What It Takes to Be a Leader: Leadership and Charisma in a Citizen-Candidate Model

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Abstract

This paper analyses leadership and charisma within the framework of social choice. In societies that lack formal institutional authorities, the power of leaders to coerce is limited. Under such conditions, we find that social outcomes will depend not only on policy preferences but also on how a leader's ability to transform voluntary efforts into some public good are conceived by other society members. The paper has three main results: (1) institutionalized and uninstitutionalized societies that have identical characteristics might have different political equilibria (namely, they might choose different leaders and different policies); (2) under imperfect information regarding individuals' abilities, social choice may be biased toward less competent but more charismatic leaders; and (3) in uninstitutionalized societies, less competent, more charismatic leaders can achieve more in terms of social goals and welfare than can more competent and less charismatic ones.

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1. Introduction

Political economists have often adopted the view that after a candidate is elected for office he is authorized, as an office holder, to implement his chosen policy. This view is applicable to a variety of situations in which societies are equipped with sufficiently advanced administrative institutions that provide their leaders with coercive power. However, while this view on leaders' authority seems reasonable enough for sufficiently institutionalized societies, one must question what kind of leadership can be formed in societies where institutions are insufficiently advanced or are even totally missing. We refer to such societies that do not provide their leaders with a formal coercive authority as uninstitutionalized societies.

Some examples of uninstitutionalized societies would be communities of settlers or of ethnic minorities, national movements, newborn trade unions, paramilitary organizations as well as many other emerged groupings that are still developing their institutions. Another would be a community created for a limited time and a specified purpose, such as a protest organization, a revolutionary movement, or any spontaneously organized political group formed on the basis of its members' mutual interests.[2]

In uninstitutionalized societies, leaders cannot gain access to two kinds of authoritative apparatus that are generally available to office holders in institutionalized ones: (1) a monitoring system that enables office holders to detect whether citizens are obeying their instructions (paying taxes or doing various work tasks), and (2) a punitive system (such as law enforcement and legal systems) through

[2] Nonetheless, such uninstitutionalized societies have had a tremendous impact on political and historical processes. For instance, the communities of European settlers in South and North America established colonies that eventually became the foundation of the great nations of these continents. Another instance is when the Russian Czar's regime was overthrown in October 1917 by a small group of young intellectual revolutionaries who immediately established a communist regime in its place.

which office holders can penalize citizens who were detected as disobedient. The absence of these types of apparatus can lead to two fundamental problems. The first is an agency problem that stems from the imperfect ability of leaders to observe citizens' actions, and the second is the inability of leaders to create incentives to followers through punishments. If, in addition, social outputs cannot be transferred (such as public goods) then leaders are also unable to create incentives to followers by issuing contracts.

The fundamental feature of uninstitutionalized societies whereby leaders cannot detect nor penalize disobedient members has an important implication on uninstitutionalized societies. Leaders in such societies are unable to obligate followers to provide the resources essential for achieving societal goals and therefore must compel them to provide such resources voluntarily.[3] However, since followers are likely to decide on how many resources to provide on the basis of the leader's attributes (such as the leader's policy choice and his ability to transform inputs into social outputs), these attributes may play a significant role *not only in leadership formation processes* (such as elections) but also – and equally important – in *input supply*. These conditions open up possibilities for interesting tradeoffs between leaders' abilities, leaders' policy choice, and followers' inputs provision, the result of which can significantly affect political outcomes.

The purpose of this paper is to present a formal analysis of uninstitutionalized societies and to examine what kind of leadership might arise in such societies. The specific scenario on which we focus is where, on the one hand, leaders cannot enforce

[3] The proposition that leaders in uninstitutionalized societies cannot obligate members to provide essential resources gains support from recent evidence that links low quality institutions to high informal and underground economic activities such as tax evasion (see Friedman et al., 2000; Chong and Gradstein (2007); and Dabla-Norris et al. (2008)). In our model however, the main focus is not on fiscal resources but rather on resources that might be recruited in the form of effort, compliance and dedication.

collection of resources from society members due to a deficiency in authoritative institutions but, on the other, they need to recruit these resources in order to produce a policy. Our analytic vehicle is a citizen-candidate model (borrowed from Osborne and Slivinski (1996) and Besley and Coate (1997)) in which we add the assumption that after a leader has been chosen to lead, society members decide on how many inputs (efforts) to provide him with to manage their society.

The paper has two central results.

(1) Institutionalized and uninstitutionalized societies that have identical characteristics might have different political equilibria (namely, they might choose different leaders and different policies). In the main text we analyze this result in a model of leadership with perfect information.

(2) In the face of informational asymmetries regarding individuals' abilities, society members may be biased toward less competent but more charismatic leaders. We call this phenomenon *the charisma bias*.[4] Surprisingly, in uninstitutionalized societies, *these less competent but more charismatic leaders may achieve higher social welfare than more competent but less charismatic ones*. This phenomenon is later analyzed in a model of leadership with imperfect information.

The first result that institutionalized and uninstitutionalized societies can differ in political equilibria is quite intuitive in light of the tradeoffs between policy choice and resource supply that emerge in uninstitutionalized societies. Due to these tradeoffs, leaders in uninstitutionalized societies might have an incentive to compromise policies they favor in order to elicit higher levels of effort, and society members might have an incentive to compromise policies they favor in order to obtain better leaders. Such incentives can significantly affect political outcomes. The second result whereby

[4] Situations in which less competent leaders are overvalued (and therefore chosen to lead) might occur not only in uninstitutionalized societies. However, only in uninstitutionalized societies does this lead to higher provision of *voluntary* resources.

informational asymmetries might lead to the charisma bias phenomenon, has a counterintuitive implication which needs further clarification. When society members have imperfect information about candidates' abilities, they must use candidates' attributes (such as self-confidence, power, poise, rhetorical abilities, etc.) as external signals of the desired leadership abilities. Yet, these external signals may very well lead society members to overvalue charismatic but incompetent candidates, and undervalue non-charismatic but more competent candidates. Under such conditions, members might choose less competent leaders while providing them with extra resources (charisma bias).

The charisma bias phenomenon, however, does have an unexpected welfare implication. Whereas in institutionalized societies the rise of less competent but more charismatic leaders leads to misallocation of resources and welfare reduction, it might very well improve the allocation of resources and increase welfare in uninstitutionalized ones. The explanation to this counterintuitive result is that in uninstitutionalized societies, in which resources are voluntarily supplied for the production of public goods, the allocation of resources is normally suboptimal. Paradoxically, however, informational asymmetries may under certain conditions Pareto improve welfare by creating situations whereby leaders mislead society members into overvaluing them and consequently to exert levels of effort higher than they would in situations of perfect information. In section 5, which discusses the charisma bias phenomenon, we set the conditions under which this situation might occur.[5]

The rest of the paper is organized as follows. The next section reviews the related literature; section 3 sets up the basic model and analyzes the leadership

[5] Specifically, we show in section 5 that the allocation of resources under incompetent but charismatic leaders can sometimes Pareto dominate the allocation of resources under more competent but not charismatic leaders.

equilibrium in a perfect information setting; section 4 provides an example with a comparative analysis of political equilibria to demonstrate how institutionalized and uninstitutionalized societies differ; section 5 presents a model of leadership with imperfect information to demonstrate the charisma bias phenomenon and its welfare implication. Section 6 concludes the paper. The mathematical proofs appear in the appendix.

2. Related Literature

This research is to a large extent related to Max Weber's monumental work *The Theory of Social and Economic Organization* (1947).[6] In that work, Weber classifies three types of authority: at one extreme are legal and traditional authorities based on rules and tradition (respectively), and at the other extreme is charismatic authority, based on devotion to the character of an individual person.[7] In his definitions, Weber identifies the principal logical elements of the charisma bias phenomenon:

> The term "Charisma" will be applied to a certain quality of an individual personality by virtue of which he is set apart from ordinary men and treated as endowed with supernatural, superhuman, or at least specifically exceptional powers or qualities. These are such as are not accessible to the ordinary person, but are regarded as of divine origin or as exemplary, and on the basis of them the individual concerned is treated as a leader. [….] How the quality in question would be ultimately judged from any ethical, aesthetic, or other such point of view is naturally entirely indifferent for purposes of definition. **What is alone important is how the individual is actually regarded by those subject to charismatic authority, by his "followers" or "disciples"** [emphasis added]. (See Weber (1947), pp. 358-359.)

[6] "The Theory of Social and Economic Organization" (1947) is a translation of Part I of Max Weber's (1921) *Wirtschaft und Gesellschaft*.

[7] Following Weber, a large body of literature in sociology and social psychology has emerged that studies the phenomenon of leadership. This literature can be classified according to the presumed factors that generate leadership (such as traits, behavior, power, influence or situational factors). For surveys see Yukl and Van Fleet (1991), Northouse (1997) and Yukl (1998).

Elsewhere, Weber writes:

> …the term 'charisma' shall be understood to refer to an *extraordinarily* quality of a person, **regardless of whether this quality is actual, alleged, or presumed**. 'Charismatic authority,' hence, shall refer to a rule over men, whether predominantly external or predominantly internal, to which the governed submit because of **their belief** in the extraordinary quality of the specific person [emphasis added]. (See Weber (1946), pp. 295.)

The distinction between institutionalized and uninstitutionalized societies that is made in this paper fairly well parallels Weber's distinction between societies run by legal and those by charismatic authorities, and likewise, it corresponds to Weber's view that leaders' personality may itself create the foundation for authority. However, the paper also makes two further contributions. First, it shows how political equilibria might differ under these two different types of authorities, and second, it explores the welfare implications of the charisma bias phenomenon.

The paper also relates to two different lines of research in the economic literature: the first maps different situations concerning voters and elections into plausible policy choice and is rooted in traditional electoral competition theory. The second examines leadership within the framework of incentive theory.

The first line of research is largely based on Downs's (1957) political competition model and its numerous extensions (see Wittman (1977, 1983); Calvert (1985); Alesina (1988) and Alesina and Spear (1988)).[8] Recently, newer studies in this area of research have emerged that analyze political equilibria in situations where every citizen can endogenously offer to run as a candidate (see Osborne and Slivinski (1996); Besley and Coate (1997)). These studies were implemented in other important

[8]Downs viewed policy as a means for winning elections, whereas Wittman (1977, 1983), Calvert (1985), Alesina and Spear (1988) and Alesina (1988) analyzed political equilibria with a fixed number of candidates who have distinct policy preferences.

works, such as those dealing with lobbying (see Besley and Coate (2001)) and politicians' quality (see Caselli and Morelli (2004)). This literature, although providing considerable insights into a variety of situations of public choice with differing assumptions concerning voters and elections, generally ignores situations whereby leaders cannot coerce due to lack of formal institutions. Our theory makes an attempt to fill this gap by analyzing leadership formation under such conditions.

The second line of research, pioneered by Rotemberg and Saloner (1993) and Hermalin (1998), views leadership as a device to create incentives in organizations under conditions of asymmetric information and incomplete contracting.[9,10] This approach provides new insights into leader-organization interactions but generally ignores questions of how leadership is formed and why some rather than other individuals become leaders. Our paper addresses these questions by combining elements from both electoral competition theory and incentive theory. Specifically, we analyze the social processes leading to leadership formation in conjunction with those capacities enabling leaders to create incentives for resource contributions among society members.

[9]Rotemberg and Saloner (1993) show that leaders who empathize with their employees adopt a participatory leadership style that can improve profitability if the firm can potentially exploit relatively many innovative ideas. Their model is based on the assumption that leaders' empathy with employees is common knowledge among an organization's members and therefore can serve as a commitment device.

[10] Hermalin (1998) emphasizes the idea that leaders can convince followers that the information provided is indeed true by setting an example (followers become convinced that the leader considers the respective activity to be truly worthwhile, because he himself exerting high level of efforts).

3. The Basic Model of Leadership with Perfect Information.

Consider a society inhabited by a finite number of individuals of different types, labeled $i \in N = \{1,...,n\}$. Each member $i \in N$ is endowed by a power index θ_i that represents his relative power among the other members of society.[11] There are two interrelated types of goods: a menu of policies Q and a quantity measure g. A policy $q \in Q$ represents a direction (or an ideological orientation) while the quantity measure g represents magnitude, that is, to what extent policy q is implemented.[12] We assume that in a certain society, only one policy $q \in Q$ can be implemented at a time and that society members have different policy preferences. For the sake of simplicity, we also assume that Q is an open interval in $\Re$ (alternatively, $Q = \Re$). Society thus faces a decision problem when choosing policy q out of menu Q types of policies.

Since both q and g are non-excludable and non-rival goods (once chosen and implemented, q and g are consumed by all society members whether willingly or upon constraint), we term the quantity measure g hereafter as a "directed" public good (or for short - a public good).

3.1 Preferences

Each individual gains utility (or disutility) from the policy q chosen by the leader, as well as from the quantity measure (the public good) g that his society provides. Individuals may also bear some non-monetary costs $c(e)$ if they decide to

[11]In the usual context of electoral competition, all individuals have identical index power. However, as this paper explores leadership in a broader context where societies do not necessarily have formal institutions, the index power θ_i may represent different categories of power in different societies. These categories can include: relative physical strength, relative wealth and, in tribal societies, family size.

[12]In the context of education policy, q can represent educational contents (curriculum), while g can represent educational output (measured in students' achievements). In uninstitutionalized societies, such as communities of ethnic minorities, a policy $q \in Q$ can represent direction (for instance whether the ethnic minority renounces its claim for independence, makes diplomatic efforts to gain autonomy, uses peaceful protests to impose their wishes on the society, or manages guerrilla fighting against the ruler to gain independence) while g represents the total output in achieving any one of these goals.

exert some effort e in producing the public good g. Formally, the utility function of each individual $i \in N$ is given by:[13]

$$u_i = v_i(q) \cdot g - c(e_i) \tag{1}$$

We assume that the non-monetary effort cost function $c : \Re_+ \to \Re_+$ is continuously differentiable three times, monotonically increasing and convex (i.e., for any e>0, $c'(e) > 0$ and $c''(e) > 0$). To avoid corner solutions and cases of multiple Nash equilibria, we also assume that $c(0) = 0$ and that $c'(0) = 0$. The function $v_i(q)$ represents individual i's private attitudes toward alternative policies. For analytical purposes we assume that $v_i(q)$ is a twice continuously differentiable function, with a nonempty support and a single peak. We refer to $v_i(q)$ as the policy value function of individual i. Whenever $v_i(q) > 0$, individual i perceives policy q as an economic good, whereas for any policy q with $v_i(q) < 0$, individual i perceives policy q as undesirable or an "economic bad".[14]

To avoid situations where leaders choose self-damaging policies (such as $v_j(q) < 0$), we assume that whenever individual j is a leader and $v_j(q) < 0$, individual j's utility is $u_j(q) = -\infty$.[15] We also assume that in the default case, where no leader is chosen to lead, the society is dismantled and each individual is left with zero utility.

[13]This specific formulation of the utility function implies that individuals have no utility rent from being leaders (no leadership ego rent). Adding the ego rent assumption (that individuals have extra benefit from being leaders) would not change the basic qualitative results of the model.

[14] The utility function above implies that direction and magnitude interact in a complementary fashion. Specifically, the more individual i favors a policy q, the more he derives benefit from the implementation of q (and therefore the higher are the efforts he is willing to exert in the production of g). This assumption is compatible with the interrelations between q and g assumed above. This assumption is also consistent with theoretical and empirical studies in organizational behavior and applied psychology that investigated individuals' work motivation in the context of social identification and self categorization (see Van Knippenberg (2000) and Haslam, S. et al. (2000)).

[15] The least preferable position for any individual is to lead the society with a policy that he considers bad.

3.2 Production

Production of the public good g requires two inputs: leadership ability and communal effort. We assume that each individual $i \in N$ is endowed with innate leadership ability $K(i) \in R_{++,}$ which he provides once he is chosen to be the leader. The total output of public good g is given by:[16]

$$g = K(j) \cdot \varphi(E) \tag{2}$$

where E is the total effort exerted by participants in the production process and $\varphi(\bullet)$ is a monotonically increasing weakly concave function such that $\varphi(0) = 0$, $\varphi'(\bullet) > 0$ and $\varphi''(\bullet) \leq 0$.

3.3 The Society

The foundation of a certain society is common knowledge among its members, fully described by the five-tuple $\left(N, \langle \theta_i \rangle_{i \in N}, \langle v_i(q) \rangle_{i \in N}, \langle K(i) \rangle_{i \in N}, \varphi\right)$.

3.4 The Mechanism

The model's mechanism parallels that of Besley and Coate' model (1997) excluding one fundamental assumption. We add an additional stage to their political process, in which, after the leader is chosen and makes his political choice, society members voluntarily exert effort to manufacture the public good g. This assumption implies that every potential leader $j \in N$ knows that the level of social effort he can recruit depends not only on his leadership ability $K(j)$ but also on his policy choice q.

[16] The ability of leaders to transform effort into some public good may also depend on their policy choices. This means that the ability of leaders to implement a policy might depend on the policy itself, that is $K = K(j, q)$. In our model however, we ignore this possibility for the reason that such a relationship does not provide any significant insights beyond the tradeoffs between effort, ability, and policy that we already examine through the avenue of individuals' preferences.

Under such conditions, a potential leader *j* may choose a policy *q* which differs from his original bliss point ($\overline{q}_j = \arg\max v_j(q)$) so as to elicit a higher level of effort.

A leader is chosen in the following manner. Each individual can costlessly declare his desire to be a leader. Every member of society subsequently gives his support to one candidate at most. The candidate who receives the most powerful set of supporters (weighted by the power indices of each society member) is chosen to lead the society. In the case where more than one candidate receives maximum support, the leader is chosen according to a uniform lottery on the set of winning candidates. Then, a chosen leader declares a policy and at the final stage, society members voluntarily chose a level of effort to provide that leader with. To summarize, the political process has four stages: At stage 1, members declare their desire to lead. At stage 2, society members promise support to potential leaders. At stage 3, the chosen leader makes a policy choice *q*. At the final stage, society members voluntarily exert effort to manufacture the public good. The model is solved backwards.

3.4.1 Optimal Effort Decisions given Leadership and Policy

Suppose that some individual $j \in N$ with leadership ability *K*(*j*) has been chosen to lead, and suppose also that the leader's policy choice is $q \in Q$. Under such conditions, the optimal effort e_i of any individual $i \in N$ is the best response to the level of aggregate effort E_{-i} exerted by other community members, and is given by:

$$e_i = \arg\max_{0 \le e_i} [v_i(q) \underbrace{K(j)\varphi(E_{-i} + e_i)}_{g} - c(e_i)] \qquad (3)$$

Individual *i* decides how much effort to exert under one of two possible conditions: If the leader's policy choice *q* is an "economic bad" in the viewpoint of individual *i* (i.e.,

$v_i(q) \le 0$), then individual i will exert zero effort (e_i=0). Otherwise, if $v_i(q) > 0$, a first-order condition implies that:

$$v_i(q)K(j)\varphi'(E) = c'(e_i) \tag{4}$$

Lemma 1: *The analytical assumptions for the cost function c(e) and the function φ(E) ensure that an effort's Nash equilibrium profile indeed exists and is unique. The Nash equilibrium profile of efforts* $\left(e_1^j * (q),...,e_n^j * (q)\right)$ *is given by:*

$$e_i^j * (q) = \begin{cases} c'^{-1}\left[v_i(q)K(j)\varphi'(E)\right] & if \quad v_i(q) > 0 \\ \\ 0 & Otherwise \end{cases}, \tag{5}$$

Where equation (5) is an implicit function of player i's best response with respect to $E = \sum_{i=1}^{n} e_i$.

Proof: See Appendix.

The following lemma claims that the aggregate effort is a non-decreasing function of the leader's ability to lead.

Lemma 2: *The analytical assumptions for the cost function c(e) and the function φ(E) ensure that the total effort E* expended in Nash equilibrium, is a non-decreasing function of the leader's ability K(j) (i.e.* $dE^* / dK(j) \ge 0$ *).*

Proof: See Appendix.

We denote by $E^j * (q) = \sum_{i=1}^{n} e_i^j * (q)$ the aggregate effort in Nash equilibrium under a given leader *j* with a policy choice *q*. We also denote by $u_i^j(q)$ the indirect utility of individual $i \in N$ given that individual *j* is the leader and that *j*'s chosen policy is *q*.

Thus:

$$u_i^j(q) = v_i(q)K(j)\varphi(E^j * (q)) - c(e_i^j * (q)) \tag{6}$$

3.4.2 The Leader's Policy Choice

Whenever some individual $j \in N$ is chosen to be a leader, his policy choice problem is to maximize his indirect utility function $u_i^j(q)$ (as given in equation (6)). Thus:

$$q^* = \arg\max_{q \in Q} \left[v_j(q) K(j) \varphi(E^j{}^*(q)) - c(e_j^j{}^*(q)) \right] \tag{7}$$

The following proposition characterizes the solution to this problem.

Proposition 1: *Suppose that individuals' idiosyncratic policy value functions $v_i = v_i(q)$ are continuously twice-differentiable and single-peaked. Suppose also that some individual j was chosen to lead the society. A necessary condition for q* to be the leader's optimal policy choice is that:*

either (I) $v_j(q^*) > 0$ *and* $-\mathbf{e}_{v_j,q} = \mathbf{e}_{g,E} \cdot \hat{\mathbf{e}}_{E_{-j},q}$ [17]

or (II) $v_j(q^*) = 0$.

Proof: See Appendix.

Condition (I) in Proposition 1 implies that whenever $v_j(q) > 0$, the chosen leader is facing a tradeoff between the policies he can implement and the aggregate effort he can elicit from society members. In terms of elasticities, condition (I) states that as long as the percentage increment in social output that emerges from positive changes in aggregate effort exceeds the percentage drop in the leader's idiosyncratic policy value, the leader is better off by compromising his favorite policies. Since both followers and potential leaders are aware of this tradeoff between policy choice and aggregate effort, candidates can credibly precommit themselves to compromise on favorite policies.

[17] The letter **e** indicates elasticity. Namely:

$$\mathbf{e}_{v_j,q} = \frac{(dv_j/dq)}{v_j(q)} \cdot q \quad , \quad \mathbf{e}_{g,E} = \frac{(d\varphi(E)/dE)}{\varphi(E)} \cdot E \quad \text{and} \quad \hat{\mathbf{e}}_{E_{-j},q} = \frac{(dE_{-j}^j/dq)}{E^j{}^*} \cdot q\,.$$

To demonstrate the significance of the result in proposition 1, let us compare it with a leader's policy choice in an institutionalized society. In institutionalized societies, leaders have access to authoritative institutions that presumably enable them to coerce each society member into exerting effort up until a level $\overline{e}$.[18] Under such conditions the leader's optimal decision is to implement a policy that maximizes his own idiosyncratic value function (i.e. $\overline{q}_j = \arg\max(v_j(q))$) and to coerce each citizen into exerting a level of effort $\overline{e}$. *Note also that candidates cannot make any credible promise to implement other combinations of effort and policy even if such combinations are more appealing to society member, since citizens know that the chosen leader is better off by breaking his promise when elected.*

The implications of proposition 1 are not limited solely to a leader's policy choice, but reach into the realm of leadership equilibria. In section 4 we demonstrate how the differences in policy choice between institutionalized and uninstitutionalized societies impinge on leadership formation in those societies.

We henceforth denote individual *j*'s optimal policy as a potential leader, by q_j* and by $q* = (q_1*,...,q_n*)$ the vector of q_j^*s.[19]

3.4.3 Choosing a Leader (*Voting*)

Suppose that the set of candidates is $\Im \subset N$. Then, each society member may cast his *support* to any candidate in $\Im$ or to abstain. The term "cast support to candidates" refers mainly to contexts lacking formal elections (uninstitutionalized

[18]For example, we can assume that an institutionalized society is equipped with sufficient monitoring and punitive institutions to enable leaders to monitor individuals' effort and to penalized them when exerting a level of effort less than $\overline{e}$. For the sake of simplicity let assume that the level of effort $\overline{e}$ is sufficiently large such that $e_i* < \overline{e}$ for all $i \in N$.

[19]Due to the assumptions of common knowledge and perfect information, the vector $q* = (q_1*,...,q_n*)$ is correctly calculated by all society members.

societies), however, for the sake of convenience, we will use the terms "support" and "vote" interchangeably. Let $\alpha_i \in \Im \cup \{0\}$ denote individual i's voting decision ($\alpha_i = j$ denotes that individual i supports candidate $j \in \Im$ and $\alpha_i = 0$ denotes that individual i abstains). We denote the voting vector by $\alpha = (\alpha_1, ..., \alpha_n)$ and the set of winning candidates by $W(\Im, \alpha)$, where:

$$W(\Im, \alpha) = \left\{ \forall\, l \in \Im : \sum_{\{i \in N : \alpha_i = l\}} \theta_i \geq \sum_{\{j \in N : \alpha_i = k\}} \theta_j \quad \forall k \neq j \text{ where } \quad k \in \Im \right\} \tag{8}$$

In the default case, where the set of winning candidates is empty (such that $W(\Im, \alpha) = \phi$), the society dismantles and each individual is left with zero utility. If $W(\Im, \alpha) = \{j\}$ for some $j \in \Im$, then j is automatically chosen to lead. If $\#W(\Im, \alpha) > 1$ then, a leader is chosen by a uniformly distributed lottery that assigns a probability of winning $P^l(\Im, \alpha) = \dfrac{1}{\#W(\Im, \alpha)}$ to each candidate $l \in W(\Im, \alpha)$.

Society members correctly anticipate the policies that would be chosen by potential leaders (see equation (7) and proposition 1) and vote strategically. A voting equilibrium is a vector, $(\alpha_1 *, ..., \alpha_n *)$, such that for each individual i,

(I) $\alpha_i *$ is the best response to $\alpha_{-i} *$, namely:

$$\alpha_i * \in \arg\max \left\{ \sum_{l \in \Im} P^l\big(\Im, (\alpha_i *, \alpha_{-i} *)\big) u_i^l(q_l^*) : \alpha_i \in \Im \cup \{0\} \right\}, \tag{9}$$

(II) $\alpha_i *$ is not a weakly dominated voting strategy. [20]

3.4.4 Declaring Candidacy (*Entry*)

Each society member must decide whether to declare his or her candidacy. Since an individual's benefit from entering the race depends on the entire candidate

[20] It is easy to verify that such a voting equilibrium indeed exists for any nonempty candidate set. In elections with more than two candidates, there will typically be multiple voting equilibria.

set, the decision whether to declare candidacy is strategic. Let $s=(s^1,...,s^n)$ denote the pure strategic entry profile, where $s^i \in \{0,1\}$ and s^i=1 denotes entry. Given the strategic entry profile s, the set of candidates is $\Im(s)=\{\forall i \in N : s^i = 1\}$. Each society member's expected utility depends on individuals' voting behavior, which is given by a function $\alpha(\Im)$ that assigns a voting vector to each candidate configuration. Thus, individual i's expected payoff from a pure strategic profile s is:[21]

$$U^i(s,\alpha(\Im(s))) = \sum_{l\in\Im(s)} P^l\big(\Im(s),\alpha(\Im(s)\big)\cdot u_i^l(q_l^*) \tag{10}$$

Let $\alpha(\bullet)$ be a function that assigns a voting vector to each candidate configuration. An equilibrium of pure strategies of the entry stage (if it exists) is a profile $s=(s^1,...,s^n)$ such that s^i is the best response against s^{-i} for each $i \in N$. Of course, equilibrium in pure strategies does not always exist. We therefore permit society members to mix entry strategies such that each society member i may choose an entry probability $\chi_i \in [0,1]$. Given the function $\alpha(\bullet)$, an individual's expected payoff from a profile of mixed strategies $\mathrm{X}=(\chi_1,...,\chi_n)$ is given by:

$$U^i(X,\alpha(\cdot)) = \sum_{s\in 2^n}\left\{\prod_{k=1}^{n}\left[\chi_k^{s^k}(1-\chi_k)^{(1-s^k)}\right]U^i(s,\alpha(\cdot))\right\} \tag{11}$$

An equilibrium of mixed strategies is a profile $\mathrm{X}=(\chi_1,...,\chi_n)$ such that χ^j is the best response to χ^{--i} for each member i.

[21] $P^l(\Im(s),\alpha(\Im(s))$ is the winning probability of candidate $l\in\Im$. In the case of abstention $u_i^0=0$.

3.4.5 Equilibrium

An equilibrium of the above leadership game is a couple $\langle X^*, \alpha^* \rangle$, such that X^* is the pure or mixed equilibrium of the entry game given the voting behavior $\alpha^*(\bullet)$, where $\alpha^*(\Im)$ is a voting equilibrium for all non-empty candidate sets $\Im$.[22]

4. An Expository Example

To demonstrate how leadership in uninstitutionalized societies differs from that prevailing in institutionalized ones, we compare between the above leadership model and a similar one in which leaders have the power to coerce. To highlight the effects of interest, several simplifying assumptions are used.

Consider a community $N = \{1,....,n\}$ that consists of two disjoint subsets N_1 and N_2, with $N = N_1 \cup N_2$ and $N_1 \cap N_2 = \phi$ such that:

***Assumption* 1:** All individuals in each subset have identical policy preferences but individuals from different subsets exhibit preference heterogeneity. This specific characterization of homogeneity within groups and heterogeneity between groups enable us to aggregate individuals' decisions in each group and therefore to illustrate the interactions between effort and policy choice through the groups' size (we henceforth denote the policy value functions from subsets N_1 and N_2 by $v_1(q)$ and $v_2(q)$ respectively, see figure 1 below).

***Assumption* 2:** For each society member $i \in N$, the value function $v_i(q)$ is symmetric around its single peak, strictly concave, and all the policy value functions $v_i(q)$s have an identical shape (i.e., they can be shifted into each other).[23]

[22] The existence of such an equilibrium follows immediately from lemma 1 and proposition 1.

[23] Specifically, there exists a strictly concave and continuously twice differentiable function $v(q)$such that:

***Assumption* 3:** Each society member has a quadratic cost function $c(e) = c \cdot e^2$ (where c>0 is a constant parameter), and the production function (not factored by leadership input) is $\varphi(E) = aE$ where a>0 is a constant parameter.[24]

Suppose that although individuals from different subsets exhibit preference heterogeneity, they can still agree on a wide range of policies. Specifically, let us assume that,

***Assumption* 4:** as visualized in figure 1, the supports of the two value functions $v_1(q)$ and $v_2(q)$ contain the bliss points of all group members.[25]

[Insert figure 1 here]

We now characterize equilibria under two different frameworks: one in which leaders cannot coerce society members into exerting effort (the uninstitutionalized society), and the other in which elected leaders can coerce citizens into exerting effort up until a level $\bar{e}$ (the institutionalized society). To ease the analysis we make an additional simplifying assumption:

***Assumption* 5:** In each subset there is only one individual with the highest leadership ability. We denote by $j(1)$ and $j(2)$ the individuals with the highest leadership ability in subsets N_1 and N_2, respectively.[26]

We start our analysis with a useful Lemma.

Lemma 3: *In both types of societies (institutionalized as well as uninstitutionalized), either j(1) or j(2) (or both) declare their candidacy, and one of them is chosen to lead.*

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a) $v(q)$ exhibits symmetry around zero (i.e., $v(q)=v(-q)$).
b) $v(q)$ has a positive single peak at zero (i.e., for all $q'<q''<0$ and for all $0>q''>q' \Rightarrow v(q')<v(q'')<v(0)$).
c) All $v_i(q)$s can be translated (shifted) into the function $v(q)$ (such that $v_i(q) = v(q - \bar{q}_i)$).

[24] This choice of functions is consistent with the model above and simplifies our analysis considerably.

[25] i.e., $\bar{q}_1, \bar{q}_2 \in supp(v_i(q)) \cap supp(v_i(q))$ (where $supp(v_i(q))=\{\forall q \in Q: v_i(q) \geq 0\}$).

[26] Though this assumption is not crucial for the results, it simplifies the exposition considerably.

Proof: $j(1)$ and $j(2)$ are the most competent individuals in subsets N_1 and N_2, respectively. Since preferences are homogenous within groups, all members of N_1 prefer $j(1)$ over any other potential candidate from N_1, and likewise, members of N_2 prefer $j(2)$ over any other potential candidate from N_2.[27] Note also that for both individuals $j(1)$ and $j(2)$ the "enter the race" strategy is weakly dominant and strictly dominant for at least one of them. Hence, either $j(1)$ or $j(2)$ (or both) enter the race and one of them is chosen to lead.□

Lemma 3 implies that in both institutionalized and uninstitutionalized societies, there exist only three types of pure equilibria:

(I) Equilibrium $E(1,1)$, in which members of N_1 as well as N_2 support $j(1)$,

(II) Equilibrium $E(2,2)$, in which members of subset N_1 and N_2 support $j(2)$, and

(III) Equilibrium $E(1,2)$ in which members of N_1 support $j(1)$ and members of N_2 support $j(2)$.[28]

In what follows, we show how equilibrium in uninstitutionalized societies diverges from those in institutionalized ones.

Lemma 4: *In an uninstitutionalized community $N = \{1,....,n\}$ that is characterized by the aforementioned assumptions, the optimal policy of leader $j(1)$ from subset N_1 (a leader $j(2)$ from N_2) is always bounded in the open interval $(\bar{q}_1, \tilde{q})$ (in the open interval $(\tilde{q}, \bar{q}_2)$) (where $\tilde{q} = (\bar{q}_1 + \bar{q}_2)/2$). The larger the relative size of subset N_1 (the relative size of subset N_2), the closer is the choice q^*_1 (q^*_2) to the leader's bliss point $\bar{q}_1$ ($\bar{q}_2$) (see the thick arrows in Figure 2).*

Proof: See Appendix**.**

[Insert figure 2 here]

[27] This holds for both institutionalized and uninstitutionalized societies.

[28] Note that the event $E(2,1)$ (i.e., individuals from group N_1 choose $j(2)$ whereas individuals in N_2 choose $j(1)$) is impossible. It is easy to verify that if individuals in subset N_1 choose $j(2)$, then $j(2)$ is significantly more competent than $j(1)$. Under such conditions, members in N_2 must choose $j(2)$ as well.

Lemma 4 provides an appealing intuition to our analysis. Owning to the homogeneity within groups and heterogeneity between groups that characterize the society, the tradeoff between policy and effort materializes through the relative size of each group. In other words, the larger the leader's group as opposed to the other group is, the higher is the relative level of effort he can elicit from his own group, and therefore the less the leader is ready to compromise his policies. Vice versa, the larger the opposing group is, the higher is the relative level of effort he can elicit from the opposite group and therefore the more ready he is to compromise his policy. For comparison purposes, recall that in institutionalized societies, where leaders can enforce citizens into exerting efforts up until a level $\bar{e}$, a chosen leader j cannot commit to implement any other policy but the one that maximizes his own policy value function $v_j(q)$.[29]

The implication of the tradeoffs between efforts and policy in uninstitutionalized societies is not limited purely to leaders' policy choice, but reaches into the realm of voting decisions and leadership equilibria. In contrast to institutionalized societies, members in uninstitutionalized might be willing to support a candidate not only because he is the most competent or their most favorite, but also, and equally important, because *he has the ability to elicit higher levels of efforts*. Since efforts are closely linked to group size, it follows that in uninstitutionalized societies the relative size of each group is an imperative factor in the members' voting choice.

To demonstrate how the tradeoff between policy and effort affect political equilibrium in uninstitutionalized societies, we identify three channels through which voting (supporting) decisions might impinge on leadership equilibrium: the "preferences gap" effect which motivates each society member to support (between

[29] i.e., $\bar{q} = \arg\max(v_j(q))$ (see the discussion following proposition 1 in section 2).

$j(1)$ and $j(2)$) the most preferred candidate in terms of policy choice; the "leadership gap" effect which motivates society members to support (between $j(1)$ and $j(2)$) the most competent candidate, and the "effort gap" effect which motivates society members to support a candidate who can recruit the highest level of effort. The "preference gap" and the "leadership gap" effects are both invariant to changes in group size, whereas the "effort gap" effect depends on group size considerably. Since the "effort gap" effect exists only in uninstitutionalized societies, it turns out that the relative size of each group is imperative to members' decisions in such societies.

A formal comparative analysis of voting equilibria is now laid out. In institutionalized societies pure voting equilibira are totally invariant to relative group size. Members vote for the candidate of the opposite group only when the "leadership gap" affects them more than the "preference gap". Otherwise, members vote for the candidate of their own group. Thus, a sufficient condition for members of subset N_1 to vote for $j(2)$ is that $\frac{v_1(\overline{q}_1)}{v_1(\overline{q}_2)} < \frac{K(j(2))}{K(j(1))}$; otherwise, members of subset N_1 vote for $j(1)$) (if $\frac{v_2(\overline{q}_1)}{v_2(\overline{q}_2)} < \frac{K(j(2))}{K(j(1))}$).[30]

We now examine how members in uninstitutionalized societies decide whether to support $j(1)$ or $j(2)$. Denote by $\alpha_1 = (\#N_1/\#N)$ the relative size of subset N_1, and by $B(1,\alpha_1)$ and $B(2,\alpha_1)$ the welfare ratios of members in N_1 and N_2 under the leadership of $j(2)$ and $j(1)$, respectively.[31] Equilibrium conditions imply that in

[30] The inequalities above hold when the community N is sufficiently large (the leader's optimal level of effort ($\frac{a}{2c} v_j(\overline{q}_j)K(j)$) relatively to all other society members' effort ($(n-1)\overline{e}$) is negligible).

[31] $B(1,\alpha_1) \overset{def}{=} \frac{u_1^2(\alpha_1)}{u_1^1(\alpha_1)}$ and $B(2,\alpha_1) \overset{def}{=} \frac{u_2^2(\alpha_1)}{u_2^1(\alpha_1)}$ where $u_1^1(\alpha_1)$ and $u_1^2(\alpha_1)$ are the utilities of individuals in N_1 under the leadership of $j(1)$ and $j(2)$, respectively, and $u_2^1(\alpha_1)$ and $u_2^2(\alpha_1)$ are the utilities of individuals in N_2 under the leadership of $j(1)$ and $j(2)$, respectively. It is easy to verify that:

uninstitutionalized societies, members of subset N_1 prefer $j(1)$ if and only if $1 > B(1,\alpha_1)$ and prefer $j(2)$ if and only if $1 < B(1,\alpha_1)$. These inequalities imply that the relative size of each group is an important factor in members' voting decisions. If, for example, the inequality $1 > B(1,\alpha_1)$ holds, then members of N_1 prefer $j(1)$, either because the "preference gap" affects them more than both the "leadership gap" and the "effort gap" or because the "preference gap" and the "leadership gap" are correlated and together outweigh the "effort gap" effect. The following two tables recapitulate the above analysis.

[**Insert Tables 1-a and 1-b here**]

The conditions under which each type of equilibrium occurs in uninstitutionalized society are given in Proposition 2.

Proposition 2:

(A) If j(1) is more competent than j(2) then, regardless of the relative size of group N_1, members of N_1 will always support their candidate j(1) since their "leadership gap" and "preference gap" effects outweigh their "effort-gap" effect.

(B) On the other hand, if j(2)'s leadership ability is higher than that of j(1) such that $1 < \frac{K(j(2))}{K(j(1))} < \frac{\eta^2}{\xi^2}$ (the parameters η and ξ appear in figures 1 and 2) and if (#N_1/#N) is sufficiently large, then members of N_1 prefer j(1)over j(2) (the "leadership gap" affects members of N_1's insufficiently to counterbalance the

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$$B(1,\alpha_1) \overset{def}{=} \frac{u_1^2(\alpha_1)}{u_1^1(\alpha_1)} = \left(\frac{K(j(2))}{K(j(1))}\right)^2 \times \frac{v_1(q_2^*)\left[(\alpha_1 - \frac{1}{2n})v_1(q_2^*) + (1-\alpha_1)v_2(q_2^*)\right]}{v_1(q_1^*)\left[(\alpha_1 - \frac{1}{2n})v_1(q_1^*) + (1-\alpha_1)v_2(q_1^*)\right]}, \quad B(2,\alpha_1) \overset{def}{=} \frac{u_2^2(\alpha_1)}{u_2^1(\alpha_1)} = \left(\frac{K(j(2))}{K(j(1))}\right)^2 \times \frac{v_2(q_2^*)\left[(1-\alpha_1 - \frac{1}{2n})v_2(q_2^*) + \alpha_1 v_1(q_2^*)\right]}{v_2(q_1^*)\left[(1-\alpha_1 - \frac{1}{2n})v_2(q_1^*) + \alpha_1 v_1(q_1^*)\right]}.$$

"leadership gap" and "preference gap" effects). Under this condition an equilibrium of type E(1,2) occurs.

(C) Equilibria of types E(1,1) and E(2,2), in which members of one group support the candidate of the other, occur when the "leadership-gap" affects them more than the "effort gap" and the "preferences gap" (for example, equilibrium of type E(2,2) occurs either when $1 < \frac{\eta^2}{\xi^2} < \frac{K(j(2))}{K(j(1))}$ *or when* $1 < \frac{K(j(2))}{K(j(1))} < \frac{\eta^2}{\xi^2}$ *and (*$\#N_1/\#N$*) is sufficiently small).*

Proof: See Appendix.

The most important implication of Proposition 2 is that, although institutionalized and uninstitutionalized societies might be identical in their characteristics, they can still differ in their political equilibria and leadership choice. Consider institutionalized and uninstitutionalized societies in which ($\#N_1/\#N$) is very large, and $j(1)$ is less competent than $j(2)$ but still $\frac{\eta}{\sigma} < \frac{K(j(2))}{K(j(1))} < \frac{\eta^2}{\xi^2}$. While Proposition 2 implies that the equilibrium in the uninstitutionalized society is of the type E(1,2), the equilibrium in the institutionalized one is of type E(2,2) (see point A in figure 3). Under these conditions, $j(1)$ becomes a leader in an uninstitutionalized society whereas $j(2)$ is elected in the institutionalized one.

[Insert Figure 3 Here]

5. Charisma - a Model of Leadership with Imperfect Information

The terms *leadership* and *charisma*, though contextually related, are not strictly identical. Whereas the notion of *leadership* can be interpreted as an individual's capacity to transform communal resources into some shared goal, the concept of *charisma* is related to an individual's talent to recruit these resources. From an economic perspective, these two notions can be associated with two separate environments: one with perfect information and the other with imperfect information.

In the case of perfect information, leadership and charisma overlap since leaders' abilities are fully observed and therefore in themselves motivate followers to deliver support and effort (see Lemma 2 and Proposition 2 in sections 3 and 4). In the case of imperfect information, however, followers' dedication to leaders cannot be based on their recognition of leaders' actual abilities (these abilities are unobservable) but rather, their recognition of certain observable attributes (such as self-confidence, poise, power, rhetorical skills, etc.). Specifically, if certain observable attributes (with a commonly known distribution) are positively correlated with leadership abilities, then, based on these attributes, society members can presumably make rational decisions on whether to provide potential leaders with support and effort.[32]

In this section we construct a leadership model of asymmetric information precisely following the description in the previous paragraph. We assume that society members cannot observe other persons' leadership abilities but, rather, do observe some personal attributes which are henceforth referred to as "external signals". These external signals are positively correlated with leadership ability and have a commonly

[32] This economic interpretation parallels Weber's definition fairly well. Weber writes: "the term 'charisma' shall be understood to refer to an extraordinarily quality of a person, regardless of whether this quality is actual, alleged, or presumed. 'Charismatic authority,' hence, shall refer to a rule over men, whether predominantly external or predominantly internal, to which the governed submit because of their belief in the extraordinary quality of the specific person" (Weber (1946), p. 295).

known distribution. We show that these external signals can mislead society members to exert more effort than they would have had they observed the leaders' actual ability.

The main result in this section is that in uninstitutionalized societies leaders who are more charismatic than competent (i.e., are endowed with "external signals" that exceed their actual leadership abilities), can achieve more in terms of public good production as well as in social welfare than more competent leaders whose abilities are commonly known. This counterintuitive result follows from the fact that voluntary provision of inputs in the production of public goods creates suboptimal allocation of resources. Paradoxically however, under certain conditions, informational asymmetries may improve this suboptimal allocation by creating situations whereby candidates mislead society members to overvalue them and therefore to exert greater effort than in situations of perfect information. In what follows we set the conditions under which this might happen. We start our analysis with a detailed description of the distribution of abilities among society members as well as the structure of information.

5.1 Abilities, External Signals and the Structure of Information

Assume that before the leadership game is launched, Nature makes two moves. The chronological order of these moves is essentially insignificant, however we present them in a certain order to clarify the exposition.

First move: Each individual $i \in N$ is endowed with a "charisma parameter" a_i that is drawn from a certain probability distribution *P*. The realization of the charisma parameter's vector $(a_1,...,a_n)$ is immediately revealed to all society members and serves as an external signal.

Second move: For each individual $i \in N$, Nature draws an independent, Bernoulli identically distributed lottery T_i such that:

$$T_i = \begin{cases} d & \text{with prob} \quad \Theta \\ 0 & \text{with prob} \quad 1-\Theta \end{cases}$$

where the probability Θ is less than 1/2, and is assumed to be very small, since charisma is a rare quality. Henceforth, we refer to the realization of T_i as "individual *i*'s deception parameter."

After the deception parameters T_is are realized, each individual $i \in N$ is endowed with a leadership ability $K(i) = a_i - T_i$. For the sake of simplicity and to ensure that leadership abilities are positive, we assume that $a_i > d$ for all $i \in N$.

After these two moves take place, each individual $i \in N$ observes his own leadership ability $K(i)$ but cannot observe the leadership abilities of others.

Note that by construction, the *observable* charisma parameters $(a_1,...,a_n)$ and the *unobservable* deception parameters $(T_1,...,T_n)$ uniquely determine the unobservable leadership abilities. Also note that individual *i*'s observable charisma parameter a_i is positively correlated with his unobservable leadership ability $K(i)$. [33]

Before describing the leadership game, three important comments on the structure of information are in order:

[33] The specific assumption that *Ti*s are asymmetric "Bernoulli noise" does not limit the generality of our results although it greatly simplifies the model's exposition. Note that as long as *Ti* and *K*(*i*) are independently distributed, their sum (a_i) is positively correlated with *K*(*i*). Furthermore, the charisma bias, together with the possibility that asymmetric information might Pareto dominate perfect information, can be established by any *Ti* with a symmetric distribution and a zero expectation (for example, *Ti*= {-*d*,0,*d*} where $P(T_i=d)=P(T_i=-d)=\Theta/2$ and $P(T_i=0)=1-\Theta$) where $\Theta<1/2$ and is assumed to be very small.

First: Any outside viewer who observes a given realization of a vector of external signals $(a_1,...,a_n)$ must conclude that:

I) The set of all possible states conditional on $(a_1,...,a_n)$ is:

$$\Omega = \{\omega = (x_1,...,x_n) : x_i \in \{(K(i) = a_i),(K(i) = (a_i - d))\}\}.$$

II) Given the external signal $(a_1,...,a_n)$, the probability measure on Ω is $q(\omega) = p(x_1,...,x_n) = \Theta^B (1-\Theta)^{n-B}$, where B is the number of individuals who received a positive deception parameter d in state ω.

Second: Recall that in any move made by Nature, each individual $i \in N$ observes his own leadership ability $K(i)$ *but not that of the others*. Under such conditions, given the realization of a vector of charisma parameters $(a_1,...,a_n)$, each individual i has:

I) An information function I_i that associates with every state $\overline{\omega} \in \Omega$ a non-empty subset $I_i(\overline{\omega})$ of Ω such that:

$$\forall \overline{\omega} \in \Omega \qquad I_i(\overline{\omega}) = I_i((\overline{x}_1,...,\overline{x}_n)) = \{\forall \omega = (x_1,...,x_n) \in \Omega : x_i = \overline{x}_i\}.$$ [34]

II) A probability measure p_i on Ω such that $p_i(\omega) = q(\omega \mid I_i(\overline{\omega})) = q(\omega \mid \overline{x}_i)$.

Third: The information structure described above can change throughout the leadership game since strategic moves in the entry stage may reveal information to other members. For example, if at the beginning of the game some individual decides to enter the race (declare candidacy), society members could conclude that the sole situation in which such an action would

[34] Note that individual i's information function $I_i(\bullet)$ induces a partition of Ω into two disjoint information subsets:
$\{\forall \omega = (x_1,...,x_n) \in \Omega : x_i = (a_i = K(i))\}$
$\{\forall \omega = (x_1,...,x_n) \in \Omega : x_i = (a_i = K(i) + d)\}$.

be rational is one where that the candidate's charisma parameter equals his leadership ability.

5.2 The Leadership Game with Imperfect Information

In order to provide a tractable framework for our analysis, we assume that all society members have the same policy preferences (i.e., $v(q) = v_1(q) = ... = v_n(q)$).[35] This assumption implies that any winning candidate will choose the policy q^*=argmax$\{v(q)\}$. For the sake of convenience, assume that $max\ v(q)$=1.

Following the realization of Nature's random moves and the allocation of information among society members, the leadership game is now conducted in three sequential stages: At stage 1, members declare their desire to lead (become candidates), at stage 2 society members grant support to potential leaders and at stage 3 (after the leader is elected), society members voluntarily exert effort to produce a public good.

The model is solved backwards.

5.2.1 Optimum Effort Decisions given Leadership

Suppose that some individual $j \in N$ with an external signal (charisma parameter) a_j and leadership ability $K(j)$ (such that $K(j) = a_j - T_j$) is chosen to lead a society. We must consider two possibilities about the information individuals hold. One is that information about j's leadership ability was not revealed throughout the previous stages, and therefore other members do not know j's leadership ability $K(j)$.

35 Maintaining the assumption that individuals differ in their political preferences creates a strategic dependence between the leader's political choice and the information followers have in the next stage. This strategic dependence may complicate the model while adding very little to our understanding of the charisma bias and its implications.

The other possibility is that strategic moves in previous stages revealed *j*'s leadership ability *K*(*j*).[36]

The case where individuals in $N \setminus \{j\}$ know *j*'s leadership ability was already solved in Lemma 1 (see section 3). It remains to analyze the case where individuals in $N \setminus \{j\}$ do not know *j*'s leadership ability, but observe *j*'s external signal a_j. Under this condition, *j*'s leadership ability $K(j)$ is perceived by individuals in $N \setminus \{j\}$ as a random variable, whereby $K(j) = a_j$ with probability 1-Θ and $K(j) = a_j - d$ with probability Θ. Each individual's objective is to maximize his expected utility function $\mathscr{E}^i\left(u_i^j \mid a_j\right)$, conditional on the leader's observable parameter a_j.

Let e_i and $E_{-\{i,j\}}$ denote the effort that individual $i \in N$ exerts, and the total effort of society members (excluding individual *i* and the leader *j*), respectively. If some individual *i* in $N \setminus \{j\}$ is unaware of *j*'s leadership ability, he calculates his best response by maximizing his expected utility u_i^j given $E_{-\{i,j\}}$ and given that the leader's effort is conditional on his own leadership ability, $e_j[K(j)]$. Individual *i* therefore solves the following optimization problem:

$$e_i = \arg\max_{e_i > 0} \mathscr{E}^i\left(u_i^j\left(e_j[K(j)] + E_{-\{i,j\}} + e_i\right) \mid a_j\right) \qquad (3')$$

Substituting the model parameters and calculating the expected utility provides:

$$e_i = \arg\max_{e_i > 0} \begin{bmatrix} (1-\Theta) \cdot a_j \cdot \varphi\left(E_{-\{i,j\}} + e_j[K(j) = a_j] + e_i\right) \\ + \Theta \cdot (a_j - d) \cdot \varphi\left(E_{-\{i,j\}} + e_j[K(j) = a_j - d] + e_i\right) - c(e_i) \end{bmatrix}$$

where $e_j[K(j) = a_j]$ is the leader's effort if his leadership ability is $K(j) = a_j$, and $e_j[K(j) = a_j - d]$ if his leadership ability is $K(j) = a_j - d$.

[36] It is commonly known that all individuals in $N \setminus \{j\}$ have the same information about *j*, *at the onset and throughout the game*. Furthermore, as individual *j* knows his own actions and their implications for other members' information, he must know what other members know about him (and of course what all other members know that he knows).

The first order condition of this problem is given by:

$$c'(e_i) = \begin{bmatrix} (1-\Theta)\cdot a_j \cdot \varphi'\left(E_{-\{i,j\}} + e_j[K(j)=a_j] + e_i\right) \\ +\Theta\cdot(a_j - d)\cdot \varphi'\left(E_{-\{i,j\}} + e_j[K(j)=a_j - d] + e_i\right) \end{bmatrix} \quad (4')$$

In Nash equilibrium, each individual i's optimal effort (where $i \in N \setminus \{j\}$) is:

$$e_i = c'^{-1}\begin{bmatrix} (1-\Theta)\cdot a_j \cdot \varphi'\left(E_{-\{i,j\}} + e_j[K(j)=a_j] + e_i\right) \\ +\Theta\cdot(a_j - d)\cdot \varphi'\left(E_{-\{i,j\}} + e_j[K(j)=a_j - d] + e_i\right) \end{bmatrix} \quad (5')$$

Leader j calculates his optimal effort knowing that the remaining society members are unaware of his leadership ability (although he himself does know it). Hence, leader j solves the optimization problem:

$$e_j = \arg\max_{e_i > 0}\left\lfloor K(j)\cdot\varphi(E_{-j} + e_j) - c(e_j)\right\rfloor \quad (3'')$$

Lemma 5: *There exists a unique Nash equilibrium profile of efforts such that all non-leader individuals exert the same level of effort. The level of effort as well as the ex-ante utility function of all individuals (including that of the leader) increases with a_j.*

Proof: See the Appendix

5.2.2 Choosing a Leader (*Voting*)

Suppose that the set of candidates is $\Im \subset N$. Each individual may cast his support to any candidate in $\Im$. Note that due to our assumption that all individuals have the same policy preferences, the abstention alternative is strategically dominated by all other voting alternatives and therefore is no longer relevant. We denote by α_i the voting decision of individual i, and the voting vector by $\alpha = (\alpha_1, ..., \alpha_n)$. The entire set of candidates who receive the majority of votes weighted by their index power is denoted by $W(\Im, \alpha)$, where:

$$W(\Im,\alpha) = \left\{ \forall\, l \in \Im : \sum_{\{i\in N:\alpha_i = l\}} \theta_i \geq \sum_{\{j\in N:\alpha_i = k\}} \theta_j \qquad \forall k \neq j \right\} \quad (8')$$

If $W(\Im,\alpha)=\{j\}$ for some $j\in\Im$, then j is automatically chosen to lead. If $\#W(\Im,\alpha)>1$, then a leader is chosen by a uniformly distributed lottery that assigns probability $P^l(\Im,\alpha)=\dfrac{1}{\#W(\Im,\alpha)}$ to each candidate in $W(\Im,\alpha)$.

Denote by $I_i(\Im)$ individual *i*'s information set given that the set of running candidates is $\Im$. Since the result of an individual's actions depends on the actions taken by the rest of society, the decision whether to support a candidate or not is strategic. A supporting equilibrium is thus a vector $(\alpha_1*,\ldots,\alpha_n*)$ such that for each individual *i*, α_i* is the optimal reaction to $\alpha_{-i}*$, specifically:

$$\alpha_i* \in \arg\max\left\{\sum_{l\in\Im} P^l\left(\Im,(\alpha_i*,\alpha_{-i}*)\right)\mathcal{E}^i\left(u_i^l \mid I_i(\Im)\right):\alpha_i\in\Im\right\}\ , \tag{9'}$$

Proposition 3: *The profile of voting strategies* $\alpha*=(\alpha_1*,\ldots,\alpha_n*)$ *where* $\alpha_i*=\arg\max\left\{\mathcal{E}^i(u_i^j \mid I_i(\Im)\right\}_{j\in\Im}$ *for all* $i\in N$ *is a profile of a Nash equilibrium.*

Proof: Note that ex ante, society members have no benefits-producing deviant strategy.□

5.2.3 Declaring Candidacy (*Entry*)

Each society member can decide whether to declare his candidacy. We assume that in the default case, when no community member presents himself as a candidate, the society is dismantled and all community members are left with zero utility.

Due to informational asymmetries, the stage in which individuals decide whether or not to declare candidacy is a Bayesian game. We denote by $s=(s^1,\ldots,s^n)$ the profile of pure entry strategies (where $s^i\in\{0,1\}$) and by

$\Im(s) = \{\forall i \in N : s^i = 1\}$ the set of candidates given $s = (s^1,...,s^n)$. Individual *i*'s utility depends on the entry strategies and the state ω:

$$U^i(s,\alpha(\cdot),\omega) = \sum_{l \in \Im(s)} P^l\left(\Im(s),\alpha(s)\right) \cdot \left(u_i^l \mid \omega\right).$$

In such a Bayesian game, a Nash equilibrium of pure strategies (if it exists) is a function that assigns to each state $\omega \in \Omega$ the profile $s^*(\omega) = (s^1{}^*(\omega),...,s^n{}^*(\omega))$ such that:

i) For any individual $i \in N$, individual *i*'s strategy depends on his information set (i.e., $s^i{}^*(\omega') = s^i{}^*(\omega'')$ for any $\omega',\omega'' \in I_i(\omega)$).

ii) For any individual $i \in N$, the strategy $s^i{}^*(\omega)$ is the best response to $s^{-i}{}^*(\omega)$.

Of course, equilibrium in pure strategies does not always exist. We therefore permit society members to mix entry decision strategies such that each member *i* may choose an entry probability $\chi_i \in [0,1]$. Given the charisma vector $(a_1,...,a_n)$ and given the function α(•) that assigns voting vectors to all candidates' configurations, the expected payoff of individual *i* from a profile of mixed strategies $\mathrm{X} = (\chi_1,...,\chi_n)$ in each state $\omega \in \Omega$ (conditional on $(a_1,...,a_n)$) is given by:

$$U^i(X,\alpha(\cdot),\omega) = \sum_{s \in 2^n}\left\{\prod_{k=1}^{n}\left[\chi_k^{s^k}(1-\chi_k)^{(1-s^k)}\right]U^i(s,\alpha(\cdot),\omega)\right\} \tag{11'}$$

Nash theorems ensure that a (mixed or pure) equilibrium in the entry stage indeed exists.

To concentrate on what we will call the charisma bias and its applications, we characterize only one equilibrium of pure strategies at the entry stage.

Proposition 4: *Let $(a_1,...,a_n)$ be a realization of the charisma parameters and let $\omega \in \Omega$ be a realization of a state (conditional on $(a_1,...,a_n)$). If for some individual $j \in N$ the condition $u_j^j > \mathcal{E}^j\left(u_j^l \mid a_l\right)$ holds for every $l \in N \setminus \{j\}$, then individual j's optimal strategy is to enter the race. If, in addition, the inequality $\mathcal{E}^m\left(u_m^j \mid a_j\right) > u_m^h$ holds for any $h \in N \setminus \{j\}$ and $m \in N$, when either $K(h) = a_h$ or $K(h) = a_h - d$, then individual j is chosen to lead.*

Proof: See Appendix.

5.3 Charisma Bias

We now demonstrate the charisma bias phenomenon. We also show that under certain conditions, the charisma bias can be socially desirable. The detailed assumptions of this scenario whereby less competent but more charismatic leaders can achieve more in terms of social goals and welfare than competent but non-charismatic leaders follow.

Consider a society $N = \{1,...,n\}$. For the sake of simplicity, assume that each society member $i \in N$ has a quadratic effort cost function $c(e) = ce^2$, and that the production function is linear and given by $\varphi(E) = aE$. Let us also assume that before the society conducts a leadership game, Nature draws a vector of charisma parameters $(a_1,...,a_n)$ and a state $\omega \in \Omega$ (conditional on $(a_1,...,a_n)$) such that $1 < d < {}^{a_l}\!/_2$ for every $l \in N$. These assumptions yield very tractable solutions to the optimal effort problem of leaders as well as followers (see Lemma 6 in the appendix).

The following proposition demonstrates the charisma bias.

Proposition 5: *If in a society N the realization of the charisma vector* $(a_1,...,a_n)$ *and the state* $\omega \in \Omega$ *(conditional on* $(a_1,...,a_n)$*) are such that two individuals* $l, j \in N$ *satisfy the following conditions:*

i) *All individuals know that individuals l,j have the greatest leadership capacity (i.e., for any* $i \in N \setminus \{j,l\}$, $a_l, a_j > a_i + d$ *).*

ii) *Individual l is more competent than j but individual j has a higher charisma parameter such that* $a_j > a_l$, $K(j) < K(l)$ *and*

$$K(j) < a_l = K(l) < K(j) + \Theta d < K(j) + d = a_j,$$

then there exists a unique equilibrium for the leadership game in which individual j (the more charismatic but less competent leader) is chosen to lead.

Proof: See the Appendix.

We now set the conditions under which replacing a competent leader with a less competent but more charismatic leader may improve social welfare.

Consider the same society $N = \{1,...,n\}$ as described above, which has at least four members. For comparative purposes, assume that the leadership game is played twice and that the realization of the charisma vector $(a_1,...,a_n)$ and the state $\omega \in \Omega$ (conditional on $(a_1,...,a_n)$) are identical in both games for all individuals excluding individual *j*. Assume also that in the first game, individual *j* is endowed with leadership ability $\hat{K}(j) = \hat{a}_j$, whereas in the second game, individual *j* is less competent but more charismatic. Specifically, *j*'s leadership capacity and charisma parameter are replaced in the second game such that the *j*'s leadership capacity $K(j)$ is less than $\hat{K}(j)$ (his capacity in the first game) although his new charisma parameter a_j is higher now than in the first game (i.e., $a_j = K(j) + d > \hat{K}(j) = \hat{a}_j$). The next proposition sets down the conditions under which the equilibrium in the second game Pareto dominates the equilibrium in the first game. For the sake of robustness, we assume that *j*'s leadership capacity in the first game $\hat{K}(j)$ is observable by all members.[37]

Proposition 6: *If a society* $N = \{1,...,n\}$ *has at least four members, and if the realization of the charisma vector* $(a_1,...,a_n)$ *as well as the state* $\omega \in \Omega$ *(conditional on* $(a_1,...,a_n)$ *) are such that some individual j has a leadership capacity* $\hat{K}(j) = \hat{a}_j$ *whereby* $\hat{K}(j) > a_i + d$ *for all* $i \in N \setminus \{j\}$, *then, even if* $\hat{K}(j)$ *is observable by all society members, there exists some* $0 < z^* < 1$ *such that diminishing j's leadership ability by z*d (i.e.,* $K(j) = \hat{K}(j) - z^* d$ *) and endowing individual j with a deception parameter* $T_j = d$ *(such that his new charisma parameter is* $a_j = K(j) + d = \hat{K}(j) + (1 - z^*)d > \hat{a}_j$*) will lead to a higher production of the public good as well as welfare improvement for all society members.*

Proof: See Appendix.

6. Concluding Remarks

This paper has analyzed the process of leadership formation in uninstitutionalized societies whereby leaders do not have enforceable means to collect resources (effort) from society members. The fundamental characteristic of such uninstitutionalized societies is that leadership capacities (the ability of leaders to transform individual resources into social goals) as well as leaders' policy preferences are salient primarily

[37] This assumption only reinforces the result. Note that if in the first game (where $\hat{a}_j = \hat{K}(j)$), society members know that *j*'s leadership ability is $\hat{K}(j)$, then they exert more effort and gain higher utility than when they do not know whether $\hat{K}(j) = \hat{a}_j - d$ or $\hat{K}(j) = \hat{a}_j$.

due to their effect on followers' incentives to exert efforts. This characteristic has two important implications for leadership formation.

The first implication is that due to tradeoffs between policy, effort and leadership capacity that emerge in uninstitutionalized societies but are absent in institutionalized ones, policy choice and leadership formation may operate differently in each. Specifically, members in uninstitutionalized societies might be willing to compromise their preferred policies in order to obtain leaders who can recruit a higher level of effort, and leaders in such societies can credibly commit to compromise policies they favor in order to obtain a higher level of collective effort.

The second implication is that false signals about leadership abilities (as well as how society members perceive these signals) may lead to leadership choice that is biased toward more charismatic but less competent leaders. We showed that in uninstitutionalized societies, this charisma bias can be socially desirable.

APPENDIX

Proof of Lemma 1: Assume that some individual j is the leader and that his policy choice is q. Let $M \subset N$ be the set of society members who view policy q as a positive policy (i.e., $M = \{i \in N : v_i(q) > 0\}$). A sufficient condition for a Nash equilibrium to exist is that equation (5) holds for each society member $i \in N$. All society members not in subset M must choose the nil strategy e_i=0. A summation of equation (5) over the subset M of society members concludes in:

$$E = \sum_{i \in M} c'^{-1}\left[v_i(q)K(j)\varphi'(E)\right] \qquad (***)$$

The analytical assumptions on $c(e)$ and $\varphi(E)$ ensure that the summation $\sum_{i \in M} c'^{-1}\left[v_i(q)K(j)\varphi'(E)\right]$ is a continuously positive, monotonically non-increasing function of *E*. Under such conditions, the intermediate value theorem implies that equation (***) holds for a unique $E^* > 0$.

Substituting E^* into equation (5) for each society member $i \in N$ yields a Nash equilibrium profile of efforts $\left(e_1^j*(q),...,e_j^j*(q),...,e_n^j*(q)\right)$, as required.□

Proof of Lemma 2:

Define a function $G\left(E, K(j)\right) = E - \sum_{i \in M} c'^{-1}\left[v_i(q)K(j)\varphi'(E)\right]$. The first order condition (see equation (***) in the proof of Lemma 1) implies that, $G\left(E^*(q), K(j)\right) = 0$.

Applying the implicit function theorem on *G* yields:

$$\frac{dE}{d(K(j))} = -\frac{\dfrac{\partial G\left(E, K(j)\right)}{\partial K(j)}}{\dfrac{\partial G\left(E, K(j)\right)}{\partial E}} = -\left[\frac{-\sum_{i \in M} {c'^{-1}}'\left[v_i(q)K(j)\varphi'(E)\right] \cdot v_i(q)\varphi'(E)}{1 - \sum_{i \in M} {c'^{-1}}'\left[v_i(q)K(j)\varphi'(E)\right] \cdot v_i(q)K(j)\varphi''(E)}\right] \qquad (*)$$

Our analytical assumptions on $\varphi(e)$ and $c(e)$ ensure that the last term of (*) is non-negative, and therefore, $dE^*(q) \big/ dK(j) \geq 0$. □.

Proof of Proposition 1:

Applying the first order condition and the envelope condition on the leader's indirect utility function in a Nash equilibrium (equation (7)) provides:

$$K(j)\left[v_j'(q)\varphi(E^j*(q)) + v_j(q)\varphi'(E^j*(q))\frac{dE^j*}{dq}\right] - c'(e_j^j*(q))\frac{de_j^j*}{dq} = 0$$

This is equivalent to:

$$K(j)\left[v_j'(q)\varphi(E^j*(q)) + v_j(q)\varphi'(E^j*(q))\sum_{\substack{l=1 \\ l \neq j}}^{n}\frac{de_l^j*}{dq}\right] + \left[K(j)v_j(q)\varphi'(E) - c'(e_j^j*(q))\right]\frac{de_j^j*}{dq} = 0$$

But $\left[K(j)v_j(q)\varphi'(E) - c'(e_j^j*(q))\right]\frac{de_j^j*}{dq} = 0$ because either $v_j(q) \geq 0$, and then the leader's optimal effort condition given in equation (4) implies that: $\left[K(j)v_j(q)\varphi'(E) - c'(e_j^j * (q))\right] = 0$, or $v_j(q) < 0$ and then $\frac{de_j^j *}{dq} = 0$.

Hence, since $K(j)\left[v_j'(q)\varphi(E^j * (q)) + v_j(q)\varphi'(E^j * (q))\sum_{\substack{l=1 \\ l \neq j}}^{n} \frac{de_l^j *}{dq}\right] = 0$ and $K(j)>0$, we

find that $\left[v_j'(q)\varphi(E^j * (q)) + v_j(q)\varphi'(E^j * (q))\sum_{\substack{l=1 \\ l \neq j}}^{n} \frac{de_l^j *}{dq}\right] = 0$.

Manipulation of the last equation leads to $-\frac{v_j'(q)}{v_j(q)} = \frac{\varphi'(E^j * (q))}{\varphi(E^j * (q))} \cdot \sum_{\substack{l=1 \\ l \neq j}}^{n} \frac{de_l^j *}{dq}$, which

implies that $-\mathbf{e}_{v_j, q} = \mathbf{e}_{z_g, E} \cdot \mathbf{e}_{E_{-j}, q}$.

Since the leader's utility equals -∞ at $v_j(q) < 0$, the above condition can hold only when $v_j(q) \geq 0$. Otherwise, $q*$ is such that $v_j(q*) = 0$ □.

Proof of Lemma 4: The lemma claims that each potential leader $j(1)$ in subset N_1 (or each potential leader $j(2)$ in subset N_2) will choose a policy $q_{j(1)}*$ such that $\bar{q}_1 < q_{j(1)}* < \tilde{q}$ (or will choose a policy $q_{j(2)}*$ in $\tilde{q} < q_{j(2)}* < \bar{q}_2$). Furthermore, the optimal policy of $j(1)$ $q_{j(1)}*$ approaches $\bar{q}_1$ when ${}^{n_1}\!/_{n}$ increases (i.e. $\frac{\partial q_{j(1)}*}{\partial (n_1 / n)} < 0$ and $q_{j(1)}* \underset{n_1/n \to 1}{\to} \bar{q}_1$). The optimal policy of j(2) $q_{j(2)}*$ approaches $\bar{q}_2$ when ${}^{n_2}\!/_{n}$ increases (i.e., $\frac{\partial q_{j(2)}*}{\partial (n_2 / n)} > 0$ and $q_{j(2)}* \underset{n_2/n \to 1}{\to} \bar{q}_2$).

In order to prove this claim we first show that under the assumptions (1)-(5) (in sec 4), there exists only one solution to the leaders' policy choice problem. We then characterize this solution. Note that our specification ensures that the utility function of any potential leader j $u_j^j(q) = \frac{a^2}{2c} v_j(q)\big(K(j)\big)^2 \left[\sum_{u\in M} v_u(q) - \frac{1}{2} v_j(q) \right]$ (either $j(1)$ from N_1 or $j(2)$ from N_2) ***has no more than one maximum point*** in the interval between the two peaks $(\bar{q}_1, \bar{q}_2)$.

This is due to the fact that ***in this domain*** ($(\bar{q}_1, \bar{q}_2)$), the utility function is a product of a positive concave function $\left[\sum_{u\in M} v_u(q) - \frac{1}{2} v_j(q) \right]$ and a positive monotonic decreasing or increasing concave function $v_j(q)$. (It is easy to verify that a product of two functions $u(x)=f(x)g(x)$, when $f(x)$ is a general concave positive function and $g(x)$ is a monotonic (increasing or decreasing) positive concave function in an open interval I, has a unique maximum point in I.)

Denote $\alpha_1 = n_1 / n$ and $\alpha_2 = n_2 / n$ and define two functions, $G_1(q,\alpha_1), G_2(q,\alpha_2)$, such that:

$G_1(q,\alpha_1) = n\{v_1'(q)[\alpha_1 v_1(q) + (1-\alpha_1)v_2(q)] + v_1(q)[(\alpha_1 - 1/n)v_1'(q) + (1-\alpha_1)v_2'(q)]\}$ and

$G_2(q,\alpha_2) = n\{v_2'(q)[(1-\alpha_2)v_1(q) + \alpha_2 v_2(q)] + v_2(q)[(\alpha_2 - 1/n)v_2'(q) + (1-\alpha_2)v_1'(q)]\}$.

First- and second-order conditions imply that any potential leader $j(1)$ from subset N_1 will choose a policy $q_{j(1)}*$ such that $G_1(q_{j(1)}*,\alpha_1) = 0$ and $\frac{\partial}{\partial q} G_1(q_{j(1)}*,\alpha_1) < 0$, and that any potential leader $j(2)$ from subset N_2 will choose a policy $q_{j(2)}*$ such that $G_2(q_{j(2)}*,\alpha_2) = 0$ and $\frac{\partial}{\partial q} G_2(q_{j(2)}*,\alpha_2) < 0$.

For any potential leader $j(1)$ from subset N_1,

$G_1(\bar{q}_1,\alpha_1) > 0$ (specifically $G_1(\bar{q}_1,\alpha_1) = (1-\alpha_1)nv_1(\bar{q}_1)v_2'(\bar{q}_1) > 0$),

$G_1(\tilde{q},\alpha_1) < 0$ (specifically $G_1(\tilde{q},\alpha_1) = (2n_1 - 1)v_1(\tilde{q})v_1'(\tilde{q}) < 0$)

Hence, from the intermediate value theorem there exists at least one point q^* in the interval $(\overline{q}_1, \tilde{q})$ such that $G_1(q^*, \alpha_1) = 0$ and $\frac{\partial}{\partial q} G_1(q^*, \alpha_1) < 0$. However, as $u_j^j(q)$ has only one extreme point between the two peaks in interval $(\overline{q}_1, \overline{q}_2)$, this point q^* must be unique.

Hence, for any potential leader $j(1)$ in the subset N_1, the optimal policy $q_{j(i)}*$ must lie in the interval $(\overline{q}_1, \tilde{q})$. The same arguments apply for $G_2(q, \alpha_2)$, which yields that for any potential leader $j(2)$ in the subset N_2, the optimal policy $q_{j(2)}*$ must lie in the interval $(\tilde{q}, \overline{q}_2)$. Applying the implicit function theorem in the relevant domains leads to:

$$\frac{\partial q_1 *}{\partial \alpha_1} = -\frac{n\{v_1'(q_1*)[v_1(q_1*) - v_2(q_1*)] + v_1(q_1*)[v_1'(q_1*) - v_2'(q_1*)]\}}{\partial G_1(q_1*) \big/ \partial q_1} < 0$$

and $$\frac{\partial q_2 *}{\partial \alpha_2} = -\frac{n\{v_2'(q)[v_2(q) - v_1(q)] + v_2(q)[v_2'(q) - v_1'(q)]\}}{\partial G_2(q_2*, \alpha_2) \big/ q_2} > 0.$$

Define:

$$\delta_1(q) = \lim_{\alpha_1 \to 1} G_1(q, \alpha_1) = n(2 - 1/n) v_1(q) v_1'(q)$$

$$\delta_2(q) = \lim_{\alpha_2 \to 1} G_2(q, \alpha_2) = n(2 - 1/n) v_2(q) v_2'(q).$$

As $\delta_1(\overline{q}_1) = 0$ and $\delta_2(\overline{q}_2) = 0$ it follows that

$q_{j(1)} * \underset{n_1/n \to 1}{\to} \overline{q}_1$ and $q_{j(2)} * \underset{n_2/n \to 1}{\to} \overline{q}_2$.□

Proof of Proposition 2:

From Lemma 4, $j(2)$'s optimal policy as a leader always lies in the interval $(\tilde{q}, \overline{q}_2]$ while $j(1)$'s optimal policy as a leader always lies in $[\overline{q}_1, \tilde{q})$. Hence, the event that members of N_1 (including j(1)) vote for $j(2)$ can occur only if $j(2)$ has a higher leadership ability than does $j(1)$. This implies that whenever $K(j(1))>K(j(2))$, members of N_1 will not support j(2).

Now suppose that $K(j(1))<K(j(2))$ such that $1<\frac{K(j(2))}{K(j(1))}<\frac{\eta^2}{\xi^2}$.

Given equilibrium, it follows that individual $j(1)$ will declare his candidacy. However, members of N_1 support $j(1)$ only when the welfare gap between the position when $j(1)$ is leading and when $j(2)$ is leading is more than one. This implies that individuals from N_1 vote for $j(1)$ only if

$$1<\left(\frac{K(j(1))}{K(j(2))}\right)^2\frac{v_1(q_1*)\left[(\alpha_1-\frac{1}{2n})v_1(q_1*)+(1-\alpha_1)v_2(q_1*)\right]}{v_1(q_2*)\left[(\alpha_1-\frac{1}{2n})v_1(q_2*)+(1-\alpha_1)v_2(q_2*)\right]}.$$

Which implies that

$$1<\left(\frac{K(j(2))}{K(j(1))}\right)^2<\frac{v_1(q_1*)\left[(\alpha_1-\frac{1}{2n})v_1(q_1*)+(1-\alpha_1)v_2(q_1*)\right]}{v_1(q_2*)\left[(\alpha_1-\frac{1}{2n})v_1(q_2*)+(1-\alpha_1)v_2(q_2*)\right]}.$$

Denote the left-hand side of the last inequality by

$$W(1,\alpha_1)=\frac{v_1(q_1*)\left[(\alpha_1-\frac{1}{2n})v_1(q_1*)+(1-\alpha_1)v_2(q_1*)\right]}{v_1(q_2*)\left[(\alpha_1-\frac{1}{2n})v_1(q_2*)+(1-\alpha_1)v_2(q_2*)\right]}$$

As $W(1,\alpha_1)$ is a continuous function of α_1, and because $\lim_{\alpha_1\to 1}W(1,\alpha_1)=\frac{\eta^2}{\xi^2}$, there exists a sufficiently small $\varepsilon>0$ and a sufficiently large $0<\hat{\alpha}<1$ such that $1<\left[\frac{K(j(2))}{K(j(1))}\right]^2<\frac{\eta^2}{\xi^2}-\varepsilon<W(1,\alpha_1)<\frac{\eta^2}{\xi^2}$ for all α_1 where, $\hat{\alpha}<\alpha_1<1$.

This proves the argument that whenever $K(j(1))<K(j(2))$ and $1<\frac{K(j(2))}{K(j(1))}<\frac{\eta^2}{\xi^2}$, there exists a threshold ratio $0<\hat{\alpha}<1$ such that for any $n_1/n>\hat{\alpha}$, individual $j(1)$ declares his candidacy and all members of N_1 vote for him.

If, on the other hand, $1 < \frac{\eta^2}{\xi^2} < \frac{K(j(2))}{K(j(1))}$, then $W(1,\alpha_1) < \left[\frac{K(j(2))}{K(j(1))}\right]^2$ and all members of N_1 (including $j(1)$) support $j(2)$. □

Proof of Proposition 3: To prove the existence and uniqueness of the equilibrium, we use the same considerations associated with Lemma 1 in Section 2. The equilibrium here is calculated in two stages. In the first stage, we obtain from equation (5') that:

$$E_{-j}*(a_j) = \sum_{i\in N\setminus\{j\}} c'^{-1}\begin{bmatrix}(1-\Theta)\cdot a_j\cdot\varphi'\left(E_{-j}+e_j[K(j)=a_j]\right)\\ +\Theta\cdot(a_j-d)\cdot\varphi'\left(E_{-j}+e_j[K(j)=a_j-d]\right)\end{bmatrix} \qquad (***')$$

In the second stage, $E_{-j}*(a_j)$ is plugged into equation (3'') by the leader. Note that the non-leader individuals are identical in their target functions and therefore have the same best response. The implicit function theorem (applied on equation (***')) implies that $E_{-j}*(a_j)$ increases with a_j. Appling Lemma 2 to equation (***') completes the proof□.

Proof of Proposition 4: The condition that $u_j^j > \mathscr{E}^j\left(u_j^l \mid a_l\right)$ implies that according to the information available in the entry stage, individual j's utility as a leader is greater than his ex-ante expected utility as a follower. Hence, individual j's strategy "enter the race", is strictly dominant. If, in addition, the inequality $\mathscr{E}^m\left(u_m^j \mid a_j\right) > u_m^h$ holds for any $h \in N\setminus\{j\}$ and any $m \in N$ when either $K(h) = a_h$ or $K(h) = a_h - d$, then all individuals recognize that their ex-ante expected utility is higher under j's leadership than under any other potential leader. Under such conditions, the best strategy of all community members is to support individual j.□

Lemma 6: Assume that $c(e) = c\cdot e^2$ and $\varphi(E) = aE$. If some individual $j \in N$ with leadership capacity $K(j)$ and charisma parameter a_j is chosen to lead, then:

i) the optimal effort of each individual $i \in N\setminus\{j\}$ is $e_i^* = \frac{a}{2c}(a_j - \Theta d)$, *ii)* the leader's optimal effort is $e_j^* = \frac{a}{2c}K(j)$,

iii) the total effort in Nash equilibrium is: $E^* = \frac{a}{2c}\left[(n-1)(a_j - \Theta d) + K(j)\right]$,

iv) the ex-ante utility of each individual $i \in N \setminus \{j\}$ in Nash equilibrium is: $\mathscr{E}\left(u_i^j \mid a_j\right) = \frac{a^2}{2c}\left\{(n-\frac{1}{2})(a_j - \Theta d)^2 + \Theta(1-\Theta)d^2\right\}$,

v) the utility function of the leader *j* depends on his deception parameter T_j, given by:

$$u_j^j = \begin{cases} \frac{a^2}{2c}\left[(n-\frac{1}{2})K(j)^2 + (1-\Theta)(n-1)d \cdot K(j)\right] & T_j = d \\ \frac{a^2}{2c}\left[(n-\frac{1}{2})K(j)^2 - (n-1)\Theta d \cdot K(j)\right] & T_j = 0 \end{cases}$$

Proof: Substituting the cost function $c(e) = c \cdot e^2$ and the production function $\varphi(E) = aE$ in the first-order condition (equations (4') and (3")) yields these results. □

Proof of Proposition 5: We show that conditions (i) and (ii) ensure that Proposition 4 holds. First, due to condition (i), the inequality $u_j^j > \mathscr{E}^j\left(u_j^i \mid a_i\right)$ holds for all $i \in N \setminus \{j,l\}$. We now show that due to condition (ii), this inequality holds for individual *l* as well.

Condition (ii), stating that $K(j) < K(l) < K(j) + \Theta d$, implies that there exists some *z* where $0 < z < \Theta < 1$ such that $K(l) = K(j) + zd$ for individual *l*. Hence, $u_j^j > \mathscr{E}^j\left(u_j^l \mid a_l\right)$ if and only if

$$\frac{a^2}{2c}\left\{(n-\tfrac{1}{2})\left[K(j)^2 + 2K(j)(z-\Theta)d\right] + \left[(n-\tfrac{1}{2})(z-\Theta)^2 + \Theta(1-\Theta)\right]d^2\right\}$$
$$< \frac{a^2}{2c}\left[(n-\tfrac{1}{2})(K(j))^2 + (n-1)(d(1-\Theta))K(j)\right] = u_j^j$$

But as $d<K(j)$ and $n>2$, the last inequality must hold.

Individuals in $N \setminus \{j\}$ (including individual *l*) do not know *j*'s leadership ability. Specifically, they do not know whether $K(j) = a_j$ or $K(j) = a_j - d$. However, they do know that in any case (either when $K(j) = a_j$ or when $K(j) = a_j - d$), the inequality $u_j^j > \mathscr{E}^j(u_j^i \mid a_i)$ holds. They therefore know that individual *j* necessarily enters the race.

We now show that due to Proposition 4, all society members must vote for *j*.

Since the inequality $a_l, a_j > a_i + d$ holds for any $i \in N \setminus \{j, l\}$, it must be that $u_i^j > u_i^i$ for any $i \in N \setminus \{j, l\}$. Furthermore, since $K(j) < a_l = K(l) < K(j) + \Theta d$ for *l* and *j* and since 0 < Θ<1/2, the inequality $\mathscr{E}^l(u_l^j \mid a_j) > u_l^l$ must hold as well. Hence, the conditions of Proposition 4 hold. Therefore, in equilibrium, individual *j* is chosen to lead even though individual *l* is more competent.□

Proof of Proposition 6: First, note that in both cases (before and after changing individual *j*'s endowments), individual *j* is chosen to lead. This is due to the fact that the inequality $\hat{a}_j, a_j > a_i + d$ holds for any $i \in N \setminus \{j\}$, which implies that individual *j*'s superior leadership abilities are commonly known by all members in both games (before and after changing *j*'s endowments).

Denote the utility of all society members, in equilibrium, in the first leadership game by $(\hat{u}_1, ..., \hat{u}_n)$, and the utility of all society members, in equilibrium, in the second leadership game by $(u_1, ..., u_n)$. The necessary and sufficient conditions for the proposition to hold are:

I) $\hat{u}_j^j < u_j^j$

II) $\hat{u}_i^j < u_i^j$ for all $i \in N \setminus \{j\}$.

Note that in the first case, where all society members observe *j*'s leadership capacity $\hat{K}(j)$, the effort exerted by each society member (leader and non-leaders) is given by $e_j{}^* = \frac{a}{2c}\hat{K}(j)$. Under such conditions, total effort is given by $E_j^* = \frac{a}{2c} n\hat{K}(j)$ and each society member (the leader and the non-leaders) has an ex-post utility $\hat{u}_j^j = \hat{u}_i^j = \frac{a^2}{2c}(n-\frac{1}{2})(\hat{K}(j))^2$.

However, in the case where $a_j = K(j) + d$, the effort exerted by all non-leaders is $e_i^* = \frac{a}{2c}(K(j) + d(1-\Theta))$ while the effort exerted by the leader is $e_j^* = \frac{a}{2c}K(j)$. Hence, total effort is given by $E^* = \frac{a}{2c}\left[nK(j) + (n-1)(d(1-\Theta))\right]$, and the ex-post utility of each non-leader i is given by:

$$\begin{aligned} u_i^j &= K(j)aE^* - ce_i^2 \\ &= \tfrac{a^2}{2c}\left[(n-\tfrac{1}{2})(K(j))^2 + (n-2)(d(1-\Theta))K(j) - \tfrac{1}{2}(d^2(1-\Theta)^2\right], \end{aligned}$$

while the leader's utility is given by:

$$\begin{aligned} u_j^j &= K(j)aE^* - ce_j^2 \\ &= \tfrac{a^2}{2c}\left[(n-\tfrac{1}{2})(K(j))^2 + (n-1)(d(1-\Theta))K(j)\right] \end{aligned}.$$

These calculations imply that condition (I) ($\hat{u}_j^j < u_j^j$) holds if and only if

$$(n-1)(d(1-\Theta))K(j) > (n-\tfrac{1}{2})\left[(\hat{K}(j))^2 - (K(j))^2\right].$$

If $K(j) = \hat{K}(j) - dz$, then the last inequality holds if and only if

$$(***) \qquad (1-\Theta)\hat{K}(j) > z\left\{\frac{(n-\frac{1}{2})}{n-1}\left[2\hat{K}(j) - dz)\right] + (d(1-\Theta))\right\}$$

For n>3, a sufficient condition for inequality (***) to hold is that

$$(1-\Theta)\hat{K}(j) > z\left\{\frac{4}{5}\left[2\hat{K}(j) - dz)\right] + (d(1-\Theta))\right\}.$$

Since the right-hand side of the last inequality is a non-negative continuous function of z that converges to zero when z converges to zero ($\underset{z\to 0}{RHS}(z) = 0$), a sufficiently small z(I) exists where $0 < z(\mathrm{I}) < 1$ such that for all z, $0 < z < z(\mathrm{I})$. If the last inequality holds, it implies that the first necessary condition stated above likewise holds.

Condition (II), that $\hat{u}_i^j < u_i^j$, holds for all $i \in N \setminus \{j\}$ if and only if

$$\left[(n-\tfrac{1}{2})(K(j))^2 + (n-2)(d(1-\Theta))K(j) - \tfrac{1}{2}(d^2(1-\Theta)^2)\right] > (n-\tfrac{1}{2})(\hat{K}(j))^2$$

If $K(j) = \hat{K}(j) - dz$, the last inequality implies that:

$$\left[\left((n-2)(d(1-\Theta)) - (n-\tfrac{1}{2})dz\right)(\hat{K}(j) - dz) - \tfrac{1}{2}d^2(1-\Theta)^2\right] > 0$$

For n>3, the left-hand side, which is a continuous function of z, converges to some positive number when z converges to zero. This implies that there exists a sufficiently small z(II) ($0 < z(\text{II}) < 1$) such that the above inequality holds for all $0 < z < z(\text{II})$.

We therefore conclude that conditions (I) and (II), above, hold for any z such that $0 < z < z^* = \min\{z(\text{I}), z(\text{II})\}$.

The previous analysis implies that diminishing the leadership ability $\hat{K}(j)$ of the leader by z^*d and endowing him with a deception parameter (i.e., charisma) will strictly Pareto improve the allocation of resources. It remains to show that individual j produces a higher quantity of the public good g in the second game than in the first one. Note that each individual $l \in N \setminus \{j\}$ exerts more costly effort in the second game than in the first, and ex-post obtains higher utility (*although the leader is less competent*). This allocation can be achieved only when the quantity of the public good in the second game exceeds the quantity of the public good in first game sufficiently to outweigh the loss in leadership ability and the increased cost of effort.□

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Figure 1

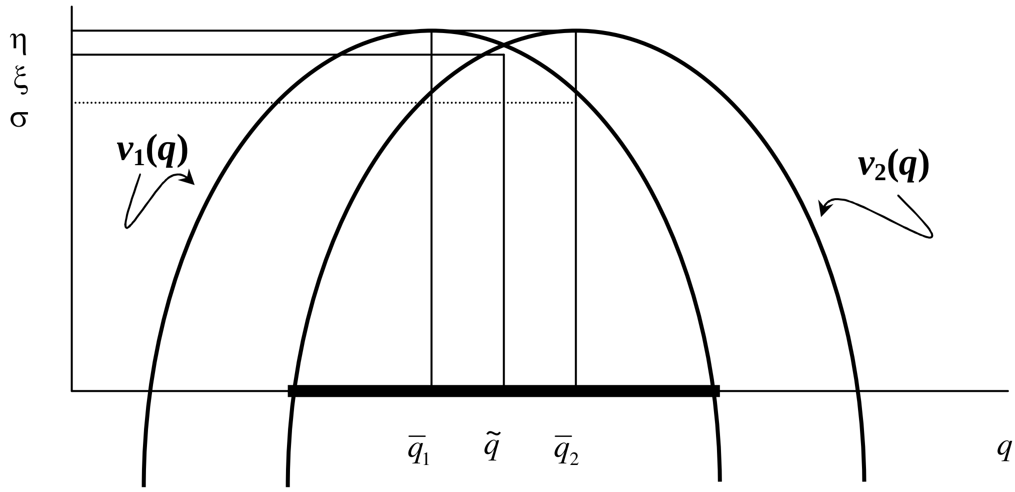


Figure 2

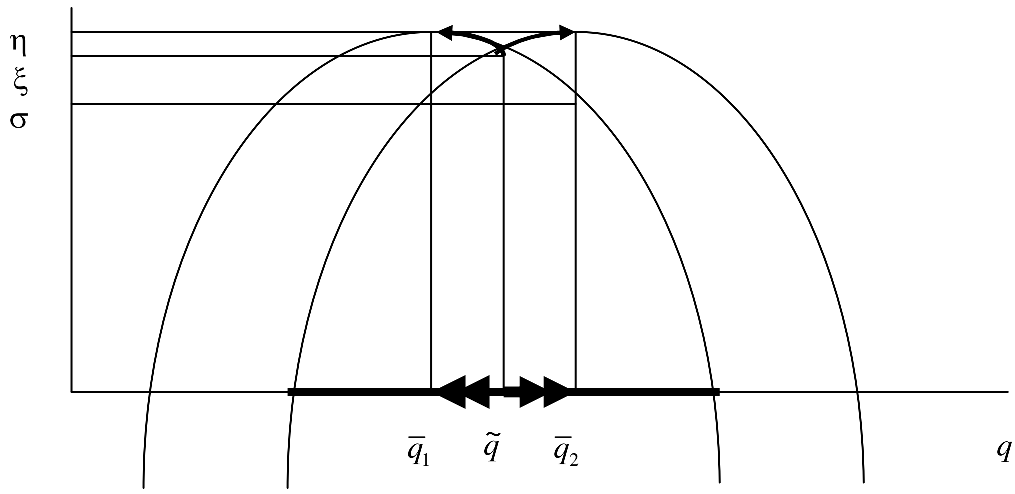
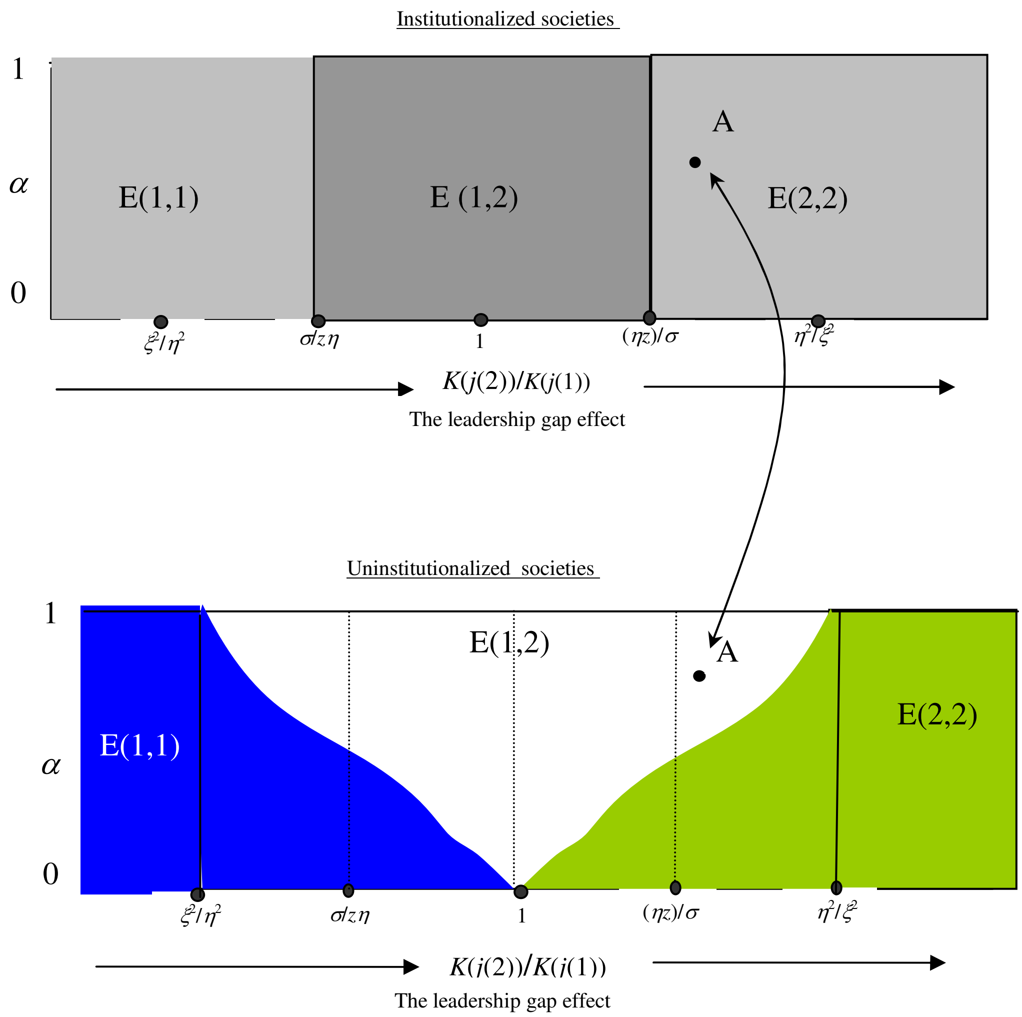


Figure 3



The upper and lower diagrams represent different equilibria in institutionalized and uninstitutionalized societies, respectively. The horizontal axis represents the leadership gap effect (symbolized by $K(j(2))/K(j(1))$) whereas the vertical axis represents N_1'*s* relative size (symbolized by α). Point A in both diagrams represents different equilibria in uninstitutionalized and institutionalized societies under similar conditions.

Table (1-a): Possible Equilibria in Uninstitutionalized Societies

E(1,1) $j(1)$ is chosen	$1 > B(1,\alpha_1)$ $,1 > B(2,\alpha_1)$	**For members in N_1:** The preference gap effect>leadership gap effect+ effort gap effect or the preference gap effect+ leadership gap>effort gap effect **For members in N_2:** The preference gap effect<leadership gap+ effort gap effect
E(2,2) j(2) is chosen	$1 < B(1,\alpha_1)$, $1 < B(2,\alpha_1)$	**For members in N_1:** the preference gap effect<leadership gap+ effort gap effect **For members in N_2:** The preference gap effect>leadership gap effect+ effort gap effect or the preference gap effect+ leadership gap>effort gap effect
E(1,2) If $\sum_{u \in N_1} \theta_u > \sum_{u \in N_2} \theta_u$ Then $j(1)$ is chosen. .If $\sum_{u \in N_1} \theta_u < \sum_{u \in N_2} \theta_u$ then $j(2)$ is chosen (In case of a tie, each is chosen with probability 1/2).	$1 > B(1,\alpha_1)$, $1 < B(2,\alpha_1)$	**For members in N_1:** The preference gap effect>leadership gap effect+ effort gap effect or the preference gap effect+ leadership gap>effort gap effect **For members in N_2:** The preference gap effect>leadership gap effect+ effort gap effect or the preference gap effect+ leadership gap>effort gap effect

Table (1-b): Possible Voting Equilibria in Institutionalized Societies

E(1,1) $j(1)$ is elected	$\frac{v_1(\bar{q}_1)}{v_1(\bar{q}_2)} z > \frac{K(j(2))}{K(j(1))}$ $\frac{v_2(\bar{q}_1)}{v_2(\bar{q}_2) z} > \frac{K(j(2))}{K(j(1))}$	**For members in N_1:** The preference gap effect>leadership gap effect **For members in N_2:** The preference gap effect<leadership gap
E(2,2) j(2) is elected	$\frac{v_1(\bar{q}_1)}{v_1(\bar{q}_2)} z < \frac{K(j(2))}{K(j(1))}$ $\frac{v_2(\bar{q}_1)}{v_2(\bar{q}_2) z} < \frac{K(j(2))}{K(j(1))}$	**For members in N_1:** The preference gap effect<leadership gap effect **For members in N_2:** The preference gap effect>leadership gap effect
E(1,2) If $\#N_1 > \#N_2$ Then $j(1)$ is chosen. Otherwise $j(2)$ is chosen. (In case of a tie, each is chosen with probability 1/2)	$\frac{v_1(\bar{q}_1)}{v_1(\bar{q}_2)} \cdot z > \frac{K(j(2))}{K(j(1))}$ $, \frac{v_2(\bar{q}_1)}{v_2(\bar{q}_2) z} < \frac{K(j(2))}{K(j(1))}$	**For members in N_1:** The preference gap effect>leadership gap effect **For members in N_2:** The preference gap effect>leadership gap effect