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UNIVERSITY OF CALIFORNIA, SAN DIEGO

Essays on Information and Conflict

A Dissertation submitted in partial satisfaction of the
requirements for the degree
Doctor of Philosophy

in

Political Science

by

David Austin Lindsey

Committee in charge:

Professor Branislav Slantchev, Chair
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2016

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University of California, San Diego

2016

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VITA

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ABSTRACT OF THE DISSERTATION

Essays on Information and Conflict

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Doctor of Philosophy in Political Science

University of California, San Diego, 2016

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This dissertation explores the relationship between informational asymmetries and costly conflict in the international system. While it is well-known that information asymmetries may cause conflict, little research explores the origins of such asymmetries. This dissertation explores the role of intelligence, diplomacy, and military strategy in revealing information. I show that, under broad conditions, states will often fail to disclose information about themselves and fail to gather information about their opponents. In consequence, the ability to gather information does not undermine the link between uncertainty and war.

Chapter 1

Diplomacy Through Agents

1.1 Introduction

Although diplomacy is an important feature of relations between states, it has been a relatively neglected research subject. Undoubtedly, this neglect of diplomacy can be largely attributed to a simple, but powerful, intuition that “cheap talk” diplomatic communications should not have a meaningful impact on interstate interactions (Schelling, 1960; Fearon, 1995). Despite this intuition, historians and practitioners hold a clearly stated belief that diplomacy matters, and states have often invested substantial resources in the conduct of diplomacy. Consequently, scholars have searched for mechanisms that can lend some credibility to cheap talk messages. Much of this work focuses on the role of reputation as the source of credibility in diplomatic communications (Sartori, 2002; Guisinger and Smith, 2002; Sartori, 2005), though some models focus on coordination dynamics (Trager, 2010; Ramsay, 2011) or the link between cheap talk and costly forms of signaling (Kurizaki, 2007).

In this paper, I outline an alternative argument centered on the fact that

diplomacy is nearly always conducted by autonomous agents. Leaders can, and sometimes do, engage directly in diplomacy, but most diplomatic communication passes through officials who operate with considerable independence and limited oversight by their home governments. This delegation provides a way for states to credibly communicate through diplomacy. Specifically, a leader can select a diplomatic agent whose preferences diverge from his own and give that agent the ability to choose what messages to convey to a foreign government. This biased diplomat will refuse to transmit certain threats to the foreign government in cases where the leader is not resolved, thus increasing the credibility of threats that she does transmit. I show that the value of this channel for credible communication is sufficiently large that a leader's optimal diplomat is *always* biased away from the leader's preferences, but I also show that the optimal is always limited. That is, leaders never delegate to a diplomat whose level of bias is large enough to eliminate the risk of conflict or as large as would be preferred by the foreign country. Consequently, the theory presented here explains not only the credibility of diplomatic communication but also the persistence of highly-delegated diplomatic institutions in an era when technology allows for centralized institutions or direct communication by leaders. By extending the baseline model, I show that, unlike diplomats who are optimally biased *away* from their leaders, advisors and intelligence agents will optimally be biased *towards* their leaders. Thus, the model supplies a reason for leaders to separate diplomatic and advisory functions.

1.2 Diplomacy and Credibility

One of the central credibility problems in international communication comes from abundant incentives to misrepresent capabilities and resolve. Talk is cheap, and saying “I am resolved” generally proves nothing. If a mere statement of resolve would be accepted by an opponent as conclusive and produce valuable concessions, then all states would verbally claim resolve. In such a world, these statements would lose all meaning. Consequently, scholars have traditionally focused on the role of costly signals, rather than mere words, as a way for states to demonstrate their resolve (Schelling, 1966).

While diplomacy is not directly costly, *public* diplomacy may trigger indirect costs. For example, leaders who publicly bluff and then back down may face punishment from domestic audiences, who interpret failed bluffs as an affront to the national honor or a signal that the leader is incompetent (Fearon, 1994; Smith, 1998). Even leaders who lack a domestic audience may face consequences from an international audience when they are publicly revealed to be bluffing. Most importantly, those who bluff may suffer a reputational cost that reduces their diplomatic effectiveness in the future (Sartori, 2002).

More recent work moves beyond both indirect costs and reputation. Kurizaki (2007) shows that the incentive to avoid the costs associated with public threats can sometimes allow the credible transmission of information through costless, private signals. Trager (2010) argues that, under appropriate circumstances, states are harmed by the perception that they have hostile intent. Because this creates a disincentive to claim to be resolved, it may make private messages expressing resolve credible. In a similar vein, Ramsay (2011) shows that costless diplomacy may influence whether or

not states are willing to negotiate, allowing some information to be transmitted.

These existing mechanisms are institutionally agnostic. That is, they do not place much weight on how a message is transmitted. To the extent that they carry institutional implications, all of these theories imply that diplomatic structures should be as centralized as possible. At best, delegating communication to autonomous agents stationed abroad is a costly way to duplicate the function of a secure telephone line. At worst, it introduces the possibility that those agents will garble messages, make mistakes, or undermine their own leaders. Historically, barriers to communication meant that leaders had few options other than to station autonomous representatives abroad, but the persistence of these autonomous diplomats in the information age is more puzzling. Here, I argue that the use of such diplomats actually increases the credibility of diplomatic communication, particularly when leaders select diplomats whose preferences diverge from their own.

1.3 Diplomatic Preferences and Institutions

Leaders have often selected diplomats with preferences different from their own. Napoleon, for example, famously described his most important diplomat, Talleyrand, as “always in a state of treason,” but their association eventually ended because Talleyrand, not Napoleon, wished to part ways (Dwyer, 2002, p. 2). Likewise, the Czechoslovak President Edvard Benes sent Zdenek Fierlinger, who would later play a substantial role in the communist takeover of the Czechoslovakia, as his ambassador to the Soviet Union. Contemporaries decried Fierlinger’s pro-Soviet views; Wladyslaw Sikorski, for example, told Benes that Fierlinger was “completely owned by the Soviets” (Lukes, 1996, p. 205). Even when confronted by similar claims about Fierlinger from

his inner circle, Benes continued to believe that Fierlinger would serve his interests as ambassador in Moscow. The model suggests that Benes may have done so because, rather than in spite, of the fact that Fierlinger's "socialist philosophy and his pro-Soviet stance had become notorious" (Lukes, 1993, p. 34).

Diplomatic bias may have a variety of sources. Diplomats might have some pre-existing personal, ethnic, religious, economic, or ideological ties to a foreign country. Professionalized diplomatic services also tend to produce diplomats with preferences somewhat distant from their own leaders. Modern diplomats spend nearly their entire career living and working abroad, thus developing a more internationalist worldview than most of the leaders they serve, and one that often favors the views of the host country. For example, work on the culture of the US foreign service has consistently found that its officers tend "to identify with foreign viewpoints" (Rosati and DeWitt, 2012, p. 185). This tendency is often noted by critics, who consider diplomats disloyal; for example, Newt Gingrich described the Foreign Service in 2003 as engaging in a "deliberate and systematic effort to undermine Bush's foreign policy" (Gingrich, 2003, p.45). As Rubin (1987, p. 247) notes, however, an affinity for foreign viewpoints comes not from disloyalty or lack of patriotism, but rather because American diplomats often "become convinced by close contact that their host country's government is an asset for U.S. interests [and] come to sympathize with its political positions."

The model developed below assumes not only that leaders are able to select biased diplomats but also that such diplomats have the ability to credibly convey their own views to foreign governments. That is, it is necessary for the host country to believe that a diplomat is able to act at least somewhat autonomously. The general structure of diplomatic relations make this very credible. Ambassadors operate far

from home, generally out of public view, and with inherently limited oversight. Many of the most important diplomatic discussions also take place in unofficial conversations or at cocktail parties. Furthermore, diplomatic communication is nuanced – it is certainly possible to convey one’s own opinion without explicitly stating it.

Diplomats often seem to feel that such communication, even if it goes against the government position, is ethical. For example, Samuel Hart, who served as US Ambassador to Ecuador, recalls of his own tactic for expressing disagreement: “The way I would frequently do it was when I would disagree with policy, I would merely say, “U.S. policy is the following...” and spell out what it was and why it was; “A contrary view is the following...” and what it was and why it was.” Hart goes on to note that he felt that doing so was “was not a disloyal act [and] ... was within the ethics [he] could live with” (Kennedy, 1992, pp. 29-30).

Beyond the nuance of diplomacy, senior diplomats report that, in general, they have a great deal of discretion, particularly on smaller issues. For example, Langhorne Motley, who served as US Ambassador to Brazil, then led the seminar conducted for newly-appointed American ambassadors at the Foreign Service Institute, says of an ambassador’s discretion: “The Foreign Service “Bible” says you write your own instructions, and that is correct. If an ambassador is aggressive, he or she will be way ahead of the curve and in effect will have written his or her own instructions. The ambassador is not sitting back waiting for someone in Washington to tell him what to do” (Mak and Kennedy, 1992, p. 43). Even when instructions are issued, ambassadors retain considerable freedom of maneuver. Brandon Grove, who served as Ambassador to Zaire then as director of the Foreign Service Institute, expresses the point bluntly: “When an ambassador gets an instruction he or she doesn’t like,

it's a difficult problem... there is nothing wrong in going back and either questioning it or pointing out your assessment of what the consequences would be, the adverse consequences ... it's the responsibility of a chief of mission to raise such questions. There are some instructions that you must not carry out" (Mak and Kennedy, 1992, p. 42). Thus, on the whole, ambassadors generally have ways of disagreeing with their leaders that do not contravene the expected norms of behavior.

Beginning from assumptions about bias and autonomy, the model developed here fits into a literature on the role of preferences in cheap talk communication. Foundational works on signaling show that preference similarity between a sender and a receiver can allow for credible information transmission through cheap talk signals (Vincent P. Crawford, 1982; Farrell and Rabin, 1996). In the seminal application of this work to international relations, Kydd (2003) argues that international mediators can transmit information when they are biased in favor of one of the disputants, creating the preference similarity that allows for credible cheap talk communication. A related literature on political advice shows that leaders may often benefit from receiving information from advisors who are biased in their favor (Calvert, 1985).

This paper builds on the basic insight that preference similarity can allow for credible information transmission, but the application to diplomacy has important differences from advisor relationships or mediation. In the case of mediation, it is most reasonable to think in terms of mediators with exogenous bias. In diplomatic and advisory relationships, leaders choose their own agents. Diplomats and advisors are, however, chosen for different purposes. While diplomats do advise their own leaders, their primary role is to transmit messages to foreign governments. In an advisory relationship, leaders delegate the *acquisition* or analysis of information. In

a diplomatic relationship, leaders delegate the *transmission* of information. In the substantive context of international relations, this is roughly the distinction between intelligence and diplomacy. In practice, the line between the two is often blurred, but the analytical distinction between delegated information acquisition and delegated information transmission is clear.

A small modification to the model developed below allows the same structure to depict an advisor or intelligence agent rather than a diplomat. The equilibrium of the model under this modification replicates the core finding of existing literature that the optimal advisor is biased *towards* her leader. As will be discussed further, the optimal diplomat is biased in the opposite direction, *away* from her leader. Delegating diplomacy also presents an important tradeoff not present in delegating intelligence or advice. In choosing a diplomat, a leader always face a tradeoff between loyalty and credibility that results in an optimal diplomat with intermediate bias, in a particular sense detailed below. In choosing an intelligence agent, a leader faces no such tradeoff, resulting in an optimal intelligence agent with large bias.

1.4 Formal Model

The theoretical model developed here uses a simple signaling structure to capture the costs and benefits of delegating diplomacy to a biased agent. All messages in the game are “cheap talk” – that is, they have no direct effect on any player’s payoffs. I also model a private, one-shot interaction, so no reputational concerns are present. The core structure assumes that a leader selects a diplomat, with some known bias, who then sends messages to a foreign government about its policies. The foreign government is given the option to voluntarily revise its policy, and if it does not do so,

then the leader is allowed to take a costly action to force revision.

The leader's utility depends on the effects of the foreign policy on him (which I label x) as well as the costs of conflict from forcing revision, should he choose to do so (which I label c_L). The precise nature of the cost will depend on the nature of the action the leader takes to force revision, but could represent the costs associated with military action, imposing economic sanctions, or engaging in international litigation. The foreign government's utility depends on the effects of its own policy (which I label f) as well as the costs of conflict that it suffers if the leader forces revision (which I label c_F). Finally, the diplomat experiences the same effects of the foreign policy as the leader (i.e., her utility also depends on x); however, the diplomat's policy preferences may diverge from the leader as captured by the bias parameter β . Like the leader and the foreign government, the diplomat pays some cost in the event of conflict (which I label c_D). This cost might simply represent the internalization of some of the overall costs of conflict but could also represent personal costs paid only by the diplomat (e.g., the possibility of being imprisoned in the event of military conflict).

The sequence of the game proceeds as follows:

1. The Leader (L) selects a Diplomat (D) with bias β .
2. Nature determines the effect of some policy adopted by Foreign (F) on both L and F. Denote by f the benefit of this policy to Foreign and suppose it is distributed with p.d.f f_f , c.d.f. F_f and support on $(0, \infty)$. Denote by x the effect on L with p.d.f f_x and c.d.f F_x and support on the (possibly infinite) interval (a, b) where $a < -c_L$ and $b \geq 0$.
3. The diplomat transmits a message to the foreign government either supporting

or opposing the policy.

4. The foreign government chooses to revise its policy (or not). If it revises the policy, all players receive a payoff of 0.
5. If foreign does not revise the policy, the leader chooses whether or not to force revision. If no action is taken, the game ends in payoffs of x to the leader, f to foreign, and $x + \beta$ to the diplomat. If the leader does force revision, I assume for simplicity that this succeeds and the game ends in payoffs of $-c_L$, $-c_F$, $-c_D$, where these quantities are less than zero.

The assumptions for the utilities are quite generic. I assume that the foreign government certainly benefits from its own policy, which is unproblematic as foreign would revise harmful policies on its own. I also assume that the benefits to the foreign government of its policy are potentially large but make no assumption about how likely this is. As for the leader, I have assumed that there is some chance that the leader is “resolved” (i.e., would take costly action if the policy is not revised) and some chance that he is not.¹ There is no assumption here about the relative probability of any states of the world, so it is possible, for example, that the leader is arbitrarily likely to benefit from foreign policies or that he is arbitrarily likely to be severely harmed by them. Finally, I have assumed that conflict is costly to each player.

I assume that the diplomat and the leader are affected by x in the same way (though the diplomat is additionally affected by the bias parameter). That is, policies that are more harmful to the leader are also more harmful to the diplomat and so forth

¹The requirement $b \geq 0$ above can be relaxed without affecting the core results here. Because the payoff to voluntary revision is 0, assuming $b < 0$ would mean that all levels of bias $\beta < -b$ would have the same effect (that is, a diplomat with any value of β such that $\beta < -b$ would be harmed by *every* policy enacted by the foreign government. In equilibrium, all such diplomats would play the same strategy. Assuming $b \geq 0$ ensures that every level of bias has a distinct effect.

(although given the diplomat's bias, the diplomat may experience a net benefit from a policy that harms the leader). This does suggest that the leader and the diplomat, despite the diplomat's bias, share common interests. The common interest in question might be as simple as valuing the same "national interest", but might also reflect a common attachment to something narrower. The diplomat might, for example, have a direct affinity for the leader's success (as is likely the case for politically-appointed ambassadors chosen, in part, for their loyal electoral support) or prefer some set of outcomes valued by the leader but not the nation as a whole. This necessity of common interest between the leader and diplomat suggests that significant changes in the goals of the leadership will tend to require the replacement of diplomats.

Informationally, the generic densities f_f and f_x allow arbitrary priors. Thus, the only consequential informational assumption is that both the leader and the diplomat hold the same information about x (the effect of the policy on the leader as well as the effect, save for bias, of the policy on the diplomat). Formally, the assumption is that both the diplomat and the leader know x precisely, but a similar logic holds if we merely assume that the diplomat and leader assess x similarly. Diplomats without such knowledge are of little value because they cannot transmit meaningful signals.

The diplomat's knowledge about the policy's effects might come from a variety of sources. Diplomats may simply rely on their own expertise to evaluate these policy effects, but at other times, they are likely to use information from home. Because leaders may sometimes have an incentive to deceive their own diplomats, it is important that a diplomat have some additional sources of information. In this case, diplomats look much like opposition parties in Schultz's (1998) model of democracy and coercive diplomacy, relying on experience, access to classified documents, and a network of

connections within the political system.

Veteran diplomats recognize the importance of maintaining such networks and access. For example, Anatoly Dobrynin, who served as Soviet ambassador to the United States for nearly twenty-five years, returned to Moscow as frequently as possible in order to maintain his personal connections. He writes in his memoir: “It was also important that I maintained good connections with the political establishment in Moscow, first of all with the Politburo and the general secretary of the Communist Party (I was a member of the Central Committee of the party). I knew the people in charge of political and military intelligence, and I of course knew what was being discussed within our Foreign Ministry about our relations with the United States. I could speak with all of them frankly” (Dobrynin, 1995, p. 7). Over the course of his quarter century in Washington, Dobrynin remembers only a single time that he was uninformed about consequential information and describes this as “a moral shock” (Dobrynin, 1995, p. 75).

The structure of the game above is chosen for simplicity and does not include any direct communication by the leader. As will be discussed below, allowing the leader to communicate directly with the foreign actor changes nothing, given a diplomat with bias $\beta \geq 0$. This is because, under any positive level of bias, the diplomat’s message has higher credibility (i.e., induces a larger change in foreign’s beliefs in the event of a message of opposition) than a direct message from the leader. Consequently, the foreign country would learn nothing from a leader’s direct signal. I also leave the model deliberately ambiguous with respect to what occurs during “conflict.” Substantively, this will often be something far short of war. Conflict might encompass economic sanctions (the most relevant possibility in the case study), limited military strikes,

WTO litigation, total war or any other form of costly coercion. Given that the equilibrium below does not depend on the cost of conflict being larger than any given threshold, it is even possible that “conflict” here takes the form of some very mildly costly action that serves to reveal resolve, thus obviating the need for further escalation.

1.5 Equilibrium

I solve the game for its perfect Bayesian equilibrium (PBE); henceforth, simply “equilibrium.” In general, we may state the equilibrium of the game as follows:

- The leader chooses a diplomat with bias β^* (defined below), which always satisfies $c_L > \beta^* > 0$.
- The diplomat transmits a message of opposition to the foreign government’s policy if and only if $x < -\beta$. Off the path of play, if $\beta \geq c_L$, then the diplomat transmits a message of opposition if and only if $x < -c_L$. Otherwise, the diplomat transmits a message of support.
- After observing a message of support, foreign never revises the policy. After observing a message of opposition, foreign voluntarily revises the policy if and only if $f < c_F * \frac{F_x(-c_L)}{F_x(-\beta) - F_x(-c_L)}$. Off the path of play, if $\beta \geq c_L$ were selected, then foreign would always revise in response to a message of opposition.
- After foreign fails to revise, the leader forces revision if and only if $x < -c_L$.

I will describe the results in reverse. That is, the proof and intuition start from the terminal move, in which the leader chooses whether or not to take costly action.

At this point, the leader faces a choice between accepting x or forcing revision at cost c_L . Trivially, he forces revision if and only if doing so is better than accepting x ; that is, the leader forces revision when $x < -c_L$.

Given the leader's behavior, foreign wishes to revise the policy voluntarily if and only if the leader is sufficiently likely to force revision through conflict. Conflict costs foreign some $c_F > 0$. Voluntarily revision gives a payoff of 0, while non-revision gives a payoff of $f > 0$ (i.e., the value of the policy, which is positive by assumption). Consequently, if the policy is sufficiently valuable and forced revision is sufficiently unlikely, then foreign will not revise the policy. As will be discussed below, the diplomat *always* transmits a message of opposition when the leader will actually force revision. Consequently, the foreign government never revises the policy when it receives a message supporting the policy from the diplomat. After receiving a message of opposition, foreign will revise the policy when its value is sufficiently low, and this threshold increases in the diplomat's level of bias because, in equilibrium, increasing bias increases foreign's posterior belief that the leader will force revision. Mathematically, in all cases where $\beta < c_L$ (which is always true on the path of play), foreign's posterior after a message of opposition is $\frac{F_x(-c_L)}{F_x(-\beta)}$. Consequently, the threshold for foreign is:

$$\frac{F_x(-c_L)}{F_x(-\beta)} * (-c_F) + \left(1 - \frac{F_x(-c_L)}{F_x(-\beta)}\right) * f > 0$$

$$f < c_F * \frac{F_x(-c_L)}{F_x(-\beta) - F_x(-c_L)}$$

The properties of this expression are straightforward, but they are crucial to the results. In essence, the core intuition here is that, because a biased diplomat bluffs

(i.e., transmits messages of opposition that the leader will not actually back up with coercion) less frequently in equilibrium, her messages of opposition are more credible (in the sense that these messages increase foreign's posterior belief that the leader will force revision). Given the diplomat's equilibrium strategy (discussed next), the frequency of bluff decreases as the diplomat's bias increases, thus increasing credibility whenever a message of opposition is received. Consequently, foreign is always more likely to revise the policy after a message of opposition when the diplomat's bias is larger. Second, foreign's incentive to revise hinges on the fact that being forced to revise is costly, so, all else equal, voluntarily revision is more likely when forced revision has a higher cost to foreign.

Consider now the diplomat's choice. Given foreign's strategy, the diplomat's messages are consequential – that is, they always affect the probability of revision. Consequently, the diplomat follows a “sincere” strategy – she transmits a message of opposition whenever she has negative utility for a policy. Suppose that she deviated from this strategy by opposing policies when $x > -\beta$. This would increase the probability of repeal for policies that have a positive utility for her. Likewise, deviating to supporting policies when $x < -\beta$ would decrease the probability of repeal for policies that she dislikes. This threshold changes, however, if $\beta > c_L$. In this case, the diplomat favors some policies that the leader would actually use force to revise (which is costly to the diplomat). Thus, for any $\beta > c_L$, the diplomat opposes policies if and only if $x < -c_L$, and these policies are *certainly* revised voluntarily. Deviation to supporting these policies would lead to conflict with certainty (which is costly for the diplomat) while deviation to opposing policies above this threshold would lead to the revision of policies that are favorable to the diplomat.

Having analyzed the signaling phase, we turn to the leader's choice of diplomat. The leader's choice of β hinges on a tradeoff. Higher levels of bias give the diplomat higher credibility, meaning that the foreign actor will be more likely to revise policies when the diplomat expresses opposition. On the other hand, the higher the level of bias, the more often the diplomat will fail to object to policies that her leader would like to see repealed. Before proceeding, it is useful to note that the equilibrium of the signaling phase (i.e., the stage of the game beginning with the diplomat's message) remains the same whether β is chosen by the leader, set exogenously, or chosen in some other way.

Before proceeding to the mathematical derivation of the optimal bias, note that the leader will always prefer an unbiased diplomat to one who is biased "against" the foreign country. That is, the leader would always prefer $\beta = 0$ to any $\beta < 0$. A negatively biased diplomat will sometimes object to policies that benefit the leader (i.e., will sometimes object given $x > 0$) leading to their repeal with positive probability and will also have *lower* credibility than an unbiased diplomat, meaning that policies harmful to the leader are less likely to be repealed. Thus, the optimal bias is never negative.

In the appendix, I derive an expression for the leader's expected utility for a diplomat with a given level of bias. In brief, β^* is simply defined as the value of β that maximizes this expression. I use this to establish two propositions and two corollaries described below, which are proved in the appendix.

Proposition 1: The optimal level of bias, β^ , is always greater than zero.* This result follows from the fact that, at least for very low values of β (and possibly for much higher ones), the credibility gained by the diplomat outweighs the reduced probability

that the diplomat will object to policies. The tradeoff is certainly favorable because the gain in credibility increases the probability that policies that are very harmful will be repealed. Meanwhile the diplomat only fails to object to the policies whose harm to the leader is the smallest. That is, an unbiased diplomat objects to all policies that harm the leader, regardless of the level of harm. All of these policies are revised with some probability. A biased diplomat objects to all policies that are *sufficiently* harmful to the leader, and the probability of revision to these policies is higher than it would be if the diplomat were unbiased. The cost of this is the fact that policies that impose a small cost on the leader are never opposed and never revised. The leader gains because, at least for values of β close to zero, the increased probability of concessions on relatively important issues outweighs the lost opportunity to occasionally gain concessions on what we might describe as unimportant or “nuisance” issues.

Corollary to Proposition 1: The probability of conflict given an optimally biased diplomat is always lower than the probability of conflict given direct communication by the leader. Recall that, by definition, $\beta = 0$ for the leader, so selecting an unbiased diplomat is equivalent to direct communication by the leader. The proof of proposition 1 shows that $\beta^* > 0$ and also shows that the probability of conflict is decreasing in β . Thus, the probability of conflict is always lower when the leader selects an optimal diplomat, or for that matter, a diplomat with any positive bias, than under direct communication. This is a simple matter of the credibility of messages of opposition (i.e., the effect of such messages on foreign’s belief that the leader will actually force revision). The biased diplomat has higher credibility than the leader and always objects to policies when the leader would actually fight. Thus, the higher credibility reduces the probability that foreign will fail to revise policies in cases where the leader

would start a conflict and consequently reduces the probability of costly conflict.

Proposition 2: The optimal level of bias, β^ is never greater than or equal to c_L .*

This result follows a similar logic to proposition 1. Given the “certainly credible” level of bias (i.e., $\beta \geq c_L$, in which case foreign always revises the policy after receiving a message of opposition), the leader obtains revision only when he would actually be willing to fight and never receives the benefits of a successful bluff (i.e., foreign never revises policies when the leader would not be willing to fight). On the other hand, a slightly lower level of bias results in only very slightly diminished credibility but allows the leader to get his way in precisely the cases where doing so is most valuable (short of those cases in which he would actually fight). Thus, a slightly (and perhaps substantially) lower level of bias always gives a better expected payoff.

Corollary to Proposition 2: The probability of conflict is never zero in equilibrium. Recall that selecting $\beta \geq c_L$ ensures that a message of opposition is always sent when the leader will force revision and that this message always leads to voluntary revision. Given any $\beta < c_L$; however, messages of opposition are imperfectly credible, and there is some probability of conflict. Consequently, the result in Proposition 2 shows that the leader never chooses a diplomat whose bias is sufficiently large to avoid the possibility of conflict. The intuition here follows that of the core proposition – it is valuable for the leader to at least sometimes bluff, and this leads to at least some probability of conflict.

Taken together, propositions 1 and 2 present a tradeoff between loyalty and credibility. That is, the leader can choose a loyal diplomat with preferences similar to his own (low β), who will generally take the same position on diplomatic issues. On the other hand, the leader can choose a credible diplomat (high β), whose messages of

opposition generally result in concessions but who often fails to take the same position as the leader. The two propositions show that neither perfect loyalty nor perfectly credible is the best solution to the tradeoff. Instead, leaders always balance loyalty and credibility by selecting an intermediate value of β .

1.6 Numerical Results

To provide some additional intuition, I graphically present the model's results for a specific parameterization. Suppose $c_F = c_L = 1$, while f follows a normal distribution with mean 2 and variance 0.5 that is truncated at zero. Finally, suppose x is distributed normally with mean -1 and variance 1. Given this setup, the leader would be willing to force revision in exactly half of cases; however, the expected benefits of the policy to foreign are fairly large. In Figure 1.1, I show the leader's expected payoff to diplomats with bias ranging from 0 to 1.1.

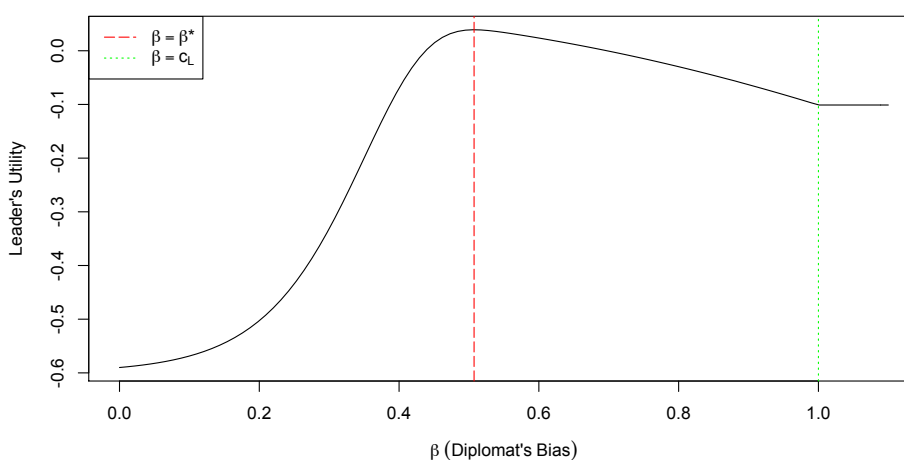


Figure 1.1: Effect of Changing β on the Leader's Expected Payoff

The optimal bias here is intermediate – about 0.51 – and the effect on the

leader's payoff is large. At a bias level of zero, the leader's expected payoff is -0.60, while at the optimal bias level, the leader's expected payoff is 0.04. In order to supply the intuition behind the propositions above, Figure 1.2 shows the probabilities of each of three possible outcomes in the model - voluntary revision, forced revision (i.e., conflict), and no revision (i.e., neither voluntarily nor forced revision).

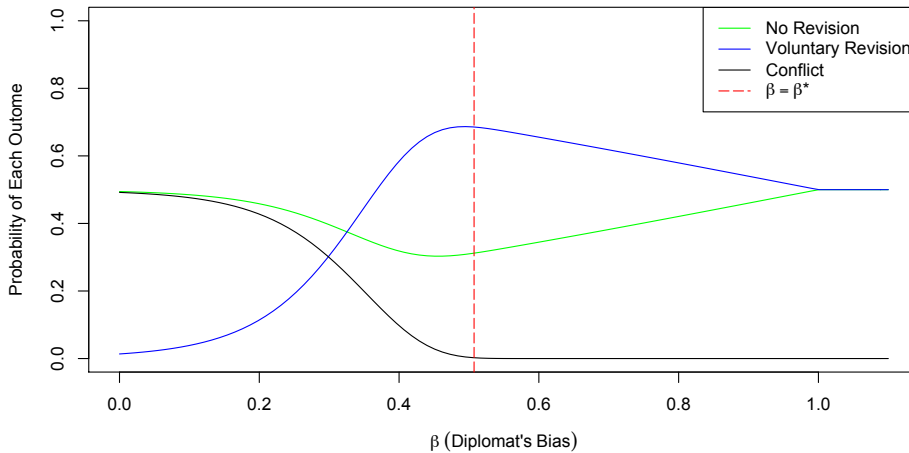


Figure 1.2: Effect of Changing β on the Probability of Each Outcome

On the far left of the figure (at $\beta = 0$), corresponding to either direct diplomacy or diplomacy by a diplomat who completely shares the leader's preferences, the foreign government almost never voluntarily revises its policy (the probability is roughly 0.01). Because the leader is often resolved, conflict often ensues, while in the remaining cases, the leader does nothing. As β increases, the probability of voluntarily revision increases, and in fact does so quite sharply as a result of the diplomat's increased credibility. This increase corresponds to a decrease in the probability both of conflict and of non-revision. The probability of voluntarily revision continues to increase until β reaches a point slightly below β^* ; here this occurs at $\beta = 0.49$.² At this point, the

²This is necessarily true. Recall that the relevant maximum is of the utility, not the probability of

probability of voluntary revision is roughly 0.687, the probability of non-revision is 0.308, and the probability of conflict is only 0.005. Here, the diplomat's threats are sufficiently credible to almost always compel foreign to voluntarily revise policies when the diplomat transmits a message of opposition.

Moving past the maximum probability of voluntarily revision, and then past β^* , the leader's payoff begins to decrease. In this region, the probability of conflict continues to decrease (although it is already low), and the credibility of the diplomat's messages continues to increase, but the diplomat transmits messages of opposition less and less frequently. Consequently, the overall probability that foreign will voluntarily revise harmful policies decreases. Correspondingly, the probability of non-revision increases. When the bias reaches the "certain credibility" level ($\beta \geq 1$), the probability of conflict is zero, but the probability of voluntarily revision has fallen to 0.5. Consequently, the leader's overall utility has fallen substantially. I will note, however, that in this case, the leader's utility at $\beta \geq c_L$ is substantially higher than at $\beta = 0$; this is not true in general, and the utility for an excessively biased diplomat is lower than the utility for an unbiased diplomat in other parameterizations.

1.7 Intelligence and Advice

A simple modification to the model above allows the same structure to capture an intelligence or advisory function. Suppose that, at the first move, the foreign government rather than the leader selects the diplomat (whom we now relabel as the advisor) then the model proceeds as before. In the revision, the equilibrium strategies

voluntary revision. Because the utility incorporates both the probability of revision and the expected utility of the policies revised, it is always maximized at a point beyond the level of β at which the maximum of the raw probability of revision is reached.

subsequent to the selection remain the same, so it is only necessary to evaluate the utility for the foreign government, rather than the leader, with respect to β .

Proposition 3: If the foreign government selects the advisor, then the foreign government will select some $\beta \geq c_L$. The remainder of the equilibrium proceeds as stated above, and there is no risk of war given foreign's choice of β . Briefly, when the foreign government selects an advisor or intelligence agent, it faces no loyalty-credibility tradeoff. The foreign government wishes to know, with as much accuracy as possible, whether the leader will actually force revision. Any agent with $\beta \geq c_L$ will provide this information with certainty. Thus, the foreign government selects an agent with maximal bias *towards* itself. This finding, then, replicates the basic finding of the literature on political advice, suggesting that leaders want advisors who are biased in their favor.

Proposition 3, then, presents two contrasts between a diplomat and an advisor or intelligence agent. First, the optimal diplomat is biased *away* from her principal. In contrast, the optimal advisor is biased *towards* her principal. Second, the loyalty-credibility tradeoff always leads to a selection of a diplomat with intermediate bias. In contrast, the lack of such a tradeoff in the selection of an advisor leads to the selection of an advisor with maximal bias. An important implication of this finding is that leaders are likely to find it useful to separate the diplomatic function from advisory or intelligence functions because the optimal biases for the two positions are opposites.

1.8 Sanctioning in Diplomacy

The core results presented here focus on the leader's selection of a diplomat; however, leaders also have influence over other aspects of the diplomatic delegation

relationship. The discussion of bias here focuses on the role of *ex ante* selection in diplomatic delegation, but principals can also use *ex post* sanctioning to achieve control in agency relationships. Consequently, I extend the baseline model by allowing the leader to commit to punish the diplomat for transmitting messages of support when the leader in fact opposes a policy. I show that punishment does not allow the leader to achieve any results not achievable through selecting an appropriately biased agent alone.

To incorporate punishment into the model, suppose that at his initial move (i.e., when selecting the diplomat's level of bias), the leader also selects a level of punishment p that will be imposed on the diplomat if she transmits a message of support for a foreign policy given $x < 0$ (i.e., this is a punishment for sending a different message than the leader would send under direct communication). For simplicity, I assume that this threat of punishment is perfectly credible.

Proposition 4: In the extended model incorporating punishment, no strategy gives the leader a higher payoff than the payoff he receives from setting $\beta = \beta^$ and $p = 0$. Additional equilibria exist in which $\beta > \beta^*$ and $p > 0$. All of these involve the same threshold strategy for the diplomat as in the model without punishment and give the leader the same payoff.* This result implies a form of equivalence between bias and punishment. In short, the leader cannot accomplish anything that is not possible through an optimal choice of bias by designing punishment institutions; however, bias and punishment may substitute for one another. That is, rather than purely selecting a biased diplomat, the leader can compensate for a diplomat with higher bias by designing appropriate punishment institutions.

Punishment does not allow the leader to improve his payoff because selecting a

biased diplomat already allows the leader to optimize the loyalty-credibility tradeoff. Imagine that a leader has selected an optimally biased diplomat. Adding a threat of punishment will induce the diplomat to support the leader's position in additional cases (i.e., make the diplomat more loyal); however, because the diplomat takes the leader's position more often, her credibility will fall. This effect is equivalent to simply selecting a diplomat with lower bias. Thus, the leader cannot improve on the optimally biased diplomat.

Because punishment does not produce superior results as compared to bias alone and requires a more complex diplomatic institution, leaders will likely tend to prefer to simply select diplomats with optimal bias and no punishment. However, when leaders face constraints on their ability to appoint optimally biased diplomats, punishment may be more important. If, for example, leaders can only select their diplomats from a narrow pool of qualified candidates, making it difficult to approximate the optimal bias level, then they may be more likely to rely on the combination of selection and punishment.

1.9 Case Study: Walter Hines Page

Having established the basic theoretical results, I now consider the career of Walter Hines Page, the American ambassador in London from 1913 until 1918. These were particularly eventful years in Anglo-American diplomacy, allowing the narrative to cover an especially large number of important controversies; as a result, we uncover several cases where Page supported Wilson's demands and several cases where he opposed them, allowing productive comparison. Page's tenure has also attracted a certain amount of historiographical controversy; assessments of his career range from

the adulatory (Hendrick, 1922*a*) to the claim that his years in London represented “a failure of ambassadorial diplomacy” (Kihl, 1970). The treatment here contributes to this debate by helping to construct the correct counterfactual for an assessment of Page’s career.

Briefly, the study here covers eight significant controversies in Anglo-American relations. In five of these, Page expressed his support for Wilson’s views, and the British government granted policy concessions to the United States. In three of these, Page expressed his personal opposition to Wilson’s views, and the British held firm on policies to which Wilson had objected. I will argue that all of the parties involved recognized Page’s pro-British bias and that all recognized that this bias gave Page unique credibility in communicating with the British. After examining Page’s role in transmitting information to the British, I will briefly explore his role as an advisor to and source of information for Wilson. Here, I side with the historical consensus that Page had little or no influence.

In a nutshell, the majority of the controversies covered here involved British attempts to restrict American trade with the Central Powers. Page persistently failed to object to British interference with American neutral commercial rights. This helped convince the British government that it could gradually tighten restrictions without provoking costly retaliation from the United States, despite voluminous protests against the British policies from American officials in Washington. On two crucial occasions, Britain overreached, provoking Wilson to a point where he would have been willing to retaliate. On both of these occasions, Page vigorously objected to the British policies, and these policies were modified at least partially because Page’s messages were seen as credible. Page’s credibility also helped to secure British concessions

on issues related to the Panama Canal, Mexico, and Ireland at other points in his tenure. In this section, I trace the eight controversies roughly chronologically, while also examining the relationship between Wilson and Page.

1.9.1 Page and Anglo-American Relations Before World War

I

Walter Hines Page was a long-time Anglophile, a fact that he had publicly made clear on many occasions during his career as a journalist and publisher before his appointment to the Court of Saint James (Gregory, 1970, pp. 14-15). Page's appointment was largely a result of his long-time support for Wilson and friendship with Wilson's trusted diplomatic adviser Colonel Edward House (Cooper, 1977, pp. 245-246), but the choice was well-received in London. *The Times*, for example, reported "much favourable comment on Mr. Page's appointment" (*Mr. Page's Appointment*, 1913). Page presented his credentials in May 1913, and while his first year was much less eventful than the period after the outbreak of the war, he did play an important role in controversies involving tolling arrangements for the Panama Canal and British policy towards Mexico.

The first issue concerned the Panama Canal Act of 1912, which exempted American coastal shipping from tolls on the Panama Canal, apparently violating a 1901 Anglo-American agreement that tolls charged for passage of the canal would be non-discriminatory. The British vigorously objected to the Act, viewing it as an unfair advantage for American shippers. Wilson had campaigned in favor of the Act but changed his mind before taking office (Coker, 1968, pp. 556-557). While Wilson wished to repeal the Act, he did not want to appear to be yielding to British pressure.

Consequently he hoped the British would simply remain silent on the matter rather than continuing to protest or attempting to take the issue to arbitration. Consequently, in July 1913, Page arranged a lunch for himself, Colonel House, and British Foreign Minister Sir Edward Grey. At the lunch, Page and House conveyed Wilson's intent to repeal the act, if only Grey would agree to remain publicly silent on the matter. The concession requested here was relatively small (asking only that the British forego the benefits of grandstanding against the Americans), and Grey went along willingly. The repeal was ultimately successful, which likely bolstered Page's credibility with the British, but importantly Page also publicly and vigorously spoke out against the Panama Canal Act to British audiences, generating something of a minor controversy about his transparent anglophilia in the American press and Congress (Gregory, 1970, pp. 41-42).³ The case is not particularly revealing with respect to the model as the desired action came at such a low cost to the British that Page's message was likely superfluous, but it sets the background for subsequent interactions as it cemented Page's standing as an anglophile and trustworthy partner.

The second major issue for Anglo-American relations involved the revolutionary situation in Mexico dating back to the 1911 ouster of Mexican President Diaz by Francisco Madero. In February 1913, Diaz's followers attempted a coup against Madero with the backing of US Ambassador to Mexico Henry Lane Wilson. This plot

³On one occasion, Page told a British audience that the great benefits to the British of the canal "added to the pleasure" of building it. The exact remark is obscure; several newspapers report that he said: "It added greatly to the pleasure of the people of the United States in the building of the Panama Canal to know that British would profit *most* by its use [emphasis added]" (*Awaits Page Reply: Envoy's London Speech Stirs Senate to Ask Explanation*, 1914). After these remarks appeared in the American press, Wilson was reportedly "inundated with petitions for Page's removal" (Whelan, 2006, p. 48), and drew attacks from the editorial pages of the *New York Times* and William Randolph Hearst's *New York American* (Gregory, 1970, pp. 41-42). Senator George Chamberlain demanded his recall ('*Recall Page*' - *Chamberlain: Oregon Senator Not Satisfied*, 1914), and Wilson immediately distanced himself from Page's remarks, but declared that maintained his confidence in Page (*Ambassador Page Asked to Explain London Speech*, 1914).

failed but led to a successful coup by Victoriano Huerta, in which Ambassador Wilson was again involved. Despite Ambassador Wilson's understanding to the contrary, Huerta then allowed the murder of Madero, alienating, among others, President-elect Woodrow Wilson, who refused to recognize the new Huerta regime after coming to office (Blaisdell, 1962). These circumstances naturally created some uncertainty about American preferences, given that the American government now declared an intention to unseat a leader, whom it had helped to install only a few weeks prior. President Wilson initially telegraphed uncertain intentions, telling reporters in July: "The trouble is that we don't know what is going on in Mexico" (Link, 1985, p. 149). A fissure in American opinion was evident even to outsiders. Ambassador Wilson, after being relieved from his post, publicly criticized the failure to recognize Huerta as a "national blunder" and described Wilson's Mexican policy as a "ridiculous failure" (Wilson, 1914, pp. 158-160). Leaders in the American business community publicly supported recognizing Huerta. Notably, Cleveland Dodge, one of Wilson's closest allies and largest campaign fundraisers, pressured Wilson to negotiate with the Huerta government (Cooper, 2011, p. 237-238). During this period of uncertainty, the British recognized Huerta's government, following the advice of Francis Stronge, the British minister in Mexico, who wrote to Grey: "[Huerta] is the only man in sight who furnishes guarantees of safety and security ... I believe his continuance in office provides the best chance for proper protection to British interests" (Philip, 1992, p. 80). Stronge also believed that the United States would soon arrive at the same position, describing it as "incredible" that American views would not change (Philip, 1992, p. 79). Stronge's successor in Mexico, Lionel Carden, held the same view, writing: "It seems scarcely credible that the United States government should have taken up so hostile an attitude

[towards Huerta] on such insufficient grounds.” Consequently, Carden argued that the British should take a hard line with the Americans on Mexico (Philip, 1992, pp. 80-82).

While British officials believed that President Wilson was irresolute and likely to change his mind, he was actually moving towards a very strong view of the Mexican situation. By the end of summer, Wilson was convinced that Huerta needed to be removed from office, and in October, he went so far as to begin drafting a resolution for Congress allowing military intervention in Mexico (Clements, 1980, pp. 116-118). Wilson hoped to convince the British to change sides in the dispute, believing that if they joined the United States in opposition to Huerta, this action might be sufficient to forestall the need for costly American intervention in Mexico. In addition, Wilson wanted the British to recall their representative, Carden, from Mexico, as American officials had come to believe that he held dangerously anti-American views.⁴ While the British had meaningful interests in Mexico, particularly in the oil industry, and preferred for Huerta to remain in power, Grey was willing to concede to American demands if doing so was the only way to avoid a confrontation with the United States (Scholes and Scholes, 1968). Consequently, the key to avoiding Anglo-British confrontation over Mexico was credible communication of Wilson’s deep resolve to remove Huerta and his opposition to Carden’s continued presence. This message reached Britain through three separate channels: Secretary of State William Jennings Bryan communicated with the British Embassy in Washington; Wilson spoke directly with William Tyrell (Grey’s privately secretary who was coincidentally visiting Washington at the time); and Page spoke with Grey. The model holds a clear

⁴One American official wrote that Carden “took delight in making difficulties and obstructions for his American colleagues” (Salisbury, 2002, p. 81).

prediction for these conversations: the message should have been most credible coming from Page. The available evidence confirms this expectation. In his memoirs, Grey writes that he immediately believed Page's statement of the American interests at stake in Mexico, making no mention of the communications he received from Tyrell or the British Embassy in Washington (Grey, 1925, pp. 98-100). Page was similarly under the impression that he was responsible for convincing Grey of American seriousness; in his notes of one meeting with Grey, he writes that he spoke in "personal and informal" terms about the matter, conveying his own opinions. Page's note concludes: "He [Grey] thanked me cordially for my frank statements and declared that he understood perfectly their personal nature. I impressed him with the seriousness of American public opinion" (Hendrick, 1922*a*, pp. 199-200). Consequently, Britain shifted away from support of Huerta. Grey also transferred Carden from Mexico to Brazil in the spring of 1914; his motivations for the choice are somewhat more opaque, but all participants on the American side were convinced that Page was responsible; President Wilson wrote to Page: "I feel sure it [Carden's transfer] is to be ascribed to your tactful and yet very plain representations" (Hendrick, 1922*a*, p. 221).

1.9.2 The Declaration of London and Blockade Controversy

In both the Panama and Mexico controversies, Page had backed Wilson's position, but World War I would reveal the costs, as well as the benefits, of choosing an ambassador with such a pro-British outlook. From the earliest stages of the war, Page uncritically adopted the British view of the conflict. On September 11, 1914, he wrote to Wilson: "the Germans have perpetrated some of the most barbarous deeds in history," taking particular offense at the violation of Belgian neutrality (Hendrick,

1922*a*, p. 325). Two weeks later, he wrote to Colonel House: “If German bureaucratic brute force could conquer Europe, presently it would try to conquer the United States... the Hohenzollern idea must perish – be utterly strangled” (Hendrick, 1922*a*, p. 328). While Wilson hoped to mediate an early end to the war, Page consistently held the belief that Germany must be defeated, and he soon began advocating for American intervention on the Allied side.

The central tension in Anglo-American relations throughout the early stages of the war came from the British interference with neutral commerce. Wilson wished to remain neutral while reaping the substantial benefits of trading with both side, and trade restrictions caused substantial harm to American economic interests. At the same time, strangling German commerce formed a central part of the Allied, and particularly British, strategic plan. Nonetheless, Grey indicates clearly in his memoirs that Britain would have been willing to give in to American pressure if doing so was necessary to forestall American retaliation. He writes: “[the] blockade of Germany was essential to the victory of the Allies, but the ill-will of the United States meant their certain defeat...It was better therefore to carry on the war without the blockade, if need be, than to incur a break with the United States about contraband and thereby deprive the Allies of the resources necessary to carry on the war at all or with any chance of success” (Grey, 1925, p. 107). Thus, we are located squarely within the parameter range described by the model: the policy of blockade was of great value to Britain, but the British were willing to revise the policy if they perceived a sufficiently high probability of a damaging American reaction. Meanwhile, Wilson hoped that the British would drop the blockade entirely but recognized the substantial costs of forcing the issue through coercive measures, most relevantly an embargo on

some or all trade with Britain. The loss of trade with Britain would have imposed a substantial cost on its own, and the British were prepared to retaliate against an American embargo with their own embargo on exporting crucial commodities to the Americans (Marsden, 1977, p. 494). Consequently, Wilson was only prepared to retaliate if the costs to American interests of the British blockade rose sufficiently high. Grey, following quite exactly in the logic of the model, writes of the situation: “It was anxious work. British action provoked American argument; that was met by British counter-argument. British action preceded British argument; the risk was that action might follow American argument. **In all this Page’s advice and suggestion were of the greatest value in warning us when to be careful or encouraging us when we could safely be firm** [emphasis added]” (Grey, 1925, p. 110).

I will not trace the full course of the debate here, but I will highlight a few crucial points in the lengthy controversy. At the very beginning of the war, Secretary of State Bryan sent a telegram to American ambassadors in all of the belligerent countries asking them to express the American hope that all belligerents would all abide by the 1909 Declaration of London with respect to neutral rights. Page objected to this policy from the earliest stages, writing to Wilson: “So far as our neutrality obligations are concerned, I do not believe that they require us to demand that Great Britain should adopt for our benefit the Declaration of London ... In its application to the situation presented by this war it is altogether to the advantage of Germany” (Hendrick, 1922*a*, p. 372). Despite Page’s view, Robert Lansing, the State Department counselor who would soon become Secretary of State, pushed for a hard line, and Page was asked to convey America’s “grave concern” about the rights of neutrals (Hendrick, 1922*a*, pp. 379-380). Page transmitted the message, making it abundantly clear that

he was communicating on behalf of Lansing and Wilson, and the British rejected the proposal to abide by the Declaration.

After the initial rebuff, Lansing changed tactics, hoping to capitalize on Page's credibility with Grey. He cabled Page asking him to "in the strictest confidence intimate to Sir Edward Grey the following plan, at the same time stating very explicitly that is your personal suggestion and not one for which your Government is responsible." He then outlined an arrangement whereby the British would accept the Declaration of London in return for an American agreement not to object to the determination that certain neutral ports used for trade with Germany were, in effect, enemy ports (United States Department of State, 1928*a*, pp. 249-250). Wilson followed up Lansing's cable with a direct message to Page, in which he wrote: "I must urge you ... to use your utmost persuasive efforts to effect an understanding, which we earnestly desire, by the method we have gone out of way to suggest [i.e., presenting the plan as Page's own], which will put the whole case in unimpeachable form" (United States Department of State, 1928*a*, pp. 252-253). Page took Lansing's proposal to Grey, but refused to claim that it was his own and, in fact, explained to Grey his own opposition to the plan (Gregory, 1970, p. 70). Far from attempting to hide this from his superiors, he wrote to Colonel House, describing what he had done (Hendrick, 1922*a*, p. 383). Importantly, Wilson seems to have borne Page no ill-will as a result of the incident; on October 29, he wrote to House: "I do not feel that it would be just to criticize him [Page] in the least" (Link, 1979, p. 246).

The outcomes here map directly onto the predictions of the model. The costs to Britain of abiding by the Declaration of London would have been quite large, while at least for the time, the cost to the United States of a British failure to do so was not

excessively large. Because Page was biased in the British direction and the benefits to the United States were not sufficiently large, he consequently sided against Wilson, allowing Grey to draw the conclusion that America was unlikely to take coercive action if Britain refused Wilson's demand. Perhaps most revealing in the incident is the attitude that Wilson and Lansing held towards the counterfactual. Both clearly believed that Grey would be more likely to take the American demand seriously if he believed it came from Page personally, rather than from Washington.

The blockade controversy continued throughout 1915, reaching another peak in October when Lansing (who had taken over as Secretary of State in June) prepared a note protesting the blockade. Page delivered this note as ordered, but made his personal disagreement clear both to Grey and to Wilson.⁵ As before, the note led to no change in the British behavior, but it did lead to a rumor to that Page was planning to resign. This alarmed Wilson and Lansing; Lansing cabled Page: "Rumors through representatives of the press that you intend to resign have been brought to the attention of the President ... the rumors persist and are causing both of us much anxiety although we can not believe them to have any foundation" (United States Department of State, 1939, p. 702). Page responded by denying the rumors, and Lansing cabled back relief along with a compliment: "Your continued and helpful service is greatly needed in London" (United States Department of State, 1939, p. 702). Despite the fact that Page had spent the last eighteen months consistently undermining the administration's position on neutral rights, Lansing and Wilson still

⁵Page wrote a long letter to House objecting to the note. Perhaps the most interesting feature of this note is that Page refers to the British in the first person plural; for example: "The President himself dealt with Germany. Even in his severity he paid the Germans the compliment of a most courteous tone in his Note. But in dealing with **us** he seems to have called in the lawyers of German importers and Chicago pork-packers. I miss the high Presidential courtesy that **we** had come to expect from Mr. Wilson [emphasis mine]" (Hendrick, 1922*b*, p. 74).

valued having him in London.

1.9.3 The Cotton and Blacklist Controversies

Page persistently failed to support Wilson's position on the blockade, but the model predicts that Wilson should have been willing to tolerate this because he anticipated that Page would support him on the most serious matters. In fact, Page did back Wilson on several critical matters. The first of these was a controversy over adding cotton to the contraband list in the summer of 1915. Cotton played an important role in the manufacture of explosives, but the British had declined to list it as contraband in 1914 out of fear of provoking the United States (Grey, 1925, p. 109). This fear had a solid economic foundation: cotton represented about a quarter of all American exports in the years preceding the war, with much of the crop going to the Central Powers. The outbreak of the war had caused panic in the cotton markets, leading the price of cotton to drop by about half between July and mid-October, mostly out of fear that the British would declare cotton contraband; this collapse in price caused a major economic and political crisis in the south.

While the British initially showed restraint, the situation had changed by the summer of 1915. Popular opinion in Britain strongly favored placing cotton on the contraband list, and the military case was seen as "uncontestable" (Lambert, 2012, p. 438). In the wake of the Gallipoli debacle, these concerns were especially severe. Moreover, the British had become substantially less concerned about the possibility of American retaliation as the Cabinet saw America leaning heavily in the British direction after the sinking of the *Lusitania* in May (Link, 1960, p. 598). Influential British officials also believed that an American embargo followed by a British counter-

embargo would “inflict far more damage on the United States [than on Britain],” making American threats less credible (Lambert, 2012, p. 446). Consequently, the Cabinet decided on July 14 to place cotton on the embargo list, though it did not immediately announce the policy (Lambert, 2012, p. 439).

In fact, the British substantially underestimated the American reaction. Upon learning about the possibility of the embargo, Wilson wrote to House, “You of course realize the fatal effect that [declaring cotton contraband] would have upon opinion here. Probably changing attitude of this country towards the Allies and leading to action by Congress cutting off munitions” (Link, 1980, p. 526). Both Wilson and Lansing had received numerous petitions from important southern figures urging them to retaliate against any British action on cotton (Link, 1960, pp. 600-601), and Lansing wrote to Page that if the British decided to implement such a policy, “the situation will become so serious politically that it will become difficult, if not impossible, to find a solution” (United States Department of State, 1939, p. 474). While we cannot be certain whether or not Wilson would actually have supported an arms embargo against the British, it appears likely that he would have. Importantly for the model, the negative effect of the cotton decision on the United States was larger than that of the general blockade policy. Because the costs to America were high, perhaps reaching the level that made Wilson’s threat credible, the model predicts that Page should have supported Wilson’s position. In fact, he did so and made it clear that he was speaking both for himself and for Wilson when he met with Grey on July 19. Page writes that he “had a long unofficial conversation with Sir Edward Grey in which [he] fully explained thoroughly the whole political dangers that have arisen and may arise about interference with the cotton trade.” Page, at least, believed his

communication was credible, writing after his conversation: “The seriousness of the situation is appreciated by Sir Edward.” During the conversation, Page also received an immediate concession from Grey, who told him that the British government would be willing to buy enough American cotton to compensate for the losses caused by the policy change (Link, 1980, p. 534).

At this point, the crucial question is the effect of Page’s message. Grey was opposed to declaring cotton contraband *before* he spoke with Page but had been overruled by his colleagues. To skip ahead in the story, Britain did eventually place cotton on the contraband list, but committed to purchasing cotton in order to keep up the price (which was the real source of Wilson’s concern), at an estimated cost of £20,000,000, which Lambert (2012, p. 454) describes as “a staggering sum.” We further know that the Cabinet initially opposed such a scheme because of the enormous cost (Lambert, 2012, p. 450); the question, then, becomes whether Page’s statement to Grey, which confirmed what Grey already suspected, played a central role in the decision to commit to the cotton purchases. Formal minutes of Cabinet meetings did not yet exist in 1915, so we are left with indirect evidence. One of the few accounts of the deliberations comes from the memoirs of Robert Borden, then Prime Minister of Canada, who attended the July 14 meeting where the cabinet resolved to add cotton to the contraband list by chance. Borden writes of the meeting: “The principal subject discussed was the question of making cotton contraband...I thought it also very important to ascertain *through the Ambassador*, who had confidential knowledge, whether such a course would be confidentially approved by the Government of the United States [emphasis added]” (Borden, 1969, p. 234). Clearly, Borden had somehow learned that Page was a particularly credible channel for such an inquiry. In addition,

it is worth noting that Grey told Page about the purchases as soon as he heard Page's views, and this occurred *before* the Cabinet had actually approved any such policy. Grey brought up the issue at the Cabinet meeting on the same day, but after his meeting with Page (Lambert, 2012, p. 444). In contrast, Lansing had conveyed a similar message to the British Ambassador in Washington, Cecil Spring-Rice, on July 15, without receiving any apparent concession, and had cabled Page *after* his own meeting with Spring-Rice to urge him to "communicate unofficially" with Grey (United States Department of State, 1928*b*, pp. 473-474). While Lansing's message had no apparent effect, Page's message seems to have been highly effective. Only hours after Grey spoke with Page, the Cabinet debated retracting the decision and directed Sir Richard Crawford to begin discussions with American cotton growers about the purchase agreement (Lambert, 2012, p. 444). While not definitive, the three basic facts here are highly suggestive: that Borden believed Page was uniquely credible (an impression he must have gotten from British officials), that Lansing believed that Page's "unofficial" discussion with Grey would have some effect that his own conversation with Spring-Rice would not, and that the Cabinet began to backtrack within hours of receiving Page's message, ultimately leading to the cotton purchase compromise.

In 1916, Page continued to frequently side against Wilson, mostly on issues related to American commercial rights. House visited Britain on a peace mission in January and February, finding that Page was completely unwilling to work with him. Not long after arriving, House wrote in his diary: 'Page... is so antagonistic to American policy that I have a feeling he will retard rather than help in this matter.' Some weeks later, House would record: "Grey views the situation much as I do,

and I find in him a colleague far more sympathetic than Page” (Gregory, 1970, pp. 142-143). It is highly doubtful that this was literally true, but House and Wilson became concerned that Page’s views had become too far divorced from the American position. After his return to the United States, House wrote to Wilson that Page was “a cog that refuses to work smoothly in the machinery” (Link, 1981, p. 11). Wilson responded with an idea, apparently proposed first by Lansing, to bring Page back home on a vacation “to get some American atmosphere into him again” (Link, 1981, p. 61). House supported the idea, writing: “I do not think we need to worry about Page. If he comes home at once we can straighten him out ... No one who has not lived in the atmosphere that has surrounded Page for three years can have any idea of its subtle influence” (Link, 1981, p. 71). The idea here is clear enough, Wilson and House still saw value in Page but feared that his pro-English bias had grown during his years in London. Page provided an easy opening, independently suggesting on July 7 that he visit Washington for policy discussions (Link, 1981, p.p. 401-402); Wilson agreed to the offer, and Page prepared to return home, initially planning to sail on July 22 (Link, 1981, p. 452).

The intervening weeks, however, featured a crisis in Anglo-American relations. On July 18, the British government released a blacklist forbidding business dealings by British firms with 87 American entities with suspected ties to the Central Powers (Link, 1965, p. 65). It appears that no one in the Cabinet recognized how provocative this step would be, but the blacklist pushed Wilson to his breaking point. On July 23, he wrote to House: “I am, I must admit, about at the end of my patience with Great Britain and the Allies. This black list business is the last straw... I am seriously considering asking Congress to authorize me to prohibit loans and restrict exportations

to the Allies” (Link, 1981, p. 467). These were not idle words. On July 26, Wilson met with Senator William Stone, chairman of the Senate Foreign Relations Committee, to discuss retaliatory legislation (Link, 1965, p. 68), and in August and September Congress passed several laws giving the President authority to retaliate as he saw fit (Link, 1965, pp. 70-71). Given the depth of Wilson’s resolve, we have a clear prediction that Page should have protested the blacklist, and he did. Page writes that he “emphatically informed Cecil [Minister of Blockade Robert Cecil] that the blacklisting of American firms is most irritating even to the Allies’ zealous friends in the United States” (United States Department of State, 1929, p. 412). Wilson conveyed the same message directly to Spring-Rice. To again jump ahead in the story, the crisis eventually abated because the British quickly relaxed application of the blacklist (without formally abandoning it), and Wilson chose not to retaliate in the short-term (Bailey, 1934, p. 24). The British then removed several entries from the blacklist and promised not to add additional entries while gradually continuing to pare the list (Bailey, 1934, p. 29). Although partial, these concessions were sufficient to avoid retaliation.

Again, we turn to the question of Page’s role in the outcome. The most interesting piece of evidence comes from House. Frank Polk, then the State Department counselor, wrote to House about the blacklist on July 22, the day before Page’s cable about his meeting with Cecil reached Washington. Consequently, House wrote back to Polk on July 25, aware of Wilson’s views and his conversation with Spring-Rice but unaware of Page’s actions. In his response to Polk, House wrote: “As a matter of fact if he [Page] had said to the British Government what the President and you have said to Spring-Rice, this blacklist order would never have been published” (Seymour,

1926, p. 314). The quotation displays a great deal of faith in Page's influence with the British government, but considerably less faith in Page's loyalty. House's statement captures precisely the problem faced in selecting a biased ambassador: a more biased ambassador has more credibility but is less likely to use that credibility to serve the leader's interests. It is clear that House felt that Page's pro-British bias had grown too large for Page to be useful, assuming that Page was unwilling to take Wilson's side even in a case where Wilson was likely prepared to execute his extreme threat (recall that in the model, it is *never* optimal to have a diplomat this biased). House was, of course, mistaken; Page had vigorously supported Wilson's case. In fact, Page pressed his case again on July 25 and felt that he had made the point convincingly; he wrote back to Washington: "I think they see they have made a bad tactical error and I expect a gradual correction of it" (United States Department of State, 1929, p. 420). Unlike the cotton case, where Page had expressed his opposition to the policy before its public announcement, Page objected to the blacklist only after it became public, so his own objection came simultaneously with a large number of messages. Even the British public seems to have objected to the blacklisting of American firms, and Bailey (1934, p. 27) writes that British businesses sent "an avalanche of protests" objecting to the policy; moreover, the passage of the legislation authorizing Wilson to retaliate was likely a particularly strong signal. It is not clear whether Page's message actually stood out as a particularly important signal in this case as the outcome was over-determined; Spring-Rice wrote that Page's message "had only confirmed tenfold ...that the publication of the blacklist was a blunder" (Gregory, 1970, p. 172). Nonetheless, House's view of Page's influence is quite telling.⁶

⁶At this point, it is interesting to note that House assumed that Page was consulted before the announcement and failed to object. In fact, Page learned of the blacklist at the same time as everyone else, and it appears that no one outside of the British government was consulted about the decision to

Page did return to the United States in early August, but contrary to Wilson's hopes, his views did not change during the visit. Lansing writes in his memoirs, "neither the President nor I made the least impression, so far as we could see, upon the pro-British wall with which he had enclosed his mind" (Lansing, 1935, p. 167).⁷ Page returned to London, but the visit left him thoroughly discouraged, as he had hoped to prod Wilson and Lansing into a change of policy; consequently, not long after reaching London, he sent Wilson a letter of resignation, to take effect at the end of Wilson's first term in March.⁸ This resignation offer gives us another window onto Wilson's view of Page; Wilson was initially undecided about accepting it (Link, 1982, p. 241). He evidently asked House to consider replacing Page, but House declined (Link, 1982, p. 403), whereupon Wilson appears to have considered a few other candidates. Ultimately, Wilson refused the resignation, and Page agreed to stay on as Ambassador (Link, 1983*a*, pp. 128-129). The rationale here is clear enough, Wilson believed that Page was biased past the optimal point and his effort to bring Page back in the American direction had failed, so the resignation was seriously considered. It is notable, however, that Wilson's preferred replacement for Page, House, was decidedly more pro-British

publish the list in advance. Page wrote in his July 22 cable: "So far as I know, no neutral government or diplomatic representative was consulted [about the blacklist (which also included individuals and businesses in other neutrals)]" (United States Department of State, 1929, p. 413). This raises a certain puzzle: why did the British not consult Page or any one else to gauge reactions before the announcement? The simple answer appears to be that the reaction thoroughly blindsided the British government. The British had been clandestinely blacklisting American firms for some time prior to the announcement without significant effects; it was the public announcement that caused the problem. Frank Polk would write of the issue at the time: "It [the blacklist] is nothing new and if the British Government would only keep quiet it could have been handled comparatively easily". It seems to have come as a complete surprise, then, that the announcement of the policy had large effects (Bailey, 1934, pp. 18-20).

⁷House shared this assessment, writing in his diary: "I cannot see that his [Page's] frame of mind has altered. He is as pro-British as ever and cannot see the American point of view" (Seymour, 1926, p. 318).

⁸Page did not include his discouragement in the letter to Wilson, although Wilson certainly knew. Instead, he wrote: "When you called me I answered ... But I understood then (and I am sure the subject lay in your mind the same way) that my service would be for four years at the most. I made all my arrangements, professional and domestic, on this supposition" (Hendrick, 1922*b*, p. 195).

than the President. House, unlike Wilson, believed that the United States should intervene on the allied side; as Williams (1984, p. 100) writes of House: “In 1916, he wished for the President the role of the belligerent who could go in and win it [the war], through a working agreement between Great Britain and the United States... for he, like Page, had faith in the advantages and virtues of a Pax Anglo-Americana.” Wilson’s goal, then, was not to select an unbiased ambassador, merely a *less* biased ambassador, but he seems to have been either unable or insufficiently motivated to locate a suitable candidate. In any case, Page would remain as ambassador until resigning in August 1918 as the result of health problems; he died that December.

1.9.4 The Irish Question

Anglo-American relations began to change fundamentally in early 1917, when Wilson broke off relations with Germany in response to the German decision to resume unrestricted submarine warfare. While many newspapers reacted to this decision as tantamount to a declaration of war, Wilson did not make any such decision immediately (Link, 1965, pp. 290-293). The American shift rapidly reduced the relevance of the commercial issues that had caused so much trouble, but Anglo-American relations were far from perfectly harmonious. One of the central stumbling blocks remaining for the relationship was British policy towards Ireland as certain Irish-Americans were the leading opponents of intervention on the Allied side. Thus, Wilson delivered to Spring-Rice a memorandum on U.S. relations with Britain in early March advising that “the Irish question is one of the greatest obstacles to a good understanding” (Link, 1983*a*, p. 347). Even after the American declaration of war against Germany, the Irish issue threatened Anglo-American cooperation. Four

days after the declaring war, Wilson wrote to Page: “Take an early opportunity in conversation with the Prime Minister to convey to him in the most confidential manner ... that the only circumstance which seems now to stand in the way of an absolutely cordial cooperation with Great Britain ... is the failure so far to find a satisfactory method of self-government for Ireland” (Link, 1983*b*, p. 24).

Page delivered the message to David Lloyd George, who seems to have accepted it immediately, telling Page: “We’ve got to settle the Irish question now” (Hendrick, 1922*b*, p. 260). Page also circulated the same message “to other influential members of the Government”, representing it as his “private opinion” (Link, 1983*b*, p. 93). The next month, Lloyd George announced the formation of the Irish Convention to settle the issue. American opinion, and particularly Page’s message to Lloyd George, was one of the most significant factors in this choice (Hartley, 1987, p. 149). While the Convention was not a success in settling the Irish question, Wilson had no intrinsic interest in the outcome (Lee, 1989, p. 41), so merely calling it served his interest by neutralizing the Irish issue during the opening stages of American involvement in the war (Carroll, 1978, p. 100).

While Page did support Wilson on the Convention, his last intervention into the Irish issue again pitted him against Wilson’s views. In the spring of 1918, the Cabinet discussed the possibility of applying conscription to Ireland, which had been exempted up to that time. Hoping to ascertain American opinion on the matter, Balfour contacted House, who expressed opposition to Irish conscription. When, however, Arthur Balfour discussed the matter with Page, Page strongly disagreed, arguing in favor of Irish conscription. Apparently encouraged by this message, the Cabinet agreed to Irish conscription (Hartley, 1987, p. 177). This was the last major

Anglo-American controversy in which Page played any role before his retirement.

1.9.5 Walter Hines Pages as an Advisor

In the conclusion to his biography of Page, Gregory (1970, p. 211) writes that “Page was so obviously pro-British, so much more interested in British diplomatic success than American, that the [Wilson] administration usually treated his messages with disinterest or disgust.” This stands in sharp contrast to the British view, quoted above, that “Page’s advice and suggestion were of the greatest value [to the British]” (Grey, 1925, p. 110). This is the basic divergence predicted by the model. Knowing of Page’s bias, Wilson did not regard him as a particularly credible source of information or advice. Wilson had other sources available to him, most notably House, who often sent Wilson notes disagreeing with Page’s assessments and opinions, particularly during his visits to Britain (Kihl, 1970, p. 639). On the other hand, that same bias made Page uniquely credible to the British government.

Lansing notes in his memoirs that after Bryan’s resignation as Secretary of State in June 1915, Page was a natural candidate to assume the secretaryship. From this position, Page would have become of Wilson’s most consequential advisors. House advocated on Page’s behalf for the position, though perhaps half-heartedly (Gregory, 1970, p. 104). Lansing writes that it was Page’s “prejudice in favor of Great Britain ... [and] lack, or apparent lack, of conformity with the President’s policy of preserving a neutral attitude toward all belligerents that was the obstacle which stood between him and the vacant secretaryship.” He continues: “I believe that the President, on account of friendship for Mr. Page, would have been glad in other circumstances to have named him as Mr. Bryan’s successor” (Lansing, 1935, pp. 15-16). Ultimately, Wilson chose

Lansing, rather than Page, for the position. House records in his diary that Wilson told him he preferred Lansing because he “would not be troublesome by obtruding or injecting his own views” (Gregory, 1970, pp. 104-105). Similarly, Lansing records in his memoirs that Wilson told him that he “was convinced that we [i.e., Wilson and Lansing] were of the same mind concerning international policies” (Lansing, 1935, p. 17). Thus, when selecting a Secretary of State, who would serve substantially as an advisor, Wilson preferred loyalty and similarity of views as suggested by the model.

1.9.6 Implications of the Page Case

Walter Hines Page stood at the center of Anglo-American relations in a tumultuous era, and his decidedly pro-British stance played an important role in the way events unfolded. Critics have derided Page for failing to more thoroughly support Wilson; Grattan (1925) describes Page as “a thoroughgoing Anglomaniac,” who, “systematically frustrated the State Department of his own country and played the British game.” Along similar lines, Coogan (1994, p. 74) complains of the “abysmal quality of Wilson’s diplomatic appointments,” citing the fact that Page was “actively disloyal ... to his country.” Kihl (1970) describes Page as a failure because of his anglophilia and persistent failure to object to the British blockade policy along with his lack of influence on decisions in Washington.

The basic charge in all of these criticisms, and many others like them, is that Page’s conduct was at best irrelevant or at worst highly damaging to American interests because he failed, time and time again, to join with Wilson in demanding a change to the British blockade policy. The model, however, allows us to think through the appropriate counterfactual. In fact, a counterfactual where Page objected to the

blockade, and was credible in doing so, is highly unlikely. Page's credibility stemmed precisely from the fact that his pro-British bias meant he would not have supported Wilson's empty threats on the blockade. The kind of ambassador who would have rubber stamped Wilson's threats would have added little credibility in doing so and would not have mattered very much. On the other hand, when Page did support Wilson, on issues of greater consequence than the basic blockade policy, the weight of the evidence suggests that this support was important. In these cases, a rubber-stamp ambassador with no independent credibility could not have helped. Thus, there is a very real possibility that the British would have overstepped by, say, failing to prop up the price of cotton, leading to costly American action. Even if Britain had ultimately backed down in such a situation, the effect on Anglo-American relations would likely have been quite serious. Thus, much of the criticism of Page seems to miss the mark by evaluating his tenure against an impossible standard.

1.10 Discussion and Conclusion

The argument and evidence presented here show that a biased diplomat can play a substantial role in manufacturing credibility for cheap-talk diplomatic messages, thereby reducing the risk of costly conflict. In some ways, this parallels the well-known argument in political economy for delegating monetary policy to a biased (specifically "conservative") central banker, who has higher credibility than a leader would with respect to inflation (Rogoff, 1985). The diplomatic mechanism is, however, different. In the central banking case, a biased banker solves a commitment problem by allowing a credible commitment to a non-inflationary policy. In the diplomatic case, a biased agent solves an information problem by allowing the credible revelation of information

about a policy's effects. Put another way, there is a consequential difference in what is delegated. In central banking, the leader must delegate control over policy. In the diplomacy case, the leader must only authorize the diplomat to communicate, and it is not even necessary that the leader refrain from communicating directly (in the presence of a biased diplomat, these messages are simply ignored as less informative).

Within the informational context, the results here emphasize the difference between delegating the diplomatic function and delegating advisory or intelligence-gathering functions. The advisory function (acquiring information) has, to date, received more scholarly attention. In general, the optimal advisor is biased towards his principal, though Johns (2007) shows that this result may change when an advisor serves multiple principals. The divergence between the optimal advisor (biased towards the principal) and the optimal diplomat (biased away from the principal) has important implications for the design of foreign policy institutions. Leaders will benefit from using multiple agents, including advisors biased towards their position and diplomats biased away from it. Some level of bureaucratic conflict between these agents is nearly inevitable, given their divergent preferences.

A fairly clear implication arises from the multiple agent framework: leaders will tend to side with their advisors more often than they side with their diplomats. Within the American context, for example, Rosati and DeWitt (2012, pp. 185-186) write: "Emphasis on overseas experience and identifying with foreign viewpoints is often detrimental to the ability of FSOs [foreign service officers] to operate successfully in the foreign policy maze at home. Often they are accused of allowing the interests of the countries in which they serve to trump U.S. interests. Such behavior often results in labels such as 'gone native', thus other officials in the foreign policy-making process

may therefore not take an FSO's policy positions seriously." This tendency has often led to a fractious relationship between diplomats and the president or other agencies, but the theory suggests that this fractiousness is part of a productive division of labor.

Delegation is also notable in that it is a tool available to any leader. The most commonly-discussed sources of credibility in international relations, notably audience costs (Fearon, 1994) and the signals sent by a domestic opposition (Schultz, 1998), rely on particular regime characteristics that no leader would change merely in return for the diplomatic benefits. Delegation to biased agents, however, allows any leader to enjoy some credibility without altering other arrangements. This makes delegation a more flexible mechanism, adaptable to many circumstances. Thus, despite critics who doubt the value of sending diplomats abroad in an age of easy, instant telecommunications, the practice is likely to endure.

Chapter 2

Willful Ignorance in Coercive Bargaining

As the first North Korean nuclear crisis reached its peak in June 1994, senior American officials held two beliefs. First, they believed, in the words of then Secretary of Defense William Perry, that “the North Koreans would surely lose [a] second Korean War” (Carter and Perry, 1999, p. 128). Second, they believed that North Korean threats to start such a war were credible and feared that the risk of war between the two countries was high. Perry describes this as “a real risk of war.” Lieutenant General Howell Estes, then deputy commander of U.S. Forces Korea, would later recall that, “inside [the military] we all thought we were going to war” (Oberdorfer and Carlin, 2014, p. 240).

These two beliefs appear to clash. If war was certain to end in American victory, then the North Koreans were bluffing when they threatened to start one as no state would intentionally start a war it was certain to lose. This implies that there was no real risk of war and that it was unnecessary for the Americans to concede

anything of value in order to prevent conflict.

Why, then, did the Americans believe war was likely? Quite simply, they feared that the North Korean leadership was ignorant of the military balance. In their joint memoir of the crisis, the lead American negotiators, Wit, Poneman and Gallucci (2004, p. 202) write, “the regime was so insular that there was no clear sense that an accurate picture of reality ... was fully conveyed to the North Korean leader.” American officials feared that the Kims were “briefed by courtiers and sycophants who shrank from telling truth to power.” Consequently, they were “concerned that the North Koreans might act foolishly from miscalculation based on misperception” (p. 202). To the extent that Kim Il-sung and Kim Jong-il were unaware that they would lose a war, they could credibly threaten to fight. The North Korean military was organized with an official goal “to reunify the Korean Peninsula under North Korean control within 30 days of beginning hostilities,” and the leadership might well have believed this was possible (Marine Corps Intelligence Activity, 1997, p. 42). While confident that, in the long-run, a war would lead to the overthrow of the Kim regime, American officials also believed that a North Korean attack would lead to tens of thousands of American casualties and immense South Korean losses before eventually failing (Oberdorfer and Carlin, 2014, p. 247). Consequently, the threat had to be taken seriously.

Ultimately, the crisis ended in a deal known as the Agreed Framework. The core of the agreement called for North Korea to freeze nuclear activity and allow IAEA inspectors to monitor its facilities in return for a commitment by the United States to supply North Korea with two light-water nuclear reactors for electricity (Oberdorfer and Carlin, 2014, p. 279). The promised reactors would cost roughly \$4-5 billion,

although the United States expected South Korea and Japan to pay much of that cost (Oberdorfer and Carlin, 2014, p. 285). Whether or not these American commitments were “worth” the expected benefits of the deal, the United States would not have had to offer anything at all (and would not have feared war) if American officials had been confident that the North Korean leadership correctly understood the military balance. Thus, in effect, the North Koreans reaped a payday in excess of four billion dollars (roughly one fifth of North Korean GDP at the time) because the U.S. believed that the North Korean leadership was sufficiently likely to be ignorant of the balance of power.

The downsides of ignorance in crisis bargaining are obvious. Both rationalist and non-rationalist theories of conflict suggest that inaccurate beliefs are one of the most important causes of war (Blainey, 1988; Jervis, 1988; Fearon, 1995). Consequently, scholars have often viewed ignorance and misperception as tragic consequences of the difficulty of acquiring or processing relevant information. The North Korean case shows something else. At times, a state may benefit from being uninformed. In particular, a poorly informed state can make threats that would not be credible if the state were known to be more knowledgeable, allowing it to extract otherwise unavailable concessions from its opponents.

Ignorance allows a state to believe that fighting is in its interest, even when it is not, possibly forcing an opponent to make concessions in response to what would otherwise be clear bluffs. The ability to credibly make threats through ignorance is advantageous whenever the opponent prefers concessions to conflict. In such cases, the uninformed threats will often generate concessions from an opponent who is forced to either fight or concede. A willfully ignorant state gains because it can obtain

concessions in cases where *neither* side wishes to fight. An ignorant state, however, risks blundering into war in cases where its opponent prefers to fight rather than concede. The formal model developed here shows that, under appropriate conditions, the potential benefit outweighs the potential cost, demonstrating that the decision to be ignorant can be rational.

Willful ignorance need not be total ignorance. Few leaders cut themselves off entirely from information about the world. Instead, willful ignorance is most likely to take the form of a decision to stop collecting additional information. Such decisions are far more common, and the model shows that states have an unfortunate incentive to stop gathering information after receiving optimistic assessments of their prospects in war but to continue gathering information after receiving pessimistic assessments. This asymmetric incentive stacks the deck in favor of war.

Interactions characterized by willful ignorance differ from the traditional model mostly in terms of the defender's motivations. As in the conventional setup, attackers initiate challenges and fight when they are sufficiently likely to benefit from conflict. In the traditional model, defenders are motivated to concede or resist on the basis of their knowledge of the actual state of the world. Given willful ignorance, however, the defender's behavior depends not only on her knowledge of the state of the world, but also on her knowledge about the attacker's beliefs. That is, a defender may concede not because the state of the world is actually favorable to an attack, but only because she fears that her opponent believes that this is the case. I label this dynamic "compellence through ignorance." Such a mechanism operated in the Korean case – American officials did not fear that the North Koreans might *actually* have the capability to conquer South Korea; instead, they feared only that the North Korean

leadership *believed* they could do so. Even in a situation of high confidence about the actual state of the world, this fear of the North Korean beliefs was sufficient to motivate concessions.

The North Korean case ended peacefully, but willful ignorance is important mostly because it may lead to war. Consequently, after presenting the theoretical model, I turn to an extended analysis of the role of willful ignorance in the American decision to invade Iraq in 2003. In brief, the historical evidence suggests that the Bush administration concluded it would prefer war with Iraq to the status quo by September 2002. After this, the administration willfully chose not to gather consequential additional information relevant to its decision to invade Iraq. I argue that this decision was motivated by the desire to achieve “compellence through ignorance,” forcing a regime change short of war, which was the administration’s most-preferred outcome. Instead, Saddam Hussein and his inner circle chose to resist the American demands, leading the United States into a war with many unforeseen, though not unforeseeable, negative consequences.

2.1 Ignorance and Conflict

The role of ignorance as a cause of conflict is well-known. Most notably, ignorance may lead to overconfidence. Once one or both sides have succumbed to overconfidence, they will be substantially less likely to make the concessions needed to avoid conflict. This overconfidence can be a rational result of private information (Fearon, 1995) or a non-rational result of positive illusions that are more easily sustained in environments of limited information (Jervis, 1976; Johnson, 2004). Historical estimates suggest that this dynamic is very common. Blainey (1988, p.

122) famously finds that “wars usually begin when fighting nations disagree on their strength”, while Van Evera (1999, p. 16) finds evidence of “unduly rosy estimates of relative military power ... before the vast majority of wars.”

In effect, ignorance is dangerous because it introduces a risk that states will start wars that they would not rationally initiate if better informed. In the conventional view, ignorance is a tragedy, and ignorant states have every reason to attempt to inform themselves about the true state of world. Rational actors would even pay possibly large sums to learn about the state of the world, allowing for more effective diplomatic strategies (Arena and Wolford, 2012). While the costs of information might sometimes deter its acquisition, actors have every reason to take advantage of available information and often have incentives to attempt to share their own private information with opponents (Fearon, 1994).

While the literature on information and conflict emphasizes the risks of fighting when an informed actor would not rationally do so under complete information, the literature on deterrence has long emphasized the possible benefits of being able to execute irrational threats. Studying strategic situations resembling the game of chicken (i.e., cases where conflict is the worst outcome for both players), Schelling and other deterrence theorists argued that credibly committing oneself to fight, even if an opponent chose to fight, would allow an actor to get its way. By committing to fight, an actor could force on its opponent the “last clear chance” to avoid war, making the opponent concede so as to prevent a mutually disastrous conflict (Schelling, 1966, pp. 43-49). Kahn (2007, p. 291), for example, suggested a player could rip the steering wheel out of his car in a literal game of chicken, so that he could not possibly swerve to avoid collision. Regardless of the underlying mechanism, such commitments can

improve the payoff to the player who makes them.

Ignorance, then, may be advantageous if it has a similar effect to the ability to commit to take sequentially irrational actions. When a state is unaware that fighting will be disadvantageous, its credible threat to do so may force an opponent to make concessions, even if that opponent knows that the uninformed state would fare poorly should a war be fought. Critics have often attacked the idea of precommitment, and the related “threat-that-leaves-something-to-chance” because it is substantively unclear how a state can actually commit to take an irrational action, given the overwhelming incentive to undermine any commitment later on (Zagare and Kilgour, 2000, pp. 31-32). Willful ignorance, as presented here, is a fully rational mechanism. When pre-committed states blunder war, they will desperately attempt to avoid conflict by any means possible at the last minute. When willfully ignorant states blunder into war, they will have no desire to change course.

2.2 Formal Setup and Assumptions

The model developed here follows a traditional sequence of moves for crisis escalation models, differing only in the initial choice to seek information (or not) by the attacker. To define the utilities for fighting, I assume the existence of four possible states of the world, which vary on two dimensions. First, the expected cost of the war varies. I will refer to this dimension as representing whether the war will be short (lower costs for both players) or long (higher costs for both players). Second, the balance of power varies such that either the attacker is strong (and the defender is weak) or the defender is strong (and the attacker is weak). I will refer to the four states throughout using abbreviations – *S* for short wars, *L* for long wars, *A* for strong

attackers and D for strong defenders, where the duration dimension is represented first.

I assume that, in all states of the world, the defender attaches a value of 1 to the status quo and a value of 0 to conceding, while the attacker attaches a value of 0 to the status quo and a value of 1 to concessions granted by the defender. Let $U_a(x)$ denote the attacker's utility for fighting in a state x , and $U_d(x)$ denote the defender's utility for fighting in a state x . I assume that these satisfy the following properties:

$$U_a(SA) > 0 > U_a(SD) > U_a(LA) > U_a(LD)$$

$$U_d(SD) > 0 > U_d(SA) > U_d(LD) > U_d(LA)$$

These assumptions imply, first, that there is no state of the world in which both sides prefer fighting to capitulating. Substantively, this is likely not true in all cases, but the assumption ensures that conflict never occurs under complete information, focusing the model on the informational dynamic of interest. Second, the assumptions imply that, all else equal, each side prefers fighting when it is strong to fighting when it is weak and fighting a short war to fighting a long war. Third, I have assumed that each side prefers a short war when it is weak to a long war when it is strong; that is, each side prefers a low-cost defeat to a pyrrhic victory. This assumption is equivalent to assuming that the costs of a long war are sufficiently high.

Given these states of the world, I assume the following sequence of moves:

1. Nature chooses the state of the world: SA with probability $q(SA)$, SD with probability $q(SD)$, LA with probability $q(LA)$ and LD with probability $q(LD)$.

These probabilities are common knowledge. The defender observes the state of

the world.

2. The attacker receives a noisy signal about the state of the world, which I call the initial intelligence report. The defender also observes this signal. Denote by $p(x)$ the probability placed on state x after receiving the intelligence report.
3. After observing the initial intelligence report, the attacker chooses whether or not to gather additional information and the defender observes this choice. For simplicity, I assume that if additional information is gathered, then the attacker learns the true state of the world with certainty.
4. The attacker chooses whether or not to challenge the defender. If no challenge is issued, the defender retains the good and the game ends in utility $(0, 1)$. If a challenge is issued, the game continues.
5. The defender chooses whether to concede or resist. If she concedes, the game ends in utility $(1, 0)$. If she resists, the game continues.
6. The attacker chooses to back down, ending the game in utility $(0, 1)$ or to fight, in which case the game ends in the state-dependent conflict payoffs described above.

As a convenience, I further assume that the attacker does not challenge when indifferent (i.e., the attacker does not challenge if the expected utility for challenging is zero). This is not an essential assumption, but it ensures that the complete information equilibria are unique. I also have not assumed the existence of any cost to the attacker for backing down; omitting any such cost ensures a focus on the informational mechanism, rather than on alternative dynamics involving audience costs.

I assume here that gathering information is free. This is certainly not true – intelligence gathering is both difficult and expensive. However, incorporating such costs would only discourage information gathering by the attacker. By assuming that information is free, I ensure that the attacker has a maximal incentive to be informed. Thus, the attacker will only decline to gather information (thereby risking war) when he actually does not wish to be informed.

Finally, I assume that the defender knows what the attacker has learned. This is generally plausible because states gather the vast majority of their intelligence overtly. As CIA Director Allen Dulles noted in 1947, “Because of its glamour and mystery, overemphasis is generally placed on what is called secret intelligence ... **the bulk of our intelligence can be obtained through overt channels**, through our diplomatic and consular missions, and our military, naval, and air attachés in the normal course of their work [emphasis added].” Scholars concur, with common estimates of the contribution of overtly-collected intelligence to final intelligence products ranging from 80% to 90% (Gibson, 2013, p. 125). On the high-end, former Deputy Assistant Director of Central Intelligence for Analysis and Production William Nolte has stated that 95-98% of U.S. intelligence information comes from overt collection (Gibson, 2014, p. 10). Even much of what is generally considered covert collection is hardly concealed from the opponent. Steele (2007, p. 102), for example, notes that the United States has “relied almost exclusively .. on ‘official cover’ for [its] spies and known trajectories for [its] satellites.” As a result, he concludes that it is a “basic fact that what we do know has been compromised.”

Of course, the residual information may be particularly important in crises. Attackers might secretly gather information then feign ignorance, and an incentive

to do so exists in the model. In order to focus the model on the possibility of “compellence through ignorance” rather than the possibility of “compellence through feigned ignorance,” I abstract away from this feigning dynamic and assume that no covert learning takes place. An extension to the model described below shows that the results here are robust to covert learning unless the probability of successful covert learning is too high, so the model is fully robust to the many cases where covert collection is prohibitively costly or risky.

Even when states do manage to learn something consequential by covert means, they will have great difficulty concealing what they know. States will often face an incentive to act on what they learn, revealing their knowledge. Perhaps more importantly, in open societies, leaks to the press and actions by informed domestic political opponents are likely to reveal the results of any consequential covert learning (Schultz, 1998). Notably, the potentially problematic form of covert learning for the model comes if a state secretly learns that conditions are *unfavorable* for war then feigns ignorance. As will be discussed in the Iraq case, this is precisely the situation where leaks are most likely. On balance, then, it is usually plausible to model a situation where the defender knows what the attacker has learned.

2.3 Equilibria

Having addressed the core assumptions of the model, I solve the game for its perfect Bayesian equilibria, henceforth simply “equilibria.” The subgame beginning after the attacker chooses to learn the true state of the world has a unique equilibrium; however, for some parameter ranges, the continuation game beginning after the attacker declines to learn the true state of the world has multiple equilibria. In most of these

equilibria, every information set is on the path of play, so standard refinements on off-the-path beliefs do not produce unique equilibria. Most of the results here do not depend on any assumptions about which of these multiple equilibria are played, but I discuss additional assumptions as they become necessary. In keeping with the generic assumptions about the initial intelligence report, I present most of the conclusions here in reference to the beliefs after this report, turning only later to the issue of the report itself. That is, plausible intelligence reports could lead to almost any form of updating, so I focus on what will happen in response to any given posterior beliefs.¹

Before proceeding to the full game, it will be useful to briefly analyze the subgame that begins when the attacker chooses to be completely informed. Notably, this subgame is certainly peaceful. If the attacker chooses to be completely informed, then he will only fight in the state SA as this is the only state of the world where fighting is better than living with the status quo. Knowing this, the defender will always concede in the state SA but would resist challenges in all other states, secure in the knowledge that the attacker would back down after resistance. Given this, the attacker challenges only in the state SA . Consequently, the attacker receives concessions from the defender in the state SA and nothing in all other states. The defender then, is able to maintain the status quo in the states SD , LA , and LD . Recall that in the latter two states, the defender does not actually prefer fighting to conceding, but she is able to preserve the status quo because the attacker cannot credibly threaten to use force.

If, however, the attacker chooses not to learn the state of the world, then there are several possible equilibria of the continuation game. For both sufficiently

¹On a theoretical level, this is equivalent to essentially opening the game with move 2 in the structure described above where $p(x)$ defines common priors. On a substantive level, however, it makes more sense to think in terms of the results of initial intelligence gathering.

high and sufficiently low $p(SA)$, the equilibrium of the continuation game is unique; consequently, the equilibrium of the full game is also unique. The first two propositions depend only on these ranges with a unique equilibrium.

Proposition 1 Given $p(SA) < p(SD) * \frac{-U_a(SD)}{U_a(SA)}$, in the unique equilibrium of the game, the attacker chooses to learn the true state of the world. After learning, the attacker challenges and the defender concedes in the state SA ; otherwise, the attacker does not challenge. Off the path of play, if the attacker chose not to learn, he would never challenge and the defender would always resist. There is no risk of war in this equilibrium.

This equilibrium is best seen as a baseline for the others. The basic reasoning is fairly clear. After receiving his intelligence report, the attacker learns that the state of the world is relatively unlikely to be SA – that is, either he is weak or the war will be long and costly. Given this, fighting is likely to prove to be a blunder. By learning the state of the world, the attacker ensures that he will not blunder into war. The attacker either will learn that the state is SA and then the defender will concede, or he will learn that the state is not SA and he will not receive concessions but will be spared a blunder into a costly war. On the other hand, if the attacker chose not to learn, then given his relatively pessimistic beliefs, he would simply back down after resistance, never receiving anything. The defender's strategy off the path of play is also intuitive here. She is aware that the attacker believes he is unlikely to be sufficiently resolved to fight. Consequently, a pooling strategy, in which the defender simply resists all challenges, will force the attacker to back down. On the path of play, after the attacker learns, the game simply proceeds as described above.

Proposition 2: Given $p(SA) > \frac{-p(LD)*U_a(LD)-p(SD)*U_a(SD)-p(LA)*U_a(LA)}{U_a(SA)}$ and

$p(SD) < \frac{p(LA)*U_a(SA)+p(LD)*U_a(SA)}{-U_a(SD)}$, in the unique equilibrium of the game, the attacker chooses not to learn the state of the world, then always challenges. The defender resists all challenges in the state SD and some challenges in the state SA , while always conceding in the states LA and LD . The attacker fights after resistance with positive probability.

Here, the “compellence through ignorance” dynamic operates, although it comes at the cost described above – war sometimes occurs. In the previous parameter range, where the initial intelligence indicated that the state SA was relatively unlikely, the defender could deter the attacker from challenging by always resisting. Within this range, however, if the defender always resisted, then the attacker would always fight because he is sufficiently likely to be in the state SA , where he prefers fighting. In this range, then, the attacker will respond to an “always resist” strategy with an “always fight” strategy. For the defender, however, an “always resist” strategy is not a best response to an “always fight” strategy because the defender prefers not to fight in the states SA , LA , and LD . If the attacker plays an “always fight” strategy by the attacker, then fighting will always occur after resistance, the defender cannot rationally resist in these states against the “always fight” strategy.

While the defender cannot rationally resist all threats, she also cannot resist only in the state SD (i.e., the one state in which she actually wishes to fight rather than concede). If the defender resisted only in the state SD , then the attacker would always back down in response to resistance, so that the defender would then deviate and resist in every state. By a similar logic, the defender cannot resist only in the states where the attacker does not wish to fight (SD, LA, LD) because any such strategy ensures that the attacker will back down after resistance, thus the defender would

choose to resist even in the state SA . Consequently, the defender must sometimes resist in the state SA in any equilibrium. In point of fact, an equilibrium can only exist when the defender resists with a probability that makes the attacker indifferent between fighting and backing down, and the attacker must mix between fighting and not (as discussed above, “always fight” cannot be played in equilibrium; “never fight” would trigger “always resist”, which as described is not an equilibrium either).

Given the risk of war, why does the attacker choose not to learn? Importantly, in this equilibrium, the defender always concedes in the states LA and LD . That is, the attacker achieves “compellence through ignorance” in these cases – although the attacker would not fight in these cases under complete information, his strategy generates a sufficiently large risk of war that the defender is forced to concede. Provided it is not sufficiently likely that the defender is actually willing to fight, the possibility of generating compellence through ignorance is sufficient to offset the cost of the cases in which the attacker is forced to fight. Thus, the attacker will remain willfully ignorant.

Proposition 3 Given an intermediate range of $p(SA)$ and $p(SD) < \frac{p(LA)*U_a(SA)+p(LD)*U_a(SA)}{-U_a(SD)}$, multiple equilibria exist. For appropriate parameter ranges, equilibria exist in which the attacker declines to learn and war occurs with positive probability in each state of the world.

The intuition behind the choice to be uninformed here is the same as that for proposition 2. The intermediate range discussed here simply extends into cases where the defender’s strategy may lead to resistance in the states LA and LD . In the middle range, the attacker is less optimistic than in the higher range supporting proposition 2, so the defender may be able to resist in a broader range of circumstances than those

described above.

For an appropriate intermediate parameter range, there is what I label a “type 1” equilibrium, which is exactly the same as the one described in proposition 2. Here, the defender always resists in the state SD and sometimes resists in the state SA . Second, for an appropriate range, there is a “type 2” equilibrium in which the defender always resists in the states SD and SA while sometimes resisting in the state LD . Third, for an appropriate range, there is a “type 3” equilibrium in which the defender resists in the states SD , SA , and LD while sometimes resisting in the state LA . Again, conditional on appropriate values of the exogenous parameters, these equilibria may be better for the attacker than choosing to be informed because the reward of obtaining “compellence through ignorance” exceeds the risk of sometimes fighting. As above, in all of these equilibria, the attacker sometimes fights and sometimes backs down after the defender resists.

Within this middle range, however, there is always an additional equilibrium in which an uninformed attacker would never challenge and the defender would always resist if challenged. Thus, on the path of play, the attacker chooses to be informed. This makes it difficult to generate useful comparative statics predictions because the overall conclusions of the model are indeterminate within this range. Forward induction, however, appears to rule out the “do not learn - never challenge” equilibrium. The decision to learn provides an “outside option” for the attacker and foregoing this outside option transmits a signal that should lead to coordination on particular equilibria in the continuation game. The attacker would always do better by choosing to learn at his initial move if he anticipates playing the “do not learn - never challenge” equilibrium; he can do better by remaining ignorant than by learning only if he

anticipates playing an equilibrium in which he fights with positive probability. Given this, whenever equilibria exist that give the attacker a higher payoff than learning, the players should coordinate on one of these. Under such reasoning, then we can rule out the “do not learn - never challenge” equilibrium, which is sufficient to obtain the proposition below.

Proposition 4: An optimistic initial intelligence report reduces the probability that the attacker will choose to learn the true state of the world.

Thus far, I have analyzed only the consequences of beliefs formed after the initial intelligence report, while keeping the character of that report fully generic. Plausible intelligence reports might push the attacker’s beliefs in nearly any direction, but I will focus here on the consequences of an “optimistic” intelligence report, defined as one that leads to posterior beliefs $p(SA) > q(SA)$ and $p(SD) \leq q(SD)$. In other words, such a report indicates that a rapid victory for the attacker is more likely than the prior while a rapid victory for the defender is no more likely. Given the forward induction argument described above, I show in the appendix that the attacker will choose not to learn whenever $p(SD) < \min(p(SA), p(LA) + p(LD)) * \frac{U_a(SA)}{-U_a(SD)}$. While this has a threshold form (i.e., it is satisfied or not), if we consider arbitrary priors, then the probability of satisfying this expression (weakly) increases after an optimistic initial intelligence report.

A similar static can be obtained without recourse to the forward induction argument above. It is sufficient to assume that, in the event of multiple equilibria, the probability that the “do not learn - never challenge” equilibrium is selected is not decreasing in $p(SA)$ and is not increasing in $p(SD)$. Thus, for example, the static above holds in the event that we assume that “do not learn - never challenge” is always

(rather than never) played when there are multiple equilibria in the continuation game, or if we assume that this equilibrium is played with some constant probability in the event of multiple equilibria.

This asymmetric incentive to learn follows directly from the propositions above. When the state of the world is likely favorable (as indicated in an optimistic report), the attacker rationally chooses not to learn, sometimes achieves “compellence through ignorance,” and sometimes fights. When the state of the world is likely unfavorable, the attacker cannot threaten to fight and thus cannot achieve “compellence through ignorance.” In these cases, the attacker can do no better than to learn the state of the world, which may confirm that conditions are unfavorable (in which case the attacker gets nothing) but will sometimes reveal that the state of the world is favorable for attack, allowing the attacker to obtain certain compellence. That is, given pessimistic beliefs, the payoff to not learning is simply zero because the attacker will not challenge. The payoff to learning is simply the probability that the attacker learns that the state of the world is SA ; while pessimistic attackers believe they are unlikely to learn this, some chance at achieving compellence is always better than nothing.

The asymmetric learning incentive is uniquely dangerous. In a general sense, attackers will choose to confirm that they do not want to fight when they already suspect this, while declining to confirm that they want to fight when they already believe this. The effect closely resembles a kind of fully rational confirmation bias – leaders have an incentive to avoid information that might challenge their existing belief that a war will be short and victorious. Cognitive or institutional confirmation bias will only tend to reinforce the core result, preventing leaders from learning in precisely those cases where the learning process would avert war.

Proposition 5 The results of the above propositions are robust to the possibility that the attacker covertly learns the state of the world with some probability r , given $r < \frac{U_d(SA) - U_d(LD)}{U_d(LD) * U_d(SA) - U_d(LD) - U_d(SA) + 1}$.

This proposition is a simple robustness check. Covert learning is potentially problematic because of the incentive to feign ignorance. That is, attackers who have covertly learned that the state of the world is LA or LD have an incentive to conceal this knowledge and initiate challenges if those challenges have some probability of forcing the defender to concede (i.e., some probability of achieving “compellence through feigned ignorance”). In general, the possibility that the attacker is covertly informed will increase the defender’s incentive to resist challenges in the states LA and LD because of the chance that resistance will force a covertly informed attacker to back down. If attackers are sufficiently likely to be covertly informed, this incentive will become overwhelming, eliminating the possibility of compellence through ignorance because the defender will always resist.

On the other hand, if attackers are able to become covertly informed, but this occurs with lower probability, then the core results here are unchanged. While attackers will feign ignorance, sometimes winning concessions as a result, the possibility of feigning does not lead the defender to change her strategy given r as described above. The equilibria with covert learning described in the appendix parallel the three types above with only a slight difference. Covertly informed attackers will initiate challenges in any state of the world that yields a positive probability of concessions (and will always initiate challenges in the state SA). When resisted, attackers who have covertly learned that the state is LA or LD always back down and attackers who have covertly learned that the state is SA always fight. Both the defender and

uninformed attackers behave in the same way as above (although there is a small change in the details of the attacker's mixed strategy). The calculated threshold on the probability of covert learning is the value needed to ensure that the defender will not change her strategy. In short, covert learning introduces some additional mechanisms but does not threaten the core results here.

2.4 Willful Ignorance and the Iraq War

In this section, I apply the insights of the theoretical model to the American decision to invade Iraq in 2003. The Bush administration started the war with two consequential false beliefs – that the Iraqis possessed weapons of mass destruction (WMD) while actively pursuing more, and that post-war reconstruction in Iraq would be easy, requiring only a small American military presence and no significant risk of insurgency. The first of these beliefs (about WMD) most directly affected the American valuation for the status quo, rather than war. In the formal model, the value of the status quo is fixed at 0 and the values of the various war outcomes are expressed relative to this, but the difference between a change in the value of the status quo and a change in the cost of war is theoretically inconsequential. That is, factors that make the status quo less attractive are equivalent to a reduction in the cost of war.²

In the years since the war, two basic narratives have emerged to explain these false beliefs, which might be labelled the “mistake” thesis and the “lie” thesis. Under

²In point of fact, Iraqi (non)possession of WMD also had direct effects on the costs of the war. Finding weapons would have bolstered both domestic and international support for the conflict, most likely leading to a substantial increase in Bush's popularity and making it easier to attract international support for the reconstruction effort.

the mistake thesis, the intelligence community, and especially the CIA, failed Bush by providing him with faulty information about Iraq. Given this information, Bush made the prospectively correct (though retrospectively mistaken), choice to use force against Iraq, and as Bush writes in his memoirs, “no one was was more shocked or angry than [he] was when we didn’t find the weapons” (Bush, 2010, p. 262). The “lie” thesis asserts, in the words of Paul Krugman, “America invaded Iraq because the Bush administration wanted a war. The public justifications for the invasion were nothing but pretexts, and falsified pretexts at that” (Krugman, 2015). In an extreme variant, this suggests that the Bush administration actually held mostly accurate beliefs and lied about them. Each of these narratives has empirical shortcomings, but these views are also notably non-strategic; that is, they do not account for either actual or anticipated Iraqi behavior. Here, I argue that this is a central missing piece in explaining the path to war.

Using the theory of willful ignorance developed above, I provide a new narrative of the Iraq war, suggesting that it resulted from neither a lie nor a mistake, but rather from a gamble. In brief, I argue that the Bush administration chose ignorance, in the manner theorized above, as part of a broader goal of coercing Saddam Hussein without actually fighting. By September 2002, the administration had reached the conclusion that war with Iraq would likely result in a quick, decisive victory and that the value of removing Saddam Hussein and destroying his WMD amply justified the costs of fighting and reconstruction. Around this time, the Bush administration deliberately decided to cut off information gathering and attempted to shut down debate about the wisdom of an invasion. The administration’s knowledge as of September 2002 made the threat to use force against Iraq credible, and the administration hoped that

this credible threat would either force Saddam Hussein to flee into exile or induce an anti-Saddam coup. After the attempt at coercion failed, the administration, ignorant substantially by its own choice, chose to fight. As predicted by the mixed strategy equilibria of the model, both sides were uncertain until the last moment about whether the other side would actually fight. While hard evidence about Iraqi motives is scarce, this interpretation suggests that Saddam Hussein's decision to resist American demands was not an irrational response (as both the "mistake" and "lie" theses imply through their assertion that war was inevitable) but actually a strategically rational one.

I present the historical analysis here thematically rather than chronologically. First, I examine the evolution of the two consequential false beliefs held by the Bush administration – that post-war situation in Iraq would be relatively favorable and that Iraq possessed WMD. I consider each of these beliefs separately, showing that the Bush administration willfully chose (partial) ignorance by deliberately shutting down valuable information channels. That is, I first establish that the administration engaged in *willful* ignorance. Second, I examine American beliefs about the possibility of Saddam Hussein leaving power without a war, either voluntarily or through a coup. I establish that administration officials believed that this was reasonably likely to happen in response to a credible American threat to use force and that it was the most-preferred outcome for senior officials. Third, I conclude the case by examining the possibility of covert learning and, to the extent permitted by the evidence, the nature of Iraqi beliefs. This argument about covert learning focuses partly on choices that were inherently observable, but much of the difficulty of covert learning came from the risk of leaks. Even if information could have been obtained without Iraqi

knowledge (and some important information almost certainly could have been covertly obtained), the administration knew that it was quite likely to leak into the American or British media, particularly if it undermined the case for war. Thus, covert learning was unlikely.

2.4.1 Willful Ignorance on Force Levels and Post-War Conditions

At the end of the Clinton administration, the American plan for a war against Iraq, OPLAN 1003-98, envisioned the need for over 400,000 American troops and a post-war occupation lasting up to ten years (Gordon and Trainor, 2006, p. 26). This plan provided the basis for the first briefing about an invasion provided to Secretary of Defense Donald Rumsfeld in the fall of 2001. As briefed to Rumsfeld, executing the plan would require up to 500,000 troops for an invasion and post-war stabilization (Gordon and Trainor, 2006, p. 4). Such a high force level would make operating against Iraq both costly and difficult, so consistent with Proposition 4 above, Rumsfeld asked for a re-appraisal.

Rumsfeld's request was reasonable, and it was rational to believe that incorporating new information would change the required force levels. The existing plan was outdated. Gordon and Trainor (2006, p. 4) characterize it as "ripe for review" while General Tommy Franks, then commanding CENTCOM, described it as "stale, conventional, predictable" (Franks, 2004, p. 331). Notably, the plan did not reflect changes in American or Iraqi capability over time. Importantly, it also assumed that Iraq, rather than the United States, would be the aggressor in any hostilities (Gordon and Trainor, 2006, p. 4) and worked from Clinton-era strategic objectives (Franks,

2004, p. 331). Revising the plan could certainly lead to a very different conclusion, although Rumsfeld did pressure the military in a certain direction when requesting the revision, stating that ‘he did not see why more than 125,000 troops would be required’ (Gordon and Trainor, 2006, p. 4). Franks updated the plan several times in response to Rumsfeld, before briefing a version with a peak level of 275,000 troops on December 19 (Gordon and Trainor, 2006, pp. 28-29). On December 28, Franks presented essentially this plan to President Bush, although the briefing assumed some foreign support, thus requiring only 230,000 American soldiers (Woodward, 2004, p. 58). While military planning continued after this point, the peak numbers and essential assumptions remained relatively constant. In addition to the reduction in peak troop levels, the plan envisioned rapid reductions from the peak level. The August 2002 version, for example, envisioned only 25,000 troops on the ground two years after the invasion with only 5,000 troops remaining a year to eighteen months thereafter, notably different from the substantial ten year occupation force in the earlier concept (United States Central Command, 2002).

In part, the reductions between the Clinton-era plan and the Franks plan resulted from growth in American military capabilities vis-à-vis the Iraqi military and the change in the objectives of the campaign, but throughout the planning process peak troop numbers reflected the force levels needed to stabilize Iraq after the fall of the regime, rather than to conduct the invasion (Bensahel et al., 2008, p. 6-7). A RAND study conducted after the war concluded that the Bush administration’s planning involved a set of assumptions that “downplayed post-Saddam challenges,” particularly the possibility of an insurgency (Bensahel et al., 2008, p. 234). The RAND authors find that the “prevailing assumptions [about favorable post-war conditions] were never

seriously challenged” within the administration (Bensahel et al., 2008, pp. 236-237). The failure here is important because of public challenges to these assumption at the time. Perhaps most notably, Army chief of staff Erik Shinseki testified to Congress that “several hundred thousand soldiers” would be needed to stabilize Iraq (Gordon and Trainor, 2006, p. 102), while a group of Army War College analysts drew attention to the possible development of an insurgency in a widely-circulated report (Isikoff and Corn, 2006, p. 198). As the RAND study notes, the prevailing assumptions within the administration were optimistic, but they were “not unreasonable” (p. 236); thus, the question is whether the failure to seriously challenge these assumptions reflected a rational form of willful ignorance.

One possibility, of course, is that the Bush administration anticipated a challenging post-war environment and the need for more troops but lied about these facts in order to “sell” the war. This interpretation; however, cannot explain post-invasion behavior. Even if the Pentagon leadership wished to deceive Congress or the public about the likely cost of the war, it had no reason to maintain such a deception once the war started. If Rumsfeld had found the scenario described by Shinseki or the War College analysts probable, then he had every incentive to send additional troops in the post-conflict phase; instead, Rumsfeld actually cancelled some of the planned troop deployments *after* the invasion began (Gordon and Trainor, 2006, pp. 460-461).

The other alternative to rational willful ignorance is that Bush administration may have irrationally dismissed dissent as the result of ideological or cognitive biases. Notably, Thomas White, who served as Secretary of the Army in the run-up to war, later told the journalist George Packer that the view of senior officials on post-war conditions “was almost theological in nature” (Packer, 2005, p. 114). While there is

little doubt that wishful thinking played some role in administration assessments, the overall record suggests a rational process. Senior Bush officials, notably Rumsfeld, Wolfowitz, and Cheney, entered office with the view that the post-war environment would be favorable and that an operation against Iraq could be conducted with limited deployments. This optimistic prior was not, however, their only source of information. First, a group of influential Iraqi exiles shared the administration's view. Second, and more importantly, the internal intelligence analysis produced at CENTCOM supported the optimistic conclusions, notably downplaying the possibility of an insurgency (Hooker, 2005, p. 89). While this analysis was produced under time and resource constraints, the result was a genuine intelligence product, reflecting the available information (Hooker, 2005, pp. 7-10). Only these CENTCOM analysts had access to the actual war plan when forecasting post-conflict scenarios. The administration chose to withhold the plan from both the intelligence community (Pillar, 2011, p. 56) and the Department of Defense office charged with post-war planning – the Office of Reconstruction and Humanitarian Assistance (ORHA) (Bensahel et al., 2008, p. 67). CENTCOM officers were even prevented from sharing the plan with, and soliciting advice from, General Anthony Zinni, Franks's predecessor at CENTCOM (Packer, 2005, p. 119). While in retrospect, the administration should have taken the analysis of its critics more seriously, the decision not to share the war plan or other intelligence information outside a narrow group rationalized the decision to dismiss outside views as uninformed. That is, an optimistic prior supported by the only analysis informed by one of the most important variables for forecasting future outcomes (the war plan) would rationally generate the sort of beliefs that senior figures held.

In addition to withholding the war plan, the administration deliberately worked

to minimize additional analysis of post-war conditions. It *never* requested a high-level intelligence assessment of the post-war situation in Iraq. In September 2002, Senators Levin, Durbin, and Graham requested a National Intelligence Estimate covering the post-war occupation of Iraq, but Director of Central Intelligence George Tenet refused to produce one (Graham and Nussbaum, 2008, p. 180). A similar internal request from the ORHA for an interagency assessment was also refused (Woodward, 2006, p. 130). Senior officials also deliberately hamstrung interagency planning. For example, when ORHA head Jay Garner hired Tom Warrick, who had led the State Department's "Future of Iraq" project, Cheney ordered Garner to fire him (Packer, 2005, pp. 123-125).

While there were limits to the "hard" information that the United States could have collected about post-war conditions, no attempt to collect such information was made. As a CIA retrospective notes, "the Intelligence Community's analysis of post-Saddam Iraq rested on little hard information." This lack of information was substantially the result of collection objectives that did not prioritize Iraq "until late 2002," and which "emphasized ... support of US military operations," rather than focusing on data useful for analyzing likely post-war outcomes (Kerr et al., 2005, pp. 48-50). Like the decision to withhold the war plan, the decision not to focus analytic or collection resources on post-war outcomes prevented the development of convincing, high-quality analysis of the war's likely aftermath.

2.4.2 Willful Ignorance and Weapons of Mass Destruction

Before Bush entered office, the consensus view of the U.S. intelligence community held that Iraq was actively pursuing weapons of mass destruction and maintained

stockpiles of chemical and biological weapons (Senate Select Committee on Intelligence, 2004, p. 144). In stark contrast to its active interest in updating the pessimistic Iraq war plan, the Bush administration never requested a high-level estimate to update the December 2000 Intelligence Community Assessment “Iraq: Steadily Pursuing WMD Capabilities,” whose title indicates its key conclusion. The now infamous October 2002 National Intelligence Estimate on Iraq’s WMD programs was, in fact, prepared at the request of Democrats on the Senate Intelligence Committee, rather than the administration (Graham and Nussbaum, 2008, p. 180). The 2002 estimate was somewhat “stronger” than the estimates presented at the end of the Clinton administration, notably with respect to nuclear weapons, but the general tone and conclusion of the analysis remained constant between December 2000 and October 2002.³

In addition to the fact that the Bush administration never requested a high-level estimate on Iraqi WMD, it made few efforts to increase intelligence collection on the topic aside from pressure on the intelligence community to produce a “smoking gun.” The administration made a large-scale push through both the NSA and CIA to improve intelligence collection targeting Iraq starting in 2002, but this collection

³On nuclear weapons, the Clinton-era analyses concluded that Iraq had not reconstituted its nuclear weapons program, but had merely “retained the foundation” to do so. In contrast, the 2002 estimate concluded that Iraq had reconstituted its nuclear program as early as 1999 (Senate Select Committee on Intelligence, 2004, pp. 84-86). The analyses concurred, however, on chemical and biological weapons. The first of the “key judgments” of the 2002 NIE held: “We judge that Iraq has continued its weapons of mass destruction (WMD) programs in defiance of UN resolutions and restrictions. Baghdad has chemical and biological weapons as well as missiles with ranges in excess of UN restrictions; if left unchecked, it probably will have a nuclear weapon during this decade.” The statement “Baghdad has chemical and biological weapons” would later attract immense criticism, but did not differ from the December 2000 conclusion. The December 2000 ICA reported, “Iraq retains stockpiles of chemical and biological agents and munitions.” (Senate Select Committee on Intelligence, 2004, p. 144). Likewise, while the 2000 ICA did not conclude that Iraq had reconstituted its nuclear program, it did conclude that this was possible and that production of a weapon would take five to seven years after the program was reconstituted, which is consistent with the timeline offered in 2002.

focused on supporting the military campaign. The administration approved a \$200 million collection plan for the CIA that called for placing up to 360 CIA officers in the country, but the seven objectives of this plan did not even reference WMD or post-war conditions. Instead, the plan focused exclusively on tactical and operational support for a future American invasion (Woodward, 2004, pp. 108-109). Likewise, the NSA started a \$300-\$400 million Iraq effort focused on “battlefield intelligence” (Woodward, 2006, p. 99), but assigned only 29 employees to WMD (Aid, 2010, p. 242). Of course, the most notable failure to seek information would come later, when the Bush administration chose to break off UN inspections.

Both contemporary and retrospective evidence strongly suggest that the Bush administration had decided on a course of action by September 2002. Public statements emphasized the goal of regime change by this point, and according to Bob Woodward, Bush informed his inner circle that this goal was paramount in September. Woodward (2004, p. 180) writes, “Bush said he wanted an outcome – Saddam out and the weapons of mass destruction eliminated. That was the goal, that was the commitment.” At this point, the administration had reached the conclusion that, if necessary, it would pursue this goal by force. While Bush did agree to allow weapons inspections through the United Nations, the goal was, as even Bush states in his memoirs, to build “the international support [needed] to execute the military plan,” rather than to pursue genuine information about Iraqi WMD (Bush, 2010, p. 239).

In principle, the inspections could have served as an overt, conclusive method for establishing whether or not Iraq had WMD, but the administration intended them as a way to win support in the Security Council or induce a regime change and not as a way to gain information. Cheney writes in his memoirs that the goal was to

establish “an aggressive inspection regime – a set of inspections so intrusive they might result in toppling Saddam” (Cheney, 2011, p. 389) and Bush described the purpose of the inspections to Bob Woodward in similar terms in December 2003 (Pincus, 2010). The administration also hoped that Saddam might refuse the inspections, establishing an unambiguous violation of the Security Council’s resolutions; Hans Blix, who ran the UN inspections, notes at several points in his memoir that he suspected the true American motive was to “achieve a provocation” (Blix, 2004, p. 93), while contemporary reporting emphasized that the administration “would far prefer a bold rebuff by Mr. Hussein” to compliance (Weisman, 2002). Officials in Washington believed that such a rebuff would allow them to obtain the full support of the Security Council, immensely bolstering the threat against Iraq. Hussein, however, decided in late 2002 to give full access to the UN inspectors and Iraq supplied no clear provocation (Woods et al., 2006, pp. 92-93).

Reinforcing the view that the United States did not aim to gain information from the inspections, American officials failed to share much of their intelligence with the inspectors. American intelligence officials indicated to the Senate Intelligence Committee in January 2003 that they had identified 550 WMD-related sites, including 148 “top suspect sites.” Before the end of inspections, the United States had passed information on only 67 sites to the inspectors (Senate Select Committee on Intelligence, 2004, pp. 407-409). As Senator Levin argued in an interview with *The Washington Post* at the time, “When they’ve taken the position that inspections are useless, they are bound to fail... We have undermined the inspectors since the beginning” (Lynch and Priest, 2003).

On March 7, 2003, Blix and Mohamed ElBaradei, director of the IAEA, reported

on the inspections to the Security Council. Both noted increases in the level of Iraqi cooperation and expressed optimism about the progress of inspections. Blix stated that completing his work “would not take years, nor weeks, but months.” ElBaradei stated that he would be able “in the near future to provide the Security Council with an objective and thorough assessment of Iraq’s nuclear-related capabilities” (United Nations Security Council, 2003). After the testimony, administration officials took to the press, describing the inspections as useless and demanding immediate action without additional time for the inspections to conclude. On March 16, for example, Cheney appeared on *Meet The Press* where he characterized the possibility of allowing thirty to sixty days of additional inspections as “a non-starter.” Pressed further by host Tim Russert, he described inspections as informationally useless, saying: “We know that based on intelligence that he [Saddam Hussein] has been very, very good at hiding these kinds of efforts.... And I think if you look at the track record of the International Atomic Energy Agency and this kind of issue, especially where Iraq’s concerned, they have consistently underestimated or missed what it was Saddam Hussein was doing.”

On March 17, Bush issued his final ultimatum to Iraq. After reiterating the argument that allowing additional time for inspections would accomplish nothing, he stated his core demand: “Saddam Hussein and his sons must leave Iraq within 48 hours. Their refusal to do so will result in military conflict” (Bush, 2003). The administration’s expressed view, that the inspections could not succeed because Saddam Hussein found it too easy to deceive the inspectors, deserves some attention. Naturally, it would have been inconceivable for the administration to state the rationale theorized here (i.e., “We do not wish to know with certainty whether or not Saddam Hussein has weapons

of mass destruction because this information might undermine the credibility of our coercive threats”), but if the administration genuinely believed that the inspections could not work, then this would have been a genuine rationale for calling them off. There is pre-crisis evidence, however, that the administration believed in the potential of inspections. Throughout the 2000 Presidential campaign, for example, Cheney, who was the harshest critic of the inspectors in 2002-2003, described the post-Gulf War inspections as highly successful. In September, he described them as “very robust,” arguing, “we had people in there all the time, checking out, *making certain* that he [Saddam Hussein] wasn’t going back trying to rebuild his biological and chemical capabilities [emphasis added].” In the October Vice Presidential debate, Cheney developed the same point, stating, “A very robust inspection regime was in place under the U.N. auspices and it was able to do a good job of stripping out the capacity to build weapons of mass destruction.” Even if the administration genuinely believed that inspections could not conclusively establish that Saddam Hussein had disarmed, it is hard to imagine that administration officials believed that inspections could not conclusively prove that the weapons *did* exist. Thus, calling off the inspections represented a genuine choice to forego information.

2.4.3 The Possibility of Iraqi Concessions

The two preceding sections establish that by the late summer of 2002, the Bush administration had determined that the benefits of removing Saddam Hussein from power by force outweighed the costs. After this point, the administration attempted to shut down additional information gathering with considerable success. Many other writers have reached a generally similar view; Senator Bob Graham, then the top

Democrat on the Senate Intelligence Committee, expresses the same conclusion in his memoir, writing: “It seemed clear to me [as of September 2002] that the President and his national security advisors, particularly those who wore suits rather than uniforms, had made up their minds to go to war and didn’t want to take the chance that additional facts might show that decision to be flawed” (Graham and Nussbaum, 2008, p. 180).

The theory presented here holds a clear explanation for the failure to gather information – the administration’s goal was to force Saddam Hussein from power and do so without fighting if possible. Given a genuine belief that war was better than the status quo, the United States could credibly threaten an invasion, which administration officials hoped would force Hussein out of power without the actual need to fight. The model makes the dilemma of additional information gathering clear. New information might have shown conclusively that war was better than the status quo (i.e., proof of WMD programs and evidence that the post-war environment would be favorable), in which case the pressure on Saddam to concede would have been overwhelming, but additional evidence might also have shown that invasion was worse than the status quo, which would have undermined the threat and allowed Saddam to safely resist American demands. Crucially, this explanation holds only if American officials saw removing Saddam without war as the best possible option and if they believed they were reasonably likely to compel this outcome through credible threats.

The value attached by Bush and his team to removing Saddam Hussein from power even before taking office has been documented extensively elsewhere (Mann, 2004). The core question, then, is the circumstances under which the administration believed this could be achieved short of war, likely through a coup, uprising, or

voluntarily exile. In early 2002, the CIA briefed Bush and Cheney on the possibility of covert action to remove Hussein. According to Bob Woodward, CIA officers made it clear that in order to launch a coup in Iraq, “they would have to say the U.S. was serious and coming with its military.” Without the leverage provided by a credible American threat, no Iraqi would dare to attempt the overthrow of a regime that “was organized ... to stop a coup” (Woodward, 2004, pp. 72-73). While the possibility of a coup without military pressure appeared highly unlikely, American intelligence came to the conclusion that credible threats were, in fact, likely to induce one. In October 2002, for example, *The Washington Post* reported: “Senior intelligence experts inside and outside government have reached a consensus that Iraqi President Saddam Hussein would likely be ousted in a coup led by members of his inner circle in the final days or hours before U.S. forces launch a major ground attack” (Pincus, 2002).

As the war approached, American officials maintained their faith in the possibility of coup or exile. Some of the best evidence for this comes from a conversation between Bush and Spanish Prime Minister Jose Maria Aznar on February 22, 2003 that leaked to the press in 2007. In the conversation, Bush assesses:⁴

There’s a 15 percent chance that at that point [late March] Saddam Hussein will be dead or will have fled. But those possibilities don’t exist until we’ve shown our resolve. The Egyptians are talking to Saddam Hussein. It seems that he’s indicated that he’s willing to go into exile if they let him take \$1 billion and all the information that he wants about the weapons of mass destruction. Gaddafi has told Berlusconi that Saddam Hussein wants to go.

Slightly later in the conversation, Aznar prompts Bush about the possibility of exile. Bush continues, giving his own account of Hussein’s outlook, in which he emphasizes

⁴The document leaked, evidently from the Spanish side, to the Spanish newspaper *El Pais*. Consequently, rather than a verbatim account of what Bush said, what we have is an English translation of the Spanish translation of Bush’s original English language remarks. I quote here from the English translation printed in *The New York Review of Books* (Danner, 2007).

the fact that he believes Hussein does not yet see the American threat to use force as thoroughly credible:

Saddam Hussein believes he's already gotten away. He thinks France and Germany have stopped holding him to his responsibilities. He also thinks the [anti-war] protests of last week protect him. And he thinks I'm much weakened. But the people around him know that things are different. They know his future is in exile or in a coffin. That's why it's so important to keep the pressure on him. Gaddafi tells us indirectly that this is the only thing that can finish him.

Aznar responds to Bush's remark with the observation that "the biggest success would be to win the game without firing a single shot," to which Bush replies:

For me it would be the perfect solution. I don't want the war. I know what wars are like. I know the destruction and the death that comes with them. I am the one who has to comfort the mothers and the widows of the dead. Of course, for us that would be the best solution. Besides, it would save us \$50 billion.

In short, the views expressed here are exactly as expected - Bush expresses the view that a coup or exile would be the best possible outcome and that this possibility is reasonably likely to occur, even describing some likely mechanisms. Other sources corroborate this evidence - Woodward (2004, p. 314) reports that Gamal Mubarak told Bush "that Saddam might be looking for an opportunity to go into exile," presumably referring to the same Egyptian discussions referenced by Bush above. Sir Lawrence Freedman, a member of the British Iraq Inquiry with access to all of the relevant classified British sources, stated in 2010: "I think it is fair to say that there was an assumption, which you can see in a lot of papers, that, if it became clear that the pressure on Saddam Hussein was becoming severe, that he was being found non-compliant, then either there might be a coup or something in Baghdad or

other Arab states would try to do something about him, find a safe way to spend his retirement” (Inquiry, 2010).⁵

Sir Christopher Meyer, who served as British ambassador to the United States before the war, recalls a conversation he had with Condoleeza Rice in November 2002 in which she explicitly ranked the administration’s preferences over three possible outcomes (the status quo, war, and Hussein’s removal short of war) in exactly the theorized order. Meyer testified before the British Iraq Inquiry (Inquiry, 2009):

I remember having this conversation with Condoleeza Rice ... I said ‘What are your priorities?’ She said, ‘The best outcome would be if the pressure of coercive diplomacy’ – that’s to say what is going on at the UN - ‘plus the troop build-up and the **knowledge of the contingency planning** led to Saddam’s removal; either he goes off into exile or he is overthrown by an internal coup’ ... The worst option, she said, was to be constantly jerked around by an eternal process of inspection, and so I said, ‘So war is somewhere between those two things,’ and she said, ‘Well, fair enough’ [emphasis added]

In short, the administration attached high value and some likelihood to the possibility of exile or a coup. Crucially, it is also very clear that the administration believed that these outcomes were possible only given a credible invasion threat. The expressed concern with credibility, in both the Aznar-Bush and Meyer-Rice conversations, is important. If, as some have claimed, Bush was committed to war, he should *not* have been concerned about the credibility of his threats, and may, in

⁵Claims surfaced in 2005 that Saddam Hussein had been prepared to go into exile. These claims originated from Muhammad bin Zayed al-Nahyan, whose father had been President of the United Arab Emirates until his death in 2004. Nahyan asserted that Saddam Hussein had agreed to go into exile in negotiations spearheaded by the UAE in return for immunity from prosecution and a resolution from the Arab League endorsing his exile. According to the UAE, the deal fell through because other Arab states refused to consider the resolution. While the UAE did push exile plans through the Arab League in March 2003, there is little independent corroboration of Nahyan’s claims that Hussein was prepared to accept. In November 2005, CNN reported confirmation of the account by a “senior official, who was then a member of the UAE delegation to the Arab League” and “another source who attended the Arab League summit” but no information has emerged from the Iraqi side (Faraj and Todd, 2005).

fact, have benefited from appearing less credible as this would have led the Iraqis to prepare less effectively for hostilities.⁶ The only reason for Bush and Rice to have been concerned with credibility is because they hoped to achieve compellence, for which a credible threat was necessary. As will become important later, the administration also believed that Iraqi “knowledge of the contingency planning” was a crucial determinant of its credibility.

2.4.4 Conclusions of the Iraq Case

I have argued here that the 2003 Iraq War was substantially the result of a failed attempt by the Bush administration to achieve “compellence through ignorance” and force Saddam Hussein from power. The historical analysis has focused first on establishing that senior administrations officials were *willfully* ignorant about consequential information and second that administration officials placed a reasonably large probability on the possibility of achieving compellence, which suggests that this was a relevant motive. Notably, one of the theoretical assumptions underlying this dynamic holds that covert learning is difficult or impossible - that is, it would have been very difficult for the Bush administration to acquire consequential information about WMD or post-war conditions without their efforts being made public, so I turn to this issue briefly.

With respect to WMD, covert learning would have been essentially impossible. Even members of Saddam’s inner circle were unsure whether or not the regime had

⁶Slantchev (2010) advances the theoretical version of this argument. Its application to the Iraq case is fairly straightforward. Woods et al. (2006, p. 31) note, on the basis of captured documents that “even with US tanks crossing the border, an internal revolt remained Saddam’s biggest fear,” undermining his preparations for conflict. A lower credibility of threat would have translated into even less focus on defense against American invasion.

such weapons, and Woods et al. (2006, p. 92) find that “a number of senior Iraqi officials” continued to believe that a hidden capability would be found “for many months after the 2003 war.” While inspectors could gradually and methodically visit suspect sites and establish confidence that no weapons existed, such an operation could not possibly be undertaken covertly. Given the uncertainty, even among regime insiders, it was simply impossible for covert operations to conclusively demonstrate the truth, although the CIA might have covertly uncovered information allowing some change in its conclusions.

With respect to the post-war environment, the American beliefs were more the result of analysis than direct information gathering, and analysis could, in principle, be conducted without Iraqi knowledge. Importantly, though, the Bush administration could not depend on such analysis remaining secret in the leak-prone political environment – Franks’s war plan, for example, leaked in substantial detail shortly after he first briefed it to his commanders (Franks, 2004, p. 384). Thus, the conclusions, particularly the negative conclusions, of any comprehensive analysis would have become public. Imagine, for example, that the Bush administration had commissioned a National Intelligence Estimate on post-war conditions; it would have been forced to share such an estimate with Congress, where critics such as Levin and Graham, would undoubtedly have publicized any negative conclusions. Graham, for example, after receiving both the classified and unclassified versions of the WMD NIE felt that the unclassified version did not reflect the same uncertainty about Iraqi intentions as the classified version and immediately forced the CIA to declassify additional content expressing uncertainty about Iraqi intentions (Graham and Nussbaum, 2008, p. 187).

After the invasion, it became clear that the administration exaggerated the

strength of some of its evidence, particularly with respect to alleged links between Iraq and al-Qaeda (Senate Select Committee on Intelligence, 2008). Trivially, this did not rise to the level of “feigning ignorance,” given that the administration chose to fight (i.e., the administration was not pretending to be willing to fight when in fact it was not). More importantly, even at the time, the strength of various parts of the administration’s intelligence case was widely reported in the media. On January 30, 2003, for example, a front-page story in *The Los Angeles Times*, citing intelligence sources, described the case linking Iraq and al-Qaeda as “highly circumstantial” and correctly noted that intelligence officials had “discounted – if not dismissed” many asserted links (Miller and Drogin, 2003). A few days later, *The New York Times* reported: “Some analysts at the Central Intelligence Agency have complained that senior administration officials have exaggerated the significance of some intelligence reports about Iraq, particularly about its possible links to terrorism ... At the Federal Bureau of Investigation, some investigators said they were baffled by the Bush administration’s insistence on a solid link between Iraq and Osama bin Laden’s network.” The same article, quite correctly, notes: “Intelligence professionals have expressed fewer reservations about the administration’s statements concerning Iraq’s weapons programs... [although] there have been disagreements over specific pieces of intelligence” (Risen and Johnston, 2003). These judgments – that the administration had been generally truthful about WMD but significantly exaggerated terrorist links – are precisely those reached by the 2008 Senate investigation into pre-war administration statements.⁷ Thus, the administration could not reasonably

⁷The report reaches sixteen separate conclusions, and I will not rehash all of them here; however, the most important al-Qaeda related conclusions hold:

- Conclusion 14: “The Intelligence community did not confirm that Muhammad Atta met an Iraqi intelligence officer in Prague in 2001.” The January 2003 *Los Angeles Times* story notes:

hope to keep negative analysis secret. As indicated in Rice's remark to Meyer, the administration believed that the Iraqis would draw conclusions from such leaks.

Thus far, I have focused only on the American decision-making. Some consideration of the Iraqi side is in order, although the lack of good evidence makes it difficult to reach strong conclusions. Importantly, the model offers a specific explanation for Hussein's decision to resist American demands. The model holds that Hussein should have resisted because he was uncertain about whether the United States would attack or not. There is conflicting evidence on the subject. After the war, Iraqi Deputy Prime Minister Tariq Aziz told interrogators Hussein was "very confident" that the United States would not attack (Woods et al., 2006, p. 28), while Hussein himself told interrogators that "it became clear to him four months before the war that war was inevitable" (Federal Bureau of Investigation, 2004). The authors of the *Iraqi Perspectives Project*, who had access to extensive classified post-war evidence, conclude that Hussein viewed an invasion as unlikely. They further suggest that this belief was

"The CIA said it can find no evidence to support post-Sept. 11 reports that Mohamed Atta, one of the hijackers in the attacks, met an Iraqi agent in the Czech capital, Prague, in 2001."

- Conclusion 12: "Statements and implications ... suggesting that Iraq and al-Qa'ida had a partnership, or that Iraq had provided al-Qa'ida with weapons training were not substantiated by the intelligence." This was also noted by the *Los Angeles Times* story: "Intelligence officials described reports that Hussein is funding an Al Qaeda-connected extremist group in northern Iraq as 'wildly overstated.' There is no evidence so far to confirm that Iraq is arming, financing, or controlling the group."
- Conclusion 11: "Statements that Iraq provided safe haven for Abu Musab al-Zarqawi and other al-Qa'ida-related terrorist members were substantiated by the intelligence assessments." The *Los Angeles Times* again correctly reported that support for Iraqi links to al-Qa'eda was "based largely on the murky case of ... Abu Musab Zarqawi."

In short, the discrepancies between the administration's case on terrorist links and the intelligence analysis were known in early 2003. On WMD, the Senate report reaches a number of conclusions, which again substantially correspond to pre-invasion news reporting. The central WMD conclusion of the report, Conclusion 5, finds: "Statements ... regarding Iraq's possession of weapons of mass destruction were generally substantiated by intelligence information, though many statements made regarding ongoing production prior to late 2002 reflected a higher level of certainty than the intelligence judgments themselves." This corresponds quite closely to the conclusion of the *New York Times* that the intelligence community had less significant disagreements with Bush on WMD.

the reason that Hussein did not set oil fields on fire or open dams to flood southern Iraq (Woods et al., 2006, pp. 30-31). On the other hand, Hussein's cooperation with the UN inspections clearly reflected a fear of American attack, and while he did not set the oil fields on fire, Hussein did take other steps indicating he saw war as likely including removing hard currency reserves from the Central Bank of Iraq (Woods et al., 2006, p. 114). On balance, the evidence suggests the kind of uncertainty about the likely American course of action described in the model, although perhaps tinged with some irrational optimism.

Returning to the model, the most important precondition for all equilibria with willful ignorance is a sufficiently large value of $p(SA)$ and sufficiently small value of $p(SD)$ - that is, in the Iraq case, a sufficiently large probability that the United States would win a quick victory and sufficiently small probability of a rapid defeat. For low $p(SD)$, willful ignorance equilibria are consistent with relative high values of $p(LA)$ - that is, a relatively high probability that the United States would win a victory but the war would be long and costly. Certainly, American policymakers rationally attached a very low, perhaps vanishingly low, probability to a rapid Iraqi victory given the incredibly skewed balance of military power. Because of the small chance of an outright Iraqi victory, willful ignorance was rationally consistent with fairly considerable doubts about the post-war situation. It is impossible to measure the relevant parameters with sufficient precision to quantify what subjective probabilities were necessary, but the likely implication here is that even if the administration had taken pessimistic views about the post-war situation more seriously, it would still have pursued the same approach.

2.5 Discussion and Conclusions

Although beliefs about the likely outcome of war are the central causal variable in the rationalist theory of war, the origins of these beliefs remains understudied. From a simple Bayesian perspective, these beliefs are some function of priors and information. There is a considerable literature examining the origins of priors, notably focusing on leaders' education, experience, and broader political outlook (Holsti and Rosenau, 1988; Saunders, 2011; Horowitz and Stam, 2014). The rationalist literature has, however, been relatively silent on the acquisition of information. In some sense, an implicit view is clear – leaders will synthesize whatever information is readily available or can be obtained at reasonable cost to reach their beliefs.

While it might be desirable for leaders to draw on the totality of available information, they certainly do not. To some extent, this may represent any of a number of non-rational tendencies (Jervis, 1976; Yarhi-Milo, 2013), but the willful ignorance thesis advanced here suggests a fully rational reason for states *not* to draw on the totality of available information. Importantly, this draws attention to an often unremarked distinction between knowable information and known information; that is, between what *could* be learned and what *has* been learned. In the traditional rationalist view on conflict, the distinction is not particularly important because states have an incentive to learn whatever they can. Once an incentive to be ignorant is appreciated, however, the difference becomes consequential.

Ultimately, what matters is the knowledge held by the top decision-makers in a government. Conceivably, leaders may know considerably less than their own advisors and officials. In the North Korean case discussed at the outset, American officials believed that relevant information, likely possessed by the North Korean

military, was not reaching top leaders; this likely only describes dictatorships where the bearers of bad news are punished or executed. In cases where leaders are briefed reasonably well by their advisors, the more important question is what is known to a country's military, diplomats, and intelligence services. Leaders deliberately set the information-gathering priorities for these agencies, so they are substantially in control of what will be learned. Unfortunately, willful ignorance suggests that they will often set priorities in a way that does not minimize the risk of war and may bias towards optimistic assessment. That is, war may result not from the insufficient availability of information but from an insufficient incentive to gather available information.

In the conventional setup, private information is often interpreted as information that is observable to one side and not the other. The implications of the setup here force us to broaden our definition of private information to encompass information that could be observed but has not been. That is, private information is not the same thing as state secrets. This suggests a larger potential role for mediation than previously appreciated. Supplying information is often seen as one of the most important functions of a mediator (Rauchhaus, 2006; Savun, 2008), but only a small number of potential mediators have plausible access to the secrets of one or both sides in a conflict. If, however, a state is engaged in willful ignorance that includes ignoring information substantially available in the public domain, then the pool of potentially useful mediators is much larger. In such a setting, the state engaged in willful ignorance would often wish to refuse the mediator's information, but if mediators can force information on their targets, then they are likely to succeed.

While willful ignorance may appear to be a reckless choice, decisions to cut off information gathering in times of crisis are relatively common. Perhaps the most

important of these is the practice of recalling diplomats, closing embassies or breaking off diplomatic relations. This is sufficiently common that it may not appear puzzling, but it should. Closing an embassy is not a costly signal in any clear way; that is, the choice should not convey information to an opponent. On the other hand, embassies are a crucial channel for negotiation, and it appears unreasonable to make negotiation more difficult in times of crisis, particularly as the late stages of a crisis may be a particularly important time for an opponent to revise its position (Fey and Ramsay, 2007). Embassies are also an extremely important, if not the most important, source of information for their home countries (Maller, 2010). Closing an embassy means the recall not only of diplomats, but also of military attachés and even spies working under official cover. In the conventional view, the loss of both the ability to communicate and a crucial source of information during a time of crisis is fundamentally illogical. Willful ignorance, however, cleanly explains the shuttering of embassies during crisis as a deliberate choice to cut off information, rather than a choice that has the unfortunate side-effect of doing so.

2.6 Proofs

2.6.1 Equilibrium of the Continuation Game under Complete Information

Trivially, the attacker fights only in the state SA and always backs down after resistance in any other state. Consequently, the defender concedes only in the state SA and resists in all other states. Thus, the attacker challenges only in the state SA (given the assumption of no challenges when indifferent; otherwise, the attacker could

challenge with some arbitrary probability in all states).

Thus, the payoff to choosing to be informed is, in expectation, always $p(SA)$.

2.6.2 Equilibria of the Continuation Game under Ignorance

First, there is no equilibrium in which the defender always concedes as resistance is the defender's unique best response in the state SD .

Second, in every equilibrium, the attacker challenges with probability 0 or probability 1 (as a mixed strategy here would imply indifference and we have assumed no challenges when indifferent).

Third, there is no equilibrium in which the challenger challenges and always backs down after resistance (this by assumption as we assume no challenges when indifferent and such an equilibrium implies indifference between challenging and not). By extension, this leaves no equilibrium in which the attacker challenges with positive probability and the defender only resists in the state SD (as this would lead the attacker to always back down).

Fourth, in every equilibrium where the defender concedes with positive probability in any state of the world, the attacker always challenges. Note that the attacker's expected utility after resistance is never worse than zero (as the attacker would deviate from any strategy giving an expected utility worse than zero after resistance to an "always back down" after resistance strategy giving a certain payoff of zero. Thus, if there is a positive probability of concessions, the expected utility to a challenge is positive.

Never Challenge Equilibrium. By the fourth property stated above, the defender must always resist if the attacker never challenges. Always resist is an equilibrium

strategy only if the attacker backs down with sufficient probability. It is sufficient to consider the case where the attacker always backs down after resistance.

Under the defender's "always resist" strategy, this attacker does not update after resistance, so this equilibrium requires that the expected value of fighting given the attacker's belief after observing the intelligence report be less than or equal to zero. This condition is $p(SA) \leq -\frac{p(LA)*U_a(LA)+p(SD)*U_a(SD)+p(LD)*U_a(LD)}{U_a(SA)}$. Given the attacker always backs down, resistance is always the defender's best response.

Always Challenge Equilibria: There are several equilibria in which the attacker always challenges. In all such equilibria, the defender always resists in the state SD , but as established above, the defender must resist in some other states as well in any equilibrium. Resisting in states other than SD ; however, is only a best response only if the attacker backs down with positive probability. Noting that there is no equilibrium in which the attacker challenges and then backs down with certainty, the attacker *must* mix between fighting and backing down. Thus, in all "always challenge" equilibria, the attacker must be indifferent between fighting and backing down after resistance.

The defender's strategy must always satisfy the following, which is a consequence of the ordering of the utilities: if the defender resists with positive probability in the state LA , then she resists with certainty in all other states; if the defender resists with positive probability LD , then she resists with certainty in the states SD and SA ; if the defender resists with positive probability in the state SA then she resists with certainty in the state SD . Likewise, if the defender resists in the state SA with a probability less than one, then she never resists in the states LA and LD . If the defender resists in the state LD with probability less than one, then she never resists

in the state LA .

These properties leave three possible equilibria, defined by the states of the world in which the defender resists with positive probability: either the states SD and SA (“type 1”), the states SD , SA , and LD (“type 2”), or all states (“type 3”). I will characterize these in turn.

Type 1: The attacker always challenges. The defender always resists in the state SD , resists with probability $\gamma = \frac{-p(SD)*U_a(SD)}{p(SA)*U_a(SA)}$ in the state SA and always concedes in the states LA and LD . After resistance, the attacker fights with probability $\rho_1 = \frac{1}{1-U_d(SA)}$.

Given $\rho_1 = \frac{1}{1-U_d(SA)}$, the defender’s expected payoff to resisting in the state SA is $\frac{1}{1-U_d(SA)} * (U_d(SA)) + (1 - \frac{1}{1-U_d(SA)}) * 1 = 0$, which leaves the defender indifferent between resisting and conceding. Given that the defender resists with the probability γ in the state SA , the attacker’s posterior belief that the state is SA , denote as $p(SA)^*$ is:

$$p(SA)^* = \frac{p(SA) * \frac{-p(SD)*U_a(SD)}{p(SA)*U_a(SA)}}{p(SA) * \frac{-p(SD)*U_a(SD)}{p(SA)*U_a(SA)} + p(SD)}$$

$$p(SA)^* = \frac{U_a(SD)}{U_a(SD) - U_a(SA)}$$

Given this belief, the expected utility for the attacker of fighting is:

$$\frac{U_a(SD)}{U_a(SD) - U_a(SA)} * U_a(SA) + (1 - \frac{U_a(SD)}{U_a(SD) - U_a(SA)}) * U_a(SD) = 0$$

Thus, the attacker is indifferent. This equilibrium will exist whenever γ and ρ_1 given

valid probability. Recall that $U_d(SA) < 0$, so that ρ_1 is certainly a valid probability. For γ , we trivially have $\gamma \geq 0$ given $U_a(SD) < 0$ and $U_a(SA) > 0$, thus we need only $\gamma \leq 1$, or:

$$\begin{aligned} -p(SD) * U_a(SD) &\geq p(SA) * U_a(SA) \\ p(SA) &\geq p(SD) * \frac{-U_a(SD)}{U_a(SA)} \end{aligned}$$

Finally, it is necessary that the expected value of challenging exceed 0 (or the attacker would deviate to not challenging). The expected value of a challenge here can be expressed as:

$$p(LA) + p(LD) + p(SA) + p(SD) * \frac{U_a(SD)}{U_a(SA)}$$

Given the already established condition $p(SA) \geq p(SD) * \frac{-U_a(SD)}{U_a(SA)}$, this is certainly greater than zero (i.e., given $p(SA)$ at this value, the expected value here is $p(LA) + p(LD) > 0$).

Type 2: The attacker always challenges. The defender always resists in the states SA and SD , and resists in the state LD with probability

$\nu = \frac{p(SD)*U_a(SD)+p(SA)*U_a(SA)}{p(LD)*(-U_a(LD))}$ (and always concedes in the state LA). After resistance, the defender fights with probability $\rho_2 = \frac{1}{1-U_a(LD)}$.

Given ρ_2 as above, the defender's expected utility to resistance in the state

LD is $\frac{1}{1-U_d(LD)} * U_d(LD) + (1 - \frac{1}{1-U_d(LD)}) = 0$, leaving the defender appropriately indifferent. Likewise, ν as above is constructed to leave the attacker indifferent (algebra omitted). As with ρ_1 , the value ρ_2 is certainly between 0 and 1, so we wish to establish the conditions under which ν gives a valid probability. As the denominator of this expression is strictly positive, we require that the numerator be positive and less than the denominator. Thus, first:

$$p(SD) * U_a(SD) + p(SA) * U_a(SA) \geq 0$$

$$p(SA) \geq p(SD) * \frac{-U_a(SD)}{U_a(SA)}$$

Second:

$$p(LD) * (-U_a(LD)) \geq p(SD) * U_a(SD) + p(SA) * U_a(SA)$$

$$p(SA) \leq \frac{-p(LD) * U_a(LD) - p(SD) * U_a(SD)}{U_a(SA)}$$

Again, we must establish that the utility here is better than zero. In this case, we can express the expected utility as:

$$p(LA) + p(LD) + p(SA) * \frac{U_a(SA)}{U_a(LD)} + p(SD) * \frac{U_a(SD)}{U_a(LD)}$$

Use the already established maximum on $p(SA)$ and observe that at this value,

the expected utility is:

$$p(LA) + p(LD) - p(LD) - p(SD) * \frac{U_a(SD)}{U_a(LD)} + -p(SD) * \frac{U_a(SD)}{U_a(LD)} > 0$$

Type 3: The attacker always challenges. The defender always resists in the states SA , SD , and LD , and resists in the state LA with probability $\chi = \frac{p(SD)*U_a(SD)+p(SA)*U_a(SA)+p(LD)*U_a(LD)}{p(LA)*(-U_a(LA))}$. The attacker fights after resistance with probability $\rho_3 = \frac{1}{1-U_a(LA)}$.

Again, these probabilities are constructed to generate indifference. The conditions on to ensure $\chi \in [0, 1]$ allow us to establish the constraints:

$$\begin{aligned} p(SD) * U_a(SD) + p(SA) * U_a(SA) + p(LD) * U_a(LD) &> 0 \\ p(SA) &\geq \frac{-p(LD) * U_a(LD) - p(SD) * U_a(SD)}{U_a(SA)} \end{aligned}$$

And:

$$\begin{aligned} p(SD) * U_a(SD) + p(SA) * U_a(SA) + p(LD) * U_a(LD) &> p(LA) * (-U_a(LA)) \\ p(SA) &< \frac{-p(LD) * U_a(LD) - p(SD) * U_a(SD) - p(LA) * U_a(LA)}{U_a(SA)} \end{aligned}$$

Once again, we must establish that the utility here is better than zero, which

requires:

$$p(LA) * \left(1 - \frac{p(SD) * U_a(SD) + p(SA) * U_a(SA) + p(LD) * U_a(LD)}{p(LA) * (-U_a(LA))}\right) > 0$$

Which of course, is guaranteed given that the expression was defined as being bounded by 0 and 1. Given the upper bound on $p(SA)$ established above, this is certainly satisfied (i.e., that bound assures $\chi > 0$). It is for this reason that, uniquely to this equilibrium, $p(SA)$ must satisfy a strict inequality.

2.6.3 Proposition 1

Being informed always gives a payoff of $p(SA)$.

Given $p(SA) < p(SD) * \frac{-U_a(SD)}{U_a(SA)}$ the unique equilibrium in the continuation game after declining to learn is the “never challenge” equilibrium with a payoff of 0. Consequently, in this parameter range the optimal choice is always to be informed.

It is below shown in the proof of proposition 2 that the “Type 1” equilibrium (i.e., the equilibrium with the highest payoff after the attacker chooses not to learn) is worse than learning if $p(SD) > \frac{p(LA) * U_a(SA) + p(LD) * U_a(SA)}{-U_a(SD)}$. The “type 1” also gives the attacker the best payoff out of all “do not learn” equilibria; thus, given $p(SD)$ above this threshold, the attacker always chooses to learn.

2.6.4 Proposition 2

Given $p(SA) > \frac{-p(LD) * U_a(LD) - p(SD) * U_a(SD) - p(LA) * U_a(LA)}{U_a(SA)}$, the unique equilibrium of the continuation game after declining to learn is the “Type 1” mixed strategy

equilibrium.

The payoff in the “Type 1” equilibrium is: $p(LA) + p(LD) + p(SA) + p(SD) * \frac{U_a(SD)}{U_a(SA)}$. It is immediately obvious that, for sufficiently small $p(SD)$, this is certainly better than the complete information payoff of $p(SA)$. We seek to establish whether or not this is more restrictive than the condition above.

Notice, immediately, that the payoff is better than the $p(SA)$ for learning the true state of the world whenever $p(SD) < \frac{p(LA)*U_a(SA)+p(LD)*U_a(SA)}{-U_a(SD)}$. This can be re-expressed by substitution as:

$$1 - p(SA) - p(LA) - p(LD) < \frac{p(LA) * U_a(SA) + p(LD) * U_a(SA)}{-U_a(SD)}$$

$$p(SA) > 1 - p(LA) - p(LD) + \frac{p(LA) * U_a(SA) + p(LD) * U_a(SA)}{U_a(SD)}$$

This form of expression makes it clear that this condition is neither inherently more restrictive, nor inherently less restrictive than the preceding one. The proposition is stated in terms of $p(SD)$ as this has a more clear intuitive interpretation.

2.6.5 Proposition 3

Given $p(SA) \in [p(SD) * \frac{-U_a(SD)}{U_a(SA)}, \frac{-p(LD)*U_a(LD)-p(SD)*U_a(SD)-p(LA)*U_a(LA)}{U_a(SA)}]$ multiple equilibria exist in the continuation game. Notably, within this range, the “never challenge” equilibrium exists, but this is certainly worse than learning. Proposition 2 shows that the “Type 1” equilibrium, which *always* exists within this range is better than learning for appropriately low $p(SD)$. We wish to establish then, that within, the ranges in which they exist, both the “Type 2” and “Type 3” equilibria may be

better than learning, although noting that these are always worse for the attacker than the “type 1”.

The utility to the “Type 2” equilibrium is: $p(LA) + p(LD) + p(SA) * \frac{U_a(SA)}{U_a(LD)} + p(SD) * \frac{U_a(SD)}{U_a(LD)}$. It is evident that for sufficiently large $p(LA) + p(LD)$ this is certainly greater than $p(SA)$. It is necessary to check only that these values are consistent with the values of $p(SA)$ necessary to sustain the equilibrium. Recall the equilibrium in question exists subject to $p(SA) \geq p(SD) * \frac{-U_a(SD)}{U_a(SA)}$. Notice as $p(SD) \rightarrow 0$, this also approaches zero. Simply, for sufficiently low $p(SD)$, this certainly better than learning.

The utility to the “Type 3” equilibrium is $p(LA) * (1 - \frac{p(SD)*U_a(SD)+p(SA)*U_a(SA)+p(LD)*U_a(LD)}{p(LA)*(-U_a(LA))})$, while this equilibrium requires at least $p(SA) \geq \frac{-p(LD)*U_a(LD)-p(SD)*U_a(SD)}{U_a(SA)}$.

Here, consider the case in which $p(SD), p(LD)$ are very small. As these approach zero, the required threshold on $p(SA)$ also approaches zero, so this can be satisfied for sufficiently low values on all these. Here, then, the value above is certainly better than $p(SA)$.

Note, further, that (other than an edge case), “Type 2” and “Type 3” are mutually exclusive; however, each of these always coexists with both a “Type 1” and a “never challenge” equilibrium.

As noted in the text, intuitive forward induction seems to rule out the never challenge equilibrium. If the attacker anticipates that he will never fight, then he cannot do better by declining to learn than by learning. Thus, the fact that the attacker declines to learn should indicate that he anticipates one of the mixed strategy equilibria, forcing the players to coordinate on such an equilibrium. Even the forward

induction argument does not, however, allow us to discriminate among the mixed strategy equilibria.

2.6.6 Proposition 4

Recall that given $p(SA) < p(SD) * \frac{-U_a(SD)}{U_a(SA)}$ and $p(SD) < \frac{p(LA)*U_a(SA)+p(LD)*U_a(SA)}{-U_a(SD)}$ there exists a mixed strategy equilibrium whose payoff to the attacker is better than the payoff for learning (and possibly two such equilibria). The forward induction argument discussed in the text implies that, if such an equilibrium exists, it will be selected. While it was previously more intuitive to state the first condition in terms of $p(SA)$, it will now prove easier to re-express as $p(SD) < p(SA) * \frac{U_a(SA)}{-U_a(SD)}$ and to restate the other condition as $p(SD) < (p(LA)+p(LD)) * \frac{U_a(SA)}{-U_a(SD)}$. Thus, there always exists an equilibrium in which ignorance is better than learning given $p(SD) < \min(p(SA), p(LA)+p(LD)) * \frac{U_a(SA)}{-U_a(SD)}$.

Several alternative assumptions leading to the same proof are described in the text. The conditions are straightforward for these. If the “never challenge” equilibrium is played with any constant probability when it exists, then given $p(SA) > \frac{-p(LD)*U_a(LD)-p(SD)*U_a(SD)-p(LA)*U_a(LA)}{U_a(SA)}$ the attacker never learns, while in the intermediate range of $p(SA)$ the attacker learns with that probability whatever it might be. Clearly, then signals that increase $p(SA)$ and do not increase $p(SD)$ relative to the prior increase the probability that the attacker will choose to learn.

2.6.7 Proposition 5

Proposition 5 requires a modification to the extensive form, and I do not fully characterize the equilibria of this modified game. Instead, I show only that the existing

conclusions are robust to this modification for a particular range of parameter values.

We now modify the game by supposing that, after the attacker declines to openly learn the state of the world, he covertly learns it with probability r .

Note that, whenever the attacker is covertly informed, he will always challenge in the state SA and never challenge in the state SD (given the fact that the attacker never backs down in the state SD and the assumption that the attacker does not challenge when indifferent). Note also, that after resistance, covertly informed attackers always fight in the state SA and never fight otherwise.

Type 1 Equilibrium with Feigning: Consider an equilibrium based on the “type 1” above. The attacker always challenges when uninformed. Covertly informed attackers always challenge in the states LA, LD and SA and never challenge in the state SD . The defender always concedes in the states LA and LD , always resists in the state SD and resists in the state SA with probability $\gamma = \frac{-p(SD) * U_a(SD)}{p(SA) * U_a(SA)}$. After resistance, covertly informed attackers always back down, except in the state SA , where they always fight. Uninformed attackers fight with probability $\rho_{1f} = \frac{1-r+r*U_d(SA)}{1-r-U_d(SA)+r*U_d(SA)}$

The probability ρ_{1f} leaves the defender indifferent between fighting and resisting in the state SA . Notably, this is different than ρ_1 above because, when covertly informed, the attacker always fights in state SA .

$$r * U_d(SA) + (1 - r) * (\rho_{1f} * U_d(SA) + (1 - \rho_{1f}) * 1) = 0$$

$$\rho_{1f} = \frac{1 - r + r * U_d(SA)}{1 - r - U_d(SA) + r * U_d(SA)}$$

The defender’s strategy remains exactly as before because it must satisfy the same constraint – leaving the attacker indifferent when uninformed.

Importantly, this equilibrium must also satisfy the property that the defender does not wish to deviate to resisting in the states LA and LD on the basis of the expectation that the attacker will back down because he is covertly informed. If this is true of the state LD , then it will also be true of the state LA .

If the defender deviated to resisting in the state LD , then uninformed attackers would continue to fight with probability $\rho_{1f} = \frac{1-r+r*U_d(SA)}{1-r-U_d(SA)+r*U_d(SA)}$ while informed attackers would always back down. Consequently, this deviation is unprofitable given:

$$r \leq \frac{U_d(SA) - U_d(LD)}{U_d(LD) * U_d(SA) - U_d(LD) - U_d(SA) + 1}$$

Thus the “type 1 with feigning” equilibrium exists subject to the same constraints as above and this additional constraint on r . Note further, that, the payoff to this equilibrium is strictly better than the payoff to the “type 1” equilibrium, so it is always better than learning if the “type 1” equilibrium is better than learning; this shows that proposition 2 is robust to a probability of covert learning $r \leq \frac{U_d(SA)-U_d(LD)}{U_d(LD)*U_d(SA)-U_d(LD)-U_d(SA)+1}$

Type 2 Equilibrium with Feigning : Here, the attacker always challenges when uninformed. Covertly informed attackers challenge in the state LA , LD and SA but not the state SD . The defender always resists in the states SA and SD , resists in the state LD with probability $\nu = \frac{p(SD)*U_a(SD)+p(SA)*U_a(SA)}{p(LD)*(-U_a(LD))}$ (and always concedes in the state LA). After resistance, the defender fights with probability $\rho_{2f} = \frac{1}{1-U_d(LD)-r+r*U_d(LD)}$ when uninformed, always fight when informed in the state SA and never fights when informed in any other state.

The probability ρ_{2f} leaves the defender indifferent given:

$$r * 1 + (1 - r) * (\rho_{2f} * U_d(LD) + (1 - \rho_{1f} * 1) = 0$$

$$\rho_{2f} = \frac{1}{1 - U_d(LD) - r + r * U_d(LD)}$$

Here, we wish to ensure that the defender does not deviate to resisting in the state LA . In response to this deviation, uninformed types would fight with probability ρ_{2f} while informed types would back down. Consequently, the deviation is unprofitable given:

$$r \neq 1$$

We also need to ensure that the defender does not deviate to conceding in the state SA , which requires:

$$r \leq \frac{U_d(SA) - U_d(LD)}{U_d(LD) * U_d(SA) - U_d(LD) - U_d(SA) + 1}$$

Which is precisely the same condition as above. As with type 1, the equilibrium with feigning gives a strictly better utility to the attacker than the equilibrium without, so whenever the type 2 equilibrium is better than learning, the type 2 with feigning is as well.

Type 3 Equilibrium with Feigning: The attacker always challenges when uninformed. Covertly informed attackers challenge in the states SA and LA but not in the

states SD or LD . The defender always resists in the states SA , SD and LD and resists in the state LA with probability $\chi = \frac{p(SD)*U_a(SD)+p(SA)*U_a(SA)+p(LD)*U_a(LD)}{p(LA)*(-U_a(LA))}$. The attacker always fights when informed in the state SA and never fights when informed in any other state. Uninformed attackers fight with probability $\rho_{3f} = \frac{1}{1-U_d(LA)-r+U_d(LA)}$

As before, it is necessary to establish that the defender does not deviate to conceding in the state SA which requires:

$$r \leq \frac{U_d(SA) - U_d(LA)}{U_d(LA) * U_d(SA) - U_d(LA) - U_d(SA) + 1}$$

Notice that this is, inherently, less restrictive than the one above. As with the others, this equilibrium gives strictly better utility to the attacker than the “type 3” equilibrium.

Consequently, given $r \leq \frac{U_d(SA)-U_d(LD)}{U_d(LD)*U_d(SA)-U_d(LD)-U_d(SA)+1}$, the equilibria described in propositions 2, 3, and 4 are robust to the possibility of covert learning.

Chapter 3

Mutual Optimism and Costly Conflict: The Case of Naval Battles in the Age of Sail

3.1 Introduction

Blainey (1973) famously argued that “wars usually begin when two nations disagree on their relative strength.” Over the last forty years, this insight has become one of the most prominent explanations for war in the international relations literature. An earlier generation of scholarship often argued that such disagreement was likely the result of misperception or irrationality (Betts, 1982; Levy, 1983; Jervis, 1988), but Fearon (1995) introduced the argument that states might rationally disagree about their relative strength because of private information. This idea of rational optimism has proven theoretically fruitful, serving as one of main avenues for theoretical development in the literature on the causes of war (Powell, 2002; Reiter, 2003; Slantchev and Tarar,

2011), but empirical testing has lagged far behind.

Scholars have long recognized some of the difficulties in testing the optimism theory of war. The core independent variable in this theory is the beliefs held by the two sides in (potential) conflict. These beliefs are not directly observable, and the theory itself suggests that publicly available proxies will not accurately capture true beliefs (Gartzke, 1999). The use of classified documents and other archival sources after the fact can address some of the issues raised by the incentive for states or leaders to misrepresent their true beliefs, but even with full access to archives, beliefs are extremely difficult to measure. For example, despite nearly a century of intensive historical research, there remains no consensus about whether the German leadership in 1914 believed that Germany would win a swift, decisive victory on the Western Front (Lieber, 2007). A true test of the theory requires not only a measure of such beliefs prior to wars that occurred but also a measure of beliefs in cases where no war occurred. In these cases, the archival record is generally much thinner.

Beyond the inherent difficulty in studying unobservable beliefs, the optimism theory is difficult to test because of similar difficulties in controlling for competing explanations. Since its formulation, the rational optimism mechanism has coexisted with other rationalist mechanisms that do not require the existence of such optimism (most notably commitment problems), meaning that optimism is not necessary for war in the rationalist framework. Further complicating the issue, modeling the combination of information and commitment problems delivers different predictions than modeling either singly (Wolford, Reiter and Carrubba, 2011). Consequently, at the inter-state level, it is not possible to separately test the mutual optimism and commitment mechanisms.

I offer a test here that circumvents many of these difficulties, allowing us to gain empirical leverage on key propositions in the informational theory of conflict by studying naval battles in the age of sail. Unique strategic features of these battles allow the derivation of novel, testable predictions that do not rely on our ability to measure beliefs. These naval battles possess the following essential features: the effective choices for each side were to fight or to sail away and attempt to avoid battle; attempting to avoid battle did not involve prohibitively high costs, and the success of attempts to avoid battle was highly stochastic. I present a simple formal model of this strategic setting to derive quantitatively testable hypotheses. Of these, the most novel is that we should find *no* correlation between between observable capability indicators and the probability of victory in mutual battles, where both sides chose to fight. I test this prediction, and rule out an alternative hypothesis that the lack of correlation is the result of measurement error on the independent variable by analyzing a set of battles where avoiding battle was not possible, meaning that the observable indicators theoretically *should* predict victory.

3.2 Testing the Role of Mutual Optimism

As noted above, observational tests of the role of mutual optimism in conflict initiation face a series of severe impediments. In an effort to overcome some of these issues, a number of scholars have attempted to measure the effect of uncertainty, rather than optimism, on conflict. Using military parity as a proxy for higher uncertainty, Reed (2003) finds a positive association between uncertainty and war. Using the same proxy, Slantchev (2004) finds that uncertainty leads to an increase in war duration. On the other hand, Bas and Schub (2014) develop a measure of uncertainty focused

on the global, rather than bilateral, balance of military power and find that increased uncertainty leads to a lower probability of conflict. While these represent some of the best efforts to test informational theories of war, their results do not speak directly to the role played by optimism, which is theoretically and empirically distinct from uncertainty.

One possible strategy for addressing the optimism issue is to directly measure privately-known capabilities that should have predictable consequences for beliefs. Bas and Schub (2016) focus on secret alliances, arguing that such alliances will lead to divergent estimates of the balance of power. In particular, the opponent of a state with a secret alliance will tend to be overly optimistic about its chances in a war. The authors find the expected positive association between secret alliances and war. Similarly, Lai (2004) examines private (i.e., secret) mobilization for war and finds that crises are more likely to end in war when states mobilize military resources secretly. These tests provide important evidence but suffer from two principal shortcomings. First, the results are likely to be confounded by selection effects. States that choose to enter secret alliances or mobilize secretly are likely different from states that do not (e.g., they may mobilized or ally secretly because of pre-existing hostile intent). Second, other plausible mechanisms link both secret alliances and secret mobilization to conflict. Third, these tests can not separate rational and irrational optimism.¹

Naturally, scholars can also test parts of the mutual optimism theory by directly manipulating or measuring beliefs in a laboratory setting. In fact, experimental tests of the role of information asymmetries on bargaining breakdown predate the development

¹Rational optimism in the case of a secret capability implies that the holder of the secret capability accurately perceives the true balance of power while his uninformed opponent underestimates the capability holder's probability of victory. However, secret capabilities might lead their holders to overestimate their own probability of victory. Without assessing conflict outcomes it is not possible to separate the two possible dynamics.

of the bargaining model of war (Robert Forsythe, 1991; Kennan and Wilson, 1993). More recently, Quek (2015) has experimentally studied games meant to specifically represent war. While these experiments provide important insight, they suffer from a number of shortcomings. First, it is far from clear that games played for small stakes in laboratory settings can capture essential features of decisions made by national leaders with thousands, or even millions, of lives on the line. Second, experiments that directly manipulate beliefs sidestep fundamental questions about the ways in which leaders form such beliefs and perceive the military balance. Moreover, theoretical work shows that small changes to the extensive form of crisis games have large effects on equilibrium predictions (Fey and Ramsay, 2007; Leventođlu and Tarar, 2008; Fey and Ramsay, 2011), so laboratory results obtained under apparently reasonable protocols may have no generalizability. In the real world, decisionmakers endogenously choose to acquire and reveal information and endogenously structure crisis interactions.

3.3 Mutual Optimism and Naval Battles

In the test presented here, I use specific strategic features of naval battles in the age of sail to derive novel theoretical predictions from the optimism theory of conflict that can be tested without measuring, manipulating, or assuming beliefs. Rather than attempting to measure or infer optimism and assessing its relationship with conflict initiation, I test for the central implication of the theory of rational optimism with respect to conflict outcomes.

The theoretical logic presented here hinges on the fact that, in a situation where some information about capabilities is public, each side will condition on those public facts in addition to its own private information. Suppose, for instance, that

one side is advantaged in observable factors; given this, his opponent will only wish to fight if she holds private information that she is, in fact, stronger than the observables indicate. Because a mutual battle requires that both the observably weaker and observably stronger sides choose to fight, conflict will only occur in cases where the observable balance of power does not accurately reflect the true balance of power. Absent information contradicting the observable balance of power, the apparently weaker side would always decline to fight. Thus, somewhat counterintuitively, the outcome of conflicts that occur as the result of mutual optimism should *not* be predictable from observable capability indicators.

This resembles a class of models studied by Fey and Ramsay (2007) where either side can avoid conflict with certainty. In such cases, even the side advantaged in the observables may not wish to fight as it knows that, given its observable advantage, battle only occurs in cases where its opponent has an equivalently large unobservable advantage. Fey and Ramsay follow this argument to the conclusion that mutual optimism can *never* lead to costly conflict, but the key assumption of their model is that a side that does not wish to fight can avoid doing so *with certainty*, even if its opponent prefers to fight.

In the naval context described here, the assumption made by Fey and Ramsay is equivalent to assuming that a fleet can *never* catch an opponent that attempts to avoid battle; in fact, fleets often did catch fleeing opponents. The logic presented here is, therefore, slightly different than Fey and Ramsay's. I model a situation in which no battle occurs if both fleets sail away, but one may occur if one side attempts to avoid battle while the other seeks battle. In those cases where one side attempts to flee but is caught and brought unwillingly to action, mutual optimism

is not the cause of conflict; however, in those cases where both sides choose to fight a battle, what I call mutual battles, mutual optimism *is* the cause. The outcome of these mutual battles should *not* be predictable from the *ex ante* observables. Again, suppose one side is advantaged in the observables. Its opponent will only choose to fight contingent on private information indicating it is actually stronger than the observables indicate. If this possibility appears to be sufficiently unlikely, then the observably advantaged side may seek battle because there is a sufficient chance that its opponent is weak, will flee, and will be caught in the chase. While the outcome of a chase battle should generally be predictable from the observables, the outcome of battles where the other side chooses to fight as well should not be predictable from the observables as the second party's willingness to fight implies private information that deviates from the observables.

The simple model here involves two sides, each of whom has some strength, s_i . Public information is represented as common priors about these strengths. In particular, I assume that the public information about each side can be modeled as some continuous probability density function f_i with expectation $E(s_i)$ and support on $[0, \infty)$. I further assume that each player pays a cost of battle c_i and, if he chooses to withdraw, pays a cost of retreat r_i . Following the conventional assumption in the conflict literature, I assume that the probability of victory for side i is $\frac{s_i}{s_i + s_{-i}}$ (Skaperdas, 1996).

Traditionally, conflict models have assumed that the payoff to victory is fixed (and consequently independent of the strengths), but this assumption makes little sense in the context of naval battles, where winning a larger battle (or by a larger margin) clearly carried higher utility. In particular, I argue below that an admiral's

utility for a naval outcome is best approximated by the number and strength of enemy ships taken or sunk less his own losses. Assume, then that each side has s_i “units” of capability (one can easily think in terms of a number of ships), and that any given unit of capability is captured or destroyed by the opponent with probability $\frac{s_i}{s_i + s_{-i}}$. Then the expected payoff to Player 1 is the expected capability remaining to him $s_1 - \frac{s_2}{s_1 + s_2} * s_1$ less the expected capability remaining to his opponent $s_2 - \frac{s_1}{s_1 + s_2} * s_2$ less the cost of fighting. That is, $s_1 - \frac{s_2}{s_1 + s_2} * s_1 - (s_2 - \frac{s_1}{s_1 + s_2} * s_2) - c = s_1 - s_2 - c$.²

Given these assumptions about the beliefs and payoffs, I turn to the structure of the game. I present two variants. In the first, I assume that each side simultaneously chooses to fight or withdraw. If both sides choose to fight, then a battle occurs with certainty. If both side choose to withdraw, then no battle occurs. If, however, one side chooses to fight while the other side chooses to withdraw, then a chase occurs and Player 1 wins the chase with probability w , which roughly captures the relative speed of the two fleets. Given this, we can solve for the equilibria of the game.³ The solution concept adopted here is Bayesian Nash equilibrium, although as I will discuss, this solution coincides with the results of prominent behavioral solution concepts. In the second variant, only Player 1 has the option to withdraw. That is, the second variant is, in fact, purely decision theoretic. As discussed substantively below, this corresponds to a case where, for example, one of the fleets is trapped.

An equilibrium for this game will take the form of a pair of thresholds t_1, t_2 such that each player fights if an only if his strength is greater than the appropriate

²We can derive precisely the same thing from an alternative assumption that admirals received utility only from win/loss outcomes but that this utility was proportional to the total forces engaged.

³The simultaneous, one-shot moves here may strike readers as unrealistic, but because I have assumed no particular distributional form to the prior beliefs, these could easily be the posterior beliefs generated by earlier interaction; that is, the model here can capture the terminal move in nearly any longer game.

threshold. At the threshold, each player will be indifferent between fighting and withdrawing. These are derived mathematically in the appendix and presented in the propositions below.

Proposition 1: In the unique Bayesian Nash equilibrium of the game where either player may withdraw, Player 1 fights if $s_1 > c_1 + E(s_2) - r_1/w$ and withdraws otherwise. Player 2 fights if $s_2 > E(s_1) + c_2 - r_2/(1 - w)$ and withdraws otherwise.

Proposition 2: When only Player 1 has the option to withdraw, Player 1 fights if $s_1 > c_1 + E(s_2) - r_1$ and withdraws otherwise.

The features of this equilibrium are straightforward and unsurprising: each player sets a higher threshold when he expects his opponent to be stronger or when the cost of battle is higher, and sets a lower threshold when the cost of retreat is higher.

Consider now the issue of predicting battle outcomes from observables. Here, it is necessary to make some further assumptions about the distribution of s_1 and s_2 . Ideally, it would be possible to use historical information to fully characterize f_1 and f_2 . In practice, this places far too high a demand on the historical record. Instead, it is only reasonable to believe that we can measure, or at least approximate, $E(s_1)$ and $E(s_2)$, that is the expected strength of the two fleets, from the historical record. Consequently, we will represent the distributions of s_1 and s_2 using the principle of maximum entropy (Shore and Johnson, 1980). Technical details are presented in the appendix, but this leads to the following core results.

The first result concerns the outcome of unilateral and chase battles:

Remark 1: Given sufficiently high costs of battle or sufficiently low costs of retreat, the expected outcome of a unilateral battle (where only one player has the option to withdraw) or a chase battle favors the choosing/chasing player regardless of the observable balance of power.

The intuition here is relatively straightforward. In a unilateral battle, only the choosing player has the ability to condition on the observables. Unless retreat is prohibitively costly, the choosing player will consequently fight only if he is likely to win. Similarly, in a chase battle, the decision by the fleeing player to withdraw implies that her private information indicates victory is unlikely. Likewise, the pursuing player

chooses to fight only because he is likely to win; consequently, the chaser is favored.

Remark 2: The expected outcome of a mutual battle is independent of $E(s_1)$ and $E(s_2)$.

This proposition lays out the core result described above. As discussed, the process of conditioning on publicly-available information will lead two sides to fight only when the observably-disadvantaged side has offsetting unobservable advantages. In consequence, it will not be possible to predict the outcome of mutual battles from the observables.

Remark 3: The margin of victory in a unilateral or chase battle is increasing in the observed balance of power

Unilateral and chase battles do not feature the same offsetting strategic selection as mutual battles. Consequently, the observed balance of power will correlate with outcomes in these cases. Note that, while Remark 1 relied on particular assumptions about the various costs involved, Remarks 2 and 3 hold regardless of these costs.

3.4 Naval Battles in the Age of Sail

The section above presents several important assumptions, which I argue are uniquely satisfied in the context of naval battles in the age of sail. First, I assume that we can reasonably model choices in a naval interaction as fight or withdraw. Second, I assume that we can reasonably model the utility of a given naval outcome as the level of an opponents' losses less the level of one's own losses. Third, we require one out of a set of assumptions about the relative payoff for and likelihood of successful fleeing when compared to fighting. The basic predictions hold under a general condition that the probability of Player 1 winning a chase is not too extreme and that the cost of

withdrawing is not sufficiently large relative to the cost of fighting. I will argue here that the cost of withdrawing was nearly zero, which is a much stronger claim than we actually require.

The first assumption amounts to the claim that for any beliefs, either fighting or fleeing was superior to any other option. While, in theory, an admiral could simply surrender, this was undoubtedly inferior to attempting flight. Even if a fleet was trapped, surrender was only superior to fighting given a very substantial imbalance in power because the outcome of surrender and the loss of all one's ships, was worse than nearly anything other than total defeat. On a few rare instances, fleets that were dramatically outnumbered and had no realistic chance of successful flight did surrender without firing a shot, as in the case of a Dutch squadron trapped by a superior English force in Saldanha Bay in 1796 (Ralfe, 2010, p. 112), but these are rare exceptions and incorporating this possibility into the model would not change any of the major findings. In theory, it might also be possible for a weaker fleet to surrender a few ships to a stronger fleet in return for being allowed to sail away with the remainder, but such a bargain would have been inherently unenforceable and to my knowledge no such bargain ever occurred. Thus, modeling a fight or flight choice is reasonable.

The second assumption concerns the players' utilities. The utility function in the model can be derived in one of two ways: either by assuming that admirals received higher utility from winning bigger battles or that their utility was proportional to the *absolute* margin of victory. These assumptions contrast with alternative ones positing either that the relative margin of victory was the source of utility or that there was a constant payoff to winning, regardless of the margin of victory or size

of the battle. The shortcomings of these alternatives are fairly clear. The most celebrated (and rewarded) naval victories rarely involved capturing or destroyed an overwhelming proportion of the opponent's force. At Trafalgar, for example, Nelson sunk or captured about half of his opponents; on the "Glorious" First of June, Howe sunk or captured only a quarter of his adversaries. Adopting a relative margin of victory concept would require us to assume that the payoffs to these battles were lower than those in a single-ship encounter where a captain took his lone adversary. To the contrary, admirals who won larger battles or by larger margins could anticipate large rewards, perhaps even a knighthood, viscountcy, or earldom. Moreover, national authorities explicitly attempted to create an incentive structure that was roughly linear in the absolute margin of victory. Nearly all navies of the period paid prize or bounty money for captured (and any many cases sunk) enemy ships; generally, this money was proportional either to number of men or guns on a ship or to its resale value, all of which are strongly correlated with the combat strength of a ship. The amount of money involved for an admiral could be quite substantial, perhaps many years pay (Pope, 1987, pp. 231-235). Thus, it is quite reasonable to assume that an admiral's payoff was proportional to his absolute margin of victory.

The third cluster of assumptions concerns the cost of battle, the likelihood of successfully fleeing, and the payoff to fleeing. I will begin with the cost of battle; we do not require the assumption that battle was costly, but assuming some non-zero cost relaxes the necessary assumption on the payoff to withdrawing, and battles were, in fact, costly. In material terms, the cost of battle is evident. As with the general case made for violent conflict, naval battles generated deadweight losses in the forms of sailors wounded or killed and ships damaged or sunk. The incentives

facing admirals mirrored this basic setup. While a winning admiral often received promotions, accolades, and wealth, a losing admiral faced court-martial, demotion, or even execution, as in the case of the unfortunate John Byng, shot in 1757 for his loss in the Battle of Minorca the previous year (Rodger, 2004, p. 267). Moreover, as has often been noted, high-ranking officers ran particularly high personal risks in battle, given their exposed position on deck - Nelson was the most famous, but hardly the only admiral killed in battle; in fact, Nelson was not even the only admiral to receive a fatal wound at Trafalgar, as his Spanish counterpart, Admiral Gravina died a few months later from his wounds. In total, in the years from 1650 to 1805, 37 admirals in the British, French, Dutch, and Spanish services died as the result of wounds received in battle (*The Naval Chronicle for 1806*, 1806, p. 408-412). Moreover, as will be argued next, national leaders incentivized their commanders *not* to fight, when likely to lose, further underscoring the fact that all parties knew naval battle to be inefficient.

Finally, we turn to the features of the possibility of avoiding battle. It is these features of naval battles that separate them from other cases we might analyze. One of the central difficulties in analyzing diplomatic interactions is that it is nearly impossible to determine what implicit or explicit “bargain” one or both sides rejected in starting a war. In analyzing land battles, we have a somewhat similar difficulty in that avoiding battle through retreat inevitably meant sacrificing territory, resources, and perhaps strategic advantages to an opponent, meaning that battle might often be more efficient than plausible battle-avoiding actions.⁴ In the naval context, however, I

⁴Withdrawing in the land context could also generate a commitment problem. For example, if an army occupied a fortified position, then giving this up in order to withdraw would substantially diminish the probability of victory in a battle fought elsewhere, so an army that could not retreat indefinitely because this would mean conceding its entire territory might have to fight at a defensible point, even if it was unlikely to win.

argue that the implicit bargain that *both* sides rejected when fighting was to sail away at low cost. Retreat in a naval engagement differs from retreat on land in that it gave nothing of value to an opponent. The ocean space vacated was almost never an object of value (and soon abandoned by both sides whether or not a battle was fought), so that neither side lost anything directly by fleeing. Moreover, I will show that, unlike in the case of land warfare, national leaders rarely gave their admirals any incentive to fight unless they were likely to win. Strategically, the value of a “fleet in being” was large, even in cases where that fleet was too weak to risk direct engagement with the enemy, so national leaders rarely had any reason to throw away a fleet by forcing their admirals to fight superior opponents.

At various points in this period, we are able to find direct orders stating that admirals should avoid fighting at a disadvantage. The English “Fighting Instructions” during the First Dutch War, first issued in 1650, ordered commanders “not to engage if the enemy’s ships exceed them in number except [if] it shall appear to them on the place that they have the advantage” (Corbett, 1905, p. 88); the same language carries over into subsequent iterations of these orders (Corbett, 1905, pp. 122, 153). Within the 17th Century, the circumstances of the Battle of Beachy Head (1690), during the Nine Years’ War, are the exception that prove this rule for the English case. Leading up to the battle, a combined English and Dutch fleet of 56 ships under the Earl of Torrington defended the English Channel. On June 25, they sighted a French fleet of 75 ships; Torrington concluded the odds were against him and called a council of war, which “unanimously agreed ...to shun fighting with them [the French] ... and retire” (Colomb, 1899, p. 115). The government, however, was deeply fearful of the domestic risks associated with failing to fight the French given Jacobite agitation (Mahan, 2003,

p. 182), and the Queen sent Torrington explicit orders to “fight whatever the odds” (Rodger, 2004, p. 145). Torrington called a council of war with his senior officers, and decided to comply with the order to fight only after a five hour discussion, and over the objections of the Dutch admiral (Fevre, 2000, p. 35). Consistent with the informational approach here, he suffered a crushing defeat. In his dispatch after the battle, he wrote, “Had I undertaken this of my own head, I should not well know what to say; but its being done by command will, I hope, free me from blame” (Clowes, 1898, p. 340). Torrington’s hopes were fulfilled, as he was acquitted fully at court martial (Rodger, 2004, p. 146). This incident serves to prove the strong practice in the Navy of avoiding action against a superior opponent, given that a direct order from the Queen was necessary to make Torrington fight, and the recognition by the officers involved as well as the court martial of the extreme unusualness of the order, even to the point that Torrington seriously considered disobeying it.

Moving into the eighteenth century, we find a certain bravado in the British Navy that might indicate incentives to fight, even against the odds. Most prominently, an anonymous pamphlet written in 1745 and later identified as the work of Admiral Edward Vernon (Motooka, 2013, p. 8), argues: “It has been said to be a rule in the Navy, that one of our ships of war should not refuse fighting two of her equal force, but might run from three. This rule has no establishment in our laws, but is very well established in honour and reason, it being well understood by every experienced seaman, that two ships against one are not the great odds, which at first sight they seem to be” (Vernon, 1745, p. 2). I first note that Vernon, though stridently arguing his case in the pamphlet, acknowledges the lack of any legal obligation to fight against a superior opponent, and that his case for fighting two opponents is not that an officer

ought to fight against long odds, but rather that the odds in such a fight are relatively good. Nonetheless, Vernon's views are not reflective of the navy of his time, and it is probably worth mentioning that he was removed from the navy by the King the next year for his publication of other pamphlets that reflected poorly on the navy (Harding, 2000, pp. 173-174).

In any case, Vernon's pamphlet was reacting to the case of Captain Savage Mostyn, who had been cruising with an English squadron of four ships off Ushant, when it sighted an inferior French squadron of three ships. The French fled and the English gave chase, during which time both squadrons became separated, so that Mostyn found himself confronting two French ships alone. Mostyn declined to engage on these unfavorable terms, and the French escaped. Mostyn wrote to the Admiralty that he had declined to engage, and the Admiralty accepted this explanation without reservations. After receiving a letter, apparently "written in fun" that criticized his conduct, however, Mostyn demanded a court martial to clear his name (Motooka, 2013, pp. 7-8). The court martial found that Mostyn was "so far from deserving any blame, that the Court are unanimously of [the] opinion, that he did his duty as an experienced good officer, and as a man of courage and conduct" (*Minutes of A Court-Martial Held on Board His Majesty's Ship Lennox in Portsmouth Harbor, 1745*, pp. 24-25). The incident caused no damage to Mostyn's career – quite to the contrary, he went on to achieve flag rank in 1755, and served briefly as one of the lords of the Admiralty before his death in 1757 Laughton and Morriss (2004). In short, we find a continued practice whereby commanders suffered no adverse consequences for avoiding action on unfavorable terms.

Turning now to the French, the case is even clearer. Nicholas Tracy writes

that the French, “developed a strategic *modus operandi* which largely sought to avoid battle unless the odds were very much in their favor” (Tracy, 1996, p. 25). Consistent with this, the French Admiral Grivel, stated the official view that the side with “the fewest ships must always avoid doubtful engagements; it must run only those risks necessary for carrying out its missions, avoid action by maneuvering, or at worst, if forced to engage, assure itself of favorable conditions” (Mahan, 2003, p. 289). Some historians go so far as to suggest that the French rewarded outright timidity in their officers. McNeill writes that the French officers “learned to prefer caution to daring,” citing the example of Dubois de la Motte, who failed to attack a British squadron, which his officers believed could have been defeated by five ships, with his squadron of eighteen, after which he received a promotion and a pension (McNeill, 1985, pp. 65-66). Whether or not the French were discouraged from fighting even when likely to win, it was certainly the case that French officers had nothing to fear from avoiding battle when they seemed likely to lose.

For other navies in the period, the incentive structures were similar. No national government wished to throw away its naval strength in an ill-chosen battle. Peter the Great, of Russia, for example, “ordered his commanders to avoid battle unless they had a one-third superiority of force” (Mitchell, 1974, p. 28). (Glete, 2004, p. 78) notes that Danish admirals were generally “instructed to avoid combat unless they were superior in strength ... [because] the Danish-Norwegian monarchy could not afford a serious defeat at sea.” Of the period in general, Sam Willis writes: “It was rare indeed for two ships or fleets to meet and both be intent on action, and usually the aggressive party in some way had to force action on his enemy” (Willis, 2008, p. 27).

This leaves only the final assumption to discuss - that success in a chase was

stochastic and that the odds were not too skewed. While naval historians have spent far more time detailing battles that happened than ones that did not, cases of successful flight are fairly common in naval histories. Because all navies used roughly the same technology, differences in speed between fleets were never too great. Consequently, even successful chases often lasted several days and covered hundreds of miles (Willis, 2008, p. 38), so that changing circumstances made the outcomes difficult to predict in advance. Finally, even a rare fleet much slower than its opponent could always hope for a shift in the weather to save it, such that, as Willis writes, “the escaping or chasing ship, however outclassed, therefore always had a chance of success” (Willis, 2008, p. 37). While the low cost of avoiding battle separates naval battles from those on land, it is this large stochastic component in chase under wind power that separates battle in the age of sail from earlier (galley) or later (steam) periods, where the faster side could count on catching the slower with near certainty.

While flight was generally costless and likely, though not certain, to succeed, a variety of cases occur in which flight was either impossible or very costly. Flight was prohibitively costly when a squadron or fleet, rather than operating alone, escorted a convoy that would be lost to the enemy in the event of flight. Similarly, in the handful of cases where admirals received orders to fight regardless of the odds, disobedience would come at great personal cost. Finally, there arise some cases where fleeing was physically impossible – most notably when a fleet confronted a lee shore or was at anchor. These cases, where observable capabilities *should* matter as shown in the model, allow for an important point of comparison in the research design described below.

3.5 Research Design

The formal model generates a number of testable propositions, so the primary challenge for research design is to operationalize the relevant variables and deal with rival explanations. I begin with a discussion of the operationalization of the balance of power, the margin of victory, and the availability of flight.

When measuring the balance of power, it is important to note that it is *not* necessary to measure either side's belief. Each side's beliefs about the balance of power will include both its own private information and the publicly-observable information about its opponent. Here, our goal is only to measure the publicly-observable information about each of the two sides. While a variety of variables capture this information, by far the most important variable is the number of guns (i.e., cannons) mounted on a fleet's ships. Guns were the actual mechanism for fighting in the age of sail and the most-discussed capability indicator among tactical writers. Unfortunately, for some early battles, information on the total number of guns is not available. In these case, we can count either the total number of ships on each side, or the total number of ships of the line (a superior indicator accounting for the differential capability represented by different ships).

It is also necessary to identify the appropriate functional form for translating the number of guns or ships on each side into a measure of the balance of power. In the formal model, I have assumed that the relationship follows a ratio-form contest success function, measuring each side's share of total capabilities present in the encounter (i.e., $\frac{s_1}{s_1+s_2}$). While this is a plausible functional form, it is not the only possibility. For example, one might adopt $\frac{\beta_1 * s_1^r}{\beta_1 * s_1^r + \beta_2 * s_2^r}$ where the terms β_1, β_2 and r are estimated from the data.

The historical measurement of strengths (in ships or guns) also requires a few choices about counting. First, I exclude from the count, in all cases, small vessels, such as yachts, bomb vessels, or brigs. Because of their small size, such vessels made little or no contribution to a side's effective fighting capability. Largely as a consequence of this, available sources do not systematically record the presence of these small vessels. Whenever possible, I separately record ships of the line and frigates, while excluding minor vessels. When it is possible to separate ships of the line and frigates, information on ships of the line is used alone.⁵

Second, we must measure the margin of victory. Here, the strong theoretical answer is to measure the number of ships sunk or captured by each side. Some care must be taken in defining this measure. I only code ships captured or sunk in the battle or its immediate aftermath as a direct consequences of battle damage (i.e., I exclude ships that sunk or ran aground after the battle even if battle damage played some role in the sinking). The other issue involves normalizing ship losses to the size of engagement. Although I present some specifications involving raw loss numbers, the preferred specifications normalize the ships losses by the total number of ships.

Third, I turn to the issue of coding battles as mutual or unilateral. An action will be coded as unilateral if one of the fleets was escorting a valuable convoy, physically trapped with no reasonable chance of escape, or under credible, explicit orders to fight whatever the odds. These coding rules are selected to minimize ambiguity. I note, however, that an admiral is not coded as physically trapped if he voluntarily

⁵The largest ships of the line, "first rates" in the British system, had three decks of guns, mounting a total of 100 guns or more with a crew of 800 or more with a broadside weight (i.e., the sum of the weight of the cannonballs fired by all of the guns onboard) around 2,000 pounds. The most common ships of the line, particularly later in the period, were 74 gun, two-deck battleships. Such a ship held a typical crew around 550 men with a broadside weight around 1,500 pounds. In contrast, the "classic" frigate featured 32 or 36 guns, a crew of around 200 men, and a total broadside weight around 350 pounds.

maneuvered from a position where he was free to flee to one in which he was not while aware of the enemy.

Finally, it is necessary to define the universe of cases. In principle, the model implies to any naval engagement within the age of sail. In practice, it is not possible to identify all such engagements, so I limit the analysis to cases in which each side had at least four ships. It is possible to systematically identify all, or nearly all, such cases. Using secondary sources, I identify all battles involving the British, Russian, French, and Dutch navies in the period from 1650-1833.⁶ This means that certain important navies (notably the Spanish, Portuguese, Swedish, and Danish navies) are included only as opponents of the specified navies but to my knowledge this excludes a negligible number of battles.

I code the data on each battle mostly from secondary sources, making very sparing use of primary sources. A full list of these can be found in the data appendix. I consult at least three distinct sources for each battle. For the vast majority of cases, it is possible to code the essential variables of interest with reasonable precision; however, six likely-qualifying battles are dropped from the analysis because the quality of available sources does not allow a clear coding of one or more essential variables.

We can now turn to the key hypotheses to be tested from the quantitative evidence. The three hypotheses derive directly from the remarks in the formal model above:

1. The margin of victory for the “chaser” in a chase battle or the “chooser” in

⁶Battles of the British Navy are identified based on the lists provided in Rodger (2004) and Willis (2008) as well as all battles described in the appropriate volumes of William Laird Clowes’s *The Royal Navy: A History from the Earliest Times to the Present*. For the French, I rely on Jenkins (1973). For the Russians, I use Tredrea and Sozaev (2010). For the Dutch, I use Bruijn (1993). Additionally, I consult all of the battles listed in *Naval Warfare: An International Encyclopedia*.

a unilateral battle should be greater than zero, regardless of the observable capabilities.

2. The margin of victory in a unilateral or chase battle should increase in the observable balanced of power.
3. The margin of victory in a mutual battle should be unrelated to the observable balance of power.

Strictly speaking, the model implies slightly different predictions for unilateral and chase battles. That is, the margin of victory should increase linearly in the balance of power for unilateral battles but might, for certain parameterizations, increase non-linearly in chase battles. The effect of the expected strengths is, however, nearly the same for plausible parameterizations. Consequently, I will generally pool chase and unilateral battles in the analysis.

I will note briefly that the model implied additional predictions for the c , z , and w terms, discussed in the appendix. In the empirical section here, these are treated as nuisances rather than parameters associated with hypotheses of interest. The reason here is threefold. First, these quantities are more difficult to measure than capabilities. Second, the historical evidence suggests that these parameters varied little, making them unsuitable for meaningful hypothesis testing. Third, these parameters are less clearly related to other conflict situations, so the hypotheses associated with them are of somewhat less theoretical interest.

We turn now to threats to inference. There are a large number of alternative explanations that explain why wars or battles occur; some of these lead to the same predictions as some of the hypotheses above, but to my knowledge none of these

generate the same prediction as hypothesis three, which can only arise theoretically if players condition in a very particular way on observable information; to generate the same prediction would require assuming that players operate under some heuristic effectively equivalent to that suggested by the optimism mechanism. Thus, the central threats to inference here come from alternative reasons that we might see a lack of correlation of the form specified by hypothesis three. The most likely challenge comes from measurement issues. Straightforwardly, if there is sufficient measurement error in the measure of capabilities then we would not find a relationship between capabilities and outcomes. This is why hypothesis two so important, although it does not directly test the optimism mechanism. If poor measurement leads to evidence that supports hypothesis three then it should also lead to evidence that falsifies hypothesis two. Measurement error on the availability of flight has the more traditional consequence of biasing against a finding. If we miscode the availability of flight, this should tend to introduce a correlation between observables and outcomes in the consensual cases and attenuate the correlation in the unilateral cases.

Turning to the nuisance parameters: c , z , and w . As argued above, there are fairly strong historical reasons to believe that these did not vary much, which would preclude any need to control for them, as they can bias our test only by covarying with expected capabilities. If, however, these parameters did meaningfully vary and did so in a way that was correlated with expected capability, then this would **always** bias against hypothesis three, as the expected margin of victory would now depend on the expected strengths via their covariance with c , z , and w , whatever that might be (except in the case of perfectly offsetting covariance, in which case the original test would be unbiased anyway).

3.6 Data Description

Before proceeding to the tests, I will briefly introduce the data. I have coded data for all British naval battles in the age of sail involving at least four ships on each side. This produces 92 battles, which I summarize by type in Table 3.1.

Table 3.1: Distribution of Battle Types

Mutual	34
Chase	20
Unilateral – Convoy Escort	17
Unilateral – Trapped	19
Unilateral – Ordered to Fight	2

For the strength variable, I rely on the number of guns, the number of ships of the line, and the number of ships. The number of guns measure is available for 78 cases (i.e., the vast majority). The number of ships of the line is the most precise measure available in 6 cases. The number of ships in the most precise available in the remaining 8 cases. I use the most precise of the available measures (in the order just listed).

In 10 of the battles, the British navy fought as part of a coalition. The British opponents in the battles are give in Table 3.2.

Table 3.2: British Opponents

French	52
Dutch	22
Spanish	6
Franco-Spanish Coalition	6
Ottoman	3
Danish	2
American	1

I also classify the battles by region of the world. I split the world into the

following regions: the Caribbean, the Mediterranean, the North Sea/Irish Sea/English Channel, the Atlantic (inclusive of the Bay of Biscay), and the Indian Ocean. The number of battles in each of these regions is shown in Table 3.3.

Table 3.3: Battle Locations

North Sea, Irish Sea, or English Channel	29
Atlantic Ocean (including Bay of Biscay)	26
Mediterranean	17
Caribbean	10
Indian Ocean	10

Turning to the outcome measures, I code two separate variables. First, I present the historiographical outcome codings. These codings characterize battles on a five point scale on the basis of the naval historiography of the battles. This coding is meant to encompass the broader strategic context of the battle. Second, I present the quantitative outcome measures: the underlying variable here is the number of ships lost by each side (though this subjected to various normalizations in the subsequent analysis). I present the historiographical codings in Table 3.4. There are five categories. Note that because the British navy is always one of the two navies involved, these can be expressed as the outcome for the British side.

As noted, the quantitative measures depend on an underlying measure of net ships losses. I will note that in 32 out of 92 battles (34%), the net losses were zero.

Table 3.4: Distribution of Outcome Codings

Decisive British Defeat	4
British Defeat	15
Inconclusive	22
British Victory	27
Decisive British Victory	24

The variable reaches a maximum of 22 net losses with a standard deviation of 6.2.

3.7 Hypothesis Tests

3.7.1 Testing H1 and H2

From an empirical perspective, H1 is the most straightforward. Here, we simply predict that in chase battles or unilateral battles, the outcome will favor either the chaser or chooser when we do *not* condition on the observed strengths. Here, I pool the chase and unilateral battles. I exclude one “doubly unilateral” battle - the Battle of the Dogger Bank, in which both sides (here the British and Dutch) were escorting convoys and unable to avoid battle.

I conduct the test using three t-tests on three different versions of the outcome measure. Here, it is necessary to express the outcome for the perspective of the chooser/chaser. First, I use the historiographical outcomes transformed onto a 5 point scale (i.e., where decisive defeat for the chooser/chaser is 1 and decisive victory for the chooser/chaser is 5 such that an inconclusive battle is coded as 3). Second, using the unnormalized net losses of the opponent (i.e., the number of ships lost by the opponent minus the number of ships lost by the side with the unilateral option to avoid battle) and using the normalized net losses of the opponent (i.e., the previous measure divided by the opponent’s number of ships). That is, we hypothesize a positive effect in each case versus a null hypothesis of zero. I show these in ??.

The results here strongly support H1. All of the results are positive, significantly greater than the null, and substantively large. The first result indicates that, when one side has the option to unilateral avoid battle, then on the historiographical coding

Table 3.5: Testing H1

Dependent Variable	Null Value	95% CI of Observed Value
Historiographical Coding	3	3.8 - 4.4
Net Losses for Opponent	0	3.8 - 6.6
Normalized Net Losses for Opponent	0.45	0.34 - 0.56

scale, the expected result roughly corresponds to victory for that side. The second result indicates that, against a null hypothesis of no ships captured on net, the side with the unilateral option expects to capture or sink just over five of its opponent's ships. The third result indicates that on average the side with the unilateral option to avoid battle captures or sinks 45% of its opponents ships.

3.7.2 Testing H2

H2 predicts that, in chase and unilateral battles, the margin of victory will increase in the observable balance of power. As discussed above, the predicted effect is linear for unilateral battles but slightly non-linear for chase battles. Given that the theorized deviation from linearity is small, I pool the two sets of battles and test for a linear relationship.

In principle, each battle presents two observations: that is, the ships taken by side 1 as well as the ships taken by side 2. Conceptually, it is entirely possible for each side to take some number of its opponents ships. The most literal form of the model predicts that Side 1 will capture $\frac{s_1}{s_1+s_2} * s_2$ ships from Side 2 while Side 2 will capture $\frac{s_2}{s_1+s_2} * s_1$ ships from Side 1. That is, on a literal basis, the appropriate model, where i indexes battles and j indicates sides within battles is:

$$\frac{OpponentLosses_{ij}}{OpponentShips_{ij}} = \beta_0 + \beta_1 * \frac{\gamma_j * Guns_{ij}}{\gamma_j * Guns_{ij} + \gamma_{j'} * OpponentGuns_{ij}} + \beta_j + \epsilon_{ij}$$

Naturally it is entirely implausible to assume that ϵ_{i1} is independent of ϵ_{i2} . Substantively, a moderate-to-strong negative correlation appears likely (i.e., higher than expected losses for one side likely imply lower than expected losses for its opponent). Consequently, it is necessary to cluster the standard errors for each battle. Under the assumption $\beta_j = \beta_{j'} = 1$, the model can be estimated via OLS. I present this model in the first column of Table 3.8.

Estimating the γ parameters allows the gun-for-gun effectiveness of different navies to vary, which is substantively important. To identify this model, I assume that $\gamma_{British} = 1$ so that the other coefficients express the effectiveness of those navies relative to the British. This model cannot, however, be estimated via OLS, so I use maximum likelihood. This necessitates a parametric assumption about the ϵ_{ij} terms. Here I assume that ϵ_{i1} and ϵ_{i2} follow a multivariate normal distribution with some variance and covariance estimated from the data. In addition to estimating differential effectiveness, it is possible to include additive nationality controls in order to control for nationally-varying costs of retreat or costs of battle (e.g., as the result of doctrinal differences).

In model 2 of Table 3.8, I simply re-estimate Model 1 using MLE and the multivariate normal error structure. In model 3 of Table 3.8, I control for both differential effectiveness (the γ_j parameter) and differential cost (the β_j parameter by

Table 3.6: Unilateral and Chase Battles

	Model 1	Model 2	Model 3
Balance of Power (β_1)	1.48*** (0.182)	1.48*** (0.184)	1.21*** (0.198)
Non-British Capability Multiplier ($\gamma_{NotBritish}$)			0.84 (0.446)
Non-British Dummy ($\beta_{NotBritish}$)			-0.31 (0.228)
British Dummy ($\beta_{British}$)			-0.44*** (0.131)
Intercept	-0.51*** (0.095)	-0.51*** (0.096)	
$Var(\epsilon)$		0.083	0.071
$Cov(\epsilon_{i1}, \epsilon_{i2})$		-0.004	0.008
Number of Battles	58	58	58
Adjusted R^2	0.37	0.37	0.44
<i>Note:</i>	*p<0.05; **p<0.01; ***p<0.001		
	Model 1 estimated via OLS with clustered standard errors.		
	Models 2-3 by MLE with multivariate normal error distribution.		

allowing these parameters to vary for British vs. non-British fleets.

The primary coefficient of interest here is β_1 , indicating the relationship between the balance of power and outcomes. Across models, this variable is highly significant and substantively large in magnitude. The strongest version of the theory implies that the coefficient on the balance of power should be exactly one, while the intercept should be exactly zero (thus, predicting no ships taken for a side with no capabilities and all ships taken for a side with all capabilities). The coefficients estimated here, especially in Model 1 diverge from this expectation, implying a somewhat “steeper” relationship between capabilities and outcomes. In Model 3, the control for heterogenous gun-for-gun effectiveness suggests that non-British navies were about 84% as effective on a gun-for-gun basis as the British, which lies well within the plausible range historiographically. Finally, I note that, as measured by the R^2 values, the fit of

the models here is quite good – that is, the balance of power explains a substantial proportion of variance in ship losses.

Next, I turn to a series of tests at the battle level, rather than the disputant level. This allows the use of the historiographical outcome codings, rather than ship losses, as a robustness check. Here, I use as the primary independent variable the British share of the balance of power in order to predict outcomes for the British in a battle. As outcome indicators, I use the historiographical codings (expressed as a five point scale), net losses (i.e., opponent losses - British losses), and normalized net losses. Here, I normalize in two different ways: first, by the number of ships held by the opponent of the British; second, by the number of ships on the weaker side (whichever side that might be). I estimate all of these models via OLS with robust standard errors and present them in Table 3.7

Table 3.7: Battle-Level Outcomes and Balance of Power

	Historiographical Outcome	Net Losses	Net Losses Non-British Ships
British Share of Power	4.751*** (1.043)	17.346*** (5.170)	2.017*** (0.237)
Constant	1.082* (0.613)	-5.475* (3.003)	-0.733*** (0.144)
Number of Battles	58	58	58
Adjusted R ²	0.264	0.130	0.377
Residual Std. Error	1.075	5.912	0.355

Note:

*p<0.1; **p<0.05; ***p<0.01

All models estimated via OLS with robust standard errors.

Again, the balance of power variable is substantively large and statistically

significant across specifications, providing strong evidence in favor of H2.

3.7.3 Testing H3

The fifth hypothesis suggests that there should be no relationship between observable indicators of strength and observed outcomes in mutual battles. The strongest version of this suggests that in mutual battles, we should precisely estimate an intercept of zero and a slope on observed capabilities of zero. A weaker variant suggests that the slope on observed capabilities should be significantly smaller for mutual than unilateral battles.

I consider these hypotheses together by including all battles in the tests above along with an interaction term between mutuality and the balance of power. If the strong variant of H3 is correct, then the coefficient on this interaction should be exactly $-\beta_1$ (i.e., should precisely offset the estimated balance of power). The weaker variant suggests merely a negative and significant coefficient on the interaction. Consequently, I re-estimate models 1 and 3 from Table 3.8 after adding the interaction term and present these below.

The results provide strong support for H2. In both models the interaction between the balance of power and the mutuality of the battle is negative and significant. Further, in both models the estimated relationship between the balance of power and outcomes in mutual battles is very small (i.e., 0.13 in model 1 and 0.17 in model 2). That is, whatever relationship exists between the balance of power and outcomes is substantively negligible in mutual battles.

After this analysis, I repeat the specification from Table 3.7, including the interaction for mutual battles. Once again, the hypothesis holds that we should observe

Table 3.8: Relationship Between Outcomes and Capabilities

	Model 1	Model 2
Balance of Power (β_1)	1.48*** (0.152)	1.26*** (0.135)
Balance of Power * Mutual	-1.35** (0.442)	-1.09** (0.352)
Mutual Battle	0.48* (0.22)	0.35* (0.179)
Non-British Capability Multiplier ($\gamma_{NotBritish}$)		0.69*** (0.116)
Non-British Dummy ($\beta_{NotBritish}$)		-0.39*** (0.090)
British Dummy ($\beta_{British}$)		-0.41*** (0.073)
Intercept	-0.51*** (0.079)	
$Var(\epsilon)$	0.056	0.048
$Cov(\epsilon_{i1}, \epsilon_{i2})$	-0.003	0.004
Number of Battles	92	92
Adjusted R^2	0.40	0.47
<i>Note:</i>	*p<0.05; **p<0.01; ***p<0.001	
	All models via MLE with multivariate normal error distribution.	

a negative and significant coefficient, roughly equal in magnitude to the coefficient on the balance of power measure. I present these results in Table 3.9.

Table 3.9: Battle Level Outcomes in the Full Sample

	<u>Net Losses</u> Non-British Ships	<u>Net Losses</u> Weaker Ships
British Share of Power	2.017*** (0.237)	2.292*** (0.329)
Mutual Battle	0.727*** (0.205)	0.806** (0.318)
British Share* <i>Mutual Battle</i>	-1.901*** (0.367)	-2.012*** (0.575)
Constant	-0.733*** (0.144)	-0.891*** (0.204)
Observations	92	92
Adjusted R ²	0.457	0.441
Residual Std. Error	0.295	0.330

Note: *p<0.1; **p<0.05; ***p<0.01
All models estimated via OLS with robust standard errors

Table 6 again provides support for H3. Across all four models, the interaction term (British Share**Mutual Battle*) takes on the expected negative sign. In the first two models, the interaction is not significant, but it is highly significant in the two models that use normalized losses as the dependent variable. This is unsurprising given that normalized losses provide a more precise measure of the outcome.

3.8 Discussion and Conclusions

Overall, the results here provide strong evidence for the mutual optimism mechanism in the context of naval battles. The first core result here shows that, when only one of two sides has the option to avoid fighting, that side tends to win. From the informational perspective, this result suggests that admirals are able to accurately perceive and condition on the observable balance of power. That is, if admirals formed substantially irrational beliefs about their probability of victory in battle, then we would not see the “chooser” win more often than not. The second key finding shows that, while capabilities predict outcomes in unilateral battles, they do not predict outcomes in mutual battles. This implies, consistent with the optimism hypothesis, that observably disadvantaged admirals are choosing to fight only when they hold unobservable advantages, which again must reflect a mostly rational assessment process. These results are inconsistent with admirals who suffer from substantial delusion or misperception, confirming the role not just of optimism, but of rational optimism in causing costly conflict.

While the second finding in particular provides strong evidence for a counter-intuitive prediction associated with the mutual optimism hypothesis, readers may worry about the generalizability of these results to the issue of war. Naval battles were chosen specifically because of specific, unique features that permit inference but the general strategic setting is similar to choices about war. The naval battles studied here involved choices of great consequence about costly conflict by senior national political and military leaders. The battles discussed here were not mere skirmishes: at least a third of them involved more than 1,000 casualties. It is no exaggeration to say that the fate of nations hung in the balance at a number of these battles: the tactically

minor French victory at the Battle of the Chesapeake led directly to Cornwallis's surrender and American independence; the dramatic victory at Trafalgar served as a key turning point in the Napoleonic Wars; and the two battles of Copenhagen marked the permanent end of Danish-Norwegian naval power. The admirals involved were among the most senior leaders of their nations; in fact, one admiral represented in the data is James, Duke of York, later King James II of England.

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