce the relative cost of war. Thus, we use \( \text{Develop}_i, i = 1, 2 \), to measure the material (or financial) cost of war for each state. In addition to material capabilities, democratic peace research suggests that regime type influences resolve or political costs and will to go to war (e.g., Morgan and Campbell 1991; Reiter and Stam 2002). Therefore, we also include \( \text{Democracy}_i \) to measure \( a_i \).

The backing-down payoff for State 1 in the theoretical model is \( u_1(BD) = 0 - a_1 \), where State 1 not only fails to obtain the disputed good but also suffers audience costs. Since Fearon (1994) conjectures that audience costs are higher in democracies than in nondemocracies, we include \( \text{Democracy}_1 \) to measure \( a_1 \).

As for State 2’s back-down payoff, \( u_2(BD) \), the constant in the equation for this payoff is forced to be zero due to the identification issue. We choose \( u_2(BD) \) among others to normalize because this BD outcome is not an immediate result of State 2’s deliberate decision, so \( u_2(BD) \) is theoretically less important. The war payoff, on the other hand, determines the range of peaceful (prefer-to-war) settlements in the bargaining framework, thereby theoretically interesting. The concession payoff, on the other hand, reflects the coercive pressure imposed by State 1’s audience costs and the underlying hands-tying (commitment) mechanism. In contrast, the back-down outcome is equivalent to the status quo outcome from State 2’s perspective.

The concession payoffs in the theoretical model are \( u_1(CD) = 1 \) and \( u_2(CD) = 0 - a_2 \). Since the theoretical model is of little help for our specification choice, we include three covariates that control for strategic factors that may influence the utilities that each state may derive from the concession outcome. First, the value of the disputed good is influenced by the similarity of strategic interests between the states. Thus, we include \( \text{Alliance} \) to control for the similarity of alliance portfolio in a disputing dyad. A record shows that a number of international disputes occur when the target country is involved in civil wars (Gleditsch, Salehyan and Schultz 2008). This implies that civil wars influence the strategic assessment of the disputed good for both states, as they make the target country vulnerable to the coercive pressure from other states. Thus, \( \text{CivilWar}_2 \) indicates whether State 2 is involved in a civil war. Finally, Huth and Allee (2002) show that countries with a shared border have higher risks of dispute escalation (see also Braithwaite and Lemke 2011; Bennett and Stam 2003). Hence, we use \( \text{Contiguity} \) indicating whether two states share a border.
The status quo payoffs in the theoretical model are given by \( u_1(SQ) = 0 \) and \( u_2(SQ) = 1 \). Note that we drop \( u_2(SQ) \) from our estimation because it never determines equilibrium choices or the calculation of the equilibrium probabilities—whether the status quo is maintained or challenged is solely decided by State 1 in the game. Thus, there is nothing to infer about \( u_2(SQ) \).

The constant term for the equation of State 1’s status quo payoff, \( u_1(SQ) \), is normalized to zero, due to the identification requirement. We choose \( u_1(SQ) \) to normalize because this payoff in the theoretical model is also normalized to zero, so it is a natural place to impose this restrictive assumption. An important strategic issue that loomed large during the interwar period is the boom of the newly created states in the aftermath of World War I and associated ongoing boundary disputes. Since this strategic environment may bias the value of the status quo, we include covariates to control for its influence in estimating \( u_1(SQ) \). Since geographical contiguity is already taken into account in the definition of the status quo observations, we instead include \( MaxAge \) that indicates the maximum years since State 1 or 2 gained statehood. This covariate and complements our use of politically relevant dyads in defining the \( SQ \) observations. Since \( u_1(SQ) \) plays important roles in testing hypotheses, we check the robustness of our main specification by including other covariates and by using other definitions for the \( SQ \) observations.

5 Analysis of Secret Crisis Diplomacy

Table 1 reports the estimation result of the statistical model of crisis diplomacy game. The first, second, and third columns respectively show crisis outcomes, payoffs, and covariates assigned for each payoff, followed by the estimate of coefficients and standard errors for each model. Mode 1 is the baseline model, on which the following analysis of Hypotheses 1 and 2 are based. As we detailed above, the specification of Model 1 remains true to the theoretical payoff specification as much as possible.

Model 2 adds \( Democracy_1 \) to the equation of \( u_1(CD) \) and \( Democracy_2 \) to \( u_2(CD) \). While the coefficient of \( Democracy_1 \) is positive and statistically significant, \( Democracy_2 \) is not. Democratic challengers (State 1) value its target’s capitulation more highly than non-democratic challengers do; the regime type of the target (State 2) does not affect the political cost incurred for the target in the event of public concessions. This rejects a common notion that democratic leaders suffer more from public concessions than non-democratic leaders.\(^9\)

Model 3 includes \( Democracy_1 \) only in the equation for \( u_1(SQ) \) but not in other payoffs. This specification is equivalent to including \( Democracy_1 \) in all three non-SQ payoffs for State 1, \( u_1(CD) \), \( u_1(BD) \), and \( u_1(SF) \). But those effects are forced

\(^9\)Kurizaki (2007) provides ample historical examples where non-democratic leaders, from Louis XIV to Khrushchev, were concerned about public defeat, which made secret diplomacy not only rational but also efficient.
to be identical. This model serves to check the robustness of the effect of MaxAge on \( u_1(SQ) \), which turns out to be statistically consistent both in terms of its sign and significance. The interpretation of Democracy\(_1\) in Model 3 is also consistent with Model 1: democratic challengers value the status quo more than initiating a crisis (as indicated by the positive coefficient in Model 3) because backing down or standing firm in a crisis is more costly for democracies (as indicated by negative coefficients in Model 1).

All in all, the estimates of Model 1 appear to be statistically consistent and robust. The following analysis of Hypothesis 1 on the necessary condition and Hypothesis 2 on the causal mechanism will be based on Model 1. The estimates of state preferences and other parameters in the underlying crisis game necessary for the analysis of the hypotheses will be derived from the estimated coefficients of Model 1.

5.1 Testing an Existence Condition for Secret Diplomacy

Recall from Hypothesis 1 that the private equilibrium exists, and hence private diplomacy can be effective, if

\[
u_2(CD) < 0.
\]

And if \( u_2(CD_{pub}) = 0 \), the private equilibrium cannot exist. The maximum likelihood estimates of Model 1 in Table 1 indicate that only the constant terms if a statistically significant determinant of State 2’s utility from a public concession. All other variables, Contiguity, Alliance, CivilWar\(_2\), and Democracy\(_2\) are not significant. Hence, the estimated payoff for State 2 from public concessions is given simply by the estimated constant term, \(-1.395\), which is strictly less than 0.

Note, however, that the constant is the estimated in the model with statistical uncertainty, so that the (average) estimated concession payoff being strictly less than zero does not guarantee the statistical significance of this result. We address this issue by calculating the 95% confidence interval for these estimates by obtaining the sampling distribution of these estimates using a bootstrapping method. If errors around each estimate are too large, then Hypothesis 1 must be rejected. The result shows that the confidence interval for the estimated concession payoff does not include 0. This result supports Hypothesis 1, and hence we conclude that the private equilibrium of the crisis diplomacy game can exist in the data. Since the conventional rationalist model, which is replicated in the public equilibrium, indicates that \( u_2(CD) \) is indistinguishable from zero, its claim that the private equilibrium cannot exist is rejected by this test.

This result also holds in Models 2 and 3. In Model 2, the contiguity dummy Contiguity is also a statistically significant predictor of \( u_2(CD) \) in addition to the constant term; none of other variables is significant. Since the coefficient of Contiguity is \(-0.089\) and the constant term is \(-1.235\), the estimated payoff for State 2 from public concessions, which is given by

\[-1.395 - 0.366 \times \text{Contiguity},\]

17
<table>
<thead>
<tr>
<th>Outcome</th>
<th>Payoff</th>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
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<td>SQ</td>
<td>$u_1(SQ)$</td>
<td>Constant</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>MaxAge</td>
<td>0.575** 0.135</td>
<td>0.117** 0.055</td>
<td>0.193** 0.114</td>
<td>0.050** 0.022</td>
</tr>
<tr>
<td></td>
<td>Democracy</td>
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<td>-0.018</td>
<td>0.201</td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>$u_1(CD)$</td>
<td>Constant</td>
<td>0.981 0.912</td>
<td>1.299** 0.545</td>
<td>1.781 1.315</td>
</tr>
<tr>
<td></td>
<td>MaxAge</td>
<td>0.575** 0.135</td>
<td>0.117** 0.055</td>
<td>0.193** 0.114</td>
<td>0.050** 0.022</td>
</tr>
<tr>
<td></td>
<td>Alliance</td>
<td>-3.507** 1.164</td>
<td>-0.196</td>
<td>0.277</td>
<td>-1.201 0.796</td>
</tr>
<tr>
<td></td>
<td>CivilWar</td>
<td>4.460** 1.451</td>
<td>1.521** 0.600</td>
<td>1.083 1.505</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contiguity</td>
<td>3.155** 0.902</td>
<td>0.545* 0.286</td>
<td>0.760 1.065</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Democracy</td>
<td>0</td>
<td>0.496** 0.173</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>$u_1(BD)$</td>
<td>Constant</td>
<td>-4.092** 0.820</td>
<td>-4.342** 0.413</td>
<td>-3.862** 0.777</td>
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<tr>
<td></td>
<td>Democracy</td>
<td>-0.411** 0.104</td>
<td>-0.557** 0.043</td>
<td>-0.877 0.227</td>
<td></td>
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<td>CapShare</td>
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<td>0.621** 0.190</td>
<td>0.831** 0.404</td>
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</tr>
<tr>
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<td>Develop</td>
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<td>0.009</td>
<td>0.038 0.005</td>
<td>0.006 0.006</td>
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<tr>
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<td>Develop2</td>
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<td>0.024</td>
<td>-0.005 0.010</td>
<td>0.006 0.017</td>
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<tr>
<td>SF</td>
<td>$u_1(SF)$</td>
<td>Constant</td>
<td>-4.620** 0.789</td>
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<td>-3.791** 0.625</td>
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<td>CapShare1</td>
<td>0.951** 0.469</td>
<td>0.626** 0.215</td>
<td>0.989* 0.533</td>
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</tr>
<tr>
<td></td>
<td>Democracy</td>
<td>-0.366</td>
<td>0.093</td>
<td>-0.572** 0.171</td>
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<td></td>
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<td>0.009 0.011</td>
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<td>Develop2</td>
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<td>CapShare2</td>
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<td>0.417</td>
<td>0.621** 0.190</td>
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<td></td>
<td>Democracy2</td>
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<td>0.009</td>
<td>0.038 0.005</td>
<td>0.006 0.006</td>
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<tr>
<td></td>
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<td>0.024</td>
<td>-0.005 0.010</td>
<td>0.006 0.017</td>
</tr>
<tr>
<td>Var</td>
<td>$Var(u_1(CD))$</td>
<td>3.037** 0.871</td>
<td>0.443 0.482</td>
<td>1.286 0.986</td>
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</tr>
<tr>
<td></td>
<td>$Var(u_1(SF))$</td>
<td>1.370 0.809</td>
<td>1.042** 0.276</td>
<td>0.948 0.592</td>
<td></td>
</tr>
<tr>
<td>Cov</td>
<td>$Cov(u_1(CD), u_1(BD))$</td>
<td>-0.242 0.665</td>
<td>0.397 0.438</td>
<td>-0.054 0.721</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$Cov(u_1(CD), u_1(SF))$</td>
<td>0.867 0.634</td>
<td>0.048 0.319</td>
<td>0.149 0.772</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$Cov(u_1(BD), u_1(SF))$</td>
<td>-1.170 1.019</td>
<td>-0.208 0.541</td>
<td>-0.283 0.749</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-361.141</td>
<td>-352.423</td>
<td>-363.6993</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>92.526 * *</td>
<td>109.9622**</td>
<td>87.5896**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** **p < 0.05, * p < 0.1 (two-tailed), N = 2102.**

Table 1: Estimation Results for the Empirical Crisis Diplomacy Game
takes strictly negative values. The 95% confidence interval of this estimated concession payoff, obtained through the bootstrap, is less than zero.

Similarly, in Model 3, the estimated payoff, $u_2(CD)$, is significantly less than zero, and the hypothesis is also supported. These results are encouraging not only because it confirms one of the necessary conditions for the existence of private equilibrium, but also because the additional (political) cost incurred by the defender in the event of a public concession is dismissed by the conventional model of crisis bargaining.\footnote{The cost of concession is one of the key drivers in the convergence of war expectations in (Goemans 2000).}

5.2 Testing the Causal Mechanism

We now turn to probing the dynamics of secret crisis diplomacy using the estimates of crisis diplomacy game. The hypothesis we test is important also because it concerns the behavioral consequences of private diplomacy that is not expected by the conventional (public) equilibrium.

Hypothesis 2 states that if State 2 revises its belief about State 1’s observable resolve in the status quo, the private equilibrium must exist. The conventional rationalist model suggests that State 2 should not change its belief in the status quo outcome. This hypothesis is substantively important because if indeed private diplomacy is irrelevant in world politics, there is nothing new to learn about State 1’s resolve if the status quo continues, leaving no reason for State 2 to change its belief. If, however, the data indicate that State 2 does learn something even if observers do not see any military challenges or provocative actions (hence coded as the status quo), that is a smoking gun that suggests that “something” observable to State 2 but not to observers must be taking place. The private equilibrium suggests that it is secret crisis diplomacy that is taking place. The private equilibrium further suggests a very specific way in which secret crisis diplomacy unfolds. Of particular interest here is State 2’s belief updating because, as we mentioned, it allows us to distinguish the private equilibrium from the conventional public equilibrium.

The prior and posterior beliefs of State 2, as they are defined in (1) and (2), can be estimated in our model based on the estimates of payoffs and other structural parameters. In particular, the prior belief in the statistical model is given by

$$\Pr(F) = \Phi \left( \frac{E[\Delta U_{SF,BD}]}{\sqrt{\text{Var}[\Delta U_{SF,BD}]}}, \right)$$

where $\Delta U_{SF,BD} = u_1(SF) - u_1(BD)$. Similarly, the posterior belief in the statistical
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model is:

\[
Pr(F|CH) = \frac{\Phi \left( \frac{E[\Delta U_{SF, BD}] - E[\Delta U_{SQ}]}{\sqrt{Var[\Delta U_{SF, BD}]}} \right)}{1 - \Phi_2 \left( \frac{E[\Delta U_{SQ, BD}] - E[\Delta U_{SQ, SF}]}{\sqrt{Var[\Delta U_{SQ, BD}]}} \right)} \cdot \Phi \left( \frac{Corr[\Delta U_{SF, BD}, \Delta U_{CH, SQ}] \sqrt{Var[\Delta U_{SF, SQ}]} + Corr[\Delta U_{SQ, BD}, \Delta U_{SQ, SF}] \sqrt{Var[\Delta U_{SQ, SQ}]}}{\sqrt{Var[\Delta U_{SF, BD}]}} \right), \tag{8}
\]

where

\[
\Delta U_{CH, SQ} = u_1(CH) - u_1(SQ),
\]
\[
\Delta U_{SF, SQ} = (1 - Pr(RS|CH))u_1(CD) + Pr(RS|CH)u_1(SF) - u_1(SQ),
\]
\[
\Delta U_{SQ, BD} = u_1(SQ) - (1 - Pr(RS|CH))u_1(CD) - Pr(RS|CH)u_1(BD), \text{ and}
\]
\[
\Delta U_{SQ, SF} = u_1(SQ) - (1 - Pr(RS|CH))u_1(CD) - Pr(RS|CH)u_1(SF).
\]

Figure 4 displays histograms of the amount of belief-updating, which show the frequency of the size of belief-updating when the SQ outcome is observed (the left panel) and when a public challenge was observed (the right panel). In both cases, zero on the x-axis indicates that there is no difference between the prior and posterior beliefs so that State 2 does not update its belief before and after State 1’s initial move. The positive values indicate that State 2 revises its beliefs upward so that State 1’s initial choice convinces State 2 that State 1 is more resolved than State 2 previously assessed. The negative values indicate the downward belief-updating.

When the status quo is maintained, the distribution of the amount of belief updating is clearly bimodal. The bimodality indicates that it is a mixture of two different unimodal distributions, each of which has a distinctive one mode. That is, the bimodal distribution of the size of belief-updating on the left panel arises because of the existence of two distinct classes of learning processes in the status quo outcomes. The simplest method to detect the bimodality within the frequency distribution is visual inspection of the figure. Neither the mean or median is a typical value in the left panel, and the standard deviation is larger than (twice as much) deviation of the distribution for the threat cases only (the right panel). The means are well separated and the position of the antimode is clearly identified by the zero frequency of non-belief-updating cases.

[These results suggest that it is a bimodal distribution and there exists a cluster of cases where State 2 updates its beliefs downward in the status quo outcome. Yet, visual inspection of the histogram alone does not give conclusive support for the presence of bimodality. Hypothesis testing requires a statistical test of the goodness of fit of the data to a theoretical distribution. We will report both parametric and nonparametric tests of the bimodality as the results are available.]

Why is it that there are significant cases where State 2 updates upward its belief in the status quo outcome? Note that the status quo outcome include not
Figure 4: Estimated Amounts of Belief-Updating in Empirical Crisis Diplomacy Game. Note: The left panel shows the histogram of the size of belief-updating when the SQ outcome is observed, the right panel shows the frequency of belief-updating when a public challenge was observed.

only the cases where there is no visible indication of diplomatic interactions but also the cases where there were some observable interactions but State 1 did not make a coercive diplomacy move backed by the threat of military force. That is, the positive belief updating cases in the status quo outcome reflects the fact that there are a significant amount of dyads with some militarized interactions that are classified as the status quo outcome due to the lack of a clear military threat with the political intent of alternating the status quo. For example, the Belgium-Germany dyad is coded as the status quo for the period of 1919-1921, although Belgium was militarily involved with Germany in 1921, according to Militarized Interstate Disputes database. In response to Germany’s violation of the reparations terms of the Treaty of Versailles, the Britain and France threatened to occupy cities to the right bank of the Rhine, Duesseldorf, Duisburg, and Ruhort, levy a tax on the sale price of German goods in allied countries, and establish a customs line on the Rhine (see also New York Times, March 4, 1921). Although the occupation was ultimately carried out with the participation of Belgian forces, Belgium was not a relevant actor in the coercive diplomacy moves as its government never contemplated compelling Germany on this issue; coercive diplomacy in this instance was led by Britain and France, and Belgium was dragged into military occupations due to the alliance obligations (New York Times, March 9, 1921). It is conceivable, therefore, that the Belgian participation disseminated some military and political information, which
eventually altered Germany’s assessment of Belgium’s resolve to engage in costly military actions.

In the case of public challenges, all but one cases indicate the positive belief-updating, which is consistent with both the public and private equilibria. In the case of status quo observations, there is a bimodal distribution, where one cluster of a large number cases indicates that State 2 updated its belief positively and another cluster of relatively fewer cases indicates that State 2 updates its belief negatively. On one hand, the fact that negative belief-updating occurs in a non-negligible number of cases appears to support the prediction of the private equilibrium. It should also be emphasized that negative belief-updating does not occur if public challenges are made except for only one case. At the first glance, these results seem to suggest that some crisis bargaining does take place even if State 1 does not appear to challenge State 2. On the other hand, positive belief-updating in decidedly more status quo observations poses a puzzle. To be sure, it definitely means that something more than status quo is happening in those cases. Yet, the present model does not offer an explanation.

6 Conclusion

We have attempted to provide statistical evidence that there exists a large class of cases where secret, and hence unobservable, crisis diplomacy takes place in observational data on international crises. A growing number of theoretical studies suggest that secrecy in world politics provides more efficient mechanisms of political bargaining. An implication from these theoretical studies suggest that we should observe many cases of secret diplomacy. Anecdotal evidence, highly suggestive of the utility of secrecy, is abundant and this seems to corroborate the existing theoretical propositions about secrecy. Yet, many scholars take it for granted that world politics consists of public events and that secrecy is of no important consequence or an anomaly. This is partly because none has yet successfully established systematic evidence that secrecy matters and that there exists a hidden class of phenomena in world politics. Testing a theory on secrecy diplomacy is challenging because, by definition, it is not systematically observable. The principal burden of proof for scholars of secrecy in world politics is to provide more systematic evidence—both quantitative and qualitative—that secrecy matters. Hence, the main task facing scholars of secrecy is not to add to the already long list of arguments and anecdotes bust instead to gather evidence that allows for (1) falsifying theoretical propositions about secrecy in world politics and (2) critical tests between the arguments for and against the importance of secrecy in world politics.

To overcome the main challenge in testing secret diplomacy, we turn to the theoretical model that describes the structure and conditions for secret crisis diplomacy as well as the statistical research design—both hypotheses and statistical model—that is directly derived from the theoretical model. We present two types of obser-
vational evidence for our theoretical model. First, we assess the necessary condition for the private diplomacy equilibrium as a falsifiable hypothesis—private diplomacy works if the defender incurs political costs if it concedes to the challenger’s demand in public. We use the structural approach to estimate the underlying payoffs in crisis diplomacy and test if the target’s payoff from the public concession is statistically less than zero. Second, we examine one of the key aspects of the causal mechanism of private diplomacy—the defender beliefs that the challenger’s threat is less credible when challenged privately. Because successful private diplomacy is observationally equivalent to the status quo in the eyes of analysts, we estimate the amount of belief updating and test if the belief is revised downward when a potential crisis episodes ends with the status quo outcome. While the statistical analysis is still underway, our initial result on the estimated amount of belief-updating suggests there exists a substantial number of cases, in which the target updates its belief downward, as predicted by the model, when the challenger apparently chose the status quo outcome. This statistical result so far offers some initial support for our hypothesis.
Appendix A: Probability of Resistance in Figure 2

The (conditional) probability of public resistance is given by a product of the probability that State 1 makes a threat in public and State 2 (publicly) resist in response:

\[(1 - F_1(\kappa^*)) \times (1 - F_2(\gamma^*)).\]

With the uniform distribution assumption, we can rewrite this probability as

\[
f - \kappa^* \times \frac{1 - p - \gamma^*}{c_2}
\]

where \(\kappa^*\) and \(\gamma^*\) take different values in each equilibrium:

In the public (separating) equilibrium, we have

\[\kappa^\text{pub} = F_2\left(\frac{a_2}{a_2}\right)\]  
\[\gamma^\text{pub} = a_2.\]

As I have shown somewhere in the note for chapter 8 on diplomatic manipulation, with the uniform distribution assumption, the (conditional) probability of public resistance is given by

\[
p + \frac{p \times a_2 - 1 - a_2}{1 + a_2} \times \frac{1 - p + a_2}{c_2}.
\]

In the public (bluffing) equilibrium, we have

\[\kappa^\text{pub} = F_1\left(1 - F_2\left(\frac{a_1 + a_2}{2}\right)\right)\]  
\[\gamma^\text{pub} = \frac{q_{\text{pub}} - 1 - a_2}{q_{\text{pub}}}.\]

As I have shown somewhere in the note for chapter 8 on diplomatic manipulation, with the uniform distribution assumption, the (conditional) probability of public resistance is given by

\[
p + \frac{a_1}{c_2} \times \frac{1 - p - \gamma^\text{pub}}{c_2},
\]

where \(\gamma^\text{pub} = 1 - \frac{(1 + a_2)(p - \kappa)}{p + a_1}\) and \(\kappa = p - \frac{(p + a_1)(p + a_2)}{1 + a_2}\).

In the private equilibrium, we have \(\kappa^\text{pri} = F_1^{-1}\left(F_1(\beta) + \frac{F_1(\beta)}{a_2}\right)\) and \(\gamma^\text{pri} = -a_2\).

Now, to derive the expression for \(\kappa^\text{pri}\), we solve the equation \(\gamma^\text{pri} = \delta^\text{pri}\) since \(\kappa^\text{pri}\) must be solve the indifference condition \(1 - F_2(\gamma^\text{pri}) = 1 - F_2(\delta^\text{pri})\). Note that

\[\delta^\text{pri} = \frac{q_{\text{pri}} - 1 - a_2}{q_{\text{pri}}},\]

where \(q_{\text{pri}} = \frac{1 + a_2}{\kappa_{\text{pri}} - 1 + a_2}\) in the case of the uniform distribution, so that \(\delta^\text{pri} = \frac{1 - p - c_2}{\kappa_{\text{pri}}}\). Hence, solving \(-a_2 = \frac{1 - p - c_2}{\kappa_{\text{pri}}}\) for \(\kappa_{\text{pri}}\), we get \(\kappa_{\text{pri}} = \frac{p + c_2 - 1}{a_2}\).

Hence, the (conditional) probability of public resistance is

\[
f - \frac{p - \frac{p + c_2 - 1}{a_2}}{c_1} \times \frac{1 - p + a_2}{c_2}.
\]

References

Inferring Secret Diplomacy - Preliminary


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