At the Helm, Kirk or Spock? Why Even Wholly Rational Actors May Favor and Respond to Charismatic Leaders*

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Abstract

Leaders are often able to reach at least some followers at an emotional level. But many followers could be rational and recognize a leader's emotional appeals are likely hiding vital information. Despite such rational pessimism, this paper shows that wholly rational followers will nevertheless work harder when they hear an emotional appeal from a more charismatic leader than a less charismatic one. Further, they will often prefer a more charismatic leader—one more inclined to make emotional appeals—to a less charismatic one. Although conditions exist such that an organization as a whole does better with a more rather than less charismatic leader, more charisma is not always good: more charismatic leaders face greater temptation to substitute charm for substantive actions, to the organization's detriment. The paper, thus, offers insights into the mixed assessment of charisma in the empirical and management literatures.

Keywords: leadership, charisma, identity

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1 INTRODUCTION

In the classic television show *Star Trek*, command of the Starship Enterprise was assigned not to the most rational character, Spock, but to a more emotionally aware character, Kirk. In real life, as in fiction, successful leaders are often those able to connect with followers at an emotional level. For example, the success enjoyed by presidents such as Reagan and Clinton is often attributed to their having that ability.[1] Conversely, aloof-seeming politicians, such as Al Gore or John Kerry, can have difficulty winning. Nor is this insight lost on politicians and other would-be leaders, who often employ acting coaches and the like in hope of improving their ability to reach their followers at an emotional level.[2]

For economists, the value of leaders' emotional appeals may be puzzling, in part because most economists, such as the readers of this paper, likely believe themselves rather immune to them. To reference another classic TV series, we seek "just the facts"; that is, we want rational arguments and find purely emotional appeals unpersuasive. Indeed, a rational actor should be suspicious of an emotional appeal: if the leader's case is, in fact, strong, why doesn't she simply present the facts? Yet, as I show in this paper, even rational actors will, in an indirect way, respond positively to charismatic leaders and their emotional appeals; moreover, they can favor more charismatic leaders to less.[3]

At the same time, if all of a leader's followers were wholly rational actors, then charisma would be irrelevant (see Proposition 6). For the leader's charisma to be relevant it must resonate with some fraction of followers. As will be seen, the fraction need not be large, only positive, for *rational* followers to prefer more charismatic leaders to less (see Proposition 7). Why the leader's charisma might resonate with a fraction of followers—referred to as "emotional responders" below—is a question beyond the scope of this paper and probably one better addressed by psychology than economics.[4] There does, however, seem ample evidence that emotional responders exist; the considerable lengths to which politicians and other leaders go to connect with their followers certainly indicate that they believe such responders are out there and it seems unlikely

[1] Reagan was known as the "great communicator" (see, *e.g.,* "Why Reagan was the 'great communicator'," Lou Cannon, *USA Today*, June 6, 2004, accessed online November 15, 2013). Clinton was noted for his empathy ("I feel your pain"). As summed up by the political scientist Thomas Cronin, "A president or would-be president must be ... warm and accessible but not too folksy, down to earth but not pedestrian" (quoted in Rockman, 1984, p. 175).

[2] For instance, top business schools hire acting coaches for this purpose (author's direct observation). As an infamous example, Hitler received lessons from an actor, also for this purpose (a fact spoofed by Bertolt Brecht in *The Resistible Rise of Arturo Ui*).

[3] In this paper, the meaning of "charismatic leader" accords with its use in every-day speech. This is worth noting because the term has a slightly different meaning in Max Weber's important and influential study of leadership. He uses the term "charismatic leader" to refer to *anyone* who is followed for reasons other than the position s/he may hold. As he wrote, "the [charismatic leader] does not deduce his authority from codes and statutes, as is the case with the jurisdiction of office; nor does he deduce his authority from traditional custom or feudal vows of faith, as in the case with patrimonial power" (Gerth and Mills, 1946, pp. 248–49).

[4] As an entree into the relevant social-psychology literature see Howell and Shamir (2005).

that they would have been mistaken for millennia.[5]

As is likely evident now—and as will be detailed formally below—a leader's charisma effectively creates additional incentives for emotional responders to work in the public (organization's) interest.[6] This is a direct benefit of charisma. If improved incentives were the only effect of charisma, then it would not be at all surprising that charismatic leaders create value.

But there are other effects. In particular, as Hermalin (1998) notes, a team can do better in expectation when its members will be informed of the marginal return to their efforts (the productivity state) at the time they decide how much effort to supply than if they won't be. Consequently, if a leader makes an emotional appeal at the expense of revealing the productive state, then this imposes a cost on the organization. So if the organization consists primarily of rational actors—those not directly susceptible to emotional appeals—or the emotional responders are only slightly susceptible or both, then an obvious prediction would seem to be that the organization would do better not to have a charismatic leader (to have, *e.g.,* Spock at the helm rather than Kirk).

That prediction is, however, naïve insofar as it overlooks that the leader could be what I call "savvy"; that is, she is able to tailor her appeal to the circumstances.[7] As modeled below, such a savvy leader will be inclined to make an emotional appeal when "just the facts" provide too little incentive and, conversely, make a rational appeal when the facts "speak for themselves." Followers (at least rational ones) will, of course, understand this is how she behaves. In particular, the rational ones—called "sober responders"—will form essentially pessimistic beliefs about the productivity state upon hearing an emotional appeal. But how pessimistic depends on how charismatic the leader is. Because a more charismatic leader is more inclined to make an emotional appeal *ceteris paribus*, sober responders are less pessimistic about the state when they hear an emotional appeal from a more charismatic leader than they would be had a less charismatic leader made the appeal. Consequently, even though not directly influenced by emotional appeals, sober (rational) responders will work harder in equilibrium in response to an emotional appeal from a more charismatic leader than they will in response to such an appeal from a less charismatic leader.

If leaders are savvy, then, as just suggested, the informational cost of an emotional appeal is lower when it comes from a more charismatic leader than a less charismatic one. Further, more charismatic leaders induce greater effort

[5] For instance, according to Plutarch, Demosthenes, 384–322 BCE, made a concerted effort to improve his skills as an orator (including practicing with pebbles in his mouth). See also Greenstein (2004), which *inter alia*, considers the role of communication skills to the success (or not) of modern US presidents.

[6] For surveys of work in social psychology documenting this phenomenon, see Shamir et al. (1993); Chatman and Kennedy (2010); Wang et al. (2011); or van Vugt and Ronay (forthcoming). Within economics, there is evidence that moral appeals (albeit not delivered by a leader) can improve contributions to a public good (Dal Bó and Dal Bó, 2013).

[7] Chatman and Kennedy (2010, p. 160), surveying the social-psychological literature on leadership observe "the most successful leaders are likely those who are self-aware [and] calculated."

from emotional responders with an emotional appeal than do their less charismatic counterparts. It thus follows that sober responders are better off with a more charismatic leader than a less charismatic one; that is, the followers *not* intrinsically susceptible to charisma will favor more charismatic leaders over less charismatic leaders.

What about emotional responders? Given that they, in essence, do not always behave in their own self interest, a key issue is whether they are aware of their vulnerability to charisma or not. If not—that is, they believe themselves to be sober responders—then they will either be indifferent to charisma as a leadership attribute when choosing a leader (if they erroneously believe all followers are sober) or they will prefer greater charisma (if they erroneously believe that, while they are immune to charisma, others are not). On the other hand, if they are aware of their vulnerability to charisma *ex ante*, then they may prefer to have a less charismatic leader than a more charismatic leader. An ironic possibility, therefore, is that the followers not directly responsive to charisma want a more charismatic leader, while those who are responsive want a less charismatic leader.[8] See Section 5 for details.

In terms of the organization's overall expected production and the expected amount of effort supplied by followers, an organization does better with a more charismatic leader than a less charismatic one (Proposition 4). This could explain, in part, why organizations seek charismatic leaders.

At the same time, some scholars have suggested that too much emphasis could be given to charisma when selecting leaders (see, in particular, Khurana, 2002a,b) or too much attributed to leadership skills (*e.g.,* Weber et al., 2001, and Wasserman et al., 2010). This paper may help reconcile those views with more positive views of charisma: when the productivity state is high, charisma is irrelevant; it matters only in low-productivity states. Hence, someone looking at the data might see that when organizations do well, there is little evidence that the leader's charisma mattered.

There are, though, other explanations for these disparate views on charisma. In particular, it could be that rather than being savvy, leaders are divided into the knowledgeable, but lacking in charisma (a type called "professors" below) and those who are ignorant, but charismatic (called "demagogues"). Now there is a tradeoff between the incentive benefits of charisma on emotional responders versus the loss due to followers' ignorance of the productivity state. As discussed in Section 4, in such a setting it is ambiguous whether the organization does better with a professor or a demagogue at the helm. This ambiguity could, then, help to explain the ambiguity in the empirical results.

Another explanation for that ambiguity arises if the leader, rather than being endowed (or perhaps not) with knowledge of the productivity state, must take a personally costly action to learn it. Because, *ceteris paribus*, a more charismatic leader is more likely to make an emotional appeal (*i.e.,* not reveal the

[8] Or, in *Star Trek* terms, on a mixed ship of human (emotional responders) and Vulcans (sober responders), the Vulcans could prefer a human captain (*e.g.,* Kirk, a charismatic leader) and the humans a Vulcan captain (*e.g.,* Spock, an uncharismatic leader).

state) than a less charismatic one, a more charismatic leader assigns less value to learning the state than a less charismatic one. Consequently, highly charismatic leaders will elect not to learn the state; that is, they will endogenously choose to be demagogues. It further follows that, in contrast to Proposition 4, the organization is no longer necessarily better off with a more charismatic leader than a less charismatic one: it is possible that, for intermediate levels of charisma, the organization would do better under a less charismatic leader than a more charismatic leader. On the other hand, a sufficiently charismatic leader will be superior to a sufficiently uncharismatic leader; and, moreover, under some conditions, the organization's wellbeing is strictly increasing in the leader's charisma, for the entire range of charisma levels, despite the costs of endogenous demagoguery. See Section 6 for details.

Yet another alternative to assuming the leader is endowed with knowledge of the productivity state is that the state is something she chooses. Specifically, in Section 7, I assume the state equals the effort the leader expends, with greater effort costing her more. In this setting, an emotional appeal diminishes the leader's incentives to expend effort because her followers don't see what she's done. On the other hand, the more charismatic she is, the harder emotional responders will work in response to an emotional appeal, which in turn enhances the leader's incentives to expend effort (*i.e.,* to boost the state and, thus, her marginal return from her followers' efforts). Combined, the two effects cause the organization's payoff to be non-monotonic in the leader's charisma: for "middle levels" of charisma, the organization is worse off than it would be if it had either a far less charismatic leader or a far more charismatic one.

Sections 6 and 7, as well as some results in Section 9, illustrate that a potential downside to charisma is that it can induce a leader to "rely on her charms"; that is, it can tempt her to effectively substitute charisma for substantive action (learning valuable information, directly enhancing the organization's productivity, or working hard herself). Consequently, these sections offer additional explanations for the empirical and management literatures' mixed assessment of charisma's value.

There is an immense social-science literature on leadership (an excellent entree is the volume edited by Nohria and Khurana, 2010).[9] Within economics, the amount of scholarship is much more modest (for surveys, see Bolton et al., 2010; Zupan, 2010; or Hermalin, 2013). Economic modeling of leadership generally follows one of two approaches: in the first, the leader is better informed about a payoff-relevant state than her followers, with the principal issue being how she credibly conveys this information to her followers;[10] in the second, the leader possesses some bias (vision, overconfidence, strong beliefs, or leadership style) that effectively commits her to courses of *ex ante* desirable actions that

[9]See also Hermalin (1998, 2013) for discussions of some key works on leadership outside of economics, as well as the links between the economics and other social-science literatures.

[10]A partial list of papers pursuing this approach includes Hermalin (1998, 2007), Kobayashi and Suehiro (2005), Andreoni (2006), Komai et al. (2007), Komai and Stegeman (2010), and Zhou (2011).

would otherwise be *ex post* incredible were she lacking in that bias.[11,12]

This paper has ties to both those strains of the literature. As in the first, a key issue here is how the leader transmits information to her followers. On the other hand, this paper departs from that literature in two ways. Most critically, in the existing literature, although the leader might like to conceal bad news, any attempts to do so would generate such pessimistic beliefs in her followers that she is compelled to always reveal information; indeed, a central finding of that literature is that the leader would, if possible, wish to establish a reputation for honestly reporting her information always (see, in particular, Hermalin, 2007). In contrast, here, a sufficiently charismatic leader can conceal bad news without triggering such pessimistic beliefs; indeed, the more charismatic she is, the less pessimistic her followers are in response to her concealing information. A second way this paper departs from the earlier literature is that, for the majority of this paper, the leader's information is assumed to be hard—she can conceal it, but if she chooses to reveal it she must do so truthfully (*i.e.,* without any misrepresentation). In contrast, the earlier literature focused on soft information—the leader could misrepresent what she knows. For the sake of completeness, Sections 8 and 9 extend the analysis to soft information. In particular, Section 9 considers ways in which the current paper ties to the earlier literature on leading by example.

Like the second strain, this paper is premised on the leader possessing a personality characteristic, in this case charisma. Also similar is that at least some followers choose their strategy in rational response to that characteristic (*i.e.,* sober responders understand how the leader's charisma influences her play and they adjust their strategy accordingly). A key difference, however, is that, in the earlier literature, it is the leader who is arguably irrational—that is, her biases cause her to behave differently than would a neo-classically rational actor—while the followers are rational. Here, instead, the focus is on a leader who is wholly rational (savvy) and it is some fraction of her followers who are, at least in part, irrational. Focusing on wholly rational leaders is important insofar as there is reason to believe the most successful leaders are those who are in control of their emotions.[13]

Two papers outside this two-strain taxonomy warrant comment. One is the contemporaneous Kvaløy and Schöttner (2014), which considers a leader's ef-

[11] A partial list of papers pursuing this approach includes Rotemberg and Saloner (1993, 1994, 2000), Van den Steen (2005), and Blanes i Vidal and Möller (2007).

[12] There is also a small empirical literature in economics demonstrating the importance of leadership; see Choudhury and Khanna (2013) as an example and for a survey of some of the other empirical literature. Hermalin (2013, §2.3.2.3) briefly reviews some of the experimental work testing implications of information-transmission models of leadership.

[13] Max Weber referred to this as "the firm taming of the soul" (quoted in Greenstein, 2004, p. 6). Greenstein cites Weber in conjunction with laying out his own argument that a successful president is one with the "the ability to manage his emotions and turn them to constructive purposes, rather than being dominated by them and allowing them to diminish his leadership" (p. 6). Bruttel and Fischbacher (2013) provide some experimental evidence suggesting that those who choose to lead have a better internal locus of control than non-leaders.

forts to motivate her followers. As here, the follower is assumed to respond positively to the leader's motivational act. There are, though, critical differences: in Kvaløy and Schöttner, the leader can vary the intensity of her motivational efforts, here she cannot and the effect, here, of her motivational "effort"—an emotional appeal—is a function of her endowment of charisma; in Kvaløy and Schöttner, the leader has no private information, whereas here, as noted, asymmetric information is central; and, in Kvaløy and Schöttner, all followers are emotional responders (indeed, they assume only one follower), while here a key issue is how a charismatic leader (indirectly) influences wholly rational followers.

The other paper outside the taxonomy is Huck and Rey-Biel (2006). They suppose the follower has a conformity bias that makes him wish to make his own action conform to the leader's. As discussed in Section 9.1, this is similar to identity, which is one explanation for why emotional responders are receptive to emotional appeals: they identify with the leader to some degree, depending on her charisma (also see the discussion in the next section, which briefly considers this paper's connection with economic models of identity as formulated by Akerlof and Kranton, 2000, and others). Consequently, one can think of Huck and Rey-Biel's model as a complementary model for why charismatic leaders can be valuable. With the exception of Section 9, this paper supposes no leading by example, so there is no scope for followers to conform to the leader's action, and thus no overlap between their paper and this one. In Section 9, a model of leading by example is introduced. That model adheres to the notion, which runs through the entire paper, that a leader faces a choice between making an emotional appeal and trying to directly convey information to her followers. But an alternative view is that a leader's charisma "enhances" the message contained in her leading by example (at least for emotional responders). That alternative is briefly explored in Section 9.1, which can be seen as a "marriage" of Huck and Rey-Biel, which has no asymmetric information, with Hermalin (1998), which has asymmetric information, but no conformism/identity preferences.

With the exception of lemmas, proofs are in the text (some, though, precede the statement of the result in question); the proofs of lemmas are in Appendix A.

2 Basic Model

2.1 Assumptions

A team consists of two kinds of members or followers: emotional responders (subscript E) and sober—alternatively, sophisticated or "synical" (*sic*)—responders (subscript S). The number of emotional responders is denoted by n_E, the number of sober responders by n_S, and the team's total size by $N = n_E + n_S$. In addition, the team has a leader, whose role will be described shortly.

A follower, m, supplies effort, $e_m \in \mathbb{R}_+$. The sum of the followers' efforts

determines the value, V, of a non-rivalrous public good,[14] where

$$V = \theta \sum_{m=1}^{N} e_m \,. \tag{1}$$

The parameter $\theta \in [\underline{\theta}, \overline{\theta}] \subset \mathbb{R}_+$ is the productivity state.[15] Although one can readily imagine alternatives to the production function given in (1), that function has a number of advantages in terms of modeling; in particular, followers' efforts are neither strategic substitutes nor complements, so the results below are not driven by those factors.[16] This permits a focus on the role of information.

The timing of the game is that nature draws θ according to some distribution function, which has a positive derivative (density) everywhere. That function is common knowledge. The leader then learns θ; this is her private information. Next, she decides whether to make a rational appeal or an emotional appeal. A rational appeal entails her revealing truthfully to the followers what θ is (think of θ as *hard* information—the leader can conceal it, but not falsify it). An emotional appeal is one in which she suppresses information about θ and simply exhorts her followers to work hard. Sober responders, at least, can distinguish rational from emotional appeals. If they receive the latter, they make inferences about θ. As discussed below, emotional responders may also make inferences upon receiving an emotional appeal. Given either their knowledge of θ or the inferences they have made, the followers then choose their efforts to maximize their objective functions. Finally, payoffs are realized.

At this juncture, assume that the leader's objective is to maximize the value of the public good, V; that is, her payoff is just V.

A follower's objective depends on whether he is an emotional or sober responder; and then only if the leader makes an emotional appeal. Assuming a *rational* appeal, the utility of follower m is

$$V - c(e_m)\,, \tag{2}$$

where $c : \mathbb{R}_+ \to \mathbb{R}_+$ is a disutility-of-effort function common to all followers.

[14] Alternatively, the members' efforts could yield some output, which they and the leader divide. Given suitable assumptions about the members' disutility-of-effort function, the optimal division is equal shares (see, *e.g.,* Hermalin, 1998, for details). Hence, the substantive results in the analysis that follows would be unaffected were this alternative assumption made.

[15] If $0 \leq \underline{\theta} < \overline{\theta} \leq 1$, then θ can also be interpreted as the probability of project success; that is, the gross payoff to each team member and the leader is $\sum_{m=1}^{N} e_m$ if success and 0 if failure, with the two events occurring with probabilities θ and $1 - \theta$, respectively.

[16] Complementary efforts might seem to boost the benefit of having a charismatic leader: as will be seen, a charismatic leader directly generates more effort from emotional responders, which would, were efforts complementary, indirectly lead to more effort from sober responders. At the same time, however, emotional appeals directly depress the effort of sober responders, which would reduce emotional responders' incentives. This *lessens* the value of emotional appeals and, therefore, charisma. While allowing for such additional effects could enrich the analysis, preliminary research indicates that such enrichment comes at a tremendous cost in terms of tractability and analytic clarity. This, in part, explains why I follow the rest of the leadership-in-teams literature by assuming efforts are neither substitutes nor complements.

To ensure followers have unique best responses given their beliefs and to avoid corner solutions, assume the disutility-of-effort function exhibits the following properties: it is twice continuously differentiable; $c(0) = c'(0) = 0$; and marginal disutility, $c'(\cdot)$, is strictly increasing and unbounded.

If the leader has made an emotional appeal, then a sober responder's utility remains as given in (2), but an emotional responder behaves as if his utility is

$$\big(\mu\chi + (1-\mu)\theta\big)e_m - c(e_m) + U(\mathbf{e}_{-m}, \chi, \theta)\,, \tag{3}$$

where $\chi \in \mathbb{R}_+$ is the leader's *charisma*, $\mu \in (0, 1]$ is how emotionally "μanipulable" such a responder is, and U maps the efforts of the other team members, as well as possibly charisma and the state, to an additional utility component (possibly a constant). For most of what follows, U is irrelevant. Note a sober responder could be seen as an emotional responder for whom $\mu = 0$ and $U = \theta \sum_{j \neq m} e_j$.

Expression (3) is consistent with two different views of behavior:

1. Emotional responders are naïve or confused. They get caught up in the leader's rhetoric, charm, etc., which leads them to the erroneous inference that the state is χ. When this interpretation is adopted, it is perhaps most appropriate to set $\mu = 1$.

2. An emotional appeal changes emotional responders' preferences, generating an "intrinsic" incentive reflected by the parameter χ. A leader's emotional appeal, for instance, makes emotional responders want to please the leader, to gain or maintain her approval.[17] Alternatively, such an appeal causes them to identify with the leader and her wishes.[18] The amount to which this happens—the value placed on pleasing the leader, her approval, or the degree of identification—is captured by the parameter χ.

It is important to note that there are subtle issues of interpretation: specifically, *is* (3) an emotional responder's utility or does he simply behave as if it is? Such issues will be considered later, when welfare and team members' preferences over leaders are considered.

[17] Many personality cults in dictatorships seek to portray the dictator as a father figure, perhaps to tap into people's desire for parental approval. See, *e.g.,* Wedeen (1998) on the portrayal of Hafez al-Assad (the late Syrian dictator) as a father figure; or Armstrong (2005) on the similar portrayal of Kim Il Sung (the late North Korean dictator).

[18] "Charismatic leadership works in part by influencing followers to identify with a collective enterprise and internalize group aspirations" (van Vugt and Ronay, forthcoming, summarizing a number of studies in social psychology). Also see Shamir et al. (1993) for evidence. Expression (3) is also consistent with models of identity in the economics literature (see, *e.g.,* Akerlof and Kranton, 2000, 2005): in particular, an alternative to (3), which would yield identical behavior by emotional responders, is

$$(1-\mu)\theta e_m - \mu\chi(e^{**} - e_m) - c(e_m) + U(\mathbf{e}_{-m}, \chi, \theta)\,,$$

where μ is the weight the follower places on the identity component of utility (so, $1-\mu$ is the weight on the "selfish" component), e^{**} is some idealized level of effort, and χ is how strongly the follower is induced to identify with the interests of the leader or society. Section 9.1 explores a variant of that utility function in which e^{**} is effort supplied by the leader herself.

The charisma of the leader, χ, is assumed to be common knowledge. It could come to be so because of an earlier, unmodeled, stage in which followers get to know (would-be) leaders. The assumption appears empirically justified: in the US, for instance, political commentators appear quick to reach consensus on how charismatic or not various politicians are (*e.g.,* Reagan was widely seen as the "great communicator").[19]

As was implicit in the presentation above, it is assumed that the leader can make an emotional appeal or a rational one, but not both. This assumption can be justified as reflecting "bandwidth" limitations (*e.g.,* followers have a limited attention span or the time allotted the leader to make her case is limited). Alternatively, trying to make both appeals simultaneously muddies the waters, diminishing the effectiveness of each.[20] I note this either-or assumption need not be critical: Appendix B considers two extensions in which the leader is able to send whatever weighted average of an emotional and rational appeal she wishes; the results, however, prove to be identical to those presented in the text.

As was also implicit, it is assumed that the leader must make an appeal; that is, she cannot be silent. Given that the leader incurs no cost in making an appeal and her information is hard, the assumption that she must make some sort of an appeal can be justified by reference to a standard unraveling argument (*e.g.,* as in Grossman, 1981); that is, no appeal would be seen by the followers as an admission that the state was at its minimum, $\underline{\theta}$. Hence, the leader finds no appeal dominated, at least weakly, by some sort of an appeal and, thus, there is no loss in assuming the leader must make an appeal.

2.2 Preliminary Analysis

The assumptions made above about the disutility-of-effort function imply

$$\max_e \xi e - c(e)$$

(i) has a unique interior solution, call it $e^*(\xi)$, for all $\xi > 0$; and (ii) $e^*(\cdot)$ is a strictly increasing function on $\mathbb{R}_+$. Moreover, by the implicit function theorem, $e^*(\cdot)$ is differentiable on $(0, \infty)$.

Because the efforts of other followers do not affect a given follower's utility-maximization program, each follower will respond to a rational appeal by supplying effort $e^*(\theta)$. If they receive an emotional appeal, the followers will form some expectation, $\widehat{\theta}$, about θ. Hence, a sober responder will maximize $\widehat{\theta} e - c(e)$; and an emotional responder will maximize

$$\big(\mu\chi + (1-\mu)\widehat{\theta}\big)e - c(e)\,.$$

[19] That various measures of charisma have been validated in the social-psychology literature (see, *e.g.,* Fuller et al., 1996) provides further evidence that people's assessment of charisma are strongly correlated.

[20] As reflected by the well-known political axiom, dating to at least the 1980s, "if you're explaining, you're losing." The line has been attributed to numerous individuals, including Ronald Reagan and the columnist George Will.

Correspondingly, the efforts of rational and emotional responders in response to an emotional appeal will be $e^*(\widehat{\theta})$ and $e^*\big(\mu\chi + (1-\mu)\widehat{\theta}\,\big)$, respectively. For future convenience, define $\Omega(\chi,\theta) = \mu\chi + (1-\mu)\theta$. Note Ω increases in each of its arguments.

Let $\Theta_-^{\mathbb{E}}(\zeta)$ denote the expectation of θ conditional on knowing it does not exceed ζ; that is, $\Theta_-^{\mathbb{E}}(\zeta) = \mathbb{E}\big\{\theta\big|\theta \le \zeta\big\}$. Necessarily, $\Theta_-^{\mathbb{E}}(\cdot)$ is an increasing function and $\Theta_-^{\mathbb{E}}(\overline{\theta})$ is just the unconditional expectation of θ, $\mathbb{E}\theta$.

3 Equilibrium of the Basic Model

Suppose the followers' beliefs are $\widehat{\theta}$ when they hear an emotional appeal. The leader will then wish to make such an appeal when the state is θ if and only if

$$\Big(n_S e^*(\widehat{\theta}\,) + n_E e^*\big(\Omega(\chi,\widehat{\theta}\,)\big)\Big)\theta \ge N e^*(\theta)\theta\,. \tag{4}$$

Because $e^*(\cdot)$ is strictly increasing, it is invertible; it thus follows from (4) that the leader will prefer to make an emotional appeal if and only if

$$e^{*-1}\left(\frac{n_S}{N}e^*(\widehat{\theta}\,) + \frac{n_E}{N}e^*\big(\Omega(\chi,\widehat{\theta}\,)\big)\right) \ge \theta\,. \tag{5}$$

Expression (5) entails that the leader's best response to the beliefs an emotional appeal induces in her followers is a cutoff strategy: make an emotional appeal if $\theta \le \theta_C$ and make a rational appeal if $\theta > \theta_C$, where the cutoff, θ_C, equals the lefthand side of (5). If the lefthand side of (5) exceeds the maximum possible state, $\overline{\theta}$, then the "cutoff" is $\overline{\theta}$. In equilibrium, followers' beliefs must be consistent with the cutoff strategy; that is, $\widehat{\theta} = \Theta_-^{\mathbb{E}}(\theta_C)$.

Proposition 1. *If the leader is sufficiently lacking in charisma—specifically, if $\chi \le \underline{\theta}$—then the only perfect Bayesian equilibrium is one in which the leader makes a rational appeal only. Otherwise, the only perfect Bayesian equilibria are those in which the leader makes an emotional appeal given states below a cutoff level and at least one such equilibrium exists.*[21]

[21] Observe no claim is made for the uniqueness of the equilibrium. As the proof of Proposition 1 makes clear, there is an equilibrium with a cutoff equal to a $\theta < \overline{\theta}$ if

$$\Lambda(\theta) \equiv n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta)\big)\Big) - (n_S + n_E)e^*(\theta) = 0 \tag{♣}$$

(see expression (9) *infra*). At a general level, it is difficult to establish that the function $\Lambda(\cdot)$ has a single zero or $\Lambda(\theta) > 0$ for all θ; either of which would ensure a unique equilibrium. Making more stringent assumptions, such as $c(e) = e^2/2$ and states are distributed uniformly on the unit interval, it is possible to show uniqueness. For instance, given those last two assumptions, expression (♣) becomes

$$n_S\frac{\theta}{2} + n_E\left(\mu\chi + (1-\mu)\frac{\theta}{2}\right) - (n_S + n_E)\theta = 0\,,$$

which has a unique zero (assuming the lefthand side is not positive for all $\theta \in [0,1]$). That is, the unique equilibrium has a cutoff

$$\theta_C = \min\left\{\frac{2n_E\mu\chi}{(1+\mu)n_E + n_S}, 1\right\}.$$

Proof: Suppose that $\chi \leq \underline{\theta}$ and there were an equilibrium in which the leader made an emotional appeal in at least some states (*i.e.,* $\theta_C > \underline{\theta}$). Rationality of beliefs implies $\Theta_-^{\mathbb{E}}(\theta_C) < \theta_C$. Hence,

$$n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)$$
$$\leq n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\underline{\theta}, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big) < (n_S + n_E) e^*(\theta_C)\,, \quad (6)$$

given that $e^*(\cdot)$ is strictly increasing. Payoffs are continuous, hence (6) is in contradiction to the leader's wishing to make an emotional appeal for all $\theta < \theta_C$, as required by a cutoff strategy. *Reductio ad absurdum*, there is no equilibrium in which a leader of such limited charisma makes an emotional appeal. In this case, it is an equilibrium for the followers to believe any emotional appeal implies $\theta = \underline{\theta}$ and for the leader, therefore, to make rational appeals only.

Suppose that $\chi > \underline{\theta}$. There cannot be an equilibrium in which the leader never makes an emotional appeal: even if followers believe that an emotional appeal implies that $\theta = \underline{\theta}$, continuity and the fact that

$$n_S e^*(\underline{\theta}) + n_E e^*\big(\Omega(\chi, \underline{\theta})\big) > (n_S + n_E) e^*(\underline{\theta}) \quad (7)$$

entail that there exist states in which the leader does better to make an emotional rather than rational appeal even if her followers hold such pessimistic beliefs.

Consistency of beliefs requires $\widehat{\theta} = \Theta_-^{\mathbb{E}}(\theta_C)$. If a $\widetilde{\theta} \in (\underline{\theta}, \overline{\theta}]$ exists such that

$$n_S e^*\big(\Theta_-^{\mathbb{E}}(\widetilde{\theta})\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\widetilde{\theta})\big)\Big) < (n_S + n_E) e^*(\widetilde{\theta})\,, \quad (8)$$

then expressions (7), (8), and continuity imply a $\theta_C \in (\underline{\theta}, \overline{\theta})$ exists such that

$$n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big) = (n_S + n_E) e^*(\theta_C)\,, \quad (9)$$

which establishes that there is an equilibrium in which an emotional appeal is made if $\theta \leq \theta_C$ and a rational appeal made otherwise. If there is no $\widetilde{\theta} \in (\underline{\theta}, \overline{\theta})$ such that (8) holds, then it must be that

$$n_S e^*(\mathbb{E}\theta) + n_E e^*\big(\Omega(\chi, \mathbb{E}\theta)\big) \geq (n_S + n_E) e^*(\overline{\theta})\,,$$

which entails that there is an equilibrium in which the leader makes an emotional appeal regardless of state and the followers' expectation of the state is correspondingly the unconditional mean. ■

The more charismatic she is, the more likely a leader will be to make an emotional appeal:

Proposition 2. *Consider two leaders with levels of charisma χ' and χ, $\chi' < \chi$. Consider a perfect Bayesian equilibrium in which the χ' leader makes an emotional appeal whenever $\theta \leq \theta'_C$. Then there exists a $\theta_C \geq \theta'_C$ such that there is a perfect Bayesian equilibrium in which the χ leader makes an emotional appeal whenever $\theta \leq \theta_C$. Moreover, if $\chi > \underline{\theta}$ and $\theta'_C < \overline{\theta}$, then $\theta_C > \theta'_C$.*

Proof: Ignoring the "moreover" part, the result is immediate from Proposition 1 if $\chi \leq \underline{\theta}$. Hence, assume $\chi > \underline{\theta}$. If $\chi' \leq \underline{\theta}$, then both parts of the proposition follow from Proposition 1. Hence, suppose $\chi' > \underline{\theta}$. If $\theta'_C = \overline{\theta}$, then

$$(n_S + n_E)e^*(\overline{\theta}) \leq n_S e^*(\mathbb{E}\theta) + n_E e^*\big(\Omega(\chi', \mathbb{E}\theta)\big) < n_S e^*(\mathbb{E}\theta) + n_E e^*\big(\Omega(\chi, \mathbb{E}\theta)\big)\,,$$

in which case there is an equilibrium in which θ_C also equals $\overline{\theta}$. Finally, suppose $\theta'_C < \overline{\theta}$. It follows that

$$(n_S + n_E)e^*(\theta'_C) = n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta'_C)\big) + n_E e^*\Big(\Omega\big(\chi', \Theta_-^{\mathbb{E}}(\theta'_C)\big)\Big)\,.$$

Hence,

$$(n_S + n_E)e^*(\theta'_C) < n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta'_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta'_C)\big)\Big)\,. \tag{10}$$

If

$$(n_S + n_E)e^*(\overline{\theta}) \leq n_S e^*(\mathbb{E}\theta) + n_E e^*\big(\Omega(\chi, \mathbb{E}\theta)\big)\,, \tag{11}$$

then there is an equilibrium in which $\theta_C = \overline{\theta}$, and both parts follow. If the inequality in (11) doesn't hold, then that fact, (10), and continuity imply there is a $\theta_C \in (\theta'_C, \overline{\theta})$ such that

$$(n_S + n_E)e^*(\theta_C) = n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)\,;$$

hence, there is an equilibrium in which the cutoff is θ_C and both parts follow. ■

Because there is little of interest in cases in which a leader always makes the same kind of appeal (rational or emotional) regardless of the state, θ, *assume henceforth* that a leader's charisma lies in the interval $(\underline{\chi}, \overline{\chi})$, where $\underline{\chi} = \underline{\theta}$ and

$$\overline{\chi} = \frac{1}{\mu} e^{*-1}\left(e^*(\overline{\theta}) + \frac{n_S}{n_E}\big(e^*(\overline{\theta}) - e^*(\mathbb{E}\theta)\big)\right) - \frac{1-\mu}{\mu}\mathbb{E}\theta\,.$$

Given $\chi \in (\underline{\chi}, \overline{\chi})$, there will be states in which the leader makes an emotional appeal and others in which she makes a rational appeal. *Note, critically, this means the antecedent in the last sentence of Proposition 2 always holds.*

Next, a leader with more charisma induces greater effort from *both* kinds of followers using an emotional appeal than does a less charismatic leader:

Proposition 3. *For any perfect Bayesian equilibrium of the game with a less charismatic leader, there is a perfect Bayesian equilibrium of the game with a more charismatic leader such that, comparing the equilibria,* both *emotional and sober responders supply greater effort in response to an emotional appeal from the more charismatic leader than they do in response to such an appeal from the less charismatic leader.*

Proof: Consider two charisma levels, $\chi > \chi'$. From Proposition 2, if θ'_C is the equilibrium cutoff with a leader of charisma χ', then there is an equilibrium with cutoff $\theta_C > \theta'_C$ in the game with the more charismatic leader. Recalling that $\Theta^{\mathbb{E}}_{-}(\cdot)$ is increasing, it follows that

$$e^*\left(\Theta^{\mathbb{E}}_{-}(\theta_C)\right) > e^*\left(\Theta^{\mathbb{E}}_{-}(\theta'_C)\right)$$
$$\text{and } e^*\big(\mu\chi + (1-\mu)\Theta^{\mathbb{E}}_{-}(\theta_C)\big) > e^*\big(\mu\chi' + (1-\mu)\Theta^{\mathbb{E}}_{-}(\theta'_C)\big)\,,$$

which establishes the claim for sober and emotional responders, respectively. ■

The effect of greater charisma on emotional responders is not surprising. What is more interesting is that sober responders—those not inherently receptive to emotional appeals—respond more to such appeals in equilibrium when they come from more charismatic leaders than when they come from less charismatic leaders. The reason is that more charismatic leaders know they have a greater influence on emotional responders than less charismatic leaders, hence more charismatic leaders are willing to make emotional appeals for a wider range of states than less charismatic leaders. Consequently, sober responders rationally infer that the state is likely to be greater when they receive an emotional appeal from a more charismatic leader than when they receive such an appeal from a less charismatic leader, which causes them to wish to expend more effort.

Of arguably greater importance is the effect of differences in leaders' charisma on *expected* effort supply and the expected value of the public good. As a preliminary step in that analysis: because charisma lies in the interval $(\underline{\chi}, \overline{\chi})$, expression (9) implies

$$n_S e^*\big(\Theta^{\mathbb{E}}_{-}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta^{\mathbb{E}}_{-}(\theta_C)\big)\Big) = N e^*(\theta_C)\,. \tag{12}$$

The following is thus readily shown.

Proposition 4. *Consider leaders with charisma χ' and χ, $\chi' < \chi$. For any perfect Bayesian equilibrium of the game with the less charismatic leader (χ'), there is a perfect Bayesian equilibrium of the game with the more charismatic leader (χ) in which, comparing the two equilibria,*

(i) expected total effort supplied by the followers is greater if the leader is the more charismatic of the two rather than the less charismatic; and

(ii) the expected value of the public good is greater if the leader is the more charismatic of the two rather than the less charismatic.

Proof: Consider any equilibrium with the less charismatic leader and corresponding cutoff θ'_C. From Proposition 2, there is an equilibrium of the game with the more charismatic leader such that the cutoff, θ_C, is greater (*i.e.*, $\theta_C > \theta'_C$). Let $F(\cdot)$ denote the distribution function over states and let $\Upsilon : [\underline{\theta}, \overline{\theta}] \to \mathbb{R}_{++}$

(more on $\Upsilon(\cdot)$ later). To understand how outcomes vary between the two leaders, observe that

$$\begin{aligned}
&\int_{\underline{\theta}}^{\theta_C} \Upsilon(\theta) N e^*(\theta_C) dF(\theta) + \int_{\theta_C}^{\overline{\theta}} \Upsilon(\theta) N e^*(\theta) dF(\theta) \\
&> \int_{\underline{\theta}}^{\theta'_C} \Upsilon(\theta) N e^*(\theta_C) dF(\theta) + \int_{\theta'_C}^{\theta_C} \Upsilon(\theta) N e^*(\theta) dF(\theta) + \int_{\theta_C}^{\overline{\theta}} \Upsilon(\theta) N e^*(\theta) dF(\theta) \\
&> \int_{\underline{\theta}}^{\theta'_C} \Upsilon(\theta) N e^*(\theta'_C) dF(\theta) + \int_{\theta'_C}^{\overline{\theta}} \Upsilon(\theta) N e^*(\theta) dF(\theta) \,,
\end{aligned}$$

where the first inequality follows because, for $\theta < \theta_C$, a leader with charisma χ strictly prefers an emotional appeal to a rational appeal and the second inequality follows because $e^*(\cdot)$ is strictly increasing. Setting $\Upsilon(\theta) \equiv 1$, this chain shows that expected effort with a more charismatic leader—the first line in the chain—strictly exceeds expected effort with a less charismatic leader—the last line in the chain. Letting $\Upsilon(\theta) = \theta$, the chain shows that expected value with a more charismatic leader is greater than with a less charismatic leader. ■

Proposition 4 provides insight into why the designers of an organization could prefer a more charismatic leader to a less charismatic leader (*e.g.,* choose Kirk over Spock): provided the organization has *any* emotional responders who are the least bit receptive to emotional appeals (*i.e.,* provided $n_E > 0$ and $\mu > 0$), a more charismatic leader will generate more effort and greater value in expectation than a less charismatic leader.

The analysis to this point has allowed for the possibility that multiple equilibria exist. Although nothing in what follows requires uniqueness of equilibria, the analysis is more concise if equilibria are unique. To that end, *assume henceforth* that the disutility-of-effort function, $c(\cdot)$, and the distribution over states, $F(\cdot)$, are such that the function $\Lambda(\cdot)$, defined as the mapping

$$\theta \mapsto n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta)\big)\Big) - N e^*(\theta)\,, \tag{13}$$

has a unique zero for each $\chi \in (\underline{\chi}, \overline{\chi})$; that is, for each χ, there is only one θ_C such that $\Lambda(\theta_C) = 0$.[22] Note this defines θ_C as an implicit function of χ and, moreover, by the implicit function theorem, $d\theta_C/d\chi$ exists for all $\chi \in (\underline{\chi}, \overline{\chi})$.

4 Savvy Leaders, Demagogues, and Professors

To this point, the leader has been assumed capable of doing two things: determining the state, θ, and choosing her appeal to maximize the public good with an understanding of how her followers will react to different appeals. Call

[22] Recall the discussion in footnote 21 *supra*.

this leader a *savvy leader*. In this section, two alternative kinds of leaders, "demagogues" and "professors," will be considered.

In contrast to a savvy leader, suppose a leader either had no charisma ($\chi = \underline{\theta}$) or, equivalently, was unwilling to ever make an emotional appeal on the grounds that such an appeal was intellectually dishonest or otherwise inappropriate. Call such a leader a *professor*. In terms of inducing effort and creating value, Proposition 4 demonstrates a professor is inferior to a savvy leader.

At the other extreme, suppose the leader does not learn θ. Such a leader—call her a *demagogue*—can make emotional appeals only.[23] Consequently, her followers can infer nothing about the state from her "decision" to make an emotional appeal and, thus, their inferences about the state are independent of her charisma. In particular, sober responders always supply effort $e^*(\mathbb{E}\theta)$.

The difference between professors and demagogues has to do with the value of information. The following lemma is critical in that regard.

Lemma 1. *Consider the functions defined by* $\theta \mapsto \theta e^*(\theta) - c\big(e^*(\theta)\big)$ *and* $\theta \mapsto \theta e^*(\theta)$.

(i) The first function is strictly convex.

(ii) If, for all $e \in \mathbb{R}_+$,

$$c''(e)^2 \geq c'(e)c'''(e)\,, \tag{14}$$

then the second function is strictly convex.

Note condition (14) can equivalently be stated as *marginal* disutility of effort is log concave.[24] Condition (14) is satisfied, for example, if $c(e) = \omega e^\gamma$, where the assumptions of Section 2 entail $\omega > 0$ and $\gamma > 1$.[25] *Assume, henceforth, that condition* (14) *holds.*

Given the lemma, Jensen's inequality entails that

$$\mathbb{E}\big\{\theta e^*(\theta)\big\} > \mathbb{E}\theta \times e^*(\mathbb{E}\theta) = \mathbb{E}\big\{\theta e^*(\mathbb{E}\theta)\big\}\,.$$

In other words, a professor generates greater expected *value* from sober responders than a demagogue. It follows that if the demagogue's charisma is low enough, or the number of emotional responders small relative to the number of sober responders, or both, then a professor will generate greater expected value

[23] She could, plausibly, also remain silent. If her charisma is less than $\mathbb{E}\theta$ and silence is equivalent to a rational appeal corresponding to the common prior expectation of θ, then she would, in fact, wish to remain silent. The analysis that follows holds independent of whether the leader has the ability to remain silent.

[24] Proof: observe $d\log\big(c'(e)\big)/de = c''(e)/c'(e)$ and the derivative of that is

$$\frac{c'''(e)c'(e) - c''(e)^2}{c'(e)^2}\,.$$

[25] Proof: $\log\big(c'(e)\big) = (\gamma - 1)\log(e) + \log(\omega\gamma)$, which is clearly concave in e.

in total. On the other hand, letting $c(e) = e^2/2$ and assuming θ is distributed uniformly on the unit interval, we have

$$\mathbb{E}\{\theta e^*(\theta)\} = \mathbb{E}\{\theta^2\} = \frac{1}{3} < \frac{1}{2} = \mathbb{E}\theta \times e^*(1)\,;$$

hence, if the demagogue is sufficiently charismatic and the emotional responders sufficiently responsive to emotional appeals (*i.e.,* μ is large), then such a demagogue would generate greater expected value from emotional responders than a professor. If, in addition, the number of emotional responders is large relative to the number of sober responders, then the demagogue must generate greater expected value in total than would a professor. To conclude:

Proposition 5. *It is ambiguous as to whether a professor generates more or less value in expectation than a demagogue. That is, there exist conditions under which the professor generates greater value in expectation and conditions under which the demagogue does.*

5 Welfare and the Democratic Choice of Leader

As an initial analysis of the issues of welfare and who the team might choose as leader, suppose that all responders are sober (*i.e.,* $n_E = 0$). Because $\Theta_-^{\mathbb{E}}(\theta_C) < \theta_C$ unless $\theta_C = \underline{\theta}$, expression (5) implies that a savvy leader facing only sober responders will never make an emotional appeal. Hence, a savvy leader is like a professor when all followers are sober; in particular, her charisma is irrelevant.

Given Lemma 1, the function

$$\theta \mapsto (n_S - 1)\theta e^*(\theta) + \theta e^*(\theta) - c\big(e^*(\theta)\big)$$

is strictly convex. Hence, Jensen's inequality implies

$$\mathbb{E}\Big\{n_S\theta e^*(\theta) - c\big(e^*(\theta)\big)\Big\} > n_S \times \mathbb{E}\theta \times e^*(\mathbb{E}\theta) - c\big(e^*(\mathbb{E}\theta)\big)\,. \tag{15}$$

Expression (15) entails that, if all followers are sober, then each strictly prefers a professor or savvy leader to a demagogue. Moreover, because multiplying (15) by n_S yields the followers' total welfare under the two kinds of leaders, it further follows that, if all followers are sober, their expected welfare is greater with a professor or savvy leader than with a demagogue. To summarize:

Proposition 6. *If all followers are sober responders, then each follower prefers a professor or savvy leader to a demagogue and their expected welfare is greater with a professor or savvy leader than with a demagogue. When choosing between two leaders, the leaders' respective charisma is irrelevant when all followers are sober responders.*

Now suppose that there are both sober and emotional responders. The presence of emotional responders causes sober responders to care about the charisma of leaders; in particular, sober responders will strictly prefer savvy leaders to professors and, in addition, more charismatic savvy leaders to less charismatic savvy leaders:

Proposition 7. *Assume there are sober and emotional responders and leaders are savvy, then sober responders prefer a more charismatic leader to a less charismatic leader.*

Proof: The expected payoff to a sober responder is

$$F(\theta_C)\Theta_-^{\mathbb{E}}(\theta_C)\left(n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big)+n_E e^*\Big(\Omega\big(\chi,\Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)\right)-F(\theta_C)c\Big(e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)$$
$$+\int_{\theta_C}^{\overline{\theta}}\Big(\theta(n_S+n_E)e^*(\theta)-c\big(e^*(\theta)\big)\Big)dF(\theta)\,. \quad (16)$$

Keeping in mind that $d\big(F(\theta_C)\Theta_-^{\mathbb{E}}(\theta_C)\big)/d\theta_C=\theta_C F'(\theta_C)$, expression (9), and the envelope theorem, it can be shown that the derivative of (16) with respect to χ is

$$F'(\theta_C)\left(c\big(e^*(\theta_C)\big)-c\Big(e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)\right)$$
$$+n_E e^{*\prime}\Big(\Omega\big(\chi,\Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)\left(\mu+(1-\mu)\Theta_-^{\mathbb{E}\,\prime}(\theta_C)\frac{d\theta_C}{d\chi}\right)\Theta_-^{\mathbb{E}}(\theta_C)F(\theta_C)$$
$$+(n_S-1)e^{*\prime}\big(\Theta_-^{\mathbb{E}}(\theta_C)\big)\Theta_-^{\mathbb{E}\,\prime}(\theta_C)\frac{d\theta_C}{d\chi}\Theta_-^{\mathbb{E}}(\theta_C)F(\theta_C)>0\,.$$

■

Corollary 1. *Assume there are sober and emotional responders, then sober responders will prefer a sufficiently charismatic demagogue to a professor.*

Proof: Consider a savvy leader with charisma $\overline{\chi}$: she always makes an emotional appeal and she is, thus, equivalent to a demagogue of equal charisma. Because a professor is equivalent to a savvy leader who lacks charisma, the result therefore follows from Proposition 7 and the continuity of payoffs. ■

Although sober responders prefer a sufficiently charismatic demagogue to a professor, a professor is preferable to demagogue with little charisma:

Proposition 8. *Assume there are sober and emotional responders, then sober responders will prefer a professor to an insufficiently charismatic demagogue.*

Proof: Let $\theta_\ell=\underline{\theta}$ if a demagogue must make an appeal and let it equal $\mathbb{E}\theta$ if she can be silent. Observe

$$\mathbb{E}\Big\{(n_S+n_E)\theta e^*(\theta)-c\big(e^*(\theta)\big)\Big\}>(n_S+n_E)\times\mathbb{E}\theta\times e^*(\mathbb{E}\theta)-c\big(e^*(\mathbb{E}\theta)\big)$$
$$\geq\mathbb{E}\theta\times\Big(n_S e^*(\mathbb{E}\theta)+n_E e^*\big(\Omega(\theta_\ell,\mathbb{E}\theta)\big)\Big)-c\big(e^*(\mathbb{E}\theta)\big)\,, \quad (17)$$

where the first inequality follows from Lemma 1 and the second because $\mathbb{E}\theta \geq \Omega(\theta_\ell, \mathbb{E}\theta)$. The first expression in (17) is a sober responder's expected payoff under a professor, the last his expected payoff under a demagogue with charisma $\chi = \theta_\ell$. The result follows given continuity of payoffs. ■

What about the preferences of emotional responders concerning the choice of leader? The answer is complicated and depends on the following:

- Are the true payoffs of emotional responders given by expression (3) or do those responders merely behave as if that is their payoff?
- If the former, what is U?
- If the latter, what are their true payoffs?
- Also, if the latter, how aware are they that their behavior is or will be at odds with their true payoffs?

Those questions engender far more possibilities to consider than can be dealt with in the limited space of a journal article; consequently, only a few cases will be examined:

1. Unaware, naïve emotional responders, whose true payoff is given by (2). Each individual emotional responder believes himself to be sober, but may or may not believe some subset of his fellow followers are emotional responders.
2. Aware, naïve emotional responders, whose true payoff is given by (2). Each such responder knows he is an emotional responder. In both this case and the previous one, assume $\mu = 1$ in (3).
3. Identifying emotional responders, whose true payoff is

$$\mu\chi + (1-\mu)V - c(e_m) \tag{18}$$

when an emotional appeal is given and is (2) when a rational appeal is given. In this case, emotional responders know their utility (payoffs) and the presumption is $\mu \in (0, 1]$.

In case #1, emotional responders' preferences over leaders weakly mimic those of sober responders: if they believe all responders are sober, then they are indifferent to charisma and strictly prefer professors to demagogues (Proposition 6); but if they believe that some *other* responders are emotional, then they will favor a more charismatic savvy leader to a less charismatic savvy leader (Proposition 7). In terms of such a follower's expected utility, it is

$$\int_{\underline{\theta}}^{\theta_C} \left(\theta\Big(n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*(\chi) \Big) - c\big(e^*(\chi)\big) \right) dF(\theta) + \int_{\theta_C}^{\overline{\theta}} \Big(\theta(n_S + n_E) e^*(\theta) - c\big(e^*(\theta)\big) \Big) dF(\theta) \tag{19}$$

(recall $\mu = 1$). Differentiating (19) with respect to χ, utilizing (9) and the envelope theorem, yields

$$\underbrace{F'(\theta_C)\Big(c\big(e^*(\theta_C)\big) - c\big(e^*(\chi)\big)\Big)}_{\mathsf{X}} + \underbrace{\left((n_E - 1)e^{*\prime}(\chi) + n_S e^{*\prime}\big(\Theta_-^{\mathbb{E}}(\theta_C)\big)\Theta_-^{\mathbb{E}}{}'(\theta_C)\frac{d\theta_C}{d\chi}\right)\Theta_-^{\mathbb{E}}(\theta_C)F(\theta_C)}_{\mathsf{A}}, \quad (20)$$

where the term labeled X reflects the amount by which such a follower is being exploited and is, thus, a loss to the follower; and the term label A reflects the additional production that a more charismatic leader generates from the *other* followers and is, thus, a positive to the follower. If n_E and n_S are sufficiently large, then $\mathsf{A} + \mathsf{X} > 0$: even such an unaware, naïve emotional responder is better off with a more charismatic leader than a less charismatic leader. Given (20) equals X if $n_E = 1$ and $n_S = 0$, conditions also exist such that an unaware emotional responder would be better off with a less charismatic leader.

In case #2, emotional responders are aware of their vulnerability to charisma. Whether they want a more or less charismatic leader depends on the sign of (20). If the sign is negative, then, ironically, it is possible that sober responders—those not directly affected by charisma—could favor the more charismatic leader, while emotional responders—those directly affected by charisma—could favor the less charismatic leader. Such a difference in preferences reflects the latter's fear of being exploited and the former's benefits from such exploitation.

In case #3, the derivative of the emotional responders' utility with respect to charisma has both the X and A terms (modified to reflect that $\mu < 1$), but now there is an additional term

$$-\theta_C F'(\theta_C)\mu\left(n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)\right) < 0\,.$$

As with case #2, it is ambiguous as to whether such emotional responders would favor a more or less charismatic leader.

6 Endogenous Demagogues

So far, the assumption has been that the leader is endowed with knowledge of the productivity state, θ. This section explores the alternative that she must invest some fixed amount, $I > 0$, in order to obtain information about θ.

In what follows, assume that a leader who obtains information acts in a savvy manner. Should she fail to obtain information, then she has no choice but to act as a demagogue (*i.e.,* make emotional appeals only). Because θ enters expressions (1) and (3) in an affine manner, little is gained by assuming that the information the leader receives is a signal of θ rather than θ itself. Additionally, although one could imagine her investment reveals θ with less than certainty, such a generalization complicates the analysis without yielding

particularly useful insights. In sum, then, assume that the leader learns θ with certainty if she invests I; and she learns nothing about θ if she chooses not to invest. Her *realized* payoff is, thus, V if she doesn't invest and $V - I$ if she does.

Suppose the followers expect the leader to invest. Her expected payoff (gross of investment cost) if she indeed does is

$$\mathbb{E}V_I \equiv \int_{\underline{\theta}}^{\theta_C} \theta N e^*(\theta_C) dF(\theta) + \int_{\theta_C}^{\overline{\theta}} \theta N e^*(\theta) dF(\theta) \,.$$

If she deviates by not investing, her expected payoff is

$$\mathbb{E}V_{\neg I} \equiv \int_{\underline{\theta}}^{\overline{\theta}} \theta N e^*(\theta_C) dF(\theta) \,.$$

The difference is

$$\Delta(\theta_C) \equiv \mathbb{E}V_I - \mathbb{E}V_{\neg I} = \int_{\theta_C}^{\overline{\theta}} \theta N \big(e^*(\theta) - e^*(\theta_C)\big) dF(\theta) \,. \tag{21}$$

If $\theta_C = \overline{\theta}$, then $\Delta(\theta_C) = 0$; if $\theta_C < \overline{\theta}$, then $\Delta(\theta_C) > 0$. Because no leader would otherwise invest, assume $\Delta(\underline{\theta}) > I$.

By continuity, there exists a $\theta_D \in (\underline{\theta}, \overline{\theta})$ such that $\Delta(\theta_D) = I$. Because, from (21), $\Delta(\cdot)$ is decreasing, θ_D is unique. Moreover, because (i) $\theta_C = \underline{\theta}$ for a leader with charisma $\underline{\chi}$; (ii) $\theta_C = \overline{\theta}$ for a leader with charisma $\overline{\chi}$; and (iii) θ_C is continuous and increasing in charisma (Proposition 2 and the assumption that $\Lambda(\cdot)$, as defined by (13), has a unique zero), it follows that there exists a unique charisma level χ_D, $\chi_D \in (\underline{\chi}, \overline{\chi})$, such that there is no equilibrium in which a leader with charisma greater that χ_D invests in learning the state.

Suppose, instead, the followers expect the leader *not* to invest. In other words, they expect the leader to behave as a demagogue; hence, a sober responder will choose effort $e^*(\mathbb{E}\theta)$ in response to the expected emotional appeal and an emotional responder will choose effort $e^*\big(\Omega(\chi, \mathbb{E}\theta)\big)$.[26] Because $\chi < \overline{\chi}$, there exists a $\widetilde{\theta} \in (\underline{\theta}, \overline{\theta})$ such that

$$N e^*(\widetilde{\theta}) = n_S e^*(\mathbb{E}\theta) + n_E e^*\big(\Omega(\chi, \mathbb{E}\theta)\big) \,.$$

Consequently, the leader's expected payoff if she indeed does not invest is

$$\mathbb{E}\widetilde{V}_{\neg I} \equiv \int_{\underline{\theta}}^{\overline{\theta}} \theta N e^*(\widetilde{\theta}) dF(\theta) \,.$$

[26] The analysis here presumes the leader *must* make an appeal (cannot be silent). The results, though, are not dependent on this: if she could elect to be silent, with silence leading to both kinds of responders playing $e^*(\mathbb{E}\theta)$, then the quantity $\widetilde{\theta}$, shortly to be introduced, would only be greater. It would thus continue to be true that $\Delta(\widetilde{\theta}) < \Delta(\theta_C)$, which is all that is required to establish Proposition 9 *infra*.

If she deviates by investing, her expected payoff (gross of investment cost) is

$$\mathbb{E}\widetilde{V}_I \equiv \int_{\underline{\theta}}^{\widetilde{\theta}} \theta N e^*(\widetilde{\theta}) dF(\theta) + \int_{\widetilde{\theta}}^{\overline{\theta}} \theta N e^*(\theta) dF(\theta)\,.$$

The difference is $\Delta(\widetilde{\theta})$.

Because $\chi < \overline{\chi}$, $\theta_C < \overline{\theta}$; hence, $\Theta_-^{\mathbb{E}}(\theta_C) < \mathbb{E}\theta$. It follows, therefore, that $\widetilde{\theta} > \theta_C$ and, thus, that $\Delta(\widetilde{\theta}) < \Delta(\theta_C)$. Consequently, if a leader of a given charisma would deviate from investing when expected to invest, then she would *not* deviate from not investing when expected not to invest. To summarize the preceding analysis:

Proposition 9. *There is a pure-strategy perfect Bayesian equilibrium of the game in which the leader decides whether to invest in learning the payoff-relevant state, θ, such that a leader with charisma not exceeding a threshold χ_D, $\chi_D \in (\underline{\chi}, \overline{\chi})$, will invest, but a leader with charisma above that threshold will not.*

Another way to state Proposition 9 is

Corollary 2. *When the leader can decide whether to become informed, a sufficiently charismatic leader will choose to be a demagogue in equilibrium.*

Because $\widetilde{\theta} > \theta_C$ for any level of charisma, the equilibrium of Proposition 9 is not unique: there is a lower threshold, $\widetilde{\chi}_D$, possibly equal to $\underline{\chi}$, such that, if the followers expect a leader with charisma $\chi \in (\widetilde{\chi}_D, \overline{\chi})$ not to invest, it is indeed a best response for such a leader not to invest. In other words, for any $\widehat{\chi} \in [\widetilde{\chi}_D, \chi_D]$ there is a pure-strategy equilibrium such that leaders with charisma less than $\widehat{\chi}$ invest and those with greater charisma don't. For the sake of brevity, however, attention will be limited to the Proposition 9 equilibrium.

In the Proposition 9 equilibrium, the public good's expected value, $\mathbb{E}V$, is

$$\mathbb{E}V = \begin{cases} \int_{\underline{\theta}}^{\theta_C} \theta N e^*(\theta_C) dF(\theta) + \int_{\theta_C}^{\overline{\theta}} \theta N e^*(\theta) dF(\theta)\,, & \text{if } \chi \leq \chi_D \\ \Big(n_S e^*(\mathbb{E}\theta) + n_E e^*\big(\Omega(\chi, \mathbb{E}\theta)\big)\Big)\mathbb{E}\theta\,, & \text{if } \chi > \chi_D \end{cases}. \tag{22}$$

Unlike Proposition 4, in which $\mathbb{E}V$ was strictly increasing in the leader's charisma, $\mathbb{E}V$ may not be monotone in charisma when the leader can decide whether to learn the state. Figure 1 plots expression (22) under two different scenarios. Common to both scenarios: $c(e) = e^2/2$, θ distributed uniformly on the unit interval, $\mu = 1$, and $N/I = 10$. In panel A of the figure, it is assumed that the number of sober and emotional responders is the same. In panel B, 90% of the followers are sober responders. In the first scenario, this entails $\overline{\chi} = 3/2$ and $\chi_D \approx .767$. In the second, $\overline{\chi} = 11/2$ and $\chi_D \approx 2.81$.

The ambiguity illustrated by the figure arises from two offsetting effects. On the one hand, if the leader does not gather the information in equilibrium, then the organization forgoes ever having that valuable information (in light of Lemma 1(ii), sober responders yield greater value in expectation when informed than when not). On the other hand, because the leader can effectively

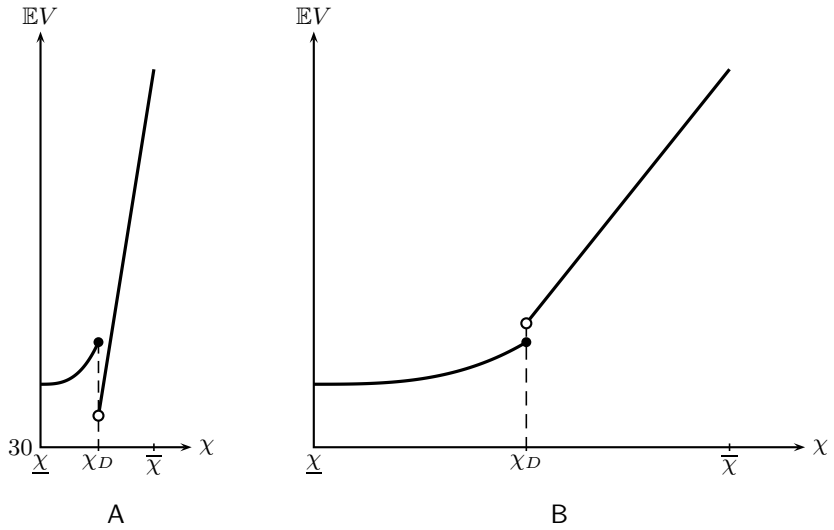

Figure 1: Expected value (expression (22)) as a function of the leader's charisma when the leader's decision to learn the state is endogenous. Horizontal & vertical axes not on the same scale. See text for the parameter values and functional forms being assumed. In panel A, the number of sober and emotional responders is equal; in panel B, 90% are sober responders.

commit not to have the information, the followers' inference about the state given an emotional appeal is consequently less pessimistic than it would be if the leader could strategically reveal or conceal that information (necessarily, $\mathbb{E}\theta > \Theta_{-}^{\mathbb{E}}(\theta_C)$). When there are relatively many emotional responders, the leader will be more inclined to make an emotional appeal than when there are relatively few (see, *e.g.,* the formula for θ_C in footnote 21). Hence, followers will already have less cause to be pessimistic upon receiving an emotional appeal, which means the loss-of-information effect will dominate the reduced-pessimism effect, as seen in Panel A of Figure 1. The reverse is true when emotional responders are relatively rare, as seen in Panel B of Figure 1.

In light of Figure 1, it is not surprising that sober responders' preferences for leaders with different *intermediate* levels of charisma could be ambiguous. What is unambiguous, though, is that they still prefer sufficiently charismatic leaders to sufficiently uncharismatic leaders: as $\chi \to \overline{\chi}$, the endogeneity of the information becomes irrelevant, because, even if informed, such a leader will almost surely make an emotional appeal. Proposition 7 therefore implies that sober responders will prefer *highly* charismatic leaders to less charismatic leaders even when the former will elect to be demagogues (*i.e.,* not learn θ).

Given the discussion at the end of the previous section, as well as here, it is clear that the preferences of emotional responders with respect to their leaders' charisma are ambiguous when information acquisition is endogenous.

7 Charisma and a Leader's Direct Work Incentives

So far the productivity state, θ, has been chosen by "nature." This section considers the possibility that θ is, instead, determined by the leader's actions. Specifically, assume that the leader chooses θ from $[\underline{\theta}, \infty)$. To ensure interior solutions, assume $\underline{\theta} > 0$ (*i.e.,* even absent any action by the leader, there is some return to the followers' efforts). The leader incurs a disutility of effort, $\delta(\theta)$, if she chooses productivity level θ. Hence, her utility is

$$\theta N e^*(\theta) - \delta(\theta) \tag{23}$$

if she makes a rational appeal and

$$\theta\Big(n_S e^*(\widehat{\theta}) + n_E e^*\big(\Omega(\chi, \widehat{\theta})\big)\Big) - \delta(\theta) \tag{24}$$

if she makes an emotional appeal, where $\widehat{\theta}$ denotes the θ the followers believe the leader chose. The leader's choice of θ is her private information, unless she chooses to reveal it via a rational appeal. As before, her knowledge of θ is hard: she can conceal it (make an emotional appeal), but cannot distort it.

For ease of analysis and to ensure interior optima and unique equilibria, assume that $\delta(\cdot)$ exhibits the following properties:[27]

- $\delta(\cdot)$ is twice continuously differentiable;

[27] Note these properties would be satisfied, for example, if $c(e) = e^2/2$ and $\delta(\theta) = (\theta - \underline{\theta})^3/3$.

- $\delta(\underline{\theta}) = \delta'(\underline{\theta}) = 0$;
- $\delta'(\cdot)$ is strictly increasing (*i.e.,* $\delta(\cdot)$ is convex) and unbounded above;
- for all levels of charisma, χ, the function defined by $\theta \mapsto n_S e^*(\theta) + n_E e^*\big(\Omega(\chi, \theta)\big)$ intersects $\delta'(\cdot)$ once on $[\underline{\theta}, \infty)$; and
- the function defined by $\theta \mapsto N e^*(\theta) + N\theta e^{*\prime}(\theta)$ intersects $\delta'(\cdot)$ once on $[\underline{\theta}, \infty)$.

Because $\underline{\theta} > 0$, $e^*(\theta) > 0$; hence, in the last two bullet points, the functions in question cross $\delta'(\cdot)$ from above.

The timing of the game is similar to before: the leader chooses θ; she then decides which kind of appeal to make; followers supply effort; and payoffs are realized.

If the leader plans to make a rational appeal, then she will choose θ to maximize (23). The previously made assumptions ensure that program has a unique solution defined by the first-order condition:

$$N e^*(\theta) + N\theta e^{*\prime}(\theta) = \delta'(\theta)\,.$$

Let θ^*_{RA} denote the solution.

If she plans to make an emotional appeal, then she will choose θ to maximize (24). The first-order condition is

$$n_S e^*(\widehat{\theta}) + n_E e^*\big(\Omega(\chi, \widehat{\theta})\big) = \delta'(\theta)\,.$$

Because followers can't believe the state is less than $\underline{\theta}$, the lefthand side is positive. It follows, given the properties of $\delta(\cdot)$, that there is a unique solution and it defines a maximum. In equilibrium, the followers' expectations must be correct; that is, the solution must be $\widehat{\theta}$. Mathematically, in equilibrium, it will be that

$$n_S e^*(\widehat{\theta}) + n_E e^*\big(\Omega(\chi, \widehat{\theta})\big) = \delta'(\widehat{\theta})\,. \tag{25}$$

By assumption, there is a unique $\widehat{\theta}$ that solves that expression for each level of charisma; call it $\widehat{\theta}(\chi)$. Because an increase in charisma, holding $\widehat{\theta}$ constant, shifts the lefthand side of (25) up and that curve interests $\delta'(\cdot)$, an increasing function, from above, it follows that $\widehat{\theta}(\cdot)$ is an increasing function. In other words:

Proposition 10. Conditional on her ultimately making an emotional appeal*, a leader works harder—generates a higher productivity parameter—the more charismatic she is.*

Intuitively, a more charismatic leader knows she will generate more effort from emotional responders *ceteris paribus*; hence, her return to increasing θ is greater. Followers understand this, so expect a higher θ, which means they will supply greater effort, which reinforces her incentives to choose a higher θ.

If, contrary to the maintained assumption of this section, leaders were demagogues only (*i.e.,* incapable of making rational appeals), then a corollary to Proposition 10 would be

Corollary 3. *If leaders are demagogues and leaders determine the productivity parameter, θ, then more charismatic leaders work harder in equilibrium than less charismatic leaders.*

The focus, however, is on savvy leaders. If the range of possible charisma levels is $[\underline{\theta}, \infty)$ (*i.e.,* $\underline{\chi} = \underline{\theta}$), then sufficiently uncharismatic leaders will prefer to make rational appeals rather than emotional ones. The reason is as follows. Necessarily, $\underline{\theta} \leq \widehat{\theta}$. In fact, because $\delta'(\underline{\theta}) = 0$ and $e^*(\underline{\theta}) > 0$, it follows that

$$n_S e^*(\underline{\theta}) + n_E e^*\big(\Omega(\underline{\theta}, \underline{\theta})\big) > 0 = \delta'(\underline{\theta})\,.$$

Consequently, it must be that $\widehat{\theta}(\underline{\theta}) > \underline{\theta}$. Hence,

$$\widehat{\theta}(\underline{\theta}) N e^*\big(\widehat{\theta}(\underline{\theta})\big) > \widehat{\theta}(\underline{\theta})\Big(n_S e^*(\widehat{\theta}(\underline{\theta})) + n_E e^*\big(\Omega(\underline{\theta}, \widehat{\theta}(\underline{\theta}))\big)\Big)\,;$$

which means that a leader of minimum charisma (*i.e.,* $\chi = \underline{\theta}$), even if she chose productivity level $\widehat{\theta}(\underline{\theta})$, would do better to deviate by making a rational appeal. Of course, if she will make a rational appeal, she does best to choose θ^*_{RA}. It is clear this logic extends to any leader whose charisma is such that $\chi < \widehat{\theta}(\chi)$: she does better to choose θ^*_{RA} and make a rational appeal. Given continuity, the interval of such types is non-empty, so we can conclude:

Proposition 11. *In equilibrium, leaders with sufficiently low charisma will choose productivity parameter θ^*_{RA} and make rational appeals. The set of charisma levels for which this is true is non-empty.*

Consider the other extreme. The implicit function theorem entails $\widehat{\theta}(\cdot)$ is differentiable. Invoking the envelope theorem, it follows that the derivative, with respect to charisma, of the equilibrium payoff enjoyed by a leader who will make an emotional appeal is

$$\widehat{\theta}(\chi)\left(n_S e^{*\prime}\big(\widehat{\theta}(\chi)\big)\widehat{\theta}'(\chi) + n_E e^{*\prime}\Big(\Omega\big(\chi, \widehat{\theta}(\chi)\big)\Big)\frac{d\Omega}{d\chi}\right)\,,$$

which is positive and bounded away from zero. Consequently, for sufficiently high levels of charisma, the equilibrium payoff enjoyed by a leader who will make an emotional appeal must exceed the maximized value of (23). This and the previous analysis establish:

Proposition 12. *If the levels of charisma are $[\underline{\theta}, \infty)$, then there exists a finite $\widehat{\chi} > \underline{\theta}$ such that, in equilibrium, leaders with charisma below $\widehat{\chi}$ will choose productivity θ^*_{RA} and make rational appeals and leaders with charisma above $\widehat{\chi}$ will choose productivity $\widehat{\theta}(\chi)$ and make emotional appeals.*

Consider a leader whose charisma is such that she indifferent between a rational-appeal strategy and an emotional-appeal strategy (*i.e.,* her charisma is precisely $\widehat{\chi}$, as defined in Proposition 12). Would she choose a greater productivity parameter if she plans on subsequently making a rational appeal or

would it be greater if she plans on an emotional appeal (*i.e.,* is θ^*_{RA} greater or less than $\widehat{\theta}(\widehat{\chi})$)? Further, which strategy will yield the greater value, V, of the public good? Given the monotonicity of $\delta(\cdot)$, the answer to the second question follows immediately from the answer to the first: given her indifference,

$$\underbrace{\theta^*_{\text{RA}} N e^*(\theta^*_{\text{RA}})}_{V_{\text{RA}}} - \delta(\theta^*_{\text{RA}}) = \underbrace{\widehat{\theta}(\widehat{\chi})\Big(n_S e^*(\widehat{\theta}(\widehat{\chi})) + n_E e^*\big(\Omega(\chi, \widehat{\theta}(\widehat{\chi}))\big)\Big)}_{V_{\text{EA}}(\widehat{\chi})} - \delta\big(\widehat{\theta}(\widehat{\chi})\big)\,. \quad (26)$$

Hence, $\theta^*_{\text{RA}} > \widehat{\theta}(\widehat{\chi})$ if and only if $V_{\text{RA}} > V_{\text{EA}}(\widehat{\chi})$.

Lemma 2. *For $\widehat{\chi}$ defined in Proposition 12, $\theta^*_{\text{RA}} > \widehat{\theta}(\widehat{\chi})$.*

Because $\widehat{\theta}(\cdot)$ is continuous, as are the other relevant functions, an immediate consequence of Lemma 2 is

Proposition 13. *There exist charisma levels $\widehat{\chi}$ and $\widetilde{\chi}$, with $\underline{\theta} < \widehat{\chi} < \widetilde{\chi}$, such that the organization is better off (V is greater) if the leader's charisma is less than $\widehat{\chi}$ than if it falls in the interval $(\widehat{\chi}, \widetilde{\chi})$; that is, the organization's wellbeing is* not *monotone in its leader's charisma.*

Because $V_{\text{EA}}(\cdot)$ is unbounded above, the cutoff $\widetilde{\chi}$ in Proposition 13 is finite: for sufficiently high levels of charisma, a charismatic leader is better than an uncharismatic leader and, in addition, at those high levels of charisma more charisma is better than less (Proposition 10). Figure 2 illustrates one possible scenario.

Intuitively, the leader can substitute charisma for observable effort and *vice versa*: if she opts for an emotional appeal, she gets more effort from emotional responders than she would from a rational appeal ($\widehat{\theta}(\chi) < \chi$); if, instead, she opts for a rational appeal, then her followers will see her choice of θ and *directly* respond to it. The leader, however, does not view this margin from the perspective of maximizing V because she bears 100% of the cost of her effort, but enjoys less than 100% of the social return it creates. Consequently, she will be more inclined to rely on charisma, which is cheaper for her, than would be socially optimal. It further follows that a leader indifferent between the two kind of appeals must, therefore, generate a smaller value of the public good if she opts for an emotional appeal than were she to opt for the rational one. Proposition 13 and Figure 2 follow from this given the continuity of payoffs.

8 Soft Information and Costly Appeals

The analysis to this point has assumed the leader's information is hard: she can conceal it, but she cannot misrepresent it. Now suppose, instead, it is soft: any statements she makes about it are cheap talk. It is also been assumed that

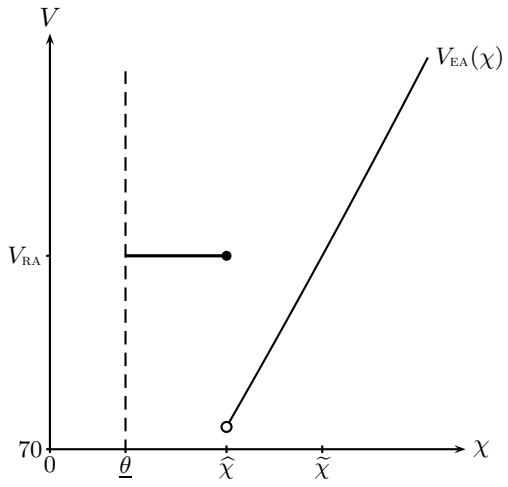

Figure 2: Organization's equilibrium payoff, V, as a function of the leader's charisma. Horizontal and vertical axes on different scale. Figure assumes $\underline{\theta} = 1$, $c(e) = e^2/2$, $n_S = n_E = 10$, $\mu = 3/4$, and $\delta(\theta) = 20(\theta - \underline{\theta})^3$.

appeals are costless. Now consider the possibility that the leader must incur a cost $C \geq 0$ to make an appeal.

To keep the analysis concise, return to the assumption that nature chooses θ and the leader is simply endowed with knowledge of it (as in Sections 2–5). Further, limit attention to the case of $\mu = 1$.

Because the game is one-shot and the leader's information soft, there is no scope for a rational appeal: if the followers believed the leader's announcement about the state, her best response would always be to claim the state was its maximum, $\overline{\theta}$ (recall $e^*(\cdot)$ is increasing). Followers are not naïve: they would expect this, hence disregard her claim, and maintain their prior belief about the state (*i.e.,* $\widehat{\theta} = \mathbb{E}\theta$).[28] Hence, the only kind of appeal the leader can realistically make is an emotional one. At the same time, especially if $C > 0$, one needs to allow for the possibility that leader makes no appeal of any kind. If the leader is silent, assume the followers act as if a rational appeal has been made with $\theta = \widehat{\theta}_\sigma$, where $\widehat{\theta}_\sigma$ is the followers' equilibrium estimate of the state conditional on "σilence." Let $\widehat{\theta}_{\text{EA}}$ denote the followers' equilibrium estimate of the state conditional on an emotional appeal.

It is useful to begin the analysis under the assumption of costless appeals (*i.e.,* $C = 0$). Given the followers' beliefs, a leader with charisma χ will make

[28] See Hermalin (1998) for a more detailed discussion of the leader's incentive to mislead her followers when her information is soft.

an emotional appeal if

$$\big(n_S e^*(\widehat{\theta}_{\text{EA}}) + n_E e^*(\chi)\big)\theta \geq N e^*(\widehat{\theta}_\sigma)\theta \tag{27}$$

(recall $\mu = 1$) and she will be silent otherwise. Observe the true value of the state, θ, is irrelevant to the inequality in (27). As a consequence, a multitude of perfect Bayesian equilibria can be supported, including the following:

1. The leader always makes an emotional appeal. Hence, $\widehat{\theta}_{\text{EA}} = \mathbb{E}\theta$. Followers believe that silence, an out-of-equilibrium action, indicates $\theta = \underline{\theta}$; hence, $\widehat{\theta}_\sigma = \underline{\theta}$.

2. The leader is always silent. Hence, $\widehat{\theta}_\sigma = \mathbb{E}\theta$. Sober responders believe that an emotional appeal, an out-of-equilibrium action, indicates $\theta = \underline{\theta}$; hence, $\widehat{\theta}_{\text{EA}} = \underline{\theta}$. Note this is an equilibrium only if

$$n_S e^*(\underline{\theta}) + n_E e^*(\chi) \leq N e^*(\mathbb{E}\theta)\,. \tag{28}$$

   Were (28) reversed, then the leader would deviate by making an emotional appeal as her charisma would be sufficient to outweigh the pessimistic beliefs of the sober responders.

3. Define

$$\Theta_+^{\mathbb{E}}(\zeta) = \mathbb{E}\left\{\theta | \theta \geq \zeta\right\}\,.$$

   Necessarily, $\Theta_+^{\mathbb{E}}(\underline{\theta}) = \mathbb{E}\theta$ and, like $\Theta_-^{\mathbb{E}}(\cdot)$, $\Theta_+^{\mathbb{E}}(\cdot)$ is a continuous function. Because $\chi \in (\underline{\chi}, \overline{\chi})$,

$$n_S e^*\big(\underbrace{\Theta_-^{\mathbb{E}}(\overline{\theta})}_{\mathbb{E}\theta}\big) + n_E e^*(\chi) < N e^*\big(\underbrace{\Theta_+^{\mathbb{E}}(\overline{\theta})}_{\overline{\theta}}\big)\,.$$

   If (28) is reversed, then, by continuity, there exists a $\theta_0 \in (\underline{\theta}, \overline{\theta})$ such that

$$n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_0)\big) + n_E e^*(\chi) = N e^*\big(\Theta_+^{\mathbb{E}}(\theta_0)\big)\,.$$

   Hence, if (28) is reversed, there is an equilibrium in which the leader makes an emotional appeal if $\theta \leq \theta_0$, is silent if $\theta > \theta_0$, and the followers' beliefs are $\widehat{\theta}_{\text{EA}} = \Theta_-^{\mathbb{E}}(\theta_0)$ and $\widehat{\theta}_\sigma = \Theta_+^{\mathbb{E}}(\theta_0)$. In this, the "strong-silent-type equilibrium," followers interpret silence as a more positive signal of the state than they do an emotional appeal.

4. Because $\chi > \underline{\theta}$,

$$n_S e^*\big(\underbrace{\Theta_+^{\mathbb{E}}(\underline{\theta})}_{\mathbb{E}\theta}\big) + n_E e^*(\chi) > N e^*\big(\underbrace{\Theta_-^{\mathbb{E}}(\underline{\theta})}_{\underline{\theta}}\big)\,.$$

   If

$$n_S e^*(\overline{\theta}) + n_E e^*(\chi) < N e^*(\mathbb{E}\theta)\,, \tag{29}$$

then, by continuity, there exists a $\theta_1 \in (\underline{\theta}, \overline{\theta})$ such that

$$n_S e^*\big(\Theta_+^{\mathbb{E}}(\theta_1)\big) + n_E e^*(\chi) = N e^*\big(\Theta_-^{\mathbb{E}}(\theta_1)\big)\,.$$

In this case, there is an equilibrium in which the leader makes an emotional appeal if $\theta \geq \theta_1$, is silent if $\theta < \theta_1$, and the followers' beliefs are $\widehat{\theta}_{\text{EA}} = \Theta_+^{\mathbb{E}}(\theta_1)$ and $\widehat{\theta}_{\sigma} = \Theta_-^{\mathbb{E}}(\theta_1)$. In this, the "something-to-hide equilibrium," followers interpret silence as a more negative signal of the state than they do an emotional appeal.

Because (29) cannot hold if (28) fails to hold, observe that (28) is a necessary condition for both the second and fourth equilibria to exist.

In the first equilibrium, a more charismatic leader delivers greater output (*i.e.,* V) than a less charismatic leader. Moreover, because their own effort is independent of the leader's charisma, this output effect means that sober responders will prefer a more charismatic leader to a less charismatic leader. Emotional responders' preferences are again ambiguous: each benefits from the greater output a more charismatic leader induces in other emotional responders, but each risks being exploited.

In the second equilibrium, the leader's charisma is irrelevant to output for all levels of charisma that are consistent with (28) holding. An increase in charisma that breaks the second equilibrium (*i.e.,* that induces a regime shift to the first or third equilibrium) increases output.

In the third and fourth equilibria, the effect of a change in charisma on the equilibrium values of θ_0 and θ_1 is *a priori* unclear; hence, the effect on equilibrium output is likewise unclear.

Now suppose the leader incurs a positive cost if she makes an appeal (*i.e.,* $C > 0$). If (28) holds, then the second equilibrium—silence always—remains an equilibrium. In fact, the interval of charisma levels for which a silence-always equilibrium exists is greater when $C > 0$ than when $C = 0$.

In contrast, the first equilibrium—appeal always—can remain an equilibrium only if

$$\big(n_S e^*(\mathbb{E}\theta) + n_E e^*(\chi)\big)\underline{\theta} - C \geq N e^*(\underline{\theta})\underline{\theta}\,. \tag{30}$$

Rather than consider all possible cases, I limit attention to arguably the most interesting case: an equilibrium in which the leader makes an appeal in some states, but not all states. To that end, assume the inequality in (30) is strictly reversed and, further, assume that

$$\big(n_S e^*(\overline{\theta}) + n_E e^*(\chi)\big)\overline{\theta} - C > N e^*(\mathbb{E}\theta)\overline{\theta}\,. \tag{31}$$

Expression (31) entails that the leader's level of charisma is neither too low nor her cost of making an appeal too great. The conditions that inequality (31) holds and inequality (30) fails can be reëxpressed, respectively, as the function

$$\theta \mapsto \Big(n_S e^*\big(\Theta_+^{\mathbb{E}}(\theta)\big) + n_E e^*(\chi) - N e^*\big(\Theta_-^{\mathbb{E}}(\theta)\big)\Big)\theta - C \tag{32}$$

is less than zero for $\theta = \underline{\theta}$ and greater than zero for $\theta = \overline{\theta}$. Given the continuity of the constituent functions, it follows that there exists at least one θ such that

the function defined by (32) equals zero. Any such zero defines an equilibrium: specifically, let $\widetilde{\theta}$ be a zero for (32). Because $C > 0$, it follows that

$$n_S e^*\big(\Theta_+^{\mathbb{E}}(\widetilde{\theta})\big) + n_E e^*(\chi) - N e^*\big(\Theta_-^{\mathbb{E}}(\widetilde{\theta})\big) > 0\,. \tag{33}$$

Define $\widehat{\theta}_{\text{EA}} = \Theta_+^{\mathbb{E}}(\widetilde{\theta})$ and $\widehat{\theta}_{\sigma} = \Theta_-^{\mathbb{E}}(\widetilde{\theta})$. Then, from (32) and (33), a best response for the leader to such beliefs is be silent if $\theta < \widetilde{\theta}$ and to make an appeal if $\theta \geq \widetilde{\theta}$. If the leader is playing that strategy, then the followers' beliefs, $\widehat{\theta}_{\text{EA}} = \Theta_+^{\mathbb{E}}(\widetilde{\theta})$ and $\widehat{\theta}_{\sigma} = \Theta_-^{\mathbb{E}}(\widetilde{\theta})$, are Bayesian consistent. This establishes:

Proposition 14. *Consider the game in which the leader's information is soft and making an emotional appeal costs her $C > 0$. Assume the inequality in* (30) *is strictly reversed and the inequality in* (31) *holds. Then there exists a perfect Bayesian equilibrium in which the leader is silent if the state, θ, is less than $\widetilde{\theta}$ and makes an emotional appeal if $\theta \geq \widetilde{\theta}$, where $\widetilde{\theta}$ makes the function defined by* (32) *equal zero. Followers' estimate of the state is $\widehat{\theta}_{\sigma} = \Theta_-^{\mathbb{E}}(\widetilde{\theta})$ if the leader is silent and $\widehat{\theta}_{\text{EA}} = \Theta_+^{\mathbb{E}}(\widetilde{\theta})$ if she makes an emotional appeal.*

Given $\Theta_+^{\mathbb{E}}(\widetilde{\theta}) > \Theta_-^{\mathbb{E}}(\widetilde{\theta})$, an immediate corollary is the following:

Corollary 4. *Maintain the assumptions of Proposition 14. In equilibrium, sober responders (i.e., followers* not *directly influenced by an emotional appeal) supply greater effort in response to an emotional appeal than they do to no appeal (i.e., silence).*

Although a straightforward model in many ways, a fully general evaluation of the effect of a change in charisma on the expected value of the public good is far from straightforward. For examples, though, evaluating that effect is feasible. Moreover, via examples, it is possible to demonstrate that $\mathbb{E}V$ can be increasing in the leader's charisma: for instance, suppose that $c(e) = e^2/2$ and θ is distributed uniformly on the unit interval. Suppose, too, that the cost of an appeal is not too great; specifically,

$$C \leq \min\left\{\frac{n_S^2}{8n_E}, \frac{n_S}{2}\right\}.$$

Finally, suppose that the division of followers into sober and emotional responders satisfies

$$(n_S - 2C)\big(\sqrt{n_S^2 - 8n_E C} - n_S\big) + 2n_E\sqrt{n_S^2 - 8n_E C} \geq 0\,. \tag{34}$$

(An example of parameters satisfying these assumptions are $n_S = n_E = 50$ and $C = 5$.) It can be shown that

$$\widetilde{\theta} = \frac{n_S + 2n_E\chi - \sqrt{(n_S + 2n_E\chi)^2 - 8n_E C}}{2n_E}\,,$$

from which it can be shown to follow that

$$\mathbb{E}V = \frac{n_S + 2n_E\chi}{4} + \frac{n_S - 2C}{4}\widetilde{\theta}.$$

Using (34) to help sign $\partial\widetilde{\theta}/\partial\chi$, it is straightforward to show that $\partial\mathbb{E}V/\partial\chi > 0$.

It is also challenging to analyze the expected wellbeing of sober responders in a general model. But via examples, one can demonstrate that their preference can be for a more charismatic leader over a less charismatic leader. As but one instance, maintain the assumptions just made and limit attention to $n_S = n_E = 50$ and $C = 5$. A sober responder's expected payoff is

$$\frac{1}{40}\left(694 + 10\chi^2 - 40\sqrt{5}\sqrt{20\chi^2 + 20\chi + 1} + \chi\left(1405 - \sqrt{5}\sqrt{20\chi^2 + 20\chi + 1}\right)\right),$$

which is increasing in χ. To summarize:

Proposition 15. *Consider the game in which the leader's information is soft and making an emotional appeal costs her $C > 0$. There exist conditions such that the expected value of the public good and the expected wellbeing of sober responders (i.e., those followers* not *directly influenced by the leader's charisma) are both increasing in the leader's charisma.*

9 Charisma and Leading by Example

Hermalin (1998) analyzed how a leader possessing soft information (similar to the last section) could credibly convey it to her followers by "leading by example": she chooses her action, e_L, first and her followers make inferences about the state, θ, based on their observation of e_L. Because, as seen below, her incentives are to supply more effort the greater is the state, her action becomes a signal of the state. In this section, I consider how the leader's charisma can affect such leading by example.

The timing is similar to before: the leader learns θ, which is now *soft* information (as in the previous section); she either leads by example or makes an emotional appeal; based on what they see or hear, the followers form beliefs about θ and simultaneously choose their actions;[29] finally, payoffs are realized.

If the leader makes an emotional appeal, her utility is just V (*i.e.,* return to the assumption that emotional appeals are costless to her). If she leads by example, her payoff is $V - c(e_L)$, where, on this path,

$$V = \left(e_L + \sum_{m=1}^{N} e_m\right)\theta\,.$$

Observe, when she leads by example, the leader is also a productive worker.

[29] An extension of this model would be to allow a leader who has made an emotional appeal to expend effort at this later point (*i.e.,* simultaneously with her followers). The principal implications of the analysis would not, however, change under this extension. Hence, both for the sake of brevity and simplicity of analysis, it is not pursued here.

Leading by example is similar to making a rational appeal and the followers' utilities are correspondingly the same (*i.e.,* each follower, m, gets $V - c(e_m)$). In response to an emotional appeal, the followers utilities are also as given earlier.

As will be seen, the leader's strategy proves to be the solution to a differential equation. To ensure a closed-form solution, it is to be assumed in this section that $c(e) = e^2/2$ (see Hermalin, 1998, for a further discussion of tractable solutions in such models). Observe the assumption that $c(e) = e^2/2$ entails $e^*(\zeta) = \zeta$.

The analysis below is aimed at constructing an equilibrium with the following properties:

(i) there is a cutoff, $\theta_C \in (\underline{\theta}, \overline{\theta})$, which will depend on the leader's charisma, such that she makes an emotional appeal when the state is below θ_C and leads by example when it is above;

(ii) the leader's strategy when she leads by example, $e_L : [\theta_C, \overline{\theta}] \to \mathbb{R}_+$, is an increasing differentiable function (*i.e.,* more effort by the leader is a positive signal about the state); and

(iii) a follower's response to the leader's effort, $\widehat{e}(e_L)$, is an increasing differentiable function (*i.e.,* the leader's example is "followed").

Consistency of beliefs requires that followers' expectation of the state given an emotional appeal be $\Theta_-^{\mathbb{E}}(\theta_C)$. Consistency of beliefs also requires that followers correctly infer the state is θ when they observe $e_L(\theta)$. Rationality dictates the followers cannot believe the state to exceed $\overline{\theta}$ even if the leader's effort exceeds $e_L(\overline{\theta})$. The remaining belief to pin down is what do the followers believe if the leader leads by example, but supplies less than effort $e_L(\theta_C)$? Theory offers little guidance as to the answer, but it will prove convenient, as well as helping to support the "best" equilibrium, to assume:

Assumption 1. *The followers take the state to be θ_C if $e_L \leq e_L(\theta_C)$.*[30]

The unique solution to the program

$$\max_e \theta_C\big(e + N e^*(\theta_C)\big) - \underbrace{\frac{1}{2}e^2}_{c(e)}$$

is $e = \theta_C$. Hence, given Assumption 1, if $e_L(\theta_C) > \theta_C$, a leader who was leading by example would do better to deviate, when $\theta = \theta_C$, from effort $e_L(\theta_C)$ to effort θ_C. If $e_L(\theta_C) < \theta_C$, then, because $\widehat{e}(\cdot)$ is nondecreasing, the leader would do better to deviate to effort θ_C. We can, therefore, conclude that given these beliefs it must be in a separating equilibrium that

$$e_L(\theta_C) = \theta_C\,. \tag{35}$$

[30] One could partially justify this by assuming the followers believe that the leader will never fail to make an emotional appeal if $\theta < \theta_C$; hence, no emotional appeal necessarily means that $\theta \geq \theta_C$.

This result is analogous to the result, standard in signaling models, that the worst type's equilibrium action is the same in a separating equilibrium as it would be were her private information publicly known.

The rest of the function $e_L(\cdot)$ can now be constructed. If she will lead by example, the leader chooses e_L to maximize

$$\theta\big(e_L + N\widehat{e}(e_L)\big) - \frac{1}{2}e_L^2\,.$$

The first-order condition is

$$\theta\big(1 + N\widehat{e}\,'(e_L)\big) = e_L\,.$$

Solving the differential equation:

$$\widehat{e}(e_L) = \frac{e_L^2 - 2\theta e_L}{2N\theta} + K\,,$$

where K is a constant of integration. Given (35), we have

$$\widehat{e}(\theta_C) = -\frac{\theta_C}{2N} + K \Longrightarrow K = \frac{2N+1}{2N}\theta_C\,.$$

In equilibrium, beliefs and actions are rational: $\widehat{e}\big(e_L(\theta)\big) = e^*(\theta) = \theta$ (the last equality following because $c(e) = e^2/2$). Hence,

$$\theta = \frac{e_L(\theta)^2 - 2\theta e_L(\theta)}{2N\theta} + \frac{2N+1}{2N}\theta_C\,. \tag{36}$$

Solving for $e_L(\theta)$:[31]

$$e_L(\theta) = \theta + \sqrt{(2N+1)\theta(\theta - \theta_C)}\,. \tag{37}$$

The function defined by (37) is increasing and differentiable in θ, as required. Given the consistency requirement $\widehat{e}\big(e_L(\theta)\big) \equiv \theta$, it follows that $\widehat{e}(\cdot) = e_L^{-1}(\cdot)$. Because $e_L(\cdot)$ is increasing, its inverse is well defined, increasing, and, moreover, from (37), differentiable, as required.

Next, we need to validate that the leader wishes to play a cutoff strategy. To that end:

Lemma 3. *If there exists an equilibrium in which the leader makes an emotional appeal if the state is less than θ_C and leads by example if the state exceeds θ_C, with $\theta_C \in (\underline{\theta}, \overline{\theta})$, then*

$$\theta_C\Big(e_L(\theta_C) + N\widehat{e}\big(e_L(\theta_C)\big)\Big) - c\big(e_L(\theta_C)\big) = \theta_C\left(n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)\right)\,. \tag{38}$$

[31] Equation (36) has two roots, but only the positive one is relevant.

It is clearly necessary that, for the desired equilibrium to exist, at least one θ_C exist that solves (38) for each level of charisma within the relevant range. To speed the analysis, assume not only does it exist, but it is (effectively) unique:[32]

Assumption 2. *For all relevant charisma levels, $\chi \in (\underline{\chi}, \overline{\chi})$, there is a corresponding $\theta \in (\underline{\theta}, \overline{\theta})$ that uniquely among the positive real numbers solves*

$$\frac{2N+1}{2}\theta = n_S \Theta_-^{\mathbb{E}}(\theta) + n_E \Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta)\big)\,. \tag{39}$$

As but one example, Assumption 2 holds if θ is distributed uniformly on the unit interval and

$$0 \leq \underline{\chi} < \overline{\chi} \leq \frac{1}{2} + \frac{N+1}{2\mu n_E}\,.$$

Given Assumption 2, the function defined as

$$\theta \mapsto \theta^2 + N\theta\theta_C - \frac{1}{2}\theta^2 \tag{40}$$

intersects the line

$$\theta \mapsto \theta\Big(n_S \Theta_-^{\mathbb{E}}(\theta_C) + n_E \Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)$$

at $\theta = 0$ and $\theta = \theta_C$; hence, because the function (*i.e.,* (40)) is strictly convex, it must lie below the line for $\theta \in (0, \theta_C)$. This means that the leader's payoff from making an emotional appeal given $\theta < \theta_C$ exceeds her payoff from deviating by leading by example. On the other hand, for $\theta > \theta_C$, we have

$$\begin{aligned}\theta\Big(e_L(\theta) + N\widehat{e}\big(e_L(\theta)\big)\Big) - c\big(e_L(\theta)\big) &> \theta\Big(e_L(\theta_C) + N\widehat{e}\big(e_L(\theta_C)\big)\Big) - c\big(e_L(\theta_C)\big) \\ &> \theta\left(n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)\right)\,,\end{aligned}$$

where the first inequality follows by revealed preference (*i.e.,* the leader prefers effort $e_L(\theta)$ to $e_L(\theta_C)$ when the state is θ); and the second inequality follows because (38) implies

$$e_L(\theta_C) + N\widehat{e}\big(e_L(\theta_C)\big) > n_S e^*\big(\Theta_-^{\mathbb{E}}(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta_-^{\mathbb{E}}(\theta_C)\big)\Big)$$

given $c\big(e_L(\theta_C)\big) > 0$. This means that the leader's payoff from leading by example given $\theta \geq \theta_C$ exceeds her payoff from deviating by making an emotional appeal. The preceding analysis therefore establishes:

Proposition 16. *Suppose the common disutility-of-effort function, $c(\cdot)$, is $c(e) = e^2/2$ and maintain Assumptions 1 and 2. Holding fixed the leader's level of charisma, there exists a cutoff, θ_C, such that it is a perfect Bayesian equilibrium for the leader to make an emotional appeal if the productive state is less than θ_C and to lead by example if the state exceeds θ_C. When she leads by example, her effort is given by expression* (37) *above.*

[32] If $\underline{\theta} = 0$, then 0 would also be a valid solution to (38). That solution is, however, irrelevant.

Turning to comparative statics, assume the following:

Assumption 3. *The distribution function over states is such that the derivative of the conditional expectation $\Theta_{-}^{\mathbb{E}}(\theta)$ with respect to θ is less than one evaluated at $\theta \in (\underline{\theta}, \overline{\theta})$.*

Assumption 3 is satisfied if the distribution function over the states, F, is weakly concave on its support (equivalently, the density is nonincreasing on the support).[33] Observe, this means the assumption is satisfied for all uniform distributions. Via direct calculation, the assumption can also be shown to hold for all power-function distributions on the unit interval.[34]

Lemma 4. *Given Assumptions 1–3, the equilibrium cutoff θ_C, as defined in Proposition 16, is greater for a more charismatic leader than a less charismatic leader.*

Intuitively, an increase in charisma raises the value of an emotional appeal *ceteris paribus*. Given expression (38), the cutoff therefore needs to adjust (given that an increase in χ raises the righthand side of that expression). Because the followers' conditional expectation of the state moves "slowly enough" in the cutoff (Assumption 3), increasing the cutoff allows the lefthand side of (38) to "catch up" with the righthand side (even though that also raises the righthand side further, just not as fast).

By considering the sign of the derivative of (37) with respect to θ_C, the following corollary to Lemma 4 is immediate:

Corollary 5. *For any state in which both more and less charismatic leaders will lead by example in equilibrium, the less charismatic leader expends more effort than the more charismatic leader.*

Corollary 5 is yet another illustration of the possible temptation charismatic leaders have to live by their charm; that is, similar to Propositions 9 and 13, a more charismatic leader is more inclined to substitute an emotional appeal for

[33] Proof: The derivative of $\Theta_{-}^{\mathbb{E}}(\cdot)$ is

$$\Theta_{-}^{\mathbb{E}}{}'(\theta) = \frac{d}{d\theta}\left(\frac{1}{F(\theta)}\int_{\underline{\theta}}^{\theta} z f(z)dz\right) = \frac{f(\theta)}{F(\theta)}\big(\theta - \Theta_{-}^{\mathbb{E}}(\theta)\big)\,, \qquad (\spadesuit)$$

where $f(\cdot)$ is the density function. If $F(\cdot)$ is weakly concave, then the function lies below its first-order Taylor series approximation:

$$F(\theta) + f(\theta)\big(\Theta_{-}^{\mathbb{E}}(\theta) - \theta\big) \geq F\big(\Theta_{-}^{\mathbb{E}}(\theta)\big) > 0\,.$$

Ignoring the middle term, simple algebra then reveals ($\spadesuit$) must be less than one.

[34] If $F(\theta) = \theta^{\eta}$, $\eta > 0$, then it is readily verified that

$$\Theta_{-}^{\mathbb{E}}(\theta) = \int_0^{\theta} z\frac{\eta z^{\eta-1}}{\theta^{\eta}}dz = \frac{\eta\theta}{1+\eta}\,,$$

the derivative of which with respect to θ is clearly less than one.

effort than is a less charismatic leader. Hence, when she leads by example, she needs to expend less effort to provide a convincing signal.

Corollary 5 also has bearing on empirical analyses of charisma. Suppose, there is a secular shock, so that a number of similar organizations all enjoy high productivity (*i.e.,* θ is large). Those organizations with less charismatic leaders will outperform those with more charismatic leaders. As such, the corollary highlights a potential pitfall in seeking to assess the value of charisma via cross-sectional analysis.

What is the effect of charisma on the *expected* value of the public good? Not surprisingly, the answer is ambiguous due the conflicting effects of greater charisma:

(i) when the leader makes an emotional appeal, a more charismatic leader directly induces greater effort than a less charismatic leader;

(ii) because a more charismatic leader is more likely to make an emotional appeal, followers are less pessimistic about the state upon receiving an emotional appeal from a more charismatic leader than they would be had it been made by a less charismatic leader, so they supply more effort;

(iii) but a more charismatic leader supplies less effort herself than does a less charismatic leader (Corollary 5); and

(iv) because the leader now incurs a cost to reveal information truthfully ($c(e_L) > 0$), her decision about whether to reveal or conceal information is not solely determined by the consequent effect on the public good (*i.e.,* V); that is, her decision in this regard is suboptimal *vis-à-vis* maximizing V (similar in spirit, but not detail, to the logic behind Proposition 13).

Figure 3 illustrates this potential ambiguity for a particular parameterization.

9.1 Another Perspective on Charisma & Leading by Example

The above analysis of charisma and leading by example was premised on the idea that using charm was a substitute for leading by example. One could, though, conceive of them as complements if one viewed charisma as causing followers—or at least emotional responders—to identify with the leader.

Specifically, suppose that the leader always chooses her action before the followers. The utility of sober responders is as given earlier. The utility—or at least the objective function—of emotional responders is different: an emotional responder, m, chooses his effort, e_m, to maximize

$$(1-\mu)V - \mu\frac{\chi}{2}(e_m - e_L)^2 - c(e_m)\,. \tag{41}$$

The middle term captures the degree to which an emotional responder identifies with the leader: such a follower suffers a loss of utility from deviating from the "norm," e_L, established by the leader. How much he suffers is a function of

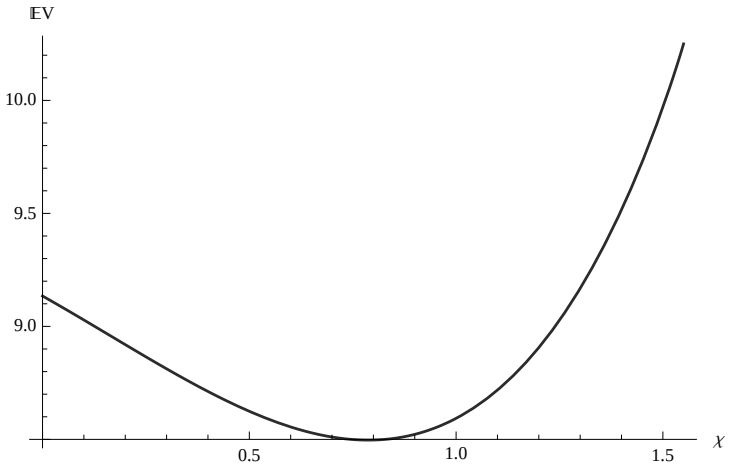

Figure 3: Expected value of the public good ($\mathbb{E}V$) in equilibrium can vary non-montonically with the leader's charisma, χ. Figure plotted assuming the state, θ, is distributed uniformly on the unit interval, $\mu = 1$, and $n_E = n_S = 10$.

the leader's charisma, χ; that is, how much he identifies with the leader.[35] As before the parameter $\mu \in (0, 1]$ captures just how emotional such responders are; that is, how prone to identify with the leader. Note a sober responder could be considered an emotional responder for whom $\mu = 0$.

It will speed the analysis to assume $\underline{\theta} = 0$. Continue to assume $c(e) = e^2/2$. Let $e_L : [\underline{\theta}, \overline{\theta}] \to \mathbb{R}_+$ denote the leader's strategy. As before, attention is limited to separating equilibria; hence, $e_L(\cdot)$ is invertible. Upon observing e_L, a follower infers the state is $e_L^{-1}(e_L)$ and chooses his effort, e, to maximize his objective function. Given $c(e) = e^2/2$, this means the efforts are

$$e_S^* = e_L^{-1}(e_L) \text{ and } e_E^* = \frac{(1-\mu)e_L^{-1}(e_L) + \mu\chi e_L}{1+\mu\chi} \tag{42}$$

for sober and emotional responders, respectively.

Given (42), the leader's utility can be written as

$$\theta\left(e_L + n_S e_L^{-1}(e_L) + n_E \frac{(1-\mu)e_L^{-1}(e_L) + \mu\chi e_L}{1+\mu\chi}\right) - \frac{e_L^2}{2}.$$

Limiting attention to differentiable strategies, the leader's choice of effort solves

[35] As noted in the Introduction, this utility function is similar to the one assumed by Huck and Rey-Biel (2006). In their paper, they interpret $\mu\chi$ as bias towards conformity, rather than as identification times charisma. That noted, were there no informational asymmetry, the mathematics would be the same.

the first-order condition

$$0 = \theta\left(1 + n_E\frac{\mu\chi}{1+\mu\chi} + \left(n_S + n_E\frac{1-\mu}{1+\mu\chi}\right)\frac{1}{e_L'\left(e_L^{-1}(e_L)\right)}\right) - e_L$$
$$= \theta\left(1 + n_E\frac{\mu\chi}{1+\mu\chi} + \left(n_S + n_E\frac{1-\mu}{1+\mu\chi}\right)\frac{1}{e_L'(\theta)}\right) - e_L(\theta)\,. \quad (43)$$

Given $\underline{\theta} = 0$, it readily follows that $e_L(\underline{\theta}) = 0$. Hence, the solution to the differential equation (43) is a linear function: $e_L(\theta) = \xi\theta$, where ξ solves

$$1 + n_E\frac{\mu\chi}{1+\mu\chi} + \left(n_S + n_E\frac{1-\mu}{1+\mu\chi}\right)\frac{1}{\xi} = \xi\,. \quad (44)$$

Because $e_L(\cdot)$ is necessarily an increasing function, only the positive root of (44) is relevant:

$$\xi = \frac{1}{2}\left(1 + n_E\frac{\mu\chi}{1+\mu\chi} + \sqrt{\left(1 + n_E\frac{\mu\chi}{1+\mu\chi}\right)^2 + 4\left(n_S + n_E\frac{1-\mu}{1+\mu\chi}\right)}\right) \quad (45)$$

Because the expression under the radical cannot be less than one, it follows that $\xi > 1$. After differentiating, that same insight yields $\partial\xi/\partial\chi > 0$ for $\mu > 0$; hence, the leader's effort is increasing in her charisma.

Proposition 17. *When she leads by example, the leader expends more effort than either kind of follower does. Fixing the state, the leader's effort and that of an emotional responder are both increasing in the leader's charisma. Fixing the state, a sober responder's effort is unaffected by the leader's charisma.*

Proof: That the leader's effort is increasing in her charisma was shown in the text preceding the proposition. From (42), a sober responder's effort is θ, given the equilibrium is separating; this level of effort is unaffected by the leader's charisma. Because $\xi > 1$, his effort is less than the leader's. From (42), an emotional responder's effort is

$$e_E^* = \frac{1}{1+\mu\chi}\theta + \frac{\mu\chi}{1+\mu\chi}\xi\theta - \frac{\mu}{1+\mu\chi}\theta\,.$$

Because the first two terms are a weighted average of θ and $\xi\theta$—and such a weighted average is necessarily less than $\xi\theta$—and the last term negative, it follows that $e_E^* < e_L$. As χ increases, that weighted average puts more weight on the larger term, which itself is increasing; hence, the weighted average must increase. The term being subtracted decreases in χ. Consequently, the sum of the effects is an increase in e_E^* as χ increases. ■

An immediate corollary to Proposition 17 is

Corollary 6. *Sober responders, those* not *directly influenced by charisma, strictly prefer a more charismatic leader to a less charismatic leader.*

Proof: As shown in Proposition 17, a more charismatic leader supplies more effort herself and induces more effort from the emotional responders, both of which benefit sober responders. Because, conditional on the state, the effort of the sober responders does not vary with the leader's charisma, there is no cost to them of having a more charismatic leader. The result follows. ■

The preferences of the emotional responders are more complex and depend, in part, on whether they are aware of their susceptibility to charisma. Assume they are aware. An increase in charisma offers them benefits: the leader supplies more effort as do their fellow emotional responders. But there is a cost: they themselves are induced to supply greater effort. Via examples, it can be shown that an increase in the leader's charisma can raise or lower their expected utility. As but one instance, suppose that θ is distributed uniformly on the unit interval, $\mu = 3/4$, and $n_E = n_S = 5$. Note $\underline{\chi} = 0$ and $\overline{\chi} = 11/6 \approx 1.83$. For $\chi < 1.61$ (approximately), the expected utility of an emotional responder is increasing in the leader's charisma; but, for $\chi > 1.61$, it is decreasing in her charisma.

10 Conclusions and Directions for Future Work

In this paper, I have sought to provide insights into why an organizations can—but need not always—benefit from having a charismatic leader, even if the organization consists largely (but not exclusively) of rational actors and even if those actors who are "irrational" are only slightly so (*i.e.,* have low μs). Further, the analysis shows why rational actors, those not inherently responsive to emotional appeals, will work harder in equilibrium in response to purely emotional appeals from more charismatic leaders than in response to similar appeals from less charismatic leaders. The paper also derives conditions under which such rational followers would prefer the organization be led by a more rather than less charismatic leader.

Although an organization can benefit from having a more charismatic leader, there exist conditions such that greater charisma is detrimental. These conditions are relevant when the leader must take some substantive action (*e.g.,* learn payoff-relevant information, take actions to improve the organization's productivity, or simply expend effort). Specifically, there is a danger that a leader will be tempted to substitute charm for action. These cautionary results help to explain the mixed assessment of charisma in the empirical and management literatures. Another possible reason for those literatures' mixed assessment is that charisma tends to be most valuable when the organization is likely to do badly, but could be irrelevant (Section 3) or even possibly detrimental (Sections 6 and 9) when conditions are otherwise good.

Despite the many extensions of the basic model considered above, work remains. For instance, in the models above, emotional responders (those directly susceptible to the leader's charm) always supply at least as much effort as sober responders (those not direct susceptible) and, on certain paths, supply strictly more. This suggests that an organization's designers would prefer to have the followers be emotional responders rather than sober responders *ceteris paribus*.

Although some organizations seem to do so (consider, *e.g.,* efforts at West Point to improve identification with leaders and obedience to their orders, as discussed in Akerlof and Kranton, 2010), one can readily imagine that many organizations might be wary about their ranks being filled with people who blindly follow the leader. In particular, it could be beneficial to have people who will question the leader or provide alternative perspectives. To the extent that charisma stifles alternative viewpoints, this could be another downside to charisma. At the same time, the ability of a charismatic leader to get her followers to march in step could enhance the value of knowing the direction to march, which in turn could enhance followers' incentives to determine the best direction. How precisely charisma could be harmful or beneficial in such settings, where cohesion and diversity of opinions could both be valuable is, thus, an open question.

It would seem impossible that a leader can make an emotional connection with her followers without knowing what makes them tick.[36] Likewise experience suggests that one must be in the presence of someone or, at the very least, be able to see and hear her, for her charisma to work. Historically, this would suggest that charisma didn't scale well to large organizations. To an extent, Ibn Khaldûn made this point over 600 years ago: why, he asked, could relatively small and primitive tribes topple large and sophisticated empires? His answer was the former had stronger *asabîyah* (usually translated as social cohesion), which permitted them to "box above their weight." Relative to this paper, that argument corresponds to one in which the relative isolation of emperors from their subjects and the unlikeliness of subjects, especially in the provinces, seeing and hearing their emperors, foreclosed charismatic leadership in empires, but the closeness of tribal leaders to their followers and *vice versa* allowed for charismatic leadership in tribes. In the context of the models presented above, it is straightforward to demonstrate that an organization led by a high-χ leader (or for which μ is large) can outproduce, in expectation, a larger organization led by a low-χ leader (or for which μ is low). Fleshing these ideas out fully, as well as tying them more to *asabîyah* and corporate culture, remain, though, topics for future research.

The last point about the scalability of charisma has bearing in the modern era, where polling and mass media may overcome the problems faced by large organizations and societies in the past. Such tools are expensive, however, and organizations thus face tradeoffs. How much should an organization invest in building up the charismatic image of its leader? Would a desire to save on those costs lead organizations to favor more naturally charismatic leaders or pursue strategies less dependent on having a charismatic leader?[37] A related point

[36] A fact long recognized; see, *e.g.,* the 14th-century *Muqaddimah* of Ibn Khaldûn (2004). For a more contemporary discussion, see Howell and Shamir (2005). Hermalin (2013) also discusses this point in the context of the connections between leadership and corporate culture.

[37] In this regard, it is worth noting that the social psychology literature points to transformational change as often requiring a charismatic leader (see, *e.g.,* Chatman and Kennedy, 2010, and Wang et al., 2011). If large organizations must invest more to make their leaders charismatic, then these arguments—speculative though they are—could be another reason why larger organizations are harder to radically change than smaller ones.

is that the image and charisma of past leaders can often overshadow those of current leaders. To get out from the shadow, new leaders (or their organizations) may have to invest more in image management. The anticipation of those costs could act to deter people from replacing the old leaders. Moreover, by investing more, the old leaders could raise their potential rivals' costs (or the cost of installing the rivals). In other words, incumbent leaders could have incentives to overinvest in imagine management in order to better entrench themselves, to the detriment of their organizations.[38] A full analysis of the pros and cons of such image management and manipulating the masses is, however, also a topic necessarily left to the future.

Appendix A: Proofs of Lemmas

Proof of Lemma 1: To prove part (i): fix θ and θ', $\theta \neq \theta'$. Let $\lambda \in (0,1)$ and define $\theta_\lambda = \lambda\theta + (1-\lambda)\theta'$. Because $e^*(\zeta)$ is the unique solution to

$$\max_e \zeta e - c(e) \tag{46}$$

and $e^*(\cdot)$ is strictly monotone, it follows that $e^*(\zeta) \neq e^*(\zeta')$ if $\zeta \neq \zeta'$ and, thus,

$$\lambda\Big(\theta e^*(\theta) - c\big(e^*(\theta)\big)\Big) > \lambda\Big(\theta e^*(\theta_\lambda) - c\big(e^*(\theta_\lambda)\big)\Big) \text{ and}$$

$$(1-\lambda)\Big(\theta' e^*(\theta') - c\big(e^*(\theta')\big)\Big) > (1-\lambda)\Big(\theta' e^*(\theta_\lambda) - c\big(e^*(\theta_\lambda)\big)\Big).$$

Summing, those two expressions imply

$$\lambda\Big(\theta e^*(\theta) - c\big(e^*(\theta)\big)\Big) + (1-\lambda)\Big(\theta' e^*(\theta')\big) - c\big(e^*(\theta')\big)\Big) > \theta_\lambda e^*(\theta_\lambda) - c\big(e^*(\theta_\lambda)\big),$$

which establishes convexity.

To prove part (ii): the function $\theta \mapsto \theta e^*(\theta)$ is the sum of the functions

$$\theta e^* - c\big(e^*(\theta)\big) \text{ and } c\big(e^*(\theta)\big).$$

Part (i) established the first function is strictly convex, so part (ii) follows if the second is convex. From the first-order condition for (46), $\theta \equiv c'\big(e^*(\theta)\big)$. Hence,

$$1 = c''\big(e^*(\theta)\big)e^{*\prime}(\theta) \Longrightarrow e^{*\prime}(\theta) = \frac{1}{c''\big(e^*(\theta)\big)}. \tag{47}$$

It further follows that

$$e^{*\prime\prime}(\theta) = -\frac{c'''\big(e^*(\theta)\big)e^{*\prime}(\theta)}{c''\big(e^*(\theta)\big)^2} = -\frac{c'''\big(e^*(\theta)\big)}{c''\big(e^*(\theta)\big)^3}, \tag{48}$$

[38] This may help to explain the significant resources dictators direct to building their personality cults. It also helps explain why they appear quick to eliminate other individuals who are charismatic: beyond the obvious advantage those individuals' charisma might have should they seek to topple the dictator, their availability for a future government lowers the perceived costs of toppling the dictator.

where the second equality follows from (47). The second derivative of $c\big(e^*(\theta)\big)$ with respect to θ is

$$c''\big(e^*(\theta)\big)e^{*\prime}(\theta)^2+c'\big(e^*(\theta)\big)e^{*\prime\prime}(\theta)=\frac{1}{c''\big(e^*(\theta)\big)}-\frac{c'\big(e^*(\theta)\big)c'''\big(e^*(\theta)\big)}{c''\big(e^*(\theta)\big)^3}\geq 0\,, \quad (49)$$

where the equality follows from (47) and (48) and the inequality from (14). Expression (49) establishes that $c\big(e^*(\cdot)\big)$ is convex. ■

Proof of Lemma 2: As a preliminary, recall that a leader pursuing an emotional-appeal strategy chooses θ to maximize (24). Hence, the marginal return, M_{EA}, to her choice of θ is a constant given the followers' beliefs; to wit,

$$M_{\text{EA}}(\chi)=n_S e^*\big(\widehat{\theta}(\chi)\big)+n_E e^*\Big(\Omega\big(\chi,\widehat{\theta}(\chi)\big)\Big)\,.$$

Her payoff is thus

$$V_{\text{EA}}(\chi)-\delta\big(\widehat{\theta}(\chi)\big)=\underline{\theta}M_{\text{EA}}(\chi)+\int_{\underline{\theta}}^{\widehat{\theta}(\chi)}\big(M_{\text{EA}}(\chi)-\delta'(\theta)\big)d\theta\,. \quad (50)$$

If she will pursue a rational-appeal strategy, her marginal return, M_{RA}, is

$$M_{\text{RA}}(\theta)=\frac{d}{d\theta}N\theta e^*(\theta)=Ne^*(\theta)+N\theta e^{*\prime}(\theta)\,.$$

Lemma 1(ii) implies that $M_{\text{RA}}(\cdot)$ is an increasing function. Hence,

$$\begin{aligned}V_{\text{RA}}-\delta(\theta^*_{\text{RA}})&=\underline{\theta}Ne^*(\underline{\theta})+\int_{\underline{\theta}}^{\theta^*_{\text{RA}}}\big(M_{\text{RA}}(\theta)-\delta'(\theta)\big)d\theta\\&<\underline{\theta}Ne^*(\underline{\theta})+\int_{\underline{\theta}}^{\theta^*_{\text{RA}}}\big(M_{\text{RA}}(\theta^*_{\text{RA}})-\delta'(\theta)\big)d\theta\,. \quad (51)\end{aligned}$$

Because necessarily $\widehat{\theta}(\widehat{\chi})\geq\underline{\theta}$ and, as shown in the text, $\widehat{\chi}\geq\widehat{\theta}(\widehat{\chi})$ (because otherwise the leader does better to make a rational appeal), it must be that $M_{\text{EA}}(\widehat{\chi})\geq Ne^*(\underline{\theta})$. In what follows, keep in mind that the first-order conditions imply $M_{\text{RA}}(\theta^*_{\text{RA}})=\delta'(\theta^*_{\text{RA}})$ and $M_{\text{EA}}(\widehat{\chi})=\delta'\big(\widehat{\theta}(\widehat{\chi})\big)$.

Suppose, contrary to the lemma's claim, that $\widehat{\theta}(\widehat{\chi})\geq\theta^*_{\text{RA}}$. It follows from (50) and (51) that:

$$\begin{aligned}\Big(V_{\text{EA}}(\widehat{\chi})-\delta\big(\widehat{\theta}(\widehat{\chi})\big)\Big)-\Big(V_{\text{RA}}-\delta(\theta^*_{\text{RA}})\Big)&>\underline{\theta}\big(M_{\text{EA}}(\widehat{\chi})-Ne^*(\underline{\theta})\big)\\&+\int_{\underline{\theta}}^{\theta^*_{\text{RA}}}(\delta'(\widehat{\theta}(\widehat{\chi})-\delta'(\theta^*_{\text{RA}}))d\theta+\int_{\theta^*_{\text{RA}}}^{\widehat{\theta}(\widehat{\chi})}(\delta'(\widehat{\theta}(\widehat{\chi})-\delta'(\theta))d\theta\geq 0\,, \quad (52)\end{aligned}$$

where the last inequality follows because $\delta'(\cdot)$ is an increasing function. But (52) contradicts the indifference condition,

$$V_{\text{EA}}(\widehat{\chi}) - \delta\big(\widehat{\theta}(\widehat{\chi})\big) = V_{\text{RA}} - \delta(\theta^*_{\text{RA}})\,.$$

The result follows *reductio ad absurdum*. ■

Proof of Lemma 3: The lefthand side of (38) is the leader's payoff if she leads by example when $\theta = \theta_C$, the righthand side her payoff if she makes an emotional appeal. If the lefthand side were greater than the righthand side, then, by continuity, there would exist a $\theta < \theta_C$ such that

$$\theta\Big(e_L(\theta_C) + N\widehat{e}\big(e_L(\theta_C)\big)\Big) - c\big(e_L(\theta_C)\big) \\ > \theta\left(n_S e^*\big(\Theta^{\mathbb{E}}_-(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta^{\mathbb{E}}_-(\theta_C)\big)\Big)\right)\,.$$

But this would mean she would do better to lead by example for that θ than make an emotional appeal, in contradiction of the cutoff strategy she is supposed to play. If the righthand side of (38) were the greater, then, given $\widehat{e}(\cdot)$ and $e_L(\cdot)$ are continuous, there would exist a $\theta > \theta_C$ such that

$$\theta\Big(e_L(\theta) + N\widehat{e}\big(e_L(\theta)\big)\Big) - c\big(e_L(\theta)\big) \\ < \theta\left(n_S e^*\big(\Theta^{\mathbb{E}}_-(\theta_C)\big) + n_E e^*\Big(\Omega\big(\chi, \Theta^{\mathbb{E}}_-(\theta_C)\big)\Big)\right)\,.$$

But this would mean she would do better to make an emotional appeal for that θ than lead by example, in contradiction of the cutoff strategy she is supposed to play. The result follows *reductio ad absurdum*. ■

Proof of Lemma 4: Because $c(e) = e^2/2$ and given Assumptions 1 and 2, expression (38) can be written as

$$\left(N + \frac{1}{2}\right)\theta_C^2 = \theta_C\Big(n_S\Theta^{\mathbb{E}}_-(\theta_C) + n_E\big((1-\mu)\Theta^{\mathbb{E}}_-(\theta_C) + \mu\chi\big)\Big)\,;$$

hence, (38) is equivalent to

$$\left(N + \frac{1}{2}\right)\theta_C = n_S\Theta^{\mathbb{E}}_-(\theta_C) + n_E\big((1-\mu)\Theta^{\mathbb{E}}_-(\theta_C) + \mu\chi\big)\,. \tag{53}$$

The slope of the lefthand side of (53) is $N + 1/2$. The slope of the righthand side is

$$(N - \mu n_E)\Theta^{\mathbb{E}}_-{}'(\theta_C) < N - \mu n_E < N + \frac{1}{2}$$

(where the first inequality follows from Assumption 3). Consequently the right-hand-side function crosses the lefthand-side line from above. Because an increase

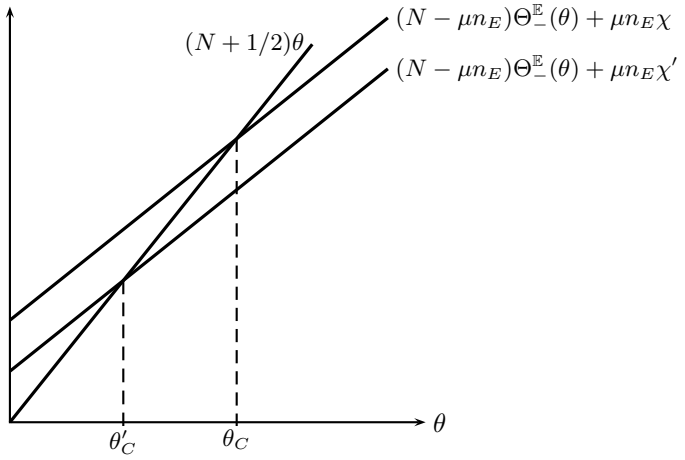

Figure 4: Illustration of the logic behind the proof of Lemma 4. Charisma χ is greater than χ', so the corresponding cutoffs, θ_C and θ'_C, are similarly ordered.

in χ shifts the righthand-side function up, it follows that the intersection of the shifted-up function and the lefthand-side line must occur to the right of the old intersection; that is, the value of θ_C that satisfies (38) must be greater if χ is greater. Figure 4 illustrates the logic. ■

Appendix B: Mixed Messages in the Baseline Model

This appendix is best read after reading Sections 2 and 3.

Contrary to the assumption of Section 2, suppose that the leader can send a "mixed message." She is, though, subject to limited bandwidth (*i.e.,* limited time to make her case or the limited attention span of her followers); hence, the more she emphasizes the emotional, the less she can emphasize the rational and *vice versa*. To capture these properties, assume the leader chooses the "inτensity" of her emotional appeal, $\tau \in [0,1]$. What this means is that, with probability τ, a follower hears her exhortations, but does not hear or understand what θ is; with probability $1-\tau$, a follower hears what θ is, but is not influenced by the emotional aspects of her appeal. If the first event occurs, a follower understands that he has not heard or understood what θ is; instead, as before, he adopts a belief $\widehat{\theta}$ about θ. Hence, such a follower supplies effort $e^*(\widehat{\theta})$ if a sober responder and $e^*\big(\Omega(\chi,\widehat{\theta})\big)$ if an emotional responder. The expected value

of the public good conditional on the true state being θ is, thus,

$$\theta \times \Big(N(1-\tau)e^*(\theta) + n_S \tau e^*(\widehat{\theta}\,) + n_E \tau e^*\big(\Omega(\chi, \widehat{\theta}\,)\big) \Big). \tag{54}$$

It is readily seen that the leader maximizes (54) by choosing $\tau = 1$ if condition (5) holds and by choosing $\tau = 0$ if the inequality in (5) is reversed. In other words, even if she is able to send a mixed message, in equilibrium the leader would never do so: she would make a purely emotional appeal if the state is low enough, otherwise she would make a purely rational appeal. In short, the assumption that she could not send a mixed message is without loss of generality, at least given this message-sending "technology."

As a variant of this model, suppose that followers understand the intensity of the leader's message. Suppose each E-type follower responds by maximizing

$$\big(\tau\chi + (1-\tau)\theta\big)e - \frac{1}{2}e^2 \tag{55}$$

and each S-type follower responds by maximizing

$$\big(\tau\widehat{\theta} + (1-\tau)\theta\big)e - \frac{1}{2}e^2 \tag{56}$$

(note, here, $c(e) = e^2/2$).[39] The story behind (55) is that E-type followers "buy-in" to the leader's message and charisma. The story behind (56) is that the S-type followers are cynical and worry that the leader might be trying to pull the wool over their eyes; hence, they increasingly discount the evidence about the true state the more emotionally intense is the leader's appeal. Note the S-type followers are now "quasi-behavioral" actors, although on the equilibrium path they will act fully rationally. Because $e^*(\zeta) = \zeta$ if $c(e) = e^2/2$, the expected value of the public good conditional on the true state being θ is, thus,

$$\theta \times \Big(n_S\big(\tau\widehat{\theta} + (1-\tau)\theta\big) + n_E\big(\tau\chi + (1-\tau)\theta\big) \Big). \tag{57}$$

If $\tau = 1$ does not maximize (57), then $\tau = 0$ does, and *vice versa*. Hence, the leader will *not* send a mixed message in equilibrium. Consequently, the resulting analysis matches the analysis in the text (with $\mu = 1$). In other words, for this variant too, the assumption the leader cannot send a mixed message is without loss of generality.

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[39] As will become clear, one could assume any disutility-of-effort function such that the resulting $e^*(\cdot)$ is weakly convex.

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