At the Helm, Kirk or Spock? The Pros and Cons of Charismatic Leadership*

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Abstract

Charismatic leaders are often desired. At the same, experience, especially with demagogues, as well as social science studies, raise doubts about such leaders. This paper offers explanations for charismatic leadership's "mixed report card"; in particular, it offers insights into why and when charismatic leadership can be effective; which, when, and why certain groups will prefer more to less charismatic leaders; and how being more charismatic can make leaders worse in other dimensions, particularly causing them to work less hard on their followers' behalf.

Keywords: leadership, charisma

*This is a heavily revised version of a paper that circulated under a similar name. The paper has benefited from the comments and suggestions of Prithwiraj Choudhury, Armin Falk, Marina Halac, Navin Kartik, Ola Kvaløy, Meg Meyer, Jean Tirole, Eric Van den Steen, Jidong Zhou, Junjie Zhou, two anonymous referees, the editor, and participants at the Hitotsubashi University Conference on Leadership, the NBER Organizational Conference, and seminars at the Toulouse School of Economics, Berkeley, MIT, Princeton, and NYU. The financial support of the Thomas and Alison Schneider Distinguished Professorship in Finance and the hospitality of Nuffield College, University of Oxford, are gratefully acknowledged.

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Date: January 8, 2020 (version 46)

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1 INTRODUCTION

In the classic TV show *Star Trek*, command of the Starship Enterprise was given not to the smartest and most knowledgeable character, Spock, but to a more charismatic character, Kirk. In real life, as in fiction, charisma is valued: leaders able to connect with and inspire their followers at an emotional level are desired.[1] At the same time, however, while charismatic leadership is prevalent and often seems effective, past and current experiences with demagogic leaders, as well as conflicting assessments from empirical and case studies, raise questions about charismatic leadership's benefits versus its costs. This paper develops a model of charismatic leadership that offers insights into why and when it can be effective; which, when, and why certain groups will prefer more to less charismatic leaders; and how being more charismatic can make leaders worse in other dimensions, particularly causing them to work less hard on their followers' behalf.

From the perspective of traditional economics, charismatic leadership—appealing to emotions over reason—seems puzzling. To reference another classic TV show, shouldn't followers want "just the facts"? Shouldn't a rational follower be suspicious of an upbeat demagogic appeal lacking in details: if the leader's case is truly strong, why doesn't she just present the facts? Yet, as I demonstrate, even wholly rational actors can respond positively to a charismatic leader's emotional appeals; in particular, work harder in response to a more charismatic leader's emotional appeal than in response to such an appeal from a less charismatic leader. Indeed, it is quite possible that an organization or society could *rationally* prefer a very charismatic demagogue, who knows nothing, to a knowledgeable leader lacking in charisma—Kirk rather than Spock.

At the same time, just because a charismatic leader can induce greater effort from followers than a less charismatic one does not make charisma an unalloyed good: circumstances exist in which a less charismatic leader is preferable to a more charismatic one. Further, situations exist in which charisma is irrelevant: outcomes are the same whether a more or less charismatic leader is at the helm. As such, the paper provides a theoretical justification for the "mixed report card" the literature has given charisma: while many scholars offer evidence of charisma's benefit (see footnote 5 *infra*), there are others who argue a misguided emphasis is placed on charisma when selecting leaders (see, in particular, Meindl, 1990 & 1995, and Khurana, 2002a,b) or too much attributed to leaders' charisma (*e.g.,* Weber et al., 2001, and Wasserman et al., 2010).

An issue when studying charisma is that, while there is some general notion of what charisma means,[2] there is no consensus as to the mechanism through which it operates.[3] That is, while psychology, sociology, and political science

[1] For instance, the ability to connect emotionally can be crucial to political success: as the political scientist Thomas Cronin put it, "A president or would-be president must be ... warm and accessible" (quoted in Rockman, 1984, p. 175). Also see Greenstein (2004).

[2] A possible consensus definition is that charismatic leaders can "by the force of their personal abilities [have] profound ... effects on followers" (House and Baetz, 1979, p. 339).

[3] In a sense, charisma is analogous to gravity: gravity clearly exists, but physics has yet to

offer considerable evidence that charisma has demonstrable effects,[4] there is no single explanation for why charisma influences followers. As I show, however, that lack of consensus on mechanism is not important to understanding the pros and cons of charismatic leadership. What is important, as I demonstrate in Section 2.2, is that, whatever one's favored conceptualization of charisma is, it exhibit certain properties and, critically, many of the conceptualizations from the literature do, indeed, exhibit those properties (see Lemma 1).

The model I develop rests on two pillars: first, although the majority of followers can be wholly rational and *directly* immune to the leader's charisma, charisma is assumed to resonate in some intrinsic way with at least a fraction of followers—referred to here as "emotional responders." To wit, an emotional appeal from a sufficiently charismatic leader engenders a positive response from emotional responders *ceteris paribus*.[5] As noted, Section 2.2 considers a number of explanations for why charisma affects at least some followers (*i.e.,* why there are emotional responders).

The second pillar is that getting the cold hard facts across clearly to followers reduces an appeal's emotional effect. There are a number of reasons, detailed in Section 2.3, for why this could be (*e.g.,* it is hard to inculcate optimism while simultaneously providing evidence that the situation is bad). Hence, the leader faces a tradeoff between information and inspiration; she can make either an emotional appeal, which is inspirational but devoid of facts; or a *rational appeal*, which credibly conveys the relevant facts but is emotionally colder.

That an emotional appeal comes at the cost of providing followers information would seem to offer one explanation for charisma's mixed report card. As Hermalin (1998) notes, under fairly general conditions, followers can expect to do better if they know, when choosing their actions, the return to them (the productivity state) than if ignorant. Hence, an emotional appeal, which conceals the productive state, imposes a cost on the followers. So if the followers are mostly rational actors—those not directly susceptible to emotional appeals—or the emotional responders only slightly susceptible or both, then it would seem an obvious prediction that the followers do better without a charismatic leader.

That prediction proves, however, incomplete: it overlooks that the leader could be "savvy"; that is, able to tailor her appeal to the circumstances. As shown below, a savvy leader makes an emotional appeal when "just the facts" provide followers too little incentive and, conversely, makes 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—

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agree on *why* bodies with mass are attracted to each other (*i.e.,* what mediates this attraction).

[4]See, *e.g.,* Awamleh and Gardner (1999), Chatman and Kennedy (2010), Conger and Kanungo (1994), Greenstein (2004), House et al. (1991), Howell and Shamir (2005), Nye (2008), Shamir et al. (1993), van Vugt and Ronay (2014), and Wang et al. (2011).

[5]Shamir et al. (1993), Chatman and Kennedy (2010), Wang et al. (2011), and van Vugt and Ronay (2014) survey the vast social-psychological evidence showing positive responses among (some) followers to charismatic leadership. In economics, Dal Bó and Dal Bó (2013) and Kvaløy et al. (2015) find evidence that emotional appeals act as incentives.

called "sober responders"—will form 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 a more charismatic leader makes an emotional appeal than when a less charismatic leader does. So, even though not directly influenced by emotional appeals, sober (rational) responders work harder in equilibrium in response to an emotional appeal from a more charismatic leader than in response to such an appeal from a less charismatic leader.

If leaders are savvy, then, as just suggested, the informational loss from an emotional appeal is less when it comes from a more rather than less charismatic leader. Further, more charismatic leaders' emotional appeals induce better actions from *all* followers than do their less charismatic counterparts' (reflecting the direct effect of charisma on emotional responders as well as the indirect effect outlined in the previous paragraph). *Ex ante*, the followers' expected production is greater with a more charismatic leader than a less charismatic one (Proposition 4). As a consequence, sober responders—those *not* intrinsically susceptible to charisma—will prefer more charismatic leaders to less charismatic ones.

What about emotional responders? In some instances, an emotional appeal leads them to act at odds with their self interest; hence, key to understanding who they prefer as leader is whether they know they are susceptible to emotional appeals. If not—they falsely believe they are sober responders—then their leadership preferences mimic sober responders'. But if aware, then they may prefer a less to more charismatic leader. An irony, therefore, is that followers not directly responsive to charisma want a more charismatic leader, while those who are responsive can want a less charismatic one. If the number of followers is great enough, however, then even aware emotional responders will prefer leaders be more rather than less charismatic: the better actions such leaders induce from *all other* followers compensates from any direct loss they individually suffer. See Section 4 for details.

Although, as just discussed, charisma is a desirable leadership characteristic in the basic model, even that analysis sheds some light on charisma's mixed report card: to the many definitions of charisma in the literature, that analysis adds, "charisma is the ability to get away with concealing bad news" (to be a bit tongue in cheek). In other words, when the situation is good, charisma is irrelevant; it matters only when the situation is bad. Hence, someone looking at the data might see that when entities do well, there is little evidence that the leader's charisma mattered. Conversely, it can help explain why leaders famous for their charisma were typically leaders in dire situations (*e.g.,* Jeanne d'Arc at the siege of Orléans or Winston Churchill during the Battle of Britain).

In contrast to the basic model, what if the choice is not between equally knowledgeable leaders of varying charisma, but rather between a knowledgeable leader lacking in charisma (called a "professor" below) or a charismatic demagogue lacking knowledge? Now there is a tradeoff between the incentive benefits of charisma and the loss due to followers' ignorance of the productivity state. As discussed in Section 4, it is ambiguous whether followers do better with a

professor or a demagogue at the helm; a finding that helps to explain the ambiguous results in empirical studies. Notably, however, a sufficiently charismatic demagogue will, despite her ignorance, be preferable to a professor.

The basic model assumes the leader is endowed (or not) with payoff-relevant information, so her only decision is what kind of appeal to make to followers. A critical issue, however, is what effect charisma has on the leader's incentives to work on behalf of her followers. Experience suggests that some charismatic leaders substitute charm for hard work. To explore the effect of charisma on the leader's work incentives, the second half of the paper (Section 5) considers settings in which, rather than being endowed with information, the leader must expend effort to learn it; or, rather than the information being exogenously determined, the information (the productivity state) is endogenously determined by the leader's efforts. In both those models with costly action by the leader, the analysis reveals that a potential downside to charisma is it indeed tempts a leader to substitute charisma for action. These models, thus, offer further explanations for the literature's mixed assessment of charisma's value.

Specifically, when the leader must work to learn the state, her value of doing so depends on how likely she is to reveal it to her followers (make a rational appeal). Because a more charismatic leader is less likely to make a rational appeal than a less charismatic one, she values knowing the state less than a less charismatic one. Highly charismatic leaders, therefore, choose *not* to learn the state; that is, they endogenously choose to be demagogues. Because, as noted, followers can do better with a professor than a demagogue, circumstances exist in which they do better with a less charismatic leader than a more charismatic leader. Alternatively, when the state depends on prior actions by the leader herself (*e.g.,* her planning), her motivation to work hard is boosted if the followers will see what she did and, so, directly respond to it; or if she has a lot influence over emotional responders. The first channel is relevant only if she will make a rational appeal; the second if she will make an emotional appeal. These two possible channels result in the followers' payoffs being non-monotonic in charisma: for "middle levels" of charisma, followers are worse off than if they had had either a far less charismatic leader or a far more charismatic one.

As noted, a large body of leadership research exists (Nohria and Khurana, 2010, offers a broad survey). The amount of scholarship in economics is more modest (for surveys, see Bolton et al., 2010; Zupan, 2010; or Hermalin, 2013). Economic models of leadership tend to adopt one of two approaches: either the leader is better informed about a payoff-relevant state than her followers, with the issue being how she credibly conveys her information to them;[6] or the leader has a bias ("leadership style") that effectively commits her to take *ex ante* desirable actions that would otherwise be *ex post* incredible.[7,8]

[6]Papers following this approach include Hermalin (1998, 2007), Kobayashi and Suehiro (2005), Andreoni (2006), Komai et al. (2007), Komai and Stegeman (2010), and Zhou (2016).

[7]Papers following this approach include Rotemberg and Saloner (1993, 1994, 2000), Van den Steen (2005), Blanes i Vidal and Möller (2007), and Bolton et al. (2013).

[8]A small empirical literature in economics also exists; see Choudhury and Khanna (2013)

This paper connects to both approaches. In common with the first is how the leader informs her followers. However, this paper departs from that literature in two ways. In the existing literature, while the leader would like to conceal bad news, to do so would generate such pessimistic beliefs in her followers that she is compelled to reveal her information; indeed, a key finding of that literature is that she desires, if possible, to have a reputation for honestly reporting her information always (see, in particular, Hermalin, 2007). In contrast, here, a charismatic leader can conceal bad news without triggering overly pessimistic beliefs; indeed, the more charismatic she is, the less pessimism concealing information engenders. A second difference is that, here, the leader's information is *hard*—she can conceal it, but, if she opts to reveal it, she must do so truthfully. In contrast, the earlier literature focused on *soft* information that the leader could both conceal and misrepresent.

Like the second approach, this paper is premised on the leader's possessing a personality characteristic, here charisma. Unlike that earlier literature, in which the leader is an irrational player—her biases cause her to behave differently than a wholly rational actor—here, the leader is wholly rational and it is, instead, some fraction of her followers who are not wholly irrational.

Two papers outside this two-approaches taxonomy warrant comment. Kvaløy and Schöttner (2015) model a leader seeking to motivate a single follower. There are, though, critical differences between their work and this paper: in Kvaløy and Schöttner, the efficacy of the leader's motivational efforts has nothing to do with her charisma; in Kvaløy and Schöttner, the leader has no private information, whereas here asymmetric information is central; and, in Kvaløy and Schöttner, the follower is somewhat irrational, whereas 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). Their single follower is biased toward making his action conform to the leader's example. This is similar to *identity*, one explanation offered below for why emotional responders are receptive to emotional appeals. On the other hand, this paper has no leading by example, thus no scope for conformity *per se*.

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

An entity (organization, social movement, polity, etc.) has a single leader, n_E followers who are emotional responders, and n_S followers who are sober (wholly rational) responders. Let $N = n_E + n_S$.

A follower, m, takes an action $a_m \in \mathbb{R}_+$ at personal cost $c(a_m)$; the function $c : \mathbb{R}_+ \to \mathbb{R}_+$ is the same for all followers. To ensure unique best responses and avoid corner solutions, assume: $c(\cdot)$ thrice continuously differentiable; $c(0) = c'(0) = 0$; and marginal cost, $c'(\cdot)$, to be strictly increasing and unbounded.

as an example and for a partial survey of the literature. Hermalin (2013, §2.3.2.3) reviews some of the experimental work testing models of leadership.

Follower m receives a payoff of $V - c(a_m)$, where

$$V = \theta \sum_{j=1}^{N} a_j \tag{1}$$

and $\theta \in (\underline{\theta}, \overline{\theta}) \subset \mathbb{R}_+$ is the marginal return to action (the "productivity state").[9] The most natural interpretation is that V is the value of a non-rivalrous public good:[10] follower m donates a_m in money, time, etc. to a cause (*e.g.,* the leader's election campaign, a humanitarian crisis, a civic activity, etc.), $c(a_m)$ is forgone utility from private consumption, alternative use of time, etc., and θ the return to donations, labor, etc. in terms of the cause's objective (*e.g.,* probability of electoral victory, lives saved, quality of the institution, etc.).

Assuming an additive production function (*i.e.,* expression (1)) avoids a more complicated analysis that would ensue if the followers' actions were strategic substitutes or complements, thus permitting a focus on the roles of charisma and information.[11] That noted, the analysis does extend to other production functions—see the working-paper version (Hermalin, 2017). Furthermore, (1) seems an accurate reflection of reality for the examples just given (*e.g.,* donating to a cause or door-to-door canvassing); also keep in mind footnote 11 *supra*.

The timing of the game is:

1. Nature draws θ from a commonly known distribution function, which has a positive derivative (density) everywhere and mean $\mathbb{E}\theta$.
2. The leader learns the realization of θ; this is her private information.
3. The leader decides whether to make a rational or emotional appeal.
4. Based on the appeal given and the inferences (if any) they draw from it, followers choose their actions.
5. Payoffs are realized and the game ends.

Making a rational appeal means the leader provides *hard* information that reveals the productive state, θ, to her followers. An emotional appeal is one in

[9] Assuming an open interval for θ avoids dealing with special cases that could arise if $\underline{\theta} = 0$.

[10] Assuming a public rather than divisible good is without loss of generality; similar results hold if the followers' payoffs are $\sigma V - c(a)$, σ denoting a follower's share of V.

[11] Having assumed production is additive, there is no greater generality to assuming

$$V = \theta \sum_{m=1}^{N} g(a_m)\,, \tag{♡}$$

$g(\cdot)$ increasing with diminishing marginal returns and $g(0) = 0$: as will be seen, followers solve programs of the form $\max_a \zeta g(a) - c(a)$, $\zeta > 0$. Via the change of variables $e = g(a)$, such programs are equivalent to $\max_e \zeta e - c\big(g^{-1}(e)\big)$. The composite cost function, $c\big(g^{-1}(\cdot)\big)$, satisfies the requisite properties for a cost-of-action function if $c(\cdot)$ does. In short, expression (1) is simply the more general (♡) after a change of variables.

which the leader suppresses information about θ and simply exhorts her followers to work hard. Sober responders can distinguish rational from emotional appeals. As discussed below, emotional responders may also be able to do so. Further details about appeals are given and justified in Section 2.3.

In this basic model, assume the leader seeks to maximize V.

A follower's objective depends on whether he is an emotional or sober responder. Regardless of appeal type, a sober follower's objective is to maximize

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

In contrast, an *emotional* responder behaves as if his objective is to maximize

$$R_\tau(\chi, \widehat{\theta})a - c(a)\,, \tag{3}$$

where $\chi \in [\underline{\chi}, \overline{\chi}) \subseteq \mathbb{R}_+$ is the leader's charisma, $\widehat{\theta}$ a rationally inferred estimate of θ (obviously equal to θ if the leader makes a rational appeal), and τ denotes the emotional inτensity of the leader's appeal, with cold hard facts—a rational appeal—being less emotionally intense than an emotional appeal. Details on how followers infer the productive state when the leader makes an emotional appeal are deferred to Section 3.

For any constant $\zeta > 0$, the properties of $c(\cdot)$ ensure a unique interior solution to the program $\max_a \zeta a - c(a)$, one that is increasing in ζ; let $a^*(\zeta)$ denote that program's solution. By the implicit function theorem, $a^*(\cdot)$ is differentiable. Given an inferred value $\widehat{\theta}$ for the productivity state, (3) entails an emotional responder's equilibrium action is $a^*\big(R_\tau(\chi, \widehat{\theta})\big)$. From (1) and (2), a sober responder's equilibrium response is $a^*(\widehat{\theta})$.

Assume throughout that the followers participate; this follows if followers' reservation utilities are zero: because a follower could choose $a = 0$, at cost 0, he must enjoy a non-negative expected utility in any equilibrium. Likewise, the leader can guarantee herself a non-negative expected utility, so her participation is also ensured if her reservation utility is zero. In keeping with leadership being an informal aspect of organization (see, *e.g.,* Hermalin, 2013, for a discussion), there is no contracting between the leader and followers.

2.2 Modeling Charisma

As noted above, the literature on charisma offers no single explanation for how it influences followers. This subsection considers, *inter alia*, possible mechanisms by which charisma affects followers. Although these explanations vary, a key finding, see Lemma 1 below, is that they exhibit certain common properties, which permit one to understand the effects of charisma even without consensus as to mechanism through which charisma works.

Charisma as Reinforcing Followers' Desires: From psychology there is evidence that people form beliefs, in part, through what might be called wishful thinking (see, *e.g.,* Ditto and Lopez, 1992, and Dunning et al., 1995, on self-serving biases). Recently, this idea has come to economics (see, *e.g.,* Kőszegi,

2006; Bénabou, 2013; Möbius et al., 2013; and Augenblick et al., 2016). A focus of this work is on people's desire to believe things are better than they are or they are more productive than they are. Another idea, dating at least to the 14th century (Ibn Khaldûn, 2004), is that a successful leader identifies and taps into her followers' desires; she reinforces desired beliefs.[12] These ideas suggest that a charismatic leader has an ability to convince at least some followers that the return to their actions are greater than they truly are. Hence, whereas a wholly rational actor can infer that the return is $\widehat{\theta}$, emotional responders are led to see it as $\widehat{\theta}$ plus something:

$$R_\tau(\chi, \widehat{\theta}\,) = \widehat{\theta} + \tau P(\chi)\,, \tag{4}$$

$P : \mathbb{R}_+ \to \mathbb{R}_+$ increasing and differentiable.[13]

Charisma as Persuasiveness: Awamleh and Gardner (1999) and Greenstein (2004), among others, suggest that charisma is an ability to persuade. Some followers (the emotional responders) respond to the leader's charm, rhetoric, or ability to tell a persuasive story. They do so because the leader's message is what they want to believe (see previous justification); or they are naïve and fail to recognize the emptiness of the rhetoric; or, anticipating the next justification, the leader's speech causes them to identify more with the leader or the entity as a whole. Some leaders are more persuasive than others because they seem more honest;[14] or have greater emotional intelligence, so connect better with followers at an emotional level (see, *e.g.,* Wong and Law, 2002). Nye (2008, p. 39) notes that *appearing* powerful can induce others to follow; hence, to the extent an emotional appeals projects power, that could make it effective (*i.e.,* charisma is an ability to project an image of power and authority).

At least two specifications for R_τ correspond to these ideas:[15]

$$R_\tau(\chi, \widehat{\theta}\,) = \tau\chi\overline{\theta} + (1 - \tau\chi)\widehat{\theta} = \widehat{\theta} + \tau\chi\big(\overline{\theta} - \widehat{\theta}\big)\,; \tag{5}$$

that is, χ is the extent to which the leader can convince emotional responders it is the best state, $\overline{\theta}$. A similar specification is

$$R_\tau(\chi, \widehat{\theta}\,) = \mu\tau\chi + (1 - \mu\tau)\widehat{\theta}\,, \tag{6}$$

[12] As Napoleon said, "A leader is a dealer in hope." See Howell and Shamir (2005) on the relation between charismatic leadership and followers' "self-concepts." Nye (2008, pp. 57–58) reviews historical cases in which charismatic leaders' successes are attributable to their having reflected back their followers' desire to be optimistic about the future.

[13] While emotional responders could perceive the return to be better than a sober responder, they might not believe it to exceed $\overline{\theta}$, the supremum of the distribution. As will become evident, that issue won't arise if $P(\overline{\chi}) \leq \overline{\theta} - \mathbb{E}\theta$.

[14] There is a large literature on dishonesty and its detection. See, *e.g.,* DePaulo et al. (1980), for a partial survey. The literature finds that some individuals are better than others at appearing honest. There is also variation in people's ability to detect deception; from this perspective, sober responders could be seen as skilled in detecting deception—that the leader concealed the facts—and emotional responders as less skilled.

[15] Expression (5) builds on a comment from Prithwiraj Choudhury on an earlier draft.

where $\mu \in (0,1)$ is a constant reflecting how manipulable emotional responders are. An interpretation of (6) is charisma corresponds to how good a state the leader could conceivably convince an emotional responder of (so, $\chi \in (\underline{\theta}, \overline{\theta})$).

Charisma and Identity: Studies in psychology find that charisma induces followers to identify with the leader, the organization, or both.[16] Building on ideas in Akerlof and Kranton (2000), a number of plausible specifications for R_τ arise. For instance, suppose the leader's charisma induces an emotional responder to put weight $\tau\chi$ on welfare maximization (*i.e.,* the action that maximizes $(N+1)\widehat{\theta}a - c(a)$) and weight $1-\tau\chi$ on his private objective (*i.e.,* (2)); consequently, the follower acts as if his marginal return to effort is

$$R_\tau(\chi, \widehat{\theta}\,) = (\tau\chi N + 1)\widehat{\theta}\,. \tag{7}$$

If, instead, he identifies with the leader only, his choice of a would maximize

$$\underbrace{(\tau\chi+1)\widehat{\theta}}_{=R_\tau(\chi,\widehat{\theta}\,)} a - c(a)\,. \tag{8}$$

A related idea is that emotional responders wish to please the leader, to gain or maintain her approval.[17] The value they place on doing so is captured by χ. Expressions (4)–(8) are all specifications consistent with this notion.

Charisma as Affect Manipulation: There is a large psychological literature on the positive effects of boosting actors' affect (mood) with respect to their actions (see, *e.g.,* Isen, 2000, for a survey). In particular, there is considerable evidence that improving affect leads to more socially desirable behavior (*e.g.,* helping others).[18] An upbeat emotional appeal, convincingly delivered, improves the listeners' mood, increasing their propensity to act in a socially desirable manner. The increased propensity can be modeled as a boost to an emotional responder's perceived return from his action. Specifications (4)–(6) and (8) would all serve to model such affect manipulation.

Emotional Responders are Naïve: An alternative to charisma is to assume that emotional responders are naïve—they fail to grasp the leader's incentive to mislead them. Experimental evidence (see, *e.g.,* Cain et al., 2005, and Coffman

[16] "Charismatic leadership works in part by influencing followers to identify with a collective enterprise and internalize group aspirations" (van Vugt and Ronay, 2014, summarizing studies in social psychology). Also see Shamir et al. (1993) and Howell and Shamir (2005) for evidence. In a non-leadership setting, Coffman and Niehaus (2014) find experimental evidence that sellers able to induce buyers to identify with them do better than sellers unable to do so.

[17] Many personality cults in dictatorships portray the dictator as a father figure, perhaps to tap into people's desire for parental approval. See, *e.g.,* Wedeen (1998) and Armstrong (2005) on such portrayals of the late dictators Hafez al-Assad and Kim Il Sung, respectively. Nye (2008, p. 56) makes a similar point to explain the power of cult leaders, such as Jim Jones.

[18] See Cunningham (1979), Isen and Levin (1972), and Isen and Reeve (2005).

and Niehaus, 2014) indicates that people often fail to account for the incentives their advisors have to give biased advice, so they give that advice more weight than they should.[19] Sober responders, in contrast, are skeptical and not fooled by misleading statements. Gullible (emotional) responders recognize the truth when they hear it, but believe any false claim about the state up to χ; that is, χ is the limit of their gullibility. In this model variant, "greater (less) charisma" is to be understood to mean "greater (less) gullibility" on the part of the emotional responders. If the leader chooses to mislead (*i.e.,* conceal information), she clearly does best to announce χ. Specification (6) with $\mu = 1$ and $\tau \in \{0, 1\}$ captures the idea that emotional responders are simply naïve.

Simplifying Assumptions and Properties of R: Although, as earlier versions of this paper show, one could do the analysis assuming $0 \leq \tau_{\text{RA}} < \tau_{\text{EA}} \leq 1$, where RA and EA denote rational and emotional appeals, respectively, the value added of doing so is limited; hence, for the sake of brevity, assume, henceforth, that τ is normalized to one if the leader makes an emotional appeal and it equals zero if she makes a rational appeal (*i.e.,* $\tau_{\text{EA}} = 1$ and $\tau_{\text{RA}} = 0$). For any of the specifications (4)–(8), a consequence of this simplification is that

$$R_0(\chi, \widehat{\theta}) = \widehat{\theta}\,. \tag{9}$$

Given (9), there is little ambiguity in simply writing R rather than R_1; to reduce notational clutter, that convention will be followed in much of what follows.

Because they are straightforward to verify, the following properties of R are stated without proof:

Lemma 1. *Assume the perceived return, R, to an emotional appeal is as given in one of the five specifications* (4)–(8)*. Then:*

(i) Perceived return is greater the more charismatic the leader; that is, for all $\theta \in (\underline{\theta}, \overline{\theta})$, $R(\chi, \theta) > R(\chi', \theta)$ if $\chi > \chi'$.

(ii) Perceived return is nondecreasing in the inferred or estimated value of the productivity state, θ; that is, for all χ, $R(\chi, \theta) \geq R(\chi, \theta')$ if $\theta > \theta'$.

(iii) If an emotional appeal has a greater impact than a rational one for a given perceived productivity state, it will do so for all lesser states; that is, if $\theta > \theta'$, then $R(\chi, \theta) > \theta$ implies $R(\chi, \theta') > \theta'$.

(iv) The function R is differentiable in all arguments.

As will become evident, the results that follow would hold for any specification of R (model of charisma) that satisfies properties (i)–(iv) of Lemma 1.

Interpret $\chi = \underline{\chi}$ to mean a total lack of charisma; reflecting that, assume

$$R(\underline{\chi}, \underline{\theta}) = \underline{\theta}\,. \tag{10}$$

[19] There is also a literature on *cheap-talk* games with credulous receivers (see, *e.g.,* Ottaviani and Squintani, 2006; Kartik et al., 2007; and Chen, 2011). Recall, however, unlike a cheap-talk game, here the leader's information is presumed to be hard.

From Lemma 1(iii), $R(\underline{\chi}, \theta) \leq \theta$, $\forall \theta$.

It speeds the analysis, without real loss of generality, to assume that no leader is so charismatic that she makes an emotional appeal regardless of the true state. For reasons that will become clear later, that holds if

$$n_S a^*(\mathbb{E}\theta) + n_E a^*\big(R(\overline{\chi}, \mathbb{E}\theta)\big) = N a^*(\overline{\theta})\,. \tag{11}$$

From Lemma 1(i) and continuity, expression (11) entails, for all $\chi \in [\underline{\chi}, \overline{\chi})$, there exists a $\theta_\chi < \overline{\theta}$ such that

$$n_S a^*(\mathbb{E}\theta) + n_E a^*\big(R(\chi, \mathbb{E}\theta)\big) < N a^*(\theta) \tag{12}$$

if $\theta \in (\theta_\chi, \overline{\theta})$.

An Additional Assumption about Charisma: The leader's charisma, χ, is common knowledge among all parties.[20] This could reflect an earlier, unmodeled, stage in which followers get to know the leader. This common-knowledge assumption has empirical validity: for instance, consensus is quickly reached on how charismatic politicians are.[21] That various measures of charisma in the social-psychology literature have high cross-subject correlation (see, *e.g.,* Conger and Kanungo, 1994, and Awamleh and Gardner, 1999) is further evidence that people's assessment of a given leader's charisma are highly similar.

2.3 Modeling Appeals

As has been implicit so far, the assumption is that the leader faces a communications tradeoff: the more fact-based her presentation or speech, the less emotional impact it has. There are many reasons to postulate such a tradeoff.

First, there are the experiments of Awamleh and Gardner (1999), who manipulate the content of speeches and find that speeches characterized by visionary content elicit higher ratings of leader charisma and effectiveness from the audience than speeches with non-visionary content.[22]

Second and related, the political adage, which dates back to the late 1970s or early 1980s, "if you're explaining, you're losing" indicates that politicians believe it difficult to simultaneous provide facts and excite one's audience.[23] Both Greenstein (2004) and Nye (2008) make similar points with regard to what

[20] In the alternative specification in which emotional responders are simply gullible, their gullibility is common knowledge between at least the leader and her sober (skeptical) followers.

[21] Internet searches for "Clinton charisma" or "Reagan charisma" yield thousands of articles, both popular press and academic, attesting to these presidents' extraordinary charisma. As Nye (2008, p. 54) reports, even Tony Blair's severest critics agreed he was highly charismatic. Conversely, Clement Attlee was widely seen to lack charisma: "A modest man, but then he has so much to be modest about" (often attributed to Churchill, though he denied saying it).

[22] In their study, visionary content was thematic and inspirational, whereas non-visionary content was "direct and information oriented" (Awamleh and Gardner, 1999, p. 353).

[23] Some sources attribute the adage to Ronald Reagan, others to the pundit George Will.

constitutes effective political speech. Indeed, if one looks at political speeches judged highly effective, one finds them relatively devoid of specifics.[24]

Furthermore, a number of the rationales given in the previous subsection for why people respond to charisma are predicated on the leader concealing information: it is impossible, *e.g.,* to inculcate optimism or belief about the state being good while simultaneously providing clear evidence to the contrary.

3 Equilibrium of the Basic Model

Denote the expectation of θ conditional on it not exceeding ζ by $\Theta^{\mathbb{E}}(\zeta)$; that is, $\Theta^{\mathbb{E}}(\zeta) = \mathbb{E}\{\theta | \theta \leq \zeta\}$. Observe $\Theta^{\mathbb{E}}(\underline{\theta}) = \underline{\theta}$ and $\Theta^{\mathbb{E}}(\overline{\theta})$ is the unconditional mean, $\mathbb{E}\theta$. Because the distribution of θ has an everywhere positive density, $\Theta^{\mathbb{E}}(\cdot)$ is increasing and $\Theta^{\mathbb{E}}(\theta) < \theta$ if $\theta > \underline{\theta}$.

The leader wishes to make an emotional appeal when the state is θ if and only if that will yield a larger V than a rational appeal; that is, if and only if

$$\Big(n_S a^*(\widehat{\theta}\,) + n_E a^*\big(\underbrace{R(\chi,\widehat{\theta}\,)}_{=R_1(\chi,\widehat{\theta})}\big)\Big)\theta \geq \Big(n_S a^*(\theta) + n_E a^*\big(\underbrace{\theta}_{=R_0(\chi,\theta) \text{ by (9)}}\big)\Big)\theta = N a^*(\theta)\theta\,, \quad (13)$$

where, as before, $\widehat{\theta}$ is the followers' expectation of the state given an emotional appeal. Condition (13) is equivalent to

$$n_S a^*(\widehat{\theta}\,) + n_E a^*\big(R(\chi,\widehat{\theta}\,)\big) \geq N a^*(\theta)\,. \quad (14)$$

Because $a^*(\cdot)$ is strictly increasing, it follows that the leader's best response to the followers' beliefs is a cutoff strategy: an emotional appeal if $\theta \leq \theta_C$ and a rational appeal if $\theta > \theta_C$, where either the cutoff, θ_C, equates the two sides of (14) or, if no such value exists, $\theta_C = \overline{\theta}$. In a perfect Bayesian equilibrium, followers' beliefs are consistent with this strategy; that is, $\widehat{\theta} = \Theta^{\mathbb{E}}(\theta_C)$.[25]

Proposition 1. *If the leader is minimally charismatic (i.e., $\chi = \underline{\chi}$), then the only perfect Bayesian equilibrium is one in which she makes a rational appeal*

[24] As an example, Franklin Roosevelt's first inaugural address, often cited as one of the best speeches by a politician, contains only three specifics: (i) in the middle of his 1,916-word speech, Roosevelt calls for "strict supervision of all banking and credits and investments"; (ii) later, he states he will "urge upon a new Congress in special session" legislation to impose such supervision; and (iii) toward the end of the speech he announces his intention to "ask the Congress for ... broad Executive power to wage a war against the emergency."

[25] In a perfect Bayesian equilibrium, players' actions are sequentially rational and their beliefs consistent with Bayes rule given prior distributions and the equilibrium strategies. So, if the leader plays a cutoff strategy in equilibrium—makes an emotional appeal if $\theta \leq \theta_C$—the Bayesian estimate of the state is $\mathbb{E}\{\theta | \theta \leq \theta_C\} \equiv \Theta^{\mathbb{E}}(\theta_C)$. For impossible actions by an informed player given the strategy profiles of the presumptive equilibrium, which cannot therefore be conditioning events for Bayesian updating, the uninformed players' beliefs need to be specified as part of the description of the equilibrium; that, however, isn't necessary for an out-of-equilibrium rational appeal because information is hard. Out-of-equilibrium emotional appeals can be ruled out by having followers hold very pessimistic beliefs (*i.e.,* $\widehat{\theta} = \underline{\theta}$) should a leader who, in equilibrium, is supposed to make a rational appeal deviate by making an emotional one, as the analysis will make clear.

only. Otherwise, the only perfect Bayesian equilibria are those in which the leader makes an emotional appeal given states below a cutoff level, $\theta_C \in (\underline{\theta}, \overline{\theta})$, a rational appeal for states about θ_C, and at least one such equilibrium exists.[26]

Proof: For a minimally charismatic leader, $R(\underline{\chi}, \underline{\theta}) = \underline{\theta}$ by (10). Suppose there were an equilibrium in which such a leader made an emotional appeal, so $\theta_C > \underline{\theta}$. Rationality of beliefs implies $\widehat{\theta} = \Theta^{\mathbb{E}}(\theta_C) < \theta_C$. Hence,

$$n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big) + n_E a^*\Big(R\big(\underline{\chi}, \Theta^{\mathbb{E}}(\theta_C)\big)\Big) \leq n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big) + n_E a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big) = N a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big) < N a^*(\theta_C)\,, \quad (15)$$

where the first inequality follows from Lemma 1(iii) and the fact that $a^*(\cdot)$ is strictly increasing; the latter fact also yields the second inequality. Payoffs are continuous, so (15) contradicts 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, the equilibrium is the leader makes rational appeals only and followers believe an (out-of-equilibrium) emotional appeal means $\theta = \underline{\theta}$.

Suppose $\chi > \underline{\chi}$, so $R(\chi, \underline{\theta}) > \underline{\theta}$ by (10) and Lemma 1(i). There is no equilibrium in which the leader never makes an emotional appeal: even if followers believed such an appeal meant $\theta = \underline{\theta}$, continuity and the fact that

$$n_S a^*(\underline{\theta}) + n_E a^*\big(R(\chi, \underline{\theta})\big) > N a^*(\underline{\theta}) \quad (16)$$

mean there are states in which the leader would do better to make an emotional rather than rational appeal even if followers held such pessimistic beliefs.

Recalling that $R(\chi, \underline{\theta}) > \underline{\theta}$, $\underline{\theta} = \Theta^{\mathbb{E}}(\underline{\theta})$, and $a^*(\cdot)$ is increasing, we have

$$n_S a^*\big(\Theta^{\mathbb{E}}(\underline{\theta})\big) + n_E a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\underline{\theta})\big)\Big) > n_S a^*(\underline{\theta}) + n_E a^*(\underline{\theta}) = N a^*(\underline{\theta})\,. \quad (17)$$

Expression (12) entails

$$n_S a^*\big(\Theta^{\mathbb{E}}(\overline{\theta})\big) + n_E a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\overline{\theta})\big)\Big) < N a^*(\overline{\theta})\,, \quad (18)$$

given $\chi < \overline{\chi}$ and Lemma 1(i) (recall $\Theta^{\mathbb{E}}(\overline{\theta}) = \mathbb{E}\theta$). Expressions (17) and (18) and continuity imply a $\theta_C \in (\underline{\theta}, \overline{\theta})$ exists such that

$$n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big) + n_E a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big) = N a^*(\theta_C)\,,$$

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. ■

A key question is whether more charismatic leaders are more likely to make emotional appeals than less charismatic ones. The answer is yes:

[26] Observe no claim is made about uniqueness. For much of what follows, uniqueness is not critical. See Lemma A.1 in the Appendix for conditions under which uniqueness is assured.

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 $\theta_C > \theta'_C$ such that there is a perfect Bayesian equilibrium in which the χ leader makes an emotional appeal whenever $\theta \leq \theta_C$.*

Proof: The result is immediate from Proposition 1 if $\chi' = \underline{\chi}$. Consider $\chi' > \underline{\chi}$. Because

$$n_S a^*\left(\Theta^{\mathbb{E}}(\theta'_C)\right) + n_E a^*\left(R\big(\chi', \Theta^{\mathbb{E}}(\theta'_C)\big)\right) = N a^*(\theta'_C)\,,$$

Lemma 1(i) and the fact that $a^*(\cdot)$ is increasing entail

$$n_S a^*\left(\Theta^{\mathbb{E}}(\theta'_C)\right) + n_E a^*\left(R\big(\chi, \Theta^{\mathbb{E}}(\theta'_C)\big)\right) > N a^*(\theta'_C)\,.$$

Given (18) and continuity, there must therefore exist a $\theta_C \in (\theta'_C, \overline{\theta})$ such that

$$n_S a^*\left(\Theta^{\mathbb{E}}(\theta_C)\right) + n_E a^*\left(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\right) = N a^*(\theta_C)\,.$$

hence, there's an equilibrium in which the cutoff is θ_C, $\theta_C > \theta'_C$. ■

Next, a leader with more charisma induces better actions 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' actions are higher in response to an emotional appeal from the more charismatic leader than they are 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. Because $\Theta^{\mathbb{E}}(\cdot)$ is increasing, it follows that

$$a^*\left(\Theta^{\mathbb{E}}(\theta_C)\right) > a^*\left(\Theta^{\mathbb{E}}(\theta'_C)\right) \text{ and } a^*\left(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\right) > a^*\left(R\big(\chi', \Theta^{\mathbb{E}}(\theta'_C)\big)\right),$$

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 take a better (higher) action.[27]

Of arguably greater importance is the effect of the leaders' charisma on actions in all states and the expected value of the public good.

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

(i) in any state, the total of the actions (i.e., $\sum_{m=1}^{N} a_m$) is never less with the more charismatic leader and it is strictly greater for a set of states of positive measure;

(ii) in any state, the value of the public good (i.e., V) is never less with the more charismatic leader and it is strictly greater for a set of states of positive measure; and

(iii) in expectation, the value of the public good is greater if the leader is the more charismatic of the two.

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 her cutoff, θ_C, is strictly greater. Because the distribution over states is strictly increasing (has an everywhere positive density), the interval $[\theta'_C, \theta_C)$ has positive measure. Likewise, because $\chi' > \underline{\chi}$, $\theta'_C > \underline{\theta}$, so the interval $(\underline{\theta}, \theta'_C)$ has positive measure.

Consider the intervals $(\underline{\theta}, \theta'_C)$, $[\theta'_C, \theta_C)$, and $(\theta_C, \overline{\theta})$. For θ in the first interval, total actions under the less and more charismatic leaders are, respectively, the left and righthand sides of

$$n_E a^*\Big(R\big(\chi', \Theta^{\mathbb{E}}(\theta'_C)\big)\Big) + n_S a^*\big(\Theta^{\mathbb{E}}(\theta'_C)\big) < n_E a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big) + n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big)\,,$$

where the inequality follows by Lemma 1 and because $\Theta^{\mathbb{E}}(\cdot)$ and $a^*(\cdot)$ are increasing. For θ in the second interval, total actions under the less and more charismatic leaders are, respectively, the left and rightmost terms of

$$n_S a^*(\theta) + n_E a^*(\theta) = N a^*(\theta) < n_E a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big) + n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big)\,,$$

where the inequality follows because the more charismatic leader strictly prefers an emotional appeal for all $\theta \in [\theta'_C, \theta_C)$. Finally, this comparison for θ in the third interval is

$$n_S a^*(\theta) + n_E a^*(\theta) = n_S a^*(\theta) + n_E a^*(\theta)\,,$$

[27] As an anonymous referee noted, if one views forgoing the benefits of an emotional appeal as an opportunity cost of making a rational one, then this reasoning is reminiscent of results in the literature on voluntary disclosure with disclosure costs (see, *e.g.,* Verrecchia, 1983).

as both leaders make rational appeals. This proves part (i).

Part (ii) follows because V is θ times total action. Part (iii) because there are intervals of positive measure in which the more charismatic leader everywhere generates greater value and none in which she generates less. ■

Proposition 4 hints at why entities could prefer a more charismatic leader to a less charismatic leader: provided an entity has *any* emotional responders (*i.e.,* provided $n_E > 0$), a more charismatic leader will generate better (higher) actions and greater value in expectation than a less charismatic leader.

As the proof of Proposition 4 makes clear, charisma is valuable when the state is low (*i.e.,* less than θ_C) but not necessarily when it is high. This could explain why charisma is more valued in dire times (*e.g.,* Churchill, whose inspirational leadership after the fall of France is considered, by many, to have been critical to Britain's survival, was voted out of office once victory had been achieved). It could also explain the phenomenon, documented by Khurana (2002b), of why poorly performing companies—those for which the distribution of θs, in the short run at least, is left shifted—seek to recruit charismatic CEOs.[28]

Although the analysis that follows does not, by and large, depend on whether the equilibrium in Proposition 1 is unique, for the sake of brevity and with no consequence for the substantive conclusions, it is worth simplifying the analysis by assuming there is a unique equilibrium (see Lemma A.1 for some conditions that ensure this).[29]

It is useful to remember, in what follows, that the leader is indifferent between the two kinds of appeal when the state equals her cutoff, θ_C; that is,

$$n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big) + n_E a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big) = N a^*(\theta_C)\,. \tag{19}$$

As will be seen, it is often convenient to use the righthand side of (19) to substitute for the lefthand side.

4 Preferences Over Kinds of Leaders

So far, the assumption has been the leader knows the state, θ, and is able to tailor her appeal to maximize the public good given how her followers respond to different appeals. Call such a leader *savvy*. Two alternative kinds of leaders, "professors" and "demagogues," will now be considered.

A *professor* is either a leader with no charisma ($\chi = \underline{\chi}$) or, equivalently, known to be unwilling to ever make an emotional appeal. In terms of actions

[28] That such CEOs do not necessarily do well (as documented by Khurana, 2002b) does not invalidate this observation: recall they are hired precisely when anticipated conditions are poor; and, as discussed in Section 5, charisma can be a two-edged sword.

[29] Equivalently, one could invoke the following equilibrium-selection rule: if multiple equilibria exist, the one with the highest cutoff, θ_C, is played. This rule can be justified by noting it yields the highest value of V and, thus, the leader would have an incentive to select it by, for example, announcing her intention to play it prior to making any appeal.

induced and creating value, a professor is inferior to a charismatic savvy leader (Proposition 4).

A *demagogue* is a leader who does not know θ (her ignorance is common knowledge). A demagogue can, thus, make emotional appeals only.[30] Her followers can infer nothing about the state from her "decision" to make an emotional appeal; hence, their inferences about the state are independent of her charisma. In particular, a sober responder's action is always $a^*(\mathbb{E}\theta)$.

How professors and demagogues vary in terms of outcomes has to do with the value of information. The following lemma is critical in that regard.

Lemma 2. *Consider the functions defined by* $\theta \mapsto \theta a^*(\theta) - c\big(a^*(\theta)\big)$ *and* $\theta \mapsto \theta a^*(\theta)$.

(i) The first function is strictly convex.

(ii) If, for all $a \in \mathbb{R}_+$, marginal *disutility of action is log concave (i.e.,* $\log\big(c'(\cdot)\big)$ *is concave), then the second function is strictly convex.*

As but one example, the log-concavity condition holds if $c(a) = a^\gamma$, where, consistent with prior assumptions, $\gamma > 1$. *Assume, henceforth, that* marginal *disutility is log concave* (does not accelerate too quickly). Note: only when Lemma 2 is invoked below is this assumption relevant; in particular, it is irrelevant for the prior propositions (as well as many subsequent ones).

Given the lemma, Jensen's inequality implies that

$$\mathbb{E}\big\{\theta a^*(\theta)\big\} > \mathbb{E}\theta \times a^*(\mathbb{E}\theta) = \mathbb{E}\big\{\theta a^*(\mathbb{E}\theta)\big\};$$

hence, information about the state is valuable: an informed follower produces more in expectation than an uninformed follower (a follower who knows only the prior). A professor, therefore, generates greater expected value from sober responders than a demagogue. Consequently, if a demagogue's charisma is low enough, or emotional responders a small enough minority of followers, or both, then a professor will generate greater expected value in total. On the other hand, recall that a maximally charismatic *savvy* leader (*i.e.,* for whom $\chi = \overline{\chi}$) makes emotional appeals only and, thus, is equivalent to a maximally charismatic demagogue. From Proposition 4, a maximally charismatic savvy leader generates greater expected value than a minimally charismatic one (the equivalent of a professor). By continuity, then, a sufficiently charismatic demagogue must outperform a professor. To conclude:

Proposition 5. *It is ambiguous as to whether a professor generates more or less value in expectation than a demagogue. Specifically, a demagogue with little charisma generates less value in expectation than a professor, but a highly charismatic demagogue generates more.*

[30] Plausibly, she could choose to remain silent. If followers respond to silence by playing their best response to their prior estimate of the state (*i.e.,* play $a^*(\mathbb{E}\theta)$) and if her charisma is such that $R(\chi, \mathbb{E}\theta) < \mathbb{E}\theta$, then she would, in fact, wish to remain silent. The analysis that follows holds independently of whether a demagogue can remain silent.

What about welfare? As a benchmark, begin by supposing that all responders are sober (*i.e.,* $n_E = 0$). Because $\Theta^{\mathbb{E}}(\theta_C) < \theta_C$, unless $\theta_C = \underline{\theta}$, expression (14) implies that a savvy leader facing only sober responders will never make an emotional appeal. Hence, her charisma is irrelevant.

Given Lemma 2, the function

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

is strictly convex. Jensen's inequality thus implies

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

So, if all followers are sober, each strictly prefers a professor or savvy leader to a demagogue—their expected welfare is greater than with a demagogue; charisma is irrelevant when all followers are sober.

Return, now, to the setting with both sober and emotional responders. The presence of emotional responders makes sober responders care about the leader's charisma; to wit, they will strictly prefer savvy leaders to professors and, in addition, more charismatic savvy leaders to less charismatic savvy leaders:

Proposition 6. *Assume savvy leaders and both sober and emotional responders, then sober responders prefer a more charismatic leader to a less charismatic one.*

Proof: Let $F : (\underline{\theta}, \overline{\theta}) \to (0, 1)$ denote the distribution function over states.

The expected payoff to a sober responder is

$$F(\theta_C)\Theta^{\mathbb{E}}(\theta_C)\left(n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big) + n_E a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big)\right) - F(\theta_C)c\Big(a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big)\Big) + \int_{\theta_C}^{\overline{\theta}} \Big(\theta(n_S + n_E)a^*(\theta) - c\big(a^*(\theta)\big)\Big)dF(\theta)\,.$$

Given (i) $d\big(F(\theta)\Theta^{\mathbb{E}}(\theta)\big)/d\theta = \theta F'(\theta)$, (ii) expression (19), and (iii) the envelope theorem, the derivative of that expression with respect to χ proves to be

$$\Bigg(F'(\theta_C)\left(c\big(a^*(\theta_C)\big) - c\Big(a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big)\Big)\right) + n_E a^{*\prime}\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big)\frac{\partial R}{\partial \theta}\Theta^{\mathbb{E}\,\prime}(\theta_C)\Theta^{\mathbb{E}}(\theta_C)F(\theta_C) + (n_S - 1)a^{*\prime}\big(\Theta^{\mathbb{E}}(\theta_C)\big)\Theta^{\mathbb{E}\,\prime}(\theta_C)\Theta^{\mathbb{E}}(\theta_C)F(\theta_C)\Bigg)\frac{d\theta_C}{d\chi} + n_E a^{*\prime}\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big)\frac{\partial R}{\partial \chi}\Theta^{\mathbb{E}}(\theta_C)F(\theta_C) > 0 \quad (20)$$

(the sign follows because $\theta_C > \Theta^{\mathbb{E}}(\theta_C)$, $d\theta_C/d\chi > 0$, and $a^{*\prime}(\cdot) > 0$). ■

As the proof (particularly expression (20)) makes clear, sober responders benefit from charisma's direct effect on emotional responders (the last line of (20)). That is not surprising. More striking is that a sober responder also benefits because *all* his fellow followers are indirectly induced to work harder (choose a higher action)—an effect captured by the middle two lines of (20)—this is due to the higher expectation of the state that an emotional appeal from a more versus less charismatic leader generates.

Corollary 1. *Sober responders prefer a sufficiently charismatic demagogue to a professor when both kinds of responders are present.*

Proof: Consider a savvy leader with charisma $\overline{\chi}$: she always makes an emotional appeal and is, thus, equivalent to a demagogue of equal charisma. A professor is a savvy leader who lacks charisma. The result follows from Proposition 6 and the continuity of payoffs. ■

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

Proposition 7. *Assume there are sober and emotional responders, then sober responders will prefer a professor to an insufficiently charismatic demagogue.*

Proof: Observe

$$\mathbb{E}\Big\{(n_S + n_E)\theta a^*(\theta) - c\big(a^*(\theta)\big)\Big\} > (n_S + n_E) \times \mathbb{E}\theta \times a^*(\mathbb{E}\theta) - c\big(a^*(\mathbb{E}\theta)\big)$$

$$\geq \mathbb{E}\theta \times \Big(n_S a^*(\mathbb{E}\theta) + n_E a^*\big(R(\underline{\chi}, \mathbb{E}\theta)\big)\Big) - c\big(a^*(\mathbb{E}\theta)\big)\,; \quad (21)$$

the first inequality follows from Lemma 2, the second because $\mathbb{E}\theta \geq R(\underline{\chi}, \mathbb{E}\theta)$ given the definition of $\underline{\chi}$ and Lemma 1(iii). The first expression in (21) is a sober responder's expected payoff under a professor, the last his expected payoff under a demagogue with charisma $\underline{\chi}$. The rest follows given continuity of payoffs.[31] ■

What about emotional responders' preferences over leaders? The issue 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 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? Among the many possible cases these questions engender, the following seem particularly relevant:

[31] If a sufficiently uncharismatic demagogue can remain silent and $R(\underline{\chi}, \mathbb{E}\theta) < \mathbb{E}\theta$, then the middle expression in (21) is a sober responder's expected payoff under a demagogue. Clearly, the result still holds.

1. Unaware, inconsistent emotional responders, whose true payoff is given by (2), but who behave as if it is (3). In this case, an emotional responder falsely believes himself to be sober, but may or may not believe other followers are emotional responders.

2. Aware, inconsistent emotional responders, whose true payoff is given by (2), but who behave as if it is (3). These followers know they are emotional responders and will behave inconsistently with their true preferences in response to an emotional appeal (get caught up in the heat of the moment).

3. Aware, sophisticated emotional responders. Such an individual, m, has a true payoff of
$$R(\chi,\widehat{\theta}\,)a_m - c(a_m) + \widehat{\theta}\sum_{j\neq m} a_j\,, \tag{22}$$
given an emotional appeal and a true payoff of (2) given a rational appeal. These individuals understand their preferences.

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

$$\int_{\underline{\theta}}^{\theta_C}\left(\theta\Big(n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big)+n_E a^*\big(R(\chi,\Theta^{\mathbb{E}}(\theta_C))\big)\Big)-c\Big(a^*\big(R(\chi,\Theta^{\mathbb{E}}(\theta_C))\big)\Big)\right)dF(\theta)$$
$$+\int_{\theta_C}^{\overline{\theta}}\Big(\theta(n_S+n_E)a^*(\theta)-c\big(a^*(\theta)\big)\Big)dF(\theta)\,. \tag{23}$$

Differentiating (23) with respect to χ, utilizing (19) and the envelope theorem, yields

$$\overbrace{-F'(\theta_C)\Big(c\big(a^*(R)\big)-c\big(a^*(\theta_C)\big)\Big)\frac{d\theta_C}{d\chi}}^{\mathsf{X}}$$
$$\overbrace{-F(\theta_C)\Big(c'\big(a^*(R)\big)-c'\big(a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big)\big)\Big)a^{*\prime}(R)\left(\frac{\partial R}{\partial\theta}\Theta^{\mathbb{E}\,\prime}(\theta_C)\frac{d\theta_C}{d\chi}+\frac{\partial R}{\partial\chi}\right)}^{\mathsf{I}}$$
$$\underbrace{+\,n_S a^{*\prime}\big(\Theta^{\mathbb{E}}(\theta_C)\big)\Theta^{\mathbb{E}\,\prime}(\theta_C)\frac{d\theta_C}{d\chi}\Theta^{\mathbb{E}}(\theta_C)F(\theta_C)}_{\mathsf{A}_S}$$
$$\underbrace{+\,(n_E-1)a^{*\prime}(R)\left(\frac{\partial R}{\partial\theta}\Theta^{\mathbb{E}\,\prime}(\theta_C)\frac{d\theta_C}{d\chi}+\frac{\partial R}{\partial\chi}\right)\Theta^{\mathbb{E}}(\theta_C)F(\theta_C)}_{\mathsf{A}_E}\,. \tag{24}$$

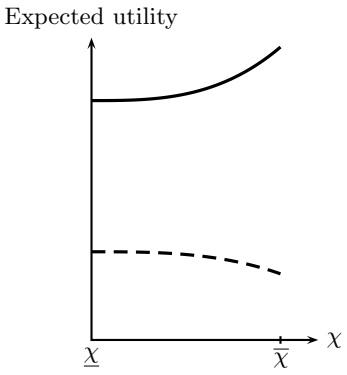

Figure 1: Expected utility of an inconsistent emotional responder as a function of the leader's charisma under two conditions. Common to both is $c(a) = a^2/2$, θ distributed uniformly on $(0,1)$, and $R(\chi,\theta) = \chi/2 + \theta/2$. Solid curve assumes $n_E = n_S = 5$. Dashed curve assumes $n_E = n_S = 2$.

The X term reflects such a follower's extra effort (note $R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big) > \theta_C$ as otherwise a savvy leader would prefer to make a rational appeal); it is a loss to an emotional responder. The I term is the penalty for being inconsistent. The A_S term is the additional production that a more charismatic leader generates indirectly from sober responders. The A_E term is the additional production directly and indirectly generated from the *other* emotional responders. Those last two terms are positive. If n_E and n_S are large enough, then $\mathsf{A}_S + \mathsf{A}_E - \mathsf{X} - \mathsf{I} > 0$: even an inconsistent emotional responder is better off with a more charismatic leader than a less charismatic one. As (24) equals $-\mathsf{X} - \mathsf{I}$ if $n_E = 1$ and $n_S = 0$, conditions also exist such that an emotional responder would do better with a less charismatic leader. Figure 1 illustrates this ambiguity.

In case #2, emotional responders are aware of their vulnerability to charisma. Whether they desire a charismatic leader depends on the sign of (24). If the sign is negative, then, ironically, it is the sober responders—those not directly affected by charisma—who favor a more charismatic leader, while emotional responders—those directly affected by charisma—favor a less charismatic leader.

In case #3, the expected value of (22), an emotional responder's payoff, is

$$
\begin{aligned}
&F(\theta_C)\Theta^{\mathbb{E}}(\theta_C)\Big(n_S a^*\big(\Theta^{\mathbb{E}}(\theta_C)\big) + (n_E - 1)a^*\big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\big)\Big) \\
&\quad + F(\theta_C)\left(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big) - c\Big(a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta_C)\big)\Big)\Big)\right) \\
&\qquad\qquad + \int_{\theta_C}^{\overline{\theta}} \Big(\theta(n_S + n_E)a^*(\theta) - c\big(a^*(\theta)\big)\Big) dF(\theta)\,.
\end{aligned}
$$

Differentiating with respect to χ, using (19) and the envelope theorem, yields

$$-\mathsf{X}+\mathsf{A}_S+\mathsf{A}_E+\underbrace{(R-\theta_C)a^*(R)F'(\theta_C)\frac{d\theta_C}{d\chi}+F(\theta_C)a^*(R)\frac{\partial R}{\partial \chi}}_{\mathsf{G}}, \tag{25}$$

where G reflects the direct gain such an emotional responder gets from an emotional appeal. As with (24), the sign of (25) is, in general, ambiguous; although obviously positive if (24) is. It also must be positive given a sufficiently large team: the additional value terms (*i.e.,* A_S and A_E) will come to outweigh all the other terms. It can also be shown to be positive if $c(a)=a^2/2$.[32]

5 Charm vs. Hard Work: The Leader's Incentives

So far, if the leader knows the state, it is because she was endowed with that knowledge. This section explores two alternatives: (i) she must discover the state through her efforts or (ii) her efforts determine the state.

Consider the first alternative: the leader incurs a cost, κ, to learn the state. Whether or not she chooses to learn the state is a hidden action.

Because θ affects payoffs in an affine manner, there is little to gain by assuming the leader acquires a signal of θ rather than learning θ itself. Additionally, while one could conceive of her efforts revealing θ with less than certainty, that generalization complicates the analysis without yielding particularly useful insights. In sum, then, assume that the leader learns θ with certainty if she spends κ, but learns nothing if she doesn't. Her payoffs are $V-\kappa$ and V, respectively.

In what follows, assume that a leader with information is savvy. If she fails to obtain information, then she has no choice but to act as a demagogue.

To determine the equilibrium, first suppose the followers expect the leader to learn the state. Her expected payoff (gross of her cost) if she indeed does is

$$\mathbb{E}V_{\text{L}}\equiv\int_{\underline{\theta}}^{\theta_C}\theta N a^*(\theta_C)dF(\theta)+\int_{\theta_C}^{\overline{\theta}}\theta N a^*(\theta)dF(\theta)$$

(note the use of (19)). If she deviates by not learning, her expected payoff is

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

The difference is

$$\Delta(\theta_C)\equiv\mathbb{E}V_{\text{L}}-\mathbb{E}V_{\neg\text{L}}=\int_{\theta_C}^{\overline{\theta}}\theta N\big(a^*(\theta)-a^*(\theta_C)\big)dF(\theta)\,. \tag{26}$$

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

[32] Observe a sufficient condition for $\mathsf{G}>\mathsf{X}$ is $(R-\theta_C)a^*(R)>c\big(a^*(R)\big)-c\big(a^*(\theta_C)\big)$. If $c(a)=a^2/2$, this condition becomes $(R-\theta_C)R>R^2/2-\theta_C^2/2$, which holds because, dividing both sides by $R-\theta_C$, $R>(R+\theta_C)/2$.

By continuity, there exists a $\theta_D \in (\underline{\theta}, \overline{\theta})$ such that $\Delta(\theta_D) = \kappa$. From (26), $\Delta(\cdot)$ is decreasing, so 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 (uniqueness of equilibrium and Proposition 2), there exists a unique charisma level χ_D, $\chi_D \in (\underline{\chi}, \overline{\chi})$, such that $\theta_C = \theta_D$ if $\chi = \chi_D$. Observe it is a best response, for a leader with $\chi \leq \chi_D$ to learn the state if expected to do so; a leader with charisma greater that χ_D, however, does better not to learn the state when expected to learn it.

Suppose, instead, the followers expect the leader *not* to learn the state and, hence, to behave as a demagogue. A sober responder will choose action $a^*(\mathbb{E}\theta)$ in response to the expected emotional appeal and an emotional responder $a^*\big(R(\chi, \mathbb{E}\theta)\big)$.[33] Because $\chi < \overline{\chi}$, a $\widetilde{\theta} \in (\underline{\theta}, \overline{\theta})$ exists such that

$$Na^*(\widetilde{\theta}) = n_S a^*(\mathbb{E}\theta) + n_E a^*\big(R(\chi, \mathbb{E}\theta)\big)\,.$$

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

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

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

$$\mathbb{E}\widetilde{V}_{\mathrm{L}} \equiv \int_{\underline{\theta}}^{\widetilde{\theta}} \theta N a^*(\widetilde{\theta}) dF(\theta) + \int_{\widetilde{\theta}}^{\overline{\theta}} \theta N a^*(\theta) dF(\theta)\,.$$

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 learning when expected to learn, then she would *not* deviate from remaining ignorant when expected to remain ignorant. To summarize the preceding analysis:

Proposition 8. *There is a pure-strategy perfect Bayesian equilibrium of the game in which the leader decides whether to learn 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 learn, but a leader with charisma above that threshold will not.*

Another way to state Proposition 8 is that 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 8 is not unique: there is a lower threshold, $\widetilde{\chi}_D$, such that, if the followers expect

[33] The presumption is the leader *must* make an appeal (cannot be silent). The results, though, are not dependent on this: if silence meant both kinds of responders played $a^*(\mathbb{E}\theta)$, 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 8 *infra*.

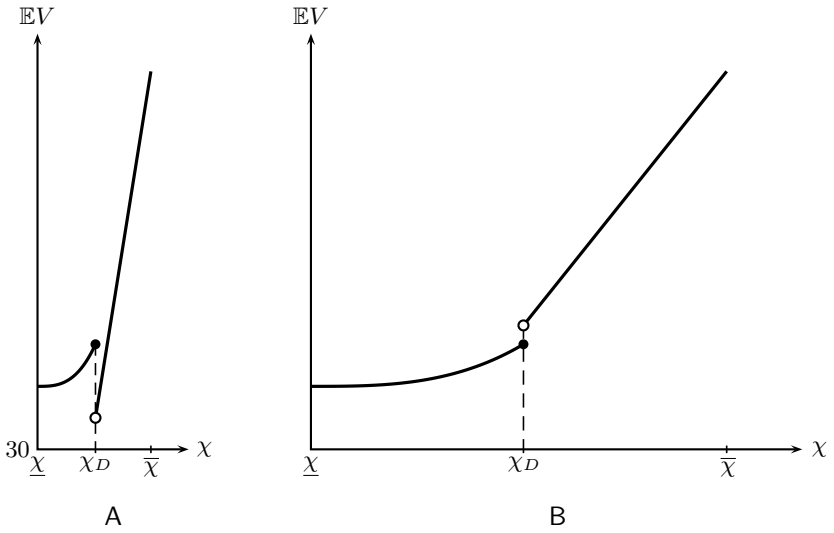

Figure 2: Expected value of the public good as a function of the leader's charisma when the leader's decision to learn the state is endogenous. Horizontal & vertical axes not on the same scale. See text for the parameter values and functional forms being assumed. In panel A, the number of sober and emotional responders is equal; in panel B, 90% are sober responders.

a leader with charisma $\chi \in (\widetilde{\chi}_D, \overline{\chi})$ to remain ignorant, it is indeed a best response for her to do so. 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 $\widehat{\chi}$ learn and those with greater charisma don't. For the sake of brevity, however, attention will be limited to the Proposition 8 equilibrium.

In the Proposition 8 equilibrium, the public good's expected value, $\mathbb{E}V$, is

$$\mathbb{E}V = \begin{cases} \int_{\underline{\theta}}^{\theta_C} \theta N a^*(\theta_C) dF(\theta) + \int_{\theta_C}^{\overline{\theta}} \theta N a^*(\theta) dF(\theta)\,, \text{ if } \chi \leq \chi_D \\ \Big(n_S a^*(\mathbb{E}\theta) + n_E a^*\big(R(\chi, \mathbb{E}\theta)\big)\Big)\mathbb{E}\theta\,, \text{ if } \chi > \chi_D \end{cases} . \tag{27}$$

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 2 plots expression (27) under two different scenarios. Common to both: $c(a) = a^2/2$, θ distributed uniformly on the unit interval, $R(\chi, \theta) = \chi$, and $N/\kappa = 10$. 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 figure reflects two offsetting effects. On one hand, if the leader remains uninformed in equilibrium, then the organization is without valuable information (Lemma 2(ii) means sober responders yield greater value in expectation

when informed than when not). On the other, because the leader can effectively commit to be ignorant, the followers' inference about the state given an emotional appeal is less pessimistic than it would be if the leader could strategically reveal or conceal information (necessarily, $\mathbb{E}\theta > \Theta^{\mathbb{E}}(\theta_C)$). When there are relatively many emotional responders, the leader is more inclined to make an emotional appeal than when there are relatively few. Hence, followers will already have less cause to be pessimistic upon receiving an emotional appeal, which means the loss-of-information effect dominates the reduced-pessimism effect, as seen in Panel A of Figure 2. The reverse is true when emotional responders are relatively rare, as seen in Panel B of Figure 2.

Sober responders' preferences around *intermediate* levels of charisma are thus ambiguous. As an example, a sober responder's expected utility in Panel A when $N = 10$ and $\kappa = 1$ would be approximately 3.34 if a leader of charisma χ_D chose to become informed and 3.04 if she chose not to become informed. By continuity, a sober responder must prefer leaders whose charisma is in some interval to the left of χ_D to any leader whose charisma is an interval to the right. In general, when the team is large enough, the effect endogenous demagoguery has on $\mathbb{E}V$ is more important to a sober responder than the possible reduction in expected disutility of action he might enjoy with an endogenous demagogue. Hence, if, as in Panel A, $\mathbb{E}V$ drops at χ_D, sober responders in large teams will have *non*-monotonic preferences over their leader's charisma.

What is unambiguous, though, is that sober responders still prefer sufficiently charismatic leaders: as $\chi \to \overline{\chi}$, the endogeneity of the information becomes irrelevant—even if informed, such a leader will almost surely make an emotional appeal and Proposition 6 already tells us that sober responders most prefer a *maximally* charismatic leader despite her never revealing the state.

Given the discussion at the end of the previous section, as well as here, it is clear that emotional responders' preferences *vis-à-vis* leaders' charisma are ambiguous when information acquisition is endogenous. Hence, so too must the effect of greater charisma on overall welfare be ambiguous. To summarize:

Proposition 9. *When the leader must incur a cost to learn the payoff-relevant state, θ, it is ambiguous as to whether her being more charismatic would enhance the wellbeing of sober responders, emotional responders, and overall welfare. In particular, circumstances exist in which all three measures are* decreasing *in the leader's charisma. At high enough levels of charisma, however, greater charisma is preferred by* sober *responders to less charisma.*

So far the return to action, θ, has been determined exogenously. Assume now, instead, it is determined by the leader's prior actions. As examples:

- The return to followers' donations in response to a humanitarian crisis or similar campaign depends on how efficient the organization is and such efficiency depends on the leader's prior actions.
- The return to followers' effort or time depends on the preparation and ground-work done by the leader.

Assume the leader chooses θ from $[\underline{\theta}, \infty)$, where, to ensure interior solutions, $\underline{\theta} > 0$ (*i.e.,* even absent action by the leader, there is some return to the followers' actions). The leader's choice of θ is her private information unless she reveals it via a rational appeal. As before, information is hard: the leader can conceal it (make an emotional appeal), but she cannot distort it. The timing is similar to before: the leader chooses θ; she decides the kind of appeal; and followers act in response. Choosing θ causes the leader disutility $D(\theta)$. Hence, her utility is

$$\theta N a^*(\theta) - D(\theta) \tag{28}$$

if she makes a rational appeal and

$$\theta\Big(n_S a^*(\widehat{\theta}) + n_E a^*\big(R(\chi, \widehat{\theta})\big)\Big) - D(\theta) \tag{29}$$

if she makes an emotional appeal, where $\widehat{\theta}$ denotes the θ the followers believe she chose.

For ease of analysis and to ensure interior optima and unique equilibria, assume that $D(\cdot)$ exhibits the following properties:[34] $D(\cdot)$ is twice continuously differentiable; $D(\underline{\theta}) = D'(\underline{\theta}) = 0$; $D'(\cdot)$ is strictly increasing (*i.e.,* $D(\cdot)$ is convex) and unbounded above; for all levels of charisma, χ, the function defined by

$$\theta \mapsto n_S a^*(\theta) + n_E a^*\big(R(\chi, \theta)\big)$$

intersects $D'(\cdot)$ once on $[\underline{\theta}, \infty)$; and the function defined by

$$\theta \mapsto N a^*(\theta) + N\theta a^{*\prime}(\theta)$$

intersects $D'(\cdot)$ once on $[\underline{\theta}, \infty)$. Because $\underline{\theta} > 0$, $a^*(\theta) > 0$; hence, the two functions just defined cross $D'(\cdot)$ from above.

If the leader intends a rational appeal, she will choose θ to maximize (28). The assumptions just made ensure that program has a unique solution: θ^*_{RA}.

If she intends an emotional appeal, she will choose θ to maximize (29). The first-order condition is

$$n_S a^*(\widehat{\theta}) + n_E a^*\big(R(\chi, \widehat{\theta})\big) = D'(\theta)\,.$$

Given the properties of $D(\cdot)$, 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,

$$n_S a^*(\widehat{\theta}) + n_E a^*\big(R(\chi, \widehat{\theta})\big) = D'(\widehat{\theta})\,. \tag{30}$$

By assumption, there is a unique $\widehat{\theta}$ that solves (30) for each level of charisma; call it $\widehat{\theta}(\chi)$. Because an increase in charisma, holding $\widehat{\theta}$ constant, shifts the lefthand side of (30) up and that curve intersects $D'(\cdot)$ from above, $\widehat{\theta}(\cdot)$ must be an increasing function. Hence:

[34] Properties satisfied, *e.g.,* if $c(a) = \omega a^2$ and $D(\theta) = \psi(\theta - \underline{\theta})^3/3$, ω and ψ positive constants.

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

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

If the range of possible charisma levels is $(\underline{\chi}, \infty)$, where, as before, $\underline{\chi}$ entails $R(\chi, \underline{\theta}) = \underline{\theta}$, then a sufficiently uncharismatic leader will prefer to make a rational appeal rather than an emotional one. The reason is as follows. Necessarily, $\widehat{\theta} \geq \underline{\theta}$. In fact, because $D'(\underline{\theta}) = 0$ and $a^*(\underline{\theta}) > 0$,

$$n_S a^*(\underline{\theta}) + n_E a^*\big(R(\underline{\chi}, \underline{\theta})\big) > 0 = D'(\underline{\theta})\,;$$

hence, it must be that $\widehat{\theta}(\underline{\chi}) > \underline{\theta}$ were there an equilibrium in which such an uncharismatic leader made an emotional appeal. Given Lemma 1(iii),

$$\widehat{\theta}(\underline{\chi}) N a^*\big(\widehat{\theta}(\underline{\chi})\big) \geq \widehat{\theta}(\underline{\chi})\Big(n_S a^*(\widehat{\theta}(\underline{\chi})) + n_E a^*\big(R(\underline{\chi}, \widehat{\theta}(\underline{\chi}))\big)\Big)\,; \tag{31}$$

which means that a leader of minimum charisma (*i.e.,* $\chi = \underline{\chi}$), if she chose productivity level $\widehat{\theta}(\underline{\chi})$, would do at least as well by making a rational appeal (a deviation) than making an emotional appeal. If the inequality in (31) is strict, then she would certainly deviate. If (31) is an equality, then

$$D'\big(\widehat{\theta}(\underline{\chi})\big) = N a^*\big(\widehat{\theta}(\underline{\chi})\big) < N a^*\big(\widehat{\theta}(\underline{\chi})\big) + N\widehat{\theta}(\underline{\chi}) a^{*\prime}\big(\widehat{\theta}(\underline{\chi})\big)\,,$$

where the equality follows from (30). Because θ^*_{RA} uniquely maximizes (28), it follows that $\widehat{\theta}(\underline{\chi}) \neq \theta^*_{\text{RA}}$—the leader would do *strictly* better to deviate by choosing θ^*_{RA} and making a rational appeal. Because, in either case, a leader with charisma $\underline{\chi}$ does *strictly* better to deviate, continuity entails there is an interval of charisma types who would do better choosing θ^*_{RA} and making a rational appeal than choosing $\widehat{\theta}(\chi)$ and making an emotional appeal. To conclude:

Proposition 11. *In any perfect Bayesian 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. By the implicit function theorem, $\widehat{\theta}(\cdot)$ is differentiable. Invoking the envelope theorem, the derivative, with respect to charisma, of the equilibrium payoff enjoyed by a leader who makes an emotional appeal is

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

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 (28). This and the previous analysis establish:

Proposition 12. *If the levels of charisma are $[\underline{\chi}, \infty)$, then there exists a finite $\widehat{\chi} > \underline{\chi}$ such that there is a perfect Bayesian equilibrium in which leaders with charisma below $\widehat{\chi}$ choose θ^*_{RA} and make rational appeals and leaders with charisma above $\widehat{\chi}$ choose $\widehat{\theta}(\chi)$ and make emotional appeals. Followers believe on hearing an emotional appeal from a leader of charisma χ that she chose action $\widehat{\theta}(\chi)$.*

Because Bayes Rule pins down beliefs on the equilibrium path only, one could construct other perfect Bayesian equilibria in which the followers "threaten" to hold very pessimistic beliefs about θ if a leader with charisma below χ^+, $\chi^+ > \widehat{\chi}$, makes an emotional appeal (*e.g.,* to believe $\theta = \underline{\theta}$). These other equilibria are, however, not robust to certain forward-induction arguments.[35] For that reason, as well as brevity, attention will be limited to the Proposition 12 equilibrium.

Consider a leader indifferent between rational-appeal and emotional-appeal strategies (*i.e.,* her charisma is precisely $\widehat{\chi}$, as defined in Proposition 12). Would she choose a greater θ 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 $D(\cdot)$, the answer to the second question follows immediately from the answer to the first: given her indifference,

$$\underbrace{\theta^*_{\text{RA}} N a^*(\theta^*_{\text{RA}})}_{V_{\text{RA}}} - D(\theta^*_{\text{RA}}) = \underbrace{\widehat{\theta}(\widehat{\chi})\Big(n_S a^*(\widehat{\theta}(\widehat{\chi})) + n_E a^*\big(R(\widehat{\chi}, \widehat{\theta}(\widehat{\chi}))\big)\Big)}_{V_{\text{EA}}(\widehat{\chi})} - D\big(\widehat{\theta}(\widehat{\chi})\big). \tag{32}$$

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

Lemma 3. *For $\widehat{\chi}$ defined in Proposition 12, $\theta^*_{\text{RA}} > \widehat{\theta}(\widehat{\chi})$.*

All functions, including $\widehat{\theta}(\cdot)$, are continuous, so Lemma 3 implies

Proposition 13. *There exist charisma levels $\widehat{\chi}$ and $\widetilde{\chi}$, with $\underline{\chi} < \widehat{\chi} < \widetilde{\chi}$, such that the public good is greater if the leader's charisma is less than $\widehat{\chi}$ then if it falls in the interval $(\widehat{\chi}, \widetilde{\chi})$; that is, the value of the public good is* not *monotone in the leader's charisma.*

[35] For instance, suppose the equilibrium were that all charisma types less than χ^+, $\chi^+ > \widehat{\chi}$, made rational appeals and followers believed an emotional appeal from such a leader meant $\theta = \underline{\theta}$. Consider the Cho and Kreps (1987)-like speech a leader with charisma $\chi \in (\widehat{\chi}, \chi^+)$ might make if she deviates by making an emotional appeal: "I have deviated, but you should not believe I chose $\underline{\theta}$, because to have done so would make me worse off than had I chosen θ^*_{RA} and made a rational appeal. Moreover, given

$$\begin{aligned}\theta^*_{\text{RA}} N a^*(\theta^*_{\text{RA}}) - D(\theta^*_{\text{RA}}) &= \widehat{\theta}(\widehat{\chi})\Big(n_S a^*(\widehat{\theta}(\widehat{\chi})) + n_E a^*\big(R(\widehat{\chi}, \widehat{\theta}(\widehat{\chi}))\big)\Big) - D\big(\widehat{\theta}(\widehat{\chi})\big) \\ &< \widehat{\theta}(\widehat{\chi})\Big(n_S a^*(\widehat{\theta}(\widehat{\chi})) + n_E a^*\big(R(\chi, \widehat{\theta}(\widehat{\chi}))\big)\Big) - D\big(\widehat{\theta}(\widehat{\chi})\big),\end{aligned}$$

you can see that I would be better off if I convince you I at least chose $\widehat{\theta}(\widehat{\chi})$. Moreover, if I will so convince you, it is indeed optimal for me to choose a $\theta \geq \widehat{\theta}(\widehat{\chi})$." In this light, the followers' beliefs are unreasonable and the equilibrium they support likewise unreasonable.

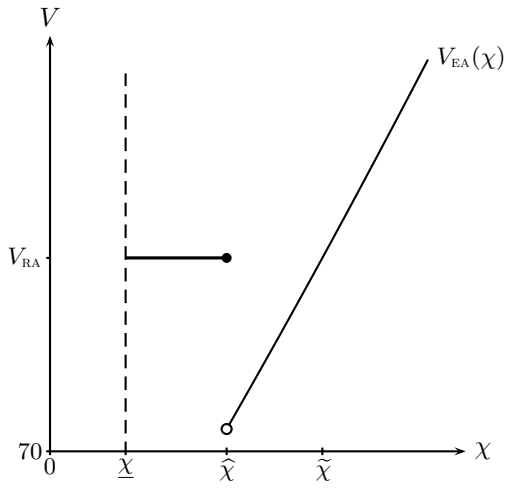

Figure 3: Equilibrium value of public good, V, as a function of the leader's charisma. Horizontal and vertical axes on different scales. Figure assumes $\underline{\theta} = 1$, $c(a) = a^2/2$, $n_S = n_E = 10$, $R(\chi, \theta) = 3\chi/4 + \theta/4$, and $D(\theta) = 20(\theta - \underline{\theta})^3$.

Because $V_{EA}(\cdot)$ 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 3 illustrates.

Intuitively, the leader can substitute charisma for observable action and *vice versa*: if she opts for an emotional appeal, she gets more from emotional responders than she would from a rational appeal; if, instead, she opts for a rational appeal, then all followers see her choice of θ and *directly* respond to it. Because the leader alone bears the cost of her action, her motive is not simply to maximize V. She is, thus, more inclined to rely on charisma than is 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 3 follow from this given the continuity of payoffs.

In light of Figure 3, it is not surprising that, as in the previous section, sober responders' preferences for leaders with different *intermediate* levels of charisma are ambiguous. As an example, taking the parameters and assumptions of Figure 3, if a leader with charisma $\widehat{\chi}$ chooses θ^*_{RA} and makes a rational appeal, the payoff to a sober responder is approximately 95.7. If that same leader chooses $\widehat{\theta}(\widehat{\chi})$ and makes an emotional appeal, a sober responder's payoff is approximately 71.6. By continuity, a sober responder must prefer leaders whose charisma is less than $\widehat{\chi}$ to any leader whose charisma is in some bounded interval to the

right of $\widehat{\chi}$. Eventually, however, if the leader's charisma is sufficiently great, sober responders prefer that leader to any leader whose charisma is $\widehat{\chi}$ or less.

The discussion at the end of Section 4, as well as here, makes clear that emotional responders' preferences *vis-à-vis* leaders' charisma are ambiguous when θ is endogenous. Hence, the effect of greater charisma on overall welfare is ambiguous. In sum, when the leader's action fixes the return, θ, to the followers' actions, it is ambiguous as to whether her being more charismatic would enhance the wellbeing of sober responders, emotional responders, and overall welfare. In particular, circumstances exist in which all three measures are *decreasing* in the leader's charisma. At high enough levels of charisma, however, greater charisma is preferred by *sober* responders to less charisma.

6 Summary and Directions for Future Work

This paper offers insights into why an entity (organization, society, etc.) can—but need not always—benefit from having a charismatic leader, even if it consists primarily (but not exclusively) of rational actors immune to any direct effect of charisma. Among the paper's findings:

1. Even though the literature (see Section 2.2) offers many distinct mechanisms that might explain *how* a charismatic leader influences at least some followers, they have properties in common that make them amenable to a general and unifying analysis (Lemma 1).

2. Assuming then entity has even just a few followers directly susceptible to charisma (so-called "emotional responders"), an emotional appeal from a more charismatic leader will induce a greater response (effort) from wholly rational followers *not* directly susceptible to charisma (so-called "sober responders") than such an appeal from a less charismatic leader in equilibrium (Proposition 3).

3. Assuming leaders are exogenously endowed with payoff-relevant information, an entity with a more charismatic leader outproduces, in expectation, an entity with a less charismatic leader (Proposition 4).

4. Having a charismatic leader is more valuable in bad times than good times (proof of Proposition 4 and following discussion).

5. A sufficiently charismatic demagogue (a leader lacking payoff-relevant information) can outperform a knowledgeable, but insufficiently charismatic leader (Proposition 5); hence, sober responders can prefer a sufficiently charismatic demagogue to a knowledgeable, but uncharismatic leader (Corollary 1).

6. Followers *not* directly affected (susceptible) to charisma (*i.e.,* sober responders) will prefer a more charismatic leader to a less charismatic one (Proposition 6), but followers who *are* directly affected (susceptible) can

prefer a less to more charismatic leader (Figure 1 and connected discussion). If an entity has enough followers, all followers prefer a more charismatic leader (Figure 1 and connected discussion).

7. Charisma is not, however, an unalloyed good: a knowledgeable leader can outperform a more charismatic demagogue if the latter is insufficiently charismatic (Section 4, Proposition 7, and connected discussion).

8. Furthermore, if leaders must take actions on behalf of followers (learn payoff-relevant information or take efforts to enhance their followers' productivity), then more charismatic leaders can work less hard than their less charismatic counterparts; hence, entities can do better with less rather than more charismatic leaders (Section 5, Figures 2 and 3, Propositions 9 and 13, and connected discussion). That is, leaders can be tempted to substitute charm for effort.

9. A particularly noteworthy aspect of the last point is that when leaders must acquire knowledge, sufficiently charismatic leaders will opt not to acquire it; that is, they will endogenously choose to be demagogues (see Proposition 8).

Although this paper provides a fairly general model of charismatic leadership, which permits understanding of how it can be effective, what its benefits and shortcomings may be, and how followers will respond to it, work remains. First, many attributes associated with charisma, such as confidence (Conger and Kanungo, 1994), have been modeled elsewhere in the literature as having a direct effect on organizational behavior and effectiveness (recall the discussion of leadership style in the Introduction; see also footnote 7 *supra*). This suggests an avenue for future work would be to explore the complementarities between the analysis here and in that earlier literature.

Another avenue concerns the extent to which charisma is innate and the extent to which it can be learned or developed. For instance, as I have observed, many business schools believe that it can be taught, and they correspondingly hire actors and communication coaches to help their students. But what precisely is being taught? A possible answer is improving would-be leaders' abilities to read their followers. After all, it is impossible for a leader to make an emotional connection with her followers without knowing what makes them tick.[36] This suggests that charismatic leadership works best when the leader knows her followers. In turn, this argues that those judged successful charismatic leaders are individuals who invested in understanding their followers. In modeling that

[36] A fact long recognized; see, *e.g.,* the 14th-century *Muqaddimah* by Ibn Khaldûn. 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. Finally, at least one well-respected leadership coach makes this point, at least obliquely, when she writes on her website, "every coaching engagement is customized to ensure that it's the right fit for ... the company culture" (www.peggyklaus.com, accessed November 8, 2014).

investment decision, a particularly relevant issue is how a leader optimally allocates time between studying her followers and other relevant activities (*e.g.,* learning about or enhancing the productivity state).

Determining what makes followers tick is presumably easier the more homogenous they are and the more immersed the leader already is in the relevant society. To an extent, Ibn Khaldûn made this point over 600 years ago: how, 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, his argument corresponds to one in which the relative heterogeneity of an empire and the social isolation of rulers from subjects foreclosed charismatic leadership in empires, but the closeness of tribal leaders to their followers and the followers to each other allowed for charismatic leadership in tribes. Using the models above, it is easily shown that an entity led by a highly charismatic leader can outproduce, in expectation, a larger entity led by an uncharismatic leader. Fleshing these ideas out fully, as well as tying them more to *asabîyah* and corporate culture, remain, though, topics for future research.

Finally, although the primary intent of this paper is to help make sense of existing evidence and studies concerning charismatic leadership, one could test many of the paper's implications experimentally. Information-transmission models of leadership have enjoyed considerable success in laboratory settings (see, *e.g.,* Hermalin, 2013, §2.3.2.3, for a partial survey). Further there are many assessments in the social psychology literature, with good validity, for measuring both charisma and followers' receptivity to it (see, *e.g.,* Conger and Kanungo, 1994; Awamleh and Gardner, 1999; and Wong and Law, 2002). Using these assessments to distinguish sober from emotional responders, many of this paper's propositions would seem amenable to testing. In particular, an especially straightforward one is that followers' responses to an emotional appeal should be more varied than to a rational appeal.

Appendix A: Proofs of Lemmas & Other Ancillary Material

Lemma A.1. *Assume that R is defined by one of* (4)–(8)*. The equilibrium of Proposition 1 is unique if*

(i) $\partial R/\partial\theta \leq 1$ *for all* χ *and* θ*, the reverse hazard rate associated with the distribution of states is decreasing,*[37] *and* $c(a) = a^2/\gamma$*;* or

(ii) $\partial R/\partial\theta \leq 2$ *for all* χ *and* θ*,* $\underline{\theta} = 0$*, the distribution of states is uniform,* $a^*(\cdot)$ *concave, and* $a^{*\prime}(\theta/2) \leq a^{*\prime}(\theta)(1/2)^k$*, for some* $k \in (-1, 0)$*.*[38]

Proof: Define

$$\Lambda(\theta) \equiv n_S a^*\big(\Theta^{\mathbb{E}}(\theta)\big) + n_E a^*\Big(R\big(\chi, \Theta^{\mathbb{E}}(\theta)\big)\Big) - N a^*(\theta)\,.$$

As Proposition 1 establishes there is at least one value of θ such that $\Lambda(\theta) = 0$. Moreover, as the proof of that proposition makes clear, any θ for which $\Lambda(\theta) = 0$ is an equilibrium cutoff; hence, if $\Lambda(\cdot)$ has only one zero (*i.e.,* a unique θ such that $\Lambda(\theta) = 0$), then there is a unique equilibrium. Clearly, there can be only one zero if $\Lambda(\cdot)$ is a monotone function.

Suppose condition (i). It is readily shown that $a^*(\zeta) = \gamma\zeta/2$. It is also readily shown that $\partial R/\partial\theta = \beta$, where β is a constant with respect to θ, if R is defined by one of (4)–(8). By assumption, $\beta \leq 1$. It follows that $\Lambda'(\theta)$ is proportional to

$$(n_E\beta + n_S)\Theta^{\mathbb{E}\prime}(\theta) - N \tag{33}$$

Given that $n_E\beta + n_S \leq n_E + n_S = N$, (33) is negative and, thus, $\Lambda(\cdot)$ monotone if $\Theta^{\mathbb{E}\prime}(\theta) < 1$ or, equivalently if $\Theta^{\mathbb{E}}(\theta) - \theta$ is decreasing in θ. Noting that

$$\Theta^{\mathbb{E}}(\theta) = \frac{1}{F(\theta)}\int_{\underline{\theta}}^{\theta} t f(t)dt = \frac{1}{F(\theta)}\left(tF(t)\Big|_{\underline{\theta}}^{\theta} - \int_{\underline{\theta}}^{\theta} F(t)dt\right)$$

via integration by parts, where $F(\cdot)$ is the distribution function over states and $f(\cdot)$ the corresponding density, it follows that

$$\Theta^{\mathbb{E}}(\theta) - \theta = -\frac{1}{F(\theta)}\int_{\underline{\theta}}^{\theta} F(t)dt\,;$$

[37] Many distributions exhibit a decreasing reverse hazard rate, among them are the uniform, beta distributions under wide range of parameter values, and triangle distributions (*i.e.,* distributions whose density functions form a triangle).

[38] The conditions on $a^*(\cdot)$ would, for example, be satisfied if $c(a) = a^\gamma/\gamma$, $\gamma > 1$, as, then, $a^*(\theta) = \theta^{1/\gamma}$, which is concave, and

$$a^{*\prime}\left(\frac{\theta}{2}\right) = \frac{1}{\gamma}\left(\frac{\theta}{2}\right)^{-\frac{\gamma-1}{\gamma}} = \frac{1}{\gamma}\theta^k\left(\frac{1}{2}\right)^k = a^{*\prime}(\theta)\left(\frac{1}{2}\right)^k,$$

where $k = -(\gamma-1)/\gamma$.

hence, $\Theta^{\mathbb{E}}(\theta)-\theta$ is decreasing in θ if $F(\theta)/\int_{\underline{\theta}}^{\theta} F(t)dt$ is a decreasing function of θ. Observe

$$\frac{d}{d\theta}\frac{F(\theta)}{\int_{\underline{\theta}}^{\theta} F(t)dt} \propto f(\theta)\int_{\underline{\theta}}^{\theta} F(t)dt - F(\theta)^2 \propto \int_{\underline{\theta}}^{\theta}\frac{f(\theta)}{F(\theta)}F(t)dt - F(\theta)\,, \tag{34}$$

where $\propto$ denotes "proportional to" or "same sign as." Because the reverse hazard rate, $f(t)/F(t)$, is decreasing, we have

$$\int_{\underline{\theta}}^{\theta}\frac{f(\theta)}{F(\theta)}F(t)dt - F(\theta) < \int_{\underline{\theta}}^{\theta}\frac{f(t)}{F(t)}F(t)dt - F(\theta) = F(\theta) - F(\theta) = 0\,.$$

Hence, $\Theta^{\mathbb{E}}(\theta)-\theta$ is decreasing in θ and, therefore, $\Lambda(\cdot)$ is decreasing (monotone).

Suppose condition (ii): If the distribution is uniform with $\underline{\theta}=0$, then $\Theta^{\mathbb{E}}(\theta)=\theta/2$. Observe that $\Lambda'(\theta)$ has a constant sign if

$$\lambda a^{*\prime}\big(\Theta^{\mathbb{E}}(\theta)\big)\Theta^{\mathbb{E}\prime}(\theta) + (1-\lambda)a^{*\prime}\Big(R\big(\chi,\Theta^{\mathbb{E}}(\theta)\,\big)\Big)\frac{\partial R}{\partial\theta}\Theta^{\mathbb{E}\prime}(\theta) - a^{*\prime}(\theta) \tag{35}$$

has constant sign, where $\lambda = n_S/N$ and, thus, $1-\lambda = n_E/N$. Substituting, (35) is equal to

$$\lambda a^{*\prime}(\theta/2)\frac{1}{2} + (1-\lambda)a^{*\prime}\Big(R\big(\chi,\Theta^{\mathbb{E}}(\theta)\,\big)\Big)\frac{\beta}{2} - a^{*\prime}(\theta)\,. \tag{36}$$

Because the leader would strictly prefer a rational appeal if $\theta \geq R\big(\chi,\Theta^{\mathbb{E}}(\theta)\,\big)$, concavity of $a^*(\cdot)$ entails that (36) cannot exceed

$$\lambda a^{*\prime}(\theta/2)\frac{1}{2} + (1-\lambda)a^{*\prime}(\theta)\frac{\beta}{2} - a^{*\prime}(\theta)\,.$$

Given $a^{*\prime}(\theta/2) \leq a^{*\prime}(\theta)(1/2)^k$, that does not exceed

$$\lambda a^{*\prime}(\theta)\left(\frac{1}{2}\right)^{k+1} + (1-\lambda)a^{*\prime}(\theta)\frac{\beta}{2} - a^{*\prime}(\theta)\,. \tag{37}$$

The sign of (37) is the same as

$$\lambda\left(\frac{1}{2}\right)^{k} + (1-\lambda)\beta - 2 < 0\,,$$

where the inequality follows because $(1/2)^k < 2$ if $k \in (-1,0)$ and $\beta < 2$. Hence, (35) is negative; that is, $\Lambda'(\cdot)$ has a constant sign, which entails $\Lambda(\cdot)$ is monotone ■

Proof of Lemma 2: As preliminaries, note $\zeta \equiv c'\big(a^*(\zeta)\big)$ from the first-order condition defining $a^*(\cdot)$; hence,

$$1 \equiv c''\big(a^*(\zeta)\big)a^{*\prime}(\zeta) \implies a^{*\prime}(\zeta) \equiv \frac{1}{c''\left(a^*(\zeta)\right)}\,. \tag{38}$$

Consequently,

$$a^{*\prime\prime}(\zeta) = -\frac{c'''\left(a^*(\zeta)\right)a^{*\prime}(\zeta)}{c''\left(a^*(\zeta)\right)^2} = -\frac{c'''\left(a^*(\zeta)\right)}{c''\left(a^*(\zeta)\right)^3}\,. \tag{39}$$

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 $a^*(\zeta)$ is the unique solution to

$$\max_a \zeta a - c(a) \tag{40}$$

and $a^*(\zeta) \neq a^*(\zeta')$ if $\zeta \neq \zeta'$, it follows that

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

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

Summing, those two expressions imply

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

which establishes convexity.

To prove part (ii): the function $\theta \mapsto \theta a^*(\theta)$ is the sum of the functions $\theta a^*(\theta) - c\big(a^*(\theta)\big)$ and $c\big(a^*(\theta)\big)$. Part (i) established the first function is strictly convex, so part (ii) follows if the second is convex. Recalling (38) and (39), the second derivative of $c\big(a^*(\theta)\big)$ with respect to θ is

$$c''\big(a^*(\theta)\big)a^{*\prime}(\theta)^2 + c'\big(a^*(\theta)\big)a^{*\prime\prime}(\theta) = \frac{1}{c''\big(a^*(\theta)\big)} - \frac{c'\big(a^*(\theta)\big)c'''\big(a^*(\theta)\big)}{c''\big(a^*(\theta)\big)^3}\,. \tag{41}$$

The function $c\big(a^*(\cdot)\big)$ is convex if (41) is non-negative. To see it is non-negative, observe that $d\log\big(c'(a)\big)/da = c''(a)/c'(a)$ and the derivative of that, which is

$$\frac{c'''(a)c'(a) - c''(a)^2}{c'(a)^2}\,, \tag{42}$$

is non-positive by the assumption of log concavity. It is readily seen that (42) being non-positive implies (41) is non-negative. ■

Proof of Lemma 3: As a preliminary, recall that a leader pursuing an emotional-appeal strategy chooses θ to maximize (29). Hence, the marginal return, M_{EA}, to her choice of θ is a constant given the followers' beliefs; to wit,

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

Her payoff is thus

$$V_{\text{EA}}(\chi) - D\big(\widehat{\theta}(\chi)\big) = \underline{\theta} M_{\text{EA}}(\chi) + \int_{\underline{\theta}}^{\widehat{\theta}(\chi)} \big(M_{\text{EA}}(\chi) - D'(\theta)\big)d\theta\,. \tag{43}$$

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

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

Lemma 2(ii) implies that $M_{\text{RA}}(\cdot)$ is an increasing function. Hence,

$$\begin{aligned} V_{\text{RA}} - D(\theta^*_{\text{RA}}) &= \underline{\theta} N a^*(\underline{\theta}) + \int_{\underline{\theta}}^{\theta^*_{\text{RA}}} \big(M_{\text{RA}}(\theta) - D'(\theta)\big) d\theta \\ &< \underline{\theta} N a^*(\underline{\theta}) + \int_{\underline{\theta}}^{\theta^*_{\text{RA}}} \big(M_{\text{RA}}(\theta^*_{\text{RA}}) - D'(\theta)\big) d\theta\,. \quad (44) \end{aligned}$$

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

Suppose, contrary to the lemma's claim, that $\widehat{\theta}(\widehat{\chi}) \geq \theta^*_{\text{RA}}$. It follows from (43) and (44) that:

$$\begin{aligned} &\Big(V_{\text{EA}}(\widehat{\chi}) - D\big(\widehat{\theta}(\widehat{\chi})\big)\Big) - \Big(V_{\text{RA}} - D(\theta^*_{\text{RA}})\Big) > \underline{\theta}\big(M_{\text{EA}}(\widehat{\chi}) - Na^*(\underline{\theta})\big) \\ &+ \int_{\underline{\theta}}^{\theta^*_{\text{RA}}} \Big(D'\big(\widehat{\theta}(\widehat{\chi})\big) - D'(\theta^*_{\text{RA}})\Big) d\theta + \int_{\theta^*_{\text{RA}}}^{\widehat{\theta}(\widehat{\chi})} \Big(D'\big(\widehat{\theta}(\widehat{\chi})\big) - D'(\theta)\Big) d\theta \geq 0\,, \quad (45) \end{aligned}$$

where the last inequality follows because $D'(\cdot)$ is an increasing function. But (45) contradicts the indifference condition, $V_{\text{EA}}(\widehat{\chi}) - D\big(\widehat{\theta}(\widehat{\chi})\big) = V_{\text{RA}} - D(\theta^*_{\text{RA}})$. The result follows *reductio ad absurdum*. ■

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