Quid Pro Quo Diplomacy

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Abstract

Political leaders value public demonstrations of support from foreign leaders, and are often willing to make concessions in order to obtain them. We model the bargaining dynamics surrounding these exchanges and their impact on the recipient leader's political survival, with a focus on top-level diplomatic visits as a means of signaling international support. Our model addresses two interrelated questions: first, we consider how symbolic displays of support from one leader to another can be informative even when they are "purchased" with concessions; and second, we derive the equilibrium price of a visit under different bargaining protocols. The incentive to make a concession in exchange for a visit generally undermines a visit's signaling value. Mutually beneficial quid-pro-quo diplomacy requires some opacity in negotiations. The results characterize the size of concessions associated with visits and the domestic political impact of a visit under different bargaining protocols.

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Heard from White House – assuming President Z convinces trump he will investigate / "get to the bottom of what happened" in 2016, we will nail down date for visit to Washington. Good luck!

—US Special Envoy to Ukraine Kurt Volker, in text message to Ukrainian Presidential Aide Andriy Yirmak, July 25, 2019[1]

The story is by now familiar: President Trump, in pursuit of dirt on a political rival, withheld U.S. support to foreign-occupied Ukraine in order to induce President Volodymyr Zelensky to announce an investigation into the family of then-candidate and former Vice President Joe Biden. Among the forms of support withheld was a White House meeting between the two leaders. For Zelensky, the visit was no small matter: as Deputy Assistant Secretary of State George Kent relayed in the impeachment hearings arising from this exchange, leaders like Zelensky "see a meeting with the U.S. President in the Oval Office at the White House as the ultimate sign of endorsement and support from the United States" (Permanent Select Committee on Intelligence 2019). Eager for such a public demonstration of diplomatic backing, Zelensky acceded to Trump's demand, until a whistleblower from within the U.S. government intervened.

Zelensky's willingness to proffer a concession for a White House visit seems reasonable at first glance, but upon further inspection a puzzle arises. The value of the visit, according to Kent, was essentially symbolic. But if the Trump administration was selling the White House visit at a price, what exactly would be signaled by the occurrence of the visit—other than Zelensky's willingness to pay for it? The credibility of a signal generally depends on its costliness; if the cost of a signal is subsidized, its credibility is undermined. How can a signal of international support be informative when the signal is effectively purchased by its beneficiary?

Recent research has begun to examine the strategic incentives underlying public diplomacy, with a primary focus on the signaling value of top-level diplomatic exchanges and the information that they convey to an international audience (McManus 2018; Matush

[1] Savage and Williams (2019)

2020; Malis and Smith 2021). Absent from these accounts, however, is consideration of the bargaining that surrounds the exchange, and how those bargaining dynamics affect the visit's signaling value. In public diplomacy, as in all facets of political life, favors are seldom given out freely. To understand the causes and consequences of diplomatic signals, it is essential to understand the bargaining and deal-making that accompany them.

This paper presents a formal model of bargaining over diplomatic signals of support. We focus on top-level diplomatic visits as a prominent means of signaling support, and we examine the consequences of these exchanges on the recipient leader's political survival. The analysis addresses two central questions: first, how can symbolic displays of support from one leader to another be informative even when they are "purchased" with concessions; and second, what is the equilibrium price of a visit under varying bargaining protocols.

Our model features three players: a foreign leader, a domestic incumbent, and a domestic challenger. The foreign leader and domestic incumbent negotiate over the size of a concession that the domestic leader will provide in exchange for a diplomatic visit. Visiting carries some cost for the foreign leader, and the benefit he enjoys from the visit is conditional on the domestic leader being sufficiently secure in office as to be able to deliver the agreed-upon concession. The foreign leader's decision to visit thus signals his private assessment of the incumbent's strength. Conversely, the domestic challenger is incentivized to challenge only sufficiently weak incumbents. Upon observing the occurrence (or not) of a diplomatic visit, the challenger updates her belief of the probability that a challenge will succeed, and is deterred from participating in one (or encouraged to do so). Importantly, the informativeness of the visit depends, among other things, on the size of the negotiated concession: the prospect of a larger (conditional) benefit makes the foreign leader more willing to visit weaker incumbents, who carry a greater risk of "defaulting" on the deal—whereas a visit granted in exchange for a smaller concession reveals an especially high degree of confidence that the incumbent will be capable of delivering. Thus in bargaining over the concession, the domestic leader must balance the increased probability of obtaining a visit, against the diminished strength of the visit's signal, as well as the direct costs of the concession.

We vary the bargaining protocol along two dimensions: first, whether the domestic or foreign leader has proposal power; and second, whether the bargaining is "open" or "closed" to the domestic challenger. Within the latter "closed" scenario, our analyses also examine how the likelihood that the foreign nation wants a favor and the ease with which concessions are observed affect bargains. Consistent with standard bargaining results, we find that each leader obtains a better a deal when she or he has proposal power. Of greater interest are the implications of bargaining transparency. Our first main result is to show that, under fully open bargaining, the domestic leader never stands to benefit from offering a concession that induces a positive probability of a visit occurring (even when she has proposal power). The incumbent is better off leaving the challenger with her prior belief, rather than facing the lottery over good and bad signals that would result from a non-degenerate bargaining outcome.

The open-door bargaining protocol provides a useful analytical benchmark, but relies on the substantively questionable assumption that a third party to a diplomatic negotiation can fully observe the bargaining process. In the latter half of the analysis we relax this assumption and assume bargaining occurs behind closed doors. In this opaque setting the challenger observes any visit and, should a visit occur, he probabilistically observes the size of the concession granted. This opacity creates the possibility of mutually beneficial quid-pro-quo diplomacy. The incumbent offers a concession that induces a positive probability of the foreign leader granting a visit, and in expectation, the incumbent's survival prospects (and overall payoff) improve relative to making no concession. This result (and its divergence from the open-bargaining result) is explained by the inference drawn from the absence of a visit. When it seems ex-ante unlikely that the foreign leader is interested in a concession from the incumbent—and thus unlikely that a visit will occur—the lack of a visit effectively provides a neutral rather than a negative signal of the incumbent's strength, while the occurrence of the visit is an unambiguously positive signal. We conclude the analysis by examining comparative statics of the equilibrium price of the visit with respect to various model parameters and features of the bargaining protocol.

This paper relates most directly to formal models of diplomatic visits by Malis and Smith (2019, 2021) and by Matush (2020)—which are, to our knowledge, the only game-theoretic approaches to the topic in extant literature—as well as related empirical research (Goldsmith, Horiuchi and Matush 2020; Ostrander and Rider 2019; McManus 2018; Lebovic and Saunders 2016; Nitsch 2007). More broadly, our study contributes to a number of other formal literatures as well: our theory relates to models of bargaining in front of audiences (Groseclose and McCarty 2001; Stasavage 2004; Perlroth 2019); to models of international bargaining over policy concessions (Andersen, Harr and Tarp 2006; Vreeland and Dreher 2014); and to models of informational channels through which international actors can influence domestic politics (Fang 2008; Shadmehr and Boleslavsky Forthcoming). Drawing on insights from these diverse literatures, our model examines an international bargaining process in which a material concession is exchanged for the revelation of information to a third party. This setup gives rise to some novel strategic considerations and helps makes sense of a broad swath of heretofore unexplained political activity.

1 Bargaining Over Symbolic Support

The bargaining over a prospective Trump-Zelensky visit represents, in unusually stark terms, a recurrent pattern in American diplomatic practice of exchanging concessions for diplomatic signals. Here we present a few more historical cases, and consider the insights from existing theoretical and empirical literature which can be leveraged to develop our model of bargaining over symbolic support.

A prospective visit between President Obama and Azerbaijani President Ilham Aliyev unfolded in a manner not entirely dissimilar to the Trump-Zelensky exchange depicted above. Aliyev was slotted to attend a multilateral nuclear security summit in Washington in March 2016, but hoped to leverage the opportunity to elicit an even stronger signal for his domestic audience, in the form of a one-on-one meeting with Obama. According to an Azerbaijani journalist and human rights activist, Aliyev was "eager for that ultimate seal of approval – a few minutes and a photo op with Obama – that would give him the image boost he seeks in the midst of an economic crisis at home" (Huseynov 2016). The Obama administration, aware of the value Aliyev placed on such a signal, demanded a concession in return: the release of political prisoners who were part of the focus of a broader human rights campaign. One US official involved in the negotiations noted that the deal was "made pretty darn explicitly. It was something like, 'We need the following things to happen . . . There's a chance you might get to meet with the President"'.[2] Aliyev released

[2] Quote from an interview conducted by Myrick and Weinstein (2020).

two political prisoners, which turned out to be insufficient to earn him a meeting with the President. He instead received a one-on-one with the Vice President (Office of the Vice President 2016); a month later he effectively revoked the prior concession by imprisoning two other activists on trumped-up charges (Gogia 2020).

Such a transactional approach to the granting or withholding of diplomatic visits can be observed throughout recent American history. Seeking UNSC authorization for a military intervention in Libya earlier in his tenure, Obama turned to Gabonese President Ali Bongo Ondimba for a critical supportive vote. Bongo delivered, and in return was granted a stay at Obama's private guest residence later that spring (O'Grady 2016). When President Bush visited Poland shortly after the invasion of Iraq in 2003, "the point of his visit [was] obvious: to thank this country for supporting American policy" and to "signal . . . that Poland, in the enthusiastic eyes of Washington, has become an important ally, even a special friend" (Bernstein 2003). Despite the fact that a quid pro quo was "obvious", the occurrence of the visit nonetheless carried some signaling value. Discussing the possibility of a US-Korean visit in 1964, a telegram from the US embassy in Korea advised that "[t]iming of visit should be related to progress [on] ROK-Japan normalization", an issue the US had been pushing despite domestic difficulties faced by the Korean government.[3] A 1955 telegram from Embassy Cairo likewise recommended delaying a visit with Nasser until "pendulum in Egyptian-United States relations could by other means be started again toward United States."[4] Generalizing beyond these individual anecdotes, Malis and Smith (2021) provide large-N evidence that post-war US presidents have systematically reaped concessions from the leaders with whom they conduct diplomatic visits, in the form of closer voting alignment in the UN General Assembly and increased market access for US exporters.

While the discussion thus far has centered around US diplomatic activity, the practice of exchanging visits for concessions is by no means a uniquely American phenomenon. For instance, we see similar tactics employed by both British Prime Minister Tony Blair and French President Nicolas Sarkozy in their dealings with Libyan leader Muammar Gaddafi in 2007. Both European leaders leveraged a high-profile diplomatic visit in exchange for advantageous commercial deals for their own domestic firms (The New York Times 2007;

[3] https://history.state.gov/historicaldocuments/frus1964-68v29p1/d354
[4] https://history.state.gov/historicaldocuments/frus1955-57v14/d175

BBC News 2007). These were the publicly known considerations in the deals; the allegation subsequently emerged that Gaddafi illicitly paid €50 million to Sarkozy's 2007 election campaign in advance of the visit, a crime for which Sarkozy has since been charged by French prosecutors (McAuley 2018).

What does existing literature tell us about these kinds of international exchanges? In general terms, we are interested in a situation in which two actors are bargaining in front of a third party who draws inferences from the bargaining outcome that she observes. Interactions of this sort have been examined in previous formal literature, with a particular focus on the incentives for "posturing" that arise, and the consequences of transparency and information asymmetry for bargaining outcomes (Groseclose and McCarty 2001; Stasavage 2004; Perlroth 2019). Our situation is unique, however, in that the object of the bargaining is not a division of resources or a policy output; rather, the object of the bargain is *information*, in the form of a costly, "money-burning" signal sent to a third party. In this sense, the puzzle we present is similar to that considered by Vreeland and Dreher (2014) in the context of vote-buying in the UN Security Council, where, as the authors describe, "the central political commodity that is bought and sold is legitimacy". While Vreeland and Dreher's study is primarily an empirical investigation of aid-for-voting exchanges, we provide a formal theoretical analysis which highlights the tensions and complexities inherent to the concessions-for-signalling exchanges under examination.

More directly related to our substantive context of analysis is a newly emerging body of quantitative and formal literature on public diplomacy and diplomatic visits (Malis and Smith 2019, 2021; McManus 2018).[5] These studies generally theorize diplomatic visits as public signals of support from one leader to another.[6] McManus (2018) conceptualizes visits as tied-hands deterrent signals in the face of threats from foreign adversaries. Malis and Smith (2019, 2021) examine how visits deter domestic challenges against the recipient leader. The present analysis differs substantially from these previous studies in two key respects: first, the model endogenizes the size of the quid pro quo through a bargaining process; and second, the domestic leader is treated as a strategic actor. An implication of these two innovations is that the signal receiver in our model knows that a visit was

[5]Complementing this body of work on the public-facing aspects of in-person diplomacy is a set of studies focusing on its private aspects: see, for instance, Holmes and Yarhi-Milo (2016).

[6]Matush (2020), in contrast, considers how public diplomacy can be used for foreign antagonism rather than support.

"purchased", and thus conditions their inferences on whatever price was paid. This in turn alters the bargaining incentives of both the domestic and foreign leader. As a consequence, our model reveals that the kind of diplomatic exchanges theorized by Malis and Smith (2019, 2021) are not generally incentive-compatible for both parties. We instead show that the conditions under which quid pro quo diplomacy can occur are precisely the conditions under which it would be least expected, as we elaborate in Section 6 below.

2 A Model of Concessions, Visits, and Political Survival

Our model features three players: a domestic incumbent, L; her political challenger, C; and a foreign leader, F. The model has three phases: 1) bargaining; 2) visits; and 3) domestic political competition. In the bargaining phase, the salience (S) of a concession arises stochastically, and L and F bargain (under varying bargaining protocols and informational structures) over the size of the concession, z, that L will provide in exchange for a visit. F then decides whether or not to conduct the visit and reap the concession. Following the bargaining and the occurrence (or not) of a visit, domestic competition occurs, in which C decides whether or not to attempt to remove L from power. We reduce domestic competition to two dimensions: the cost K that C incurs for mounting a challenge against the leader, and the probability θ that the leader can survive a challenge. The challenger fully learns the first factor, while the foreign leader sees a noisy signal of the latter.

2.1 Bargaining

The game begins with nature stochastically determining whether a salient opportunity exists for L to provide F a concession. We represent this as a random variable $S \in \{0, 1\}$. If L wants a favor, $S = 1$, then Challenger C believes that the probability that $S = 1$ is $\sigma \in (0, 1]$. We refer to σ as expected salience; C's expectation that F wants a favor. Absent such a salient opportunity, the bargaining phase concludes trivially with no concession agreed upon, and the game moves directly to the political competition phase. If a salient opportunity arises, then bargaining commences and L and F negotiate the size of the concession that L is to provide F in exchange for a visit. We assume a simple take-it-or-leave-it bargaining framework: one leader, either L or F, proposes a concession z to be proffered upon the completion of a visit, and the other leader either accepts or rejects.

We vary the bargaining context along two dimensions: 1) which leader has proposal power, and 2) whether the negotiations are open or closed.

Proposal power: If L is the proposer, then she offers a concession of size $z \geq 0$ in return for a visit, which F then either accepts or rejects. If F is the proposer, then the roles are reversed: F makes a demand of z, which L either accepts or rejects. We note that accepting an agreement at this stage does not entail a commitment on F's part to conduct a visit; rather, it is a commitment on L's part to provide a concession of size z in the event that F does decide to visit (which we discuss in the next phase).

Open vs closed bargaining: Visits are public events seen by all. However, we vary the extent to which C observes other aspects of the game. In open bargaining, the first scenario we consider, C observes all aspect of the bargaining. That is to say, C knows whether F wants a favor and completely observes the offers and acceptances of the players.

In the closed setting, which we believe is closer to the reality of diplomatic bargaining, C does not observe bargaining between F and L. Within this setting we vary concession transparency and expected salience. Concession transparency refers to the probability, q, that the size of the concession is observed when a visit occurs. Expected salience corresponds to C's belief that F wants a favor from L (i.e. $Pr(S = 1)$).

We do not explicitly model the origins of C's beliefs about the likelihood that F wants a favor. However we could easily do so with a simple signaling structure. For instance, suppose C observes a signal $s \in \{0, 1\}$ where $Pr(s = y|S = y) = \gamma > \frac{1}{2}$ and the common prior is $\mu = Pr(S = 1)$. Then upon observing $s = 1$, $\sigma = \frac{\mu\gamma}{\mu\gamma+(1-\mu)(1-\gamma)} > \mu$.

2.2 Visits

F must decide whether to carry out the visit and collect the concession. From F's perspective, the decision to visit entails balancing costs and benefits, which are conditional on L's survival in office. F sees a noisy signal A of L's strength θ, which captures the likelihood that L can survive a challenge from her domestic rival (described below in detail). We specify the game such that F observes this signal after the negotiations are complete.

However, as we discuss towards the end of the paper, the results are robust to alternative assumptions about the timing of F's information acquisition.

If F conducts a visit, he incurs a fixed cost τ: this includes the opportunity cost of F's time, as well as any associated transport, security, and administrative costs. F pays this cost regardless of whether or not L survives in office. In the event that L is removed from office following the visit, F pays an additional cost of ρ; we refer to this as a reputational cost. Weighed against these costs is the benefit F enjoys from the concession z. If L remains in office, this concession is received with certainty; if L is removed, F retains the concession with probability $r \in [0, 1]$. Thus r captures the immediacy with which the concession can be delivered following the negotiation, or the difficulty that L's successor would face in revoking the concession.

2.3 Domestic political competition

In the final stage of the game, the challenger, C, may attempt to remove the leader. For exposition purposes we focus on domestic political competition, though the model readily accommodates a foreign challenger. Many factors shape political contestation. We focus here on two dimensions: θ and K, which we refer to as the leader's "strength" and the challenger's "cost" respectively. θ represents the probability that L can withstand a removal attempt by C, and K represents C's cost for making such an attempt. All actors have common priors about θ and K. The challenger, C, fully learns his cost K before deciding whether or not to challenge. We assume that F learns nothing about the cost dimension, but does see a noisy signal about L's strength, θ. Thus while C maintains an informational advantage over F with respect to one dimension of political contestation, he can still learn something about the second dimension from observing F's decision to visit or not.

C's payoff from successfully removing L is 1 and we normalize C's payoff from L remaining in office to 0. C's payoff from attempting to remove L is

$$(1 - \theta)1 - K$$

We assume K is uniformly distributed on the internal $[0, 1]$.

The domestic leader L receives an office-holding benefit of Ψ if she retains power, while her payoff from being deposed is normalized to 0.

2.4 Signals and beliefs

Foreign leader F observes a noisy signal of L's strength θ. This signal A takes values between 0 and n. For intuition (although we do not restrict A to integers) we can think of A as the number of "heads" from n biased coin flips, where the probability of heads in each trial is θ. By this interpretation, each coin flip would represent a new piece of evidence uncovered about L's strength in office, and heads would denote evidence indicating that L is strong and capable of delivering a concession. The number of trials, n, thus provides a convenient metric for the precision of F's signal.

All players share a common prior belief of θ, which lies between 0 and 1. We specify this prior distribution, $G(x) = Pr(\theta < x)$, to be the Beta distribution (with parameters α and β), which is a flexible distribution on the domain [0,1]. The associated probability density is $g(\theta) = \frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)}\theta^{\alpha-1}(1-\theta)^{\beta-1}$, where $\Gamma(z) = \int_0^\infty x^{z-1}e^{-x}dx$.

We exploit two useful features of the Beta distribution (as have others, for instance Alt, Calvert and Humes (1988)). First, the expected value of θ is $\frac{\alpha}{\alpha+\beta}$. Second, the Beta distribution has a simple Bayesian update. Given regime strength θ, the probability density with which $A = x$ is

$$p(x|\theta) = \frac{\Gamma(n+1)}{\Gamma(x+1)\Gamma(n-x+1)}\theta^x(1-\theta)^{(n-x)},$$

the likelihood of x 'heads' from n coin flips where the coin is weighted to come up 'heads' with probability θ (for integers the terms involving the Gamma functions simply reduce to the binomial coefficients). Let $p(x) = \int_0^1 p(x|\theta)g(\theta)d\theta$ and $P(a) = \int_0^a p(x)dx$. Therefore, $Pr(A < a) = \frac{P(a)}{P(n)}$ and $Pr(A \geq a) = \frac{P(n)-P(a)}{P(n)}$.[7]

Given the signal A, Bayesian updating yields the posterior belief that θ is Beta distributed with parameters $\alpha + A$ and $\beta + (n - A)$, so the updated expectation that L can survive a challenge is $E[\theta|A] = \frac{\alpha+A}{\alpha+\beta+n}$.

[7] The model considers $A \in [0, n]$. The standard binominal setup considers only integers. While $\sum_{x=0}^n p(x) = 1$, the integral $\int_0^n p(x) \neq 1$. Hence throughout we need to standardize by $P(n)$.

2.5 Summary of model setup

To summarize, the sequence of the game form is as follows:

1. With probability σ, nature stochastically determines whether a salient opportunity for a favor arises, $S \in \{0, 1\}$.
2. If a salient opportunity arises, then bargaining occurs. Depending on the bargaining protocol, either L offers concession z, which F can accept or reject, or F demands concessions which L can accept or reject.
3. F sees signal A and decides whether to visit L.
4. Under open bargaining, C observes S and all details of the bargaining. Under closed bargaining, C observes whether a visit occurred and, should a visit occur, C observes the concession granted with probability q.
5. Domestic political competition: C either challenges or abstains. If C plays challenge, then L is removed with probability $1 - \theta$.

Payoffs and notation are in Tables 1 and 2. We characterize Perfect Bayesian Equilibria under different bargaining protocols.

Table 1: Payoffs

F, Foreign Power	L Survives	Regime Change
Visit	$Sz - \tau$	$-\rho - \tau + S\,r\,z$
Non-visit	0	0

L, Leader	L Survives	Regime Change
Visit	$\Psi - z$	$-z$
Non-visit	Ψ	0

C, Challenger	Status Quo	Regime Change
Challenge	$-K$	$1 - K$
Abstain	0	n.a.

3 Analysis

We begin with a general characterization of the subgame that follows the negotiation stage, which applies to both open and closed bargaining settings.

Table 2: Notation

$K \sim U[0,1]$	C's cost of challenging
$\theta \in [0,1]$	L's regime strength, with prior distribution $Beta(\alpha, \beta)$
$A \in [0,n]$	F's private signal of regime strength
$z \geq 0$	Concession offered in exchange for a visit
$\Psi > 0$	L's valuation of holding office
$S \in \{0,1\}$	Salience of concession for F, with prior $Pr(S=1) = \sigma$
$r \in [0,1]$	Probability that F retains a concession following L's removal
$\tau > 0$	F's fixed/opportunity cost for visiting
$\rho > 0$	F's conditional cost for visiting if L is subsequently removed
σ	Expected salience (C expectation, $E[S=1]$)
q	Concession transparency

3.1 F's incentive to visit

The core incentive is that F wants to visit strong leaders. Suppose the negotiated concession is z, and F sees signal A, and following a visit the challenger will attempt removal with probability κ_v. Then F's expected payoff from a visit is

$$\begin{aligned} V(A,z) &= Pr(L \text{ survives}|visit, A)(z-\tau) + Pr(L \text{ deposed}|visit, A)(rz - \tau - \rho) \\ &= z - \tau - \underbrace{\kappa_v}_{\text{Pr(challenge)}} \underbrace{E[1-\theta|A]}_{\text{Pr(deposed|challenge)}} ((1-r)z + \rho) \end{aligned} \tag{1}$$

F's visit decisions are governed by Equation (1). τ represents the fixed cost of a visit, ρ is the reputational cost of visiting a leader who is subsequently removed from power, and r is the extent to which F can benefit from the concession even if L is removed from power. If C attempts removal, then L is deposed with probability $1-\theta$. The likelihood of a high signal increases in L's strength. Therefore F is more likely to visit as the signal A increases: $E[1-\theta|A] = \frac{n-A+\beta}{\alpha+\beta+n}$. Equation (1) is strictly increasing in z and A.

Absent a visit, the foreign leader's payoff is normalized to 0. The foreign leader only visits when $V(A,z) \geq 0$. Suppose F saw signal $a = A \in [0,n]$. There is a unique concession size that makes F indifferent between visiting and not. Let the strictly decreasing function $z(a)$ characterize the indifference concession associated with each signal.

Conversely, define the inverse function, $a(z)$, as the signal that makes F indifferent between visiting and not given concession z. Further, define

$$z_0 = \frac{\frac{\beta\rho(\beta+n)}{(\alpha+\beta)(\alpha+\beta+n)} + \tau}{1 - \frac{\beta(1-r)(\beta+n)}{(\alpha+\beta)(\alpha+\beta+n)}} \qquad \text{and} \qquad z_n = \frac{\frac{\beta^2\rho}{(\alpha+\beta+n)^2} + \tau}{1 - \frac{\beta^2(1-r)}{(\alpha+\beta+n)^2}}$$

as the extreme concessions that make F indifferent between visiting following the weakest and strongest possible messages respectively: $V(A = 0, z_0) = 0$ and $V(A = n, z_n) = 0$.

Lemma 1 *For concessions $z \in (z_0, z_n)$, there is a decreasing monotonic function $a(z)$ such that $V(a(z), z) = 0$. F visits if and only if he sees a signal $A \geq a(z)$.*

3.2 Visits deter domestic political challenges

In the final move of the game, the challenger C decides whether to challenge or abstain. L survives a removal attempt with probability θ. Given information I, C only challenges when the expectations of success justify the cost of attempting removal:

$$\underbrace{E[1-\theta|I]}_{Pr(success)} - \underbrace{K}_{\text{Cost of attempt}} \geq 0$$

There is critical threshold $k = E[1-\theta|I]$ such that C attempts removal when $K \leq k$. The critical threshold depends upon the information revealed by bargaining and visits. To keep the notation simple we use k_0 as the threshold given no opportunity for a visit, $\sigma = 0$. The thresholds k_v and k_n indicate C's critical cost given occurrence and absence of a visit, respectively.

If C knows there is no salient opportunity for a visit ($S = 0$), then C cannot update beyond his prior:

$$k_0 = E[1-\theta] = \frac{\beta}{\alpha+\beta} \text{ and } Pr(\text{challenge}) = Pr(K < k_0) = k_0 = E[1-\theta]$$

Visits affect domestic political competition by altering C's beliefs about regime strength. The occurrence of a visit reveals that F saw a signal $A \geq a(z)$. Given this information, C's expectation that a challenge will succeed declines, since $E[1-\theta|A \geq a(z)]$ is between $\frac{\beta}{\alpha+\beta+n}$ and $\frac{\beta+n-a(z)}{\alpha+\beta+n}$. These bounds refers to the beliefs associated with seeing $A = n$ and $A = a(z)$.

In contrast, if F forgoes the opportunity to visit (but C knows there was an opportunity), then C infers L is weaker than initially thought: $E[1-\theta|\text{no visit}] = E[1-\theta|A \leq a(z)]$, which is between $\frac{\beta+n}{\alpha+\beta+n}$ and $\frac{\beta+n-a(z)}{\alpha+\beta+n}$.

We can now state equilibrium behavior in the visit subgame:

Proposition 1 ***Informative equilibrium:*** *Suppose the bargaining phase results in a concession of z that is known to all players. If $z \in (z_n, z_0)$, then F visits if and only if $A \geq a(z)$ where $a(z)$ is the implicit function that that solves*

$$V(a, z) \quad = \quad z - \tau - E[1-\theta|A = a]E[1-\theta|A \geq a]((1-r)z + \rho) = 0 \tag{2}$$

Following a visit C attempts removal if and only if $K \leq k_v = E[1-\theta|A \geq a(z)]$; and following non-visit, C attempts removal if and only if $K \leq k_n = E[1-\theta|A < a(z)]$.

Consistent with standard refinements, (Banks 1991), we restrict out-of-equilibrium beliefs:

Assumption 1 *If $a(z) \geq n$ (such that no visits occur), then should a visit occur let $E[1-\theta|visit] = \frac{\beta}{\alpha+\beta+n}$. If $a \leq 0$ (such that visits always occur), then let $E[1-\theta|non\text{-}visit] = \frac{\beta+n}{\alpha+\beta+n}$.*

Proposition 2 ***Pooling equilibria:*** *If the concession is small, $z \leq z_n$, then F never visits and following no visit C attempts removal if $K \leq k_0$. If the concession is large, $z \geq z_0$, then F always visits and following a visit C attempts removal if $K \leq k_0$.*

Note that Equation (2) is simply Equation (1) with the substitution that $\kappa_v = k_v = E[1-\theta|A \geq a]$. For any given z, the equilibrium to the visit subgame is unique.

Corollary 1 *For an fixed concession, z, visits become more likely as r increases and τ and ρ decrease: $\frac{\partial a(z)}{dr} \leq 0$, $\frac{\partial a(z)}{d\tau} \geq 0$ and $\frac{\partial a(z)}{d\rho} \geq 0$ (these inequalities are strict for $z \in (z_n, z_0)$)*

Corollary 2 *For the special case $\alpha = \beta = 1$,*

$$a(z) = \frac{3}{2} + n - \frac{1}{2}\sqrt{\frac{8(n+2)^2(z-\tau) + \rho + (1-r)z}{\rho + (1-r)z}} \tag{3}$$

for $z \in (z_n, z_0)$

Alternatively, stated in terms of concessions,

$$z(a) = \frac{\rho(a-n-2)(a-n-1) + 2(n+2)^2\tau}{a^2(r-1) - a(2n+3)(r-1) + (n+2)(nr+n+r+3)} \tag{4}$$

Visits discourage removal attempts ($k_v < k_0$) and non-visits increase the likelihood of removal attempts ($k_n > k_0$). However, the likelihood of a visit and the domestic political consequences of a visit depends upon the size of the concession on offer.

Proposition 3 ***Effect of Concessions on Occurrence and Impact of Visits****: As concessions increase,*

1. *visits become more likely:* $\frac{dPr(visit)}{dz} \geq 0$
2. *the perception of L's strength following a visit decreases:* $\frac{dE[\theta|visit]}{dz} \leq 0$
3. *the perception of L's strength following no visit decreases:* $\frac{dE[\theta|non\text{-}visit)}{dz} \leq 0$

These inequalities are strict if $z \in (z_n, z_0)$*. Further, for any given* $z \in (z_n, z_0)$*, visits become more likely as* r *increases and* ρ *and* τ *decrease.*

The intuition is straightforward: visits signal regime strength and enhance L's survival. Hence L wants to encourage F to visit. However, Proposition 3 shows that making visits more attractive undermines their domestic political value. In the extreme, if C knows that L made a concession of size z_0 (which is large enough to induce F to visit even for the worst possible signal), then the visit fails to signal L's strength. As the concession size decreases, F becomes less likely to visit—but the deterrent value of a visit, should it occur, grows stronger. The tension between wanting to increase the likelihood of a visit and undermining the domestic political value of a visit shapes equilibrium bargaining behavior.

4 Open Negotiations

Under open negotiations, challenger, C, observes whether F wants a favor (S) and all the details of the bargaining. In this case, we have the following general result:

Proposition 4 *Under open bargaining, any concession* $z \in (z_n, z_0)$ *that induces threshold strategy* $a(z) \in (0, n)$ *increases L's risk of deposition relative to no agreement (*$z < z_n$*).*

When the leaders negotiate in the open, the lottery between a survival-improving visit and a deposition-enhancing non-visit reduces L's aggregate survival prospects relative no information being communicated. This result holds regardless of whether F or L has proposal power.

Figure 1: Probability of Regime Change (RC) given Threshold $a(z)$ under Open Bargaining

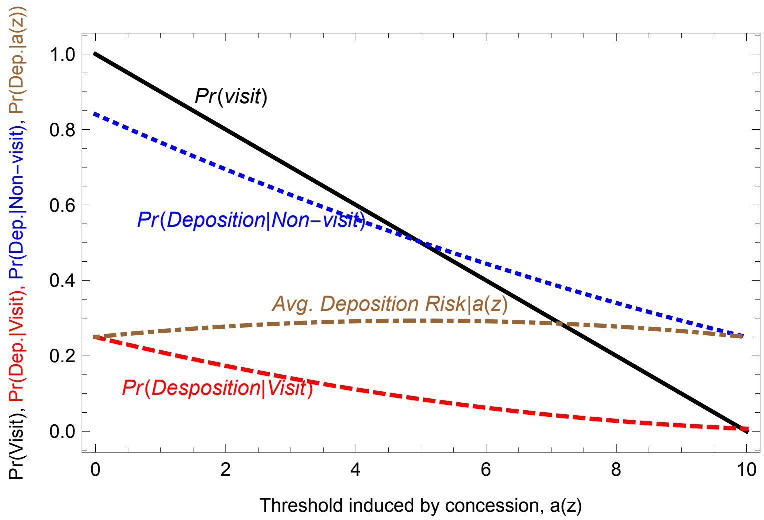


Figure 1 illustrates Proposition 4 for the special case of a uniform prior ($\alpha = \beta = 1$). The horizontal axis shows the threshold $a(z)$ induced by concession z. As z increases, $a(z)$ decreases, and F visits for a greater range of signals. The probability that F visits is shown by the solid line. The figure also shows the probability that L is deposed following a visit (dashed, $Pr(Deposition|\text{Visit})$) and no visit (dotted, $Pr(Deposition|\text{Non-visit})$). If a bargain is reached ($z \in (z_n, z_0)$), then the average probability that L is deposed is:

$$\begin{aligned} \text{Avg. Deposition Risk}|a(z) &= Pr(visit)Pr(Deposition|a(z)|visit) \\ &+ (1 - Pr(visit))Pr(Deposition|a(z)|\text{non-visit}) \qquad (5) \end{aligned}$$

This aggregate deposition risk, shown by the dot-dashed hump-shaped curve, is higher than if no additional information were revealed. L does not want any deal that could result in a visit. She would propose $z < z_n$ and reject any deal F offers in which $z \geq z_n$. Quid pro quo visits increase L's aggregate deposition risk and this induces the following result:

Proposition 5 *Under open bargaining, concessions are never agreed and quid pro quo visits never occur. If L is proposer, then she proposes $z < z_n$. If F is proposer, then L* *rejects any offer,* $z \geq z_n$.

5 Closed Bargaining

While the open bargain setting provides a useful benchmark, it is probably unrealistic as domestic actors rarely have the opportunity to observe the details of diplomatic negotiations. Indeed, people rarely even know that the negotiations are going on. In the closed setting, C does not observe the negotiations. Within this closed setting, we vary expected salience, σ, and concession opacity, q.

If C believes that $S = 1$ with probability σ, and C believed that the negotiated concession is z, then, absent a visit, C's expectation are given by Bayes rule:

$$\begin{aligned} E_C[1-\theta|\text{non-visit}, z] &= Pr(S=1|\text{non-visit})\frac{\beta}{\alpha+\beta} + (1-Pr(S=1|\text{non-visit}))E[1-\theta|A < a(z))] \\ &= \frac{P(a(z))\sigma E[1-\theta|A<a(z))] + (1-\sigma)P(n)\frac{\beta}{\alpha+\beta}}{P(a(z))\sigma + (1-\sigma)P(n)} \end{aligned}$$

5.1 F as proposer

Proposition 6 *If* $q \in [0,1]$, $\sigma \in [0,1)$ *and* F *is proposer, then on the equilibrium path, when* $S = 1$, F *proposes* z *such that*

$$\frac{z}{\Psi} = \frac{\frac{\beta}{\alpha+\beta}P(n) - E[1-\theta|A<a(z))]P(a(z))}{P(n)-P(a(z))} E_C[1-\theta|\textit{non-visit}, z] - E[1-\theta|A \geq a(z))]^2, \tag{6}$$

which L *accepts. The concession* z *is increasing in* σ. *As office holding becomes the dominant motive* ($\Psi \to \infty$)*,* $z \to z_0$.

F can shake down L because threat of no-visit harms L survival. As σ increases, which is to say, C thinks it increasingly likely that F wants a favor, non-visit send a worse signal and as a result F can extract more concessions as L is anxious to avoid the negative signal associated with non-visit.[8] As office holding becomes very important, F can maximally shake down L: $z \to z_0$.

[8]The results in Proposition 6 hold for $\sigma \to 1$. However, if C is completely certain, $\sigma = 1$, then F can shake down L to an even greater extent. We characterize this pathological in the appendix (Proposition 8).

5.2 L as proposer

In appendix we characterize the equilibria in a more generally set. For ease of presentation, here we focus of the setting were office holding is the dominant motive.

Proposition 7 *If L is proposer and office holding incentives dominate ($\Psi \to \infty$), then on the equilibrium path L offers z that solve* (7) *and visits occur if $A \geq a(z)$*

$$-\frac{E[1-\theta|A<a(z)](P(n)\frac{\beta}{\alpha+\beta}(1-\sigma)+P(a(z))E[1-\theta|A<a(z)]\sigma)}{P(n)(1-\sigma)+P(a(z))\sigma}+E[1-\theta|A\geq a(z)](E[1-\theta|A=a(z)](1+q)-E[1-\theta|A\geq a(z)]q)=0 \quad (7)$$

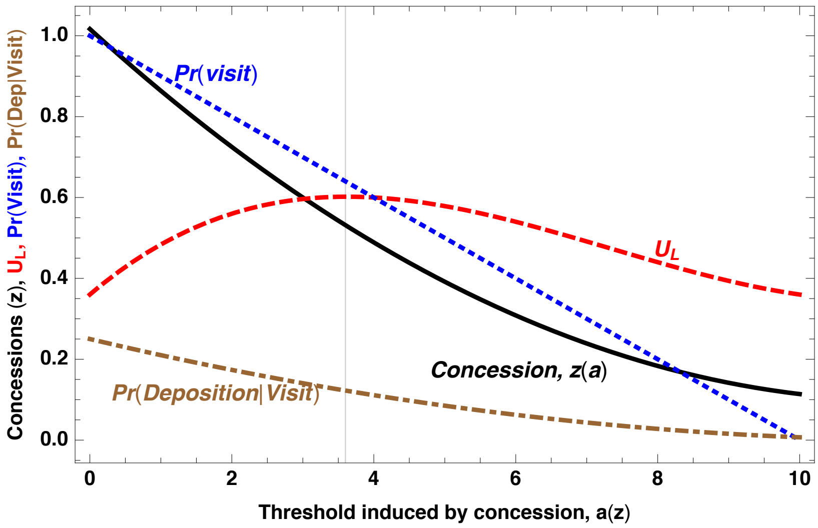
L trades off the likelihood of receiving a visit against the impact of a visit should it occur. If L offers a small concession, then F rarely visits but, should such a visit occur, the visit greatly increases L's survival prospects. If L offers a large concession, then visits are common, but their impact on domestic politics is small. When officeholding motives dominate, L finds the threshold $a(z)$ that maximizes expected survival and then offers the concession that induces that threshold. The optimal threshold $a(z)$ represents a compromise between the probability of a visit and survival enhancement of a visit.

To illustrate the tradeoff between likelihood of a visit and a visit's impact, we return to the special case of the uniform prior, $\alpha = \beta = 1$, $\sigma \to 0$ and $q = 1$. This case is depicted visually in Figure 2.[9] The threshold $a(z)$ is the horizontal axis. The solid decreasing line shows the concession necessary for each threshold. The downward sloping dotted line shows $Pr(visit)$. The lower dash-dot line shows the probability of regime change given the occurrence of a visit. The dashed line shows L's (rescaled) expected payoff for the each induced threshold.

A large concession induces a low threshold (LHS of figure, $a(z)$ close to 0), and so visits become very likely. However, such visits are of little value to L, as they provide only a weak signal of strength. At the opposite extreme, if L offers only a small concession, then the induced threshold is high, meaning visits are unlikely, but visits provide a strong signal of strength when they do occur. L's payoff is maximized

[9]The figure was constructed assuming $n = 10$, $\Psi \to \infty$ (and L's payoff rescaled for the graph), $r = 1$, $\rho = 2$ and $\tau = 0.1$

Figure 2: L's Choice of Concessions Behind Closed Doors



by a moderate signal, such that visits occur reasonably often and provide a moderate signal of strength.

Corollary 3 *As C becomes more likely to observe the concession (q increases), the concession z becomes smaller and visits become less likely. As C increasingly believes that F wants a favor (σ increases), the concession z increases and visits become more likely. When office holding is the dominant concern ($\Psi \to \infty$), if either $q \to 0$ or $\sigma \to 1$, then $z \to z_0$.*

Expected salience increases L concession and makes visits more likely. As C thinks it more likely that F wants a favor, the signal no visit signal sends a worse signal of L's strength: $\frac{dE_c[1-\theta|\text{non-visit},z]}{d\sigma} > 0$.To avoid this negative signal, L offers large concessions such that F is likely to visit.

Concession transparency reduces concessions. If a visit occurs, then with probability q C observes the concession. If the concession is unobserved, which happens with probability $1 - q$, then suppose C conjectures that the concession is w. If the concession is transparent ($q \to 1$), then L trades off the likelihood of a visit and the informativeness of the signal as described above. Consider the case where concession transparency is low. When q is small it is unlikely that C will observe the actual concession and will instead infer the concession w. If L increases the actual concession z, then a visit becomes more likely. However, since C rarely observes z, increasing the concession does not erode the value of the signal. This incentive leads L to increase her concession. Of course, in equilibrium C conjecture must be correct ($w = z$); so when concession transparency is low, L offers a large concession and C (correctly) infers that visits are bought with large concessions and therefore largely discounts visits as a signal of L's strength.

With the uniform prior, we can provide an explicit statement of the equilibrium concession size and corresponding threshold:

Corollary 4 *For $\alpha = \beta = 1$, low expected salience ($\sigma \to 0$) and dominant office incentives ($\Psi \to \infty$), L offers concessions z that induces*

$$a(z) = \frac{(n+1)(1+q)}{2+q} + \frac{\sqrt{n^2 + 2n + (1+q)^2}}{2+q} \tag{8}$$

As n increases, visits become more likely $\left(\frac{d\frac{a(z)}{n}}{dn} < 0\right)$. For the case of $r = 1$, concession are decreasing in n.

L and F's payoff are increasing in n. The quid pro quo of buying visits is more attractive to both parties as the foreign power has access to better intelligence.

Quid pro quo diplomacy requires closed bargaining. However, too much opacity in terms of concession transparency or a high expectation that F wants a favor leads to increased concession size and visits become less valuable in terms of deterring domestic political opponents.

Before characterizing the price of the quid pro quo, we revisit the timing of F information acquisition. The game form specified that F observed the signal after concluding negotiations. An equally valid assumption might be that F learned the signal before negotiations, or that F learned partly before and partly afterwards. However, equilibria under these alternative assumptions are behaviorally equivalent to the results here. This equivalence is straightforward to see when L is proposer. Whether F accepts the proposal and visits only of $A \geq a(z)$ or has prior knowledge of A and F rejects agreements if $A < a(z)$ is observationally equivalent. Visits occur only when $A \geq a(z)$.

Likewise when F is proposer, the timing of F information acquisition does not matter. In equilibrium, F demands the maximum that L will pay for a visit. F has no incentive to demand a smaller concession based upon a strong signal. The challenger does not observe the negotiations so it is observationally equivalent whether F demands the maximum concession that F will accept and then visits if $A \geq a(z)$ or if F knows A in advance and only demands the maximum concession when $A \geq a(z)$. From C's perspective, a visit indicates that F paid the maximum concession and $A \geq a(z)$ and a non-visit indicates either $S = 0$ or F wanted a concession but $A < a(z)$. Our results are robust to the timing of when F learns about F's strength.

6 The price of the *quid pro quo*

Propositions 6 and 7 allow us to address a central motivating question, what is the price of a state visit?

Open vs Closed Bargaining: When C is fully aware of salient opportunities and bargaining, then an exchange concessions for visits are never in L's interest. Quid pro quo diplomacy requires that bargaining occurs behind closed doors.

Bargaining power: If L makes the proposal, she offers a moderate concession. Her moderate concession balances a desire to obtain a survival-enhancing visit against the deterrent effect of a visit. As bargaining power shifts from L to F, the size of concessions increases, visits become more frequent, and the visits that occur have a decreased impact on L's survival.

Expected Salience: When F is likely to want a favor, L is trapped in a diplomatic hold up situation. Once C anticipates that F wants a favor, the absence of a visit sends a strong negative signal. To avoid the inference of weakness, L pays more a visit, visits become more likely but the survival enhancement from a visit is small. In contrast, when it is unexpected that F wants a favor, the required concession is smaller and the occurrence of a visit greatly improves L chances of survival.

Concession transparency: Visits are public are always observed. However, the associated concessions are not always seen. As the concessions become more opaque, L offers larger concessions and as a results visits become likely but have a smaller impact with respect to deterring domestic political opponents.

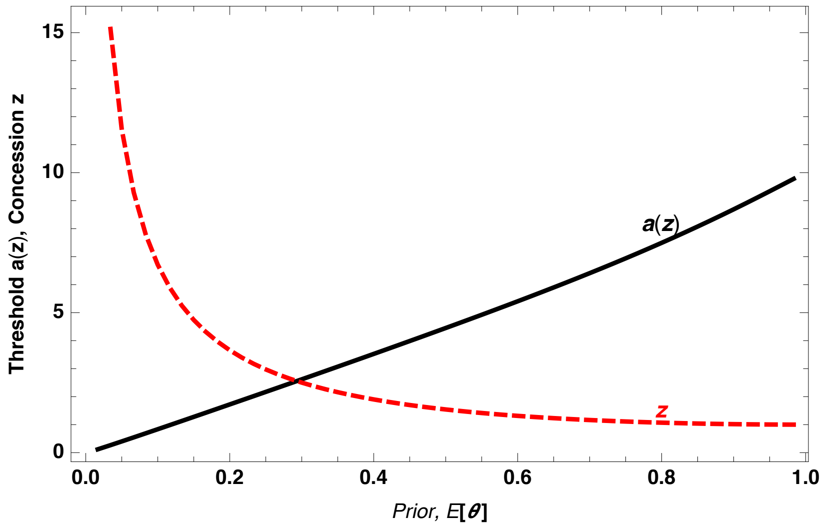
F's cost: As F's costs of visiting increase, so does the price needed to offset those costs. The model has three main costs for F: the material and opportunity costs of travel τ; the reputational cost of associating with a soon-deposed leader ρ, and the cost associated with the risk that concessions are not implemented $(1 - r)$. A stop on a regional tour or a pull-aside at a multilateral summit can be purchased more cheaply than a trip undertaken solely for the bilateral visit. Dictators and human rights abusers will likely see a steeper price for their diplomatic engagements. A policy concession requiring implementation will need to be greater than its cash equivalent, as the policy concession carries the risk that L fails to survive in office long enough to implement it.

Ex ante survival prospects: Ex ante expectations of the likelihood that L will survive affect the size of concessions and the likelihood of visits. Intuitively, survival affects both the supply and demand of visits. If L is likely to be deposed, then F needs larger concessions to compensate for the risk he assumes, due to the potential reputational cost and/or the possibility that the concession is not implemented. When pessimistic about her survival prospects, L values visits highly and is willing to make larger concessions. Thus when L's regime is perceived to be unstable, the supply of visits is low and the demand for them high, so the price is driven upwards. Figure 3 illustrates the impact of survival prospects on concessions when L has proposal power and officeholding incentives are dominant $(\Psi \to \infty)$.

The horizontal axis in Figure 3 is $E[\theta] = \frac{\alpha}{\alpha+\beta}$. The dashed line shows L's optimal concession and the solid line shows the threshold $a(z)$ that the concession induces.[10] When L is anticipated to be strong, L offers relatively small concessions and F only visits if he sees a relatively high signal. The relative rarity of visits means that a

[10]The figure is constructed using $n = 10$, $q = 1$ and $\alpha + \beta = 6$.

Figure 3: L's Anticipated Strength and Concessions



visit is a powerful signal of strength. In contrast, when L is perceived to be weak, L makes more generous concessions that induce a lower threshold $a(z)$, meaning that F visits for a wider range of private signals. L is willing to spend more for a weaker signal of strength when she is perceived to be weak because her precarious situations makes any signal of strength valuable. Of course, the increased concession does not necessarily mean visits are more likely to occur, as on average, F's private signal is likely to be weaker when the prior $E[\theta]$ is small.

Quality of intelligence The basis of the quid pro quo is that F has some private information about the strength of L's regime. The number of trials, n, may be interpreted as the quality of F's intelligence. Both leaders' payoffs are increasing in n: the visit's deterrent value is increasing in the precision of the information that guided F's decision to conduct the visit, enhancing L's survival prospects; and in turn, L is willing to pay more for the visit, improving F's payoff. F's improved intelligence also means that F can better avoid visits with leaders that will be soon be removed, and avoid the costs associated with such a diplomatic misstep. An empirical implication is that visits with a US President—whose decisions are informed by \$80 billion worth of annual intelligence gathering (DeVine 2019)—are far more valuable to recipient leaders than are visits with a Canadian Prime Minister, who has no formal intelligence apparatus of his own (Robinson 2009). This relative valuation is not a function of the the countries' relative prestige or influence, but rather of the quality of private information that their leaders have access to. If we suppose that leaders face similar travel and opportunity costs for foreign visits (similar τ and ρ), then US Presidents should travel more than Canadian leaders because they can extract larger concessions in return.

7 Conclusions

We examine the bargaining that surrounds top-level diplomatic exchanges, and the impact of those exchanges on domestic political competition. A symbolic demonstration of support from one leader to another is valuable for the recipient because of the information it communicates to a potential challenger. This gives the incumbent an incentive to offer a concession to the foreign leader in exchange for a supportive diplomatic signal, but such a payment undermines the visit's signaling value. We show that mutually beneficial quid pro quo diplomacy can occur when negotiations occur behind closed doors. The price of a visit depends on the bargaining structure, the expected likelihood that a foreign leader wants a favor, the transparency of the concession, the recipient leader's prior regime strength, and the quality of the intelligence informing the foreign leader's decision. Provided there is a degree of opacity surrounding negotiations, symbolic public diplomacy can be informative even when it is purchased.

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8 Appendix

8.1 Bayesian Updating

Here we more explicitly derive C Bayesian updating upon observing the occurrence or absence of a visit, as summarized in Section 2.4 of the main text.

The prior belief on θ is the Beta distribution with parameters α and β, hence the pdf is $g(\theta) = \frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)}\theta^{\alpha-1}(1-\theta)^{\beta-1}$. Given the strategy that F visits if and only if $A \geq a$, we characterize C's beliefs following visit and non-visit. Given regime strength θ, the probability density with which $A = x$ is

$$p(x|\theta) = \frac{\Gamma(n+1)}{\Gamma(x+1)\Gamma(n-x+1)}\theta^x(1-\theta)^{(n-x)}$$

where we have stated the standard binomial coefficients $\left(\begin{array}{c} n \\ x \end{array}\right) = \frac{n!}{x!(n-x)!}$ in terms of the gamma function since we do not restrict A to integers.

Averaging over all possible values of θ, let

$$\begin{aligned} p(x) &= \int_0^1 p(x|\theta)g(\theta)d\theta = \int_0^1 \frac{\Gamma(n+1)}{\Gamma(x+1)\Gamma(n-x+1)}\theta^x(1-\theta)^{(n-x)}\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)}\theta^{\alpha-1}(1-\theta)^{\beta-1}d\theta \\ &= \frac{\Gamma(n+1)\Gamma(x+\alpha)\Gamma(n-x+\beta)\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)\Gamma(x+1)\Gamma(n-x+1)\Gamma(n+\alpha+\beta)} \end{aligned}$$

and integrating over signals $A \leq a$ let

$$P(a) = \int_0^a p(x)dx = \int_0^a \frac{\Gamma(n+1)\Gamma(x+\alpha)\Gamma(n-x+\beta)\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)\Gamma(x+1)\Gamma(n-x+1)\Gamma(n+\alpha+\beta)}da \quad (9)$$

Therefore, $Pr(A < a) = \frac{P(a)}{P(n)}$ and since $E[\theta|A = x] = \frac{x+\alpha}{n+\alpha+\beta}$, we can express C's expectations of regime weakness, that is $(1-\theta)$, as

$$E[1-\theta|A < a] = \frac{\int_0^a \frac{\beta+n-x}{\alpha+\beta+n}p(x)dx}{\int_0^a p(x)dx} \quad (10)$$

Likewise, if C observes $A \geq a$,

$$E[1-\theta|A \geq a] = \frac{\int_a^n \frac{\beta+n-x}{\alpha+\beta+n} p(x)dx}{\int_a^n p(x)dx} \tag{11}$$

Differentiation of equations 10 and 11 yields

$$\frac{\partial E[1-\theta|A<a]}{\partial a} = \frac{p(a)}{P(a)} \left(E[1-\theta|A=a] - E[1-\theta|A<a]\right) < 0 \tag{12}$$

and

$$\frac{\partial E[1-\theta|A \geq a]}{\partial a} = \frac{p(a)}{P(n)-P(a)} \left(E[1-\theta|A \geq a] - \frac{n-a+\beta}{n+\alpha+\beta}\right) < 0 \tag{13}$$

8.2 Decision to Visit

The concessions z_0 and z_n characterize limits. The concession z_0 is sufficiently large as to induce F to visit for even the weakest possible signal; given such a large concession, the occurrence of a visit is uninformative. In contrast, the concession z_n is not large enough to induce F to visit even for the strongest possible signal; given such a small concession, the absence of a visit is uninformative.

Proof of Lemma 1: Given C's belief that visits imply $A \geq a$, we can write F's payoff from visiting (equation (2)) given signal $A = a$ as

$$V(a,z) = z - \tau - ((1-r)z+\rho) \frac{n-a+\beta}{\alpha+\beta+n} E[1-\theta|A \geq a] \tag{14}$$

In equilibrium, $V(a,z) = 0$. From total differentiation of $V(a,z) = 0$, for $a \in (0,n)$,

$$\frac{da}{dz} = \frac{1 - \frac{n-a+\beta}{n+\alpha+\beta} E[1-\theta|A \geq a](1-r)}{(z(1-r)+\rho)\left(E[1-\theta|A \geq a] \frac{d\frac{n-a+\beta}{n+\alpha+\beta}}{da} + \frac{n-a+\beta}{n+\alpha+\beta} \frac{dE[1-\theta|A \geq a]}{da}\right)} < 0 \tag{15}$$

■

Proof of Propositions 1 and 2:

For $z \in (z_n, z_0)$, the equilibrium characterization follows directly from the implicit solution to $V(a,z) = 0$. F wants to visit if $A \geq a(z)$. Given this decision, C's beliefs are defined by Bayes rule and k_n and k_v are sequentially rational given these beliefs.

The characterization of the limiting cases requires tying down C's out of equilibrium beliefs. If F always visits (i.e. visit if $A \geq 0$), then C's beliefs ($E[1-\theta|\text{non-visit}]$) are undefined by Bayes rule if F does not visit. Assumption 1 ensures that C infers non-visits as associated with the worst possible signal, $E[1-\theta|\text{non-visit}] = E[1-\theta|A \leq 0] = \frac{\beta+n}{\alpha+\beta+n}$ and $k_n = \frac{\beta+n}{\alpha+\beta+n}$.

Likewise assumption 1 ties down beliefs following a visit if F is never expected to visit ($a \geq n$) such that z_n is the limiting solution to $V(a,z) = 0$ as $a \to n$. The equilibrium is unique since the random variables A and K have no mass at any point.

■

The proof of corollary 1 follows direct from total differentiation of equation 2.

Proof of Corollary 2: Given the uniform prior ($\alpha = \beta = 1$), all signals are equally likely: $p(x) = \frac{1}{n}$ for all $x \in (0,n)$. Hence $E[1-\theta|A \geq a] = \int_a^n \frac{p(x)}{P(n)-P(a)} \frac{n+1-x}{n+2} dx = \frac{\frac{n+1-a}{n+2} + \frac{1}{n+2}}{2} = \frac{2-a+n}{4+2n}$. The result is an algebraic rearrangement of Equation (2): $z - \tau + ((1-r)z + \rho)\frac{2-a+n}{4+2n}\frac{n+1-a}{2+n} = 0$ ■

Proof of Proposition 3: Given concession $z \in (z_n, z_0)$, $Pr(visit|z) = 1 - \frac{P(a(z))}{P(n)}$ which is increasing in z: $\frac{dPr(visit|z)}{dz} = -\frac{p(a)}{P(n)}\frac{da(z)}{dz} > 0$. The second and third results follow from equations 13 and 12.

For fixed z, $\frac{da(z)}{d\tau} = \frac{\partial V(a,z)}{\partial \tau} / \frac{\partial V(a,z)}{\partial a} > 0$, $\frac{da(z)}{d\rho} = \frac{\partial V(a,z)}{\partial \rho} / \frac{\partial V(a,z)}{\partial a} > 0$ and $\frac{da(z)}{dr} = \frac{\partial V(a,z)}{\partial r} / \frac{\partial V(a,z)}{\partial a} < 0$. ■

8.3 Open/Transparent Bargaining

Proof of Proposition 4: To simplify notation let $I_n = \int_0^a \frac{\beta+n-x}{\alpha+\beta+n} p(x)dx < P(a)$ and $I_v = \int_a^n \frac{\beta+n-x}{\alpha+\beta+n} p(x)dx < P(n) - P(a)$ Therefore, from Equation (5),

$$Pr(\text{Regime Change}|a(z)) = \frac{P(a)}{P(n)}\frac{I_n^2}{P(a)^2} + \frac{P(n)-P(a)}{P(n)}\frac{I_v^2}{(P(n)-P(a))^2}$$

and

$$E[1-\theta]^2 = \frac{(I_n + I_v))^2}{P(n)^2}$$

$$Pr(\text{Regime Change}|a(z)) - E[1-\theta]^2 = \frac{(I_n(P(a)-P(n)) + I_v P(a))^2}{P(a)P(n)^2(P(n)-P(a))} > 0$$

The inequality is strict because $I_n(P(a) - P(n)) + I_v P(a) < I_v(-I_n + P(a)) < 0$ so both numerator and denominator are positive. ■

Proposition 4 direct implies Proposition 5. L never agrees to or proposes any concession that results in a positive probability of a visit, since doing so increases her deposition risk.

9 Bargaining behind closed doors

Moving forward, it is useful to introduce some additional notation. We write $NV = E[1-\theta] = \frac{\beta}{\alpha+\beta}$, $B(a) = E[1-\theta|A \geq a]$, $G(a) = E[1-\theta|A = a]$ and $H(a) = E[1-\theta|A < a]$.

Consider any $q \in [0,1]$, $\sigma \in [0,1)$ and suppose that the challenger conjectures that should $S = 1$ that the negotiated concession is w. Suppose the negotiated concession is actually z, F will visit with probability $\frac{P(n)-P(a(z))}{P(n)}$. Should a visit occur then with probability q, C will observe the concession z and the L's expected probability of deposition is $B(a(z))^2$; and with probability $1-q$ the concession is not observed by C, who will infer $E[1-\theta|visit] = B(a(w))$ and L will infer $E[1-\theta|visit] = B(a(z))$ (since L knows the actual concession). Hence following a visit the expected probability of deposition is $qB(a(z))^2 + (1-q)B(a(w))B(a(z))$. If $S = 1$ and the negotiated concession is z, then with probability $\frac{P(a(z))}{P(n)}$ F does not visit. Under this eventuality, L infers that $E[1-\theta|\text{non-visit}] = H(a(z))$. The challenger infers the expected value of $1-\theta$ is $E_c[1-\theta|\text{non-visit}, w]$, where, via Bayes rule,

$$\begin{aligned} E_C[1-\theta|\text{non-visit}, w] &= Pr(S=1|\text{non-visit})NV + (1 - Pr(S=1|\text{non-visit}))H(a(w)) \\ &= \frac{P(a(w))\sigma H(a(w)) + (1-\sigma)P(n)\text{NV}}{P(a(w))\sigma + (1-\sigma)P(n)} \end{aligned}$$

Given $S = 1$, L's expected payoff from the agreement z is

$$U_L(z,w) = -\overbrace{\frac{P(n)-P(a(z))}{P(n)}}^{\text{direct cost}} z + \Psi \left\{ 1 - \overbrace{\frac{(P(n)-P(a(z)))}{P(n)}}^{Pr(visit)} \overbrace{(qB(a(z))^2 + (1-q)B(a(w))B(a(z)))}^{\text{deposition risk}|\text{ visit}} - \underbrace{\frac{P(a(z))}{P(n)}}_{Pr(\text{non-visit})} \underbrace{H(a(z))\, E_C[1-\theta|\text{non-visit}, w]}_{\text{deposition risk}|\text{non-visit}} \right\} \quad (16)$$

If no agreement (or $z < z_n$), then L's payoff is

$$U_L(z < z_n, w) = \Psi\,(1 - NV\; E_C[1-\theta|\text{non-visit}, w]) \quad (17)$$

Proof of Proposition 6: Comparing (16) and (17), L will accept z if

$$\frac{z}{\Psi} \leq \frac{(\text{NV}P(n) - H(a(z))P(a(z)))}{P(n) - P(a(z))} E_C[1-\theta|\text{non-visit}, w] - B(a(z))^2$$

F demands the largest concession that L will accept, which at the equilibrium condition $w = z$ implies (6). That the concession is increasing in σ follows from $E_C[1-\theta|\text{non-visit}, z]$ being increasing in σ, and hence RHS of (6), increasing in σ. As $\Psi \to \infty$, the LHS of 6 goes to 0 and as $z \to z_0$, $Q \to NV$, $B(a(z)) \to NV$ and $P(a(z)) \to 0$, so the RHS of (6) $\to 0$. ■

Proposition 6 holds as provided there is some possibility that F does not want a favor ($\sigma < 1$). However, when it is certain that F wants a favor $\sigma = 1$, then F can extract more than z_0 concessions, as we characterize below in proposition 8. The difference between the cases arises because when $\sigma = 1$ as $a \to a_0$, $E_C[1-\theta|\text{non-visit}, w = z] \to H(a_0) > NV$. However, if C believes that F wants a favor with probability $\sigma < 1$, then as $a \to a_0$, $E_C[1-\theta|\text{non-visit}, w = z] \to NV$.

Proposition 8 *If the Challenger is certain that a salient opportunity exists (i.e. $\sigma = 1$), then on the equilibrium path F demands the largest concession such that equation 18 holds and L accepts such an offer.*

$$\frac{z}{\Psi} \leq \frac{(NVP(n) - H(a(z))P(a(z)))}{P(n) - P(a(z))} H(a(z)) - B(a(z))^2 \quad (18)$$

If office holding is the dominant motive, $\Psi \geq \frac{(\alpha+\beta)^2(\alpha+\beta+n)(\tau(\alpha+\beta)(\alpha+\beta+n)+\beta\rho(\beta+n))}{\alpha\beta n(\alpha^2+2\alpha\beta+n(\alpha+\beta r)+\beta^2 r)}$*, then F demands* $z = \Psi\left(\frac{\alpha\beta n}{(\alpha+\beta)^2(\alpha+\beta+n)}\right)$ *(which is the largest possible demand such that equation 18 holds given* $a(z) = 0$*). L accepts such an offer and given this deal F visits for any* $A \geq 0$.

Proof of Proposition 8: When $\sigma = 1$, $E_C[1-\theta|\text{non-visit}, w] = H(a(w))$. Evaluated at $w = z$, (6) implies (18). As $a(z) \to 0$, $B(a(z)) \to \frac{\beta}{\alpha+\beta}$, $H(a(z)) \to \frac{n+\beta}{n+\alpha+\beta}$ and the RHS of (18) is $\Psi\left(\frac{\alpha\beta n}{(\alpha+\beta)^2(\alpha+\beta+n)}\right)$. The condition on Ψ is sufficient to ensure that (18) holds for $z = z_0$. ■

9.1 L as proposer

Proof of Proposition 7: If L and F agree to concession z and C conjectures that the concession is w when he does not observe it, then F's payoff is

$$\begin{aligned} U_L(z,w) &= -\frac{(P(n)-P(a(z)))}{P(n)}z + \Psi\Bigg\{1 - \frac{(P(n)-P(a(z)))}{P(n)}\left(qB(a(z))^2 + (1-q)B(a(w))B(a(z))\right) \\ &- \frac{P(a(z))}{P(n)}\frac{H(a(z))(P(a(w))\sigma H(a(w)) + (1-\sigma)P(n)\text{NV})}{P(n)(P(a(w))\sigma + (1-\sigma)P(n))}\Bigg\} \end{aligned} \quad (19)$$

The first term corresponds to the direct cost. The second term correspond to L's probability of surviving in office.

F can do no better than accept any offer and visit if and only if $A \geq a(z)$ so to find L's best offer we need to maximize (19) with respect to z. The derivative of (19) with respect to z, evaluated at the equilibrium condition, $w = z$, is

$$\begin{aligned} \frac{dU_L(z,w)}{dz}\Big|_{w=z} &= \overbrace{\frac{a'(z)P'(a(z))}{P(n)}\Psi\left[-\frac{G(a(z))(P(n)\text{NV}(1-\sigma) + P(a(z))H(a(z))\sigma)}{P(n)(1-\sigma) + P(a(z))\sigma} + B(a(z))(G(a(z))(1+q) - B(a(z))q)\right]}^{\text{office holding effect}} \\ &+ \underbrace{z\frac{a'(z)P'(a(z))}{P(n)} - \frac{P(n)-P(a(z))}{P(n)}}_{\text{direct cost}} \end{aligned} \quad (20)$$

where we substituted for $H'(a(z))$ and $B'(a(z))$ using (12) and (13).

Focusing on office holding benefits, as $\Psi \to \infty$,

$$\frac{1}{\Psi}\frac{dU_L(z,w)}{dz}\Big|_{w=z} = \frac{a'(z)P'(a(z))}{P(n)}\left[-\frac{G(a(z))(P(n)\text{NV}(1-\sigma) + P(a(z))H(a(z))\sigma)}{P(n)(1-\sigma) + P(a(z))\sigma} + B(a(z))(G(a(z))(1+q) - B(a(z))q)\right]$$

The first order condition implies (7) in Proposition 7. Next we show that this FOC is a maximum. The second order condition is proportional to the derivative of LHS of (7). In particular,

$$\frac{1}{\Psi}\frac{d^2U_L(z,w)}{dz^2}|_{w=z} = \frac{a'(z)^2P'(a(z))}{P(n)G(a(z))(P(n)-P(a(z)))}\times \left(qB(a(z))^2G'(a(z))(P(n)-P(a(z)))-2qG(a(z))(B(a(z))-G(a(z)))^2P'(a(z))\right)<0$$

This condition ensures that the FOC characterizes L's best offer.

Corollary 3 follows direct from total differentiation of (7). ■