

# The Leader as Catalyst

On Mass Movements and the Mechanics of Institutional Change

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## Abstract

Why are some leaders able to rally mass support and successfully catalyze revolutionary change while others fail? We argue that the key to understanding a leader's effectiveness lies in dissecting the symbiotic relationship between the leader and his committed activist-followers. Good leaders attract committed activist-followers. In turn, these followers have a bottom-up role in empowering the leader by rallying support from the broader populace, resulting in a mass movement. This two-way leader-follower interaction can endogenously give rise to threshold effects: 'small' differences in leader ability have a dramatic impact on the prospects for change. We show that for a leader 'it is better to be feared than loved'. An ambitious, self-serving leader attracts activist-followers who fear bad institutional change and hope to insulate themselves by becoming loyal followers. Indeed by empowering such a self-serving leader, these followers make him a more effective agent of (both good *and* bad) institutional change.

Keywords: Leadership, followership, empowerment, mass movement, institutional change.

# 1 Introduction

On 6 April, 1930, Mahatma Gandhi culminated his “Salt March” on the western coast of India. There, in defiance of the British monopoly on the collection of salt, he simply picked up a lump of natural sea salt. Within days, in a coordinated act of civil disobedience, Gandhi’s followers in the Congress party as well as ordinary people throughout India did the same. It is widely agreed that this unique, collective act of non-violent protest was the first shot that eventually brought down the British Empire in India. Gandhi’s effectiveness as a leader at this stage was driven in part by his ability to draw on a cadre of committed followers.<sup>1</sup> Similar instances of party activists empowering the leader are seen in many socio-political movements. Without Nelson Mandela and his followers in the ANC, the contours of South African political institutions may well have been very different, just as no account of the success of the Civil Rights Movement under Martin Luther King can fail to give his followers in the SCLC an important role. However our understanding of this crucial dynamic between a leader and followers in catalyzing revolutionary change remains poorly understood. This paper take a first step in that direction.

Most accounts of revolution and large-scale change in socio-political institutions give primacy to changes in some underlying structural conditions — be it changes in the distribution of resources and power across and within groups as well as the threat of external forces. While important, such accounts are incomplete in the sense that the availability of a window of change does not always result in successful mass movements capable of transforming the political landscape. Similar underlying conditions often result in very different outcomes. Thus even when structural conditions are appropriate, the issue of how a mass movement is catalyzed and helps bring about institutional change remains. We argue that individual agency and leadership has a distinct and important role to play in this process, and in this paper we seek to understand how and when can an individual leader catalyze a broad-based mass movement for social or political change? Why are some of these movements successful and others a failure? This paper thus shares with Richard Samuels (2003) the idea that institutional “change need not be accidental or compelled by great force. Even if it occurs at unexpected times and in unexpected ways, it can be nudged by the choices of individuals.”

We argue that dissecting the symbiotic nature of the leader-follower relationship is key to understanding why only some leaders are effective. While followers are integral to understanding leadership, most studies tend to focus only on the top-down role of the leader in persuading

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<sup>1</sup>According to Dalton (1993), Gandhi’s effectiveness as a leader derived from both his activist base as well as his skill at recognizing the effectiveness of civil disobedience against the British and his choice of salt as a simple yet emotive symbol with mass appeal.

followers to act. However, the bottom-up role of the activist-follower in empowering a leader is equally important. Indeed we argue that this dynamic synergy between the leader and his followers is what separates a transformational political revolution from a movement that fails to get off the ground. However, leadership can be for better or worse, in that for every leader such as Nelson Mandela there is a Robert Mugabe. Therefore we further ask, why do individuals sometimes deliberately prefer to follow a leader they know to be ambitious and unscrupulous, rather than one with whom they have congruent preferences? Can such followership make the self-interested leader a more effective agent for change than a benevolent one?

This paper addresses these questions by developing a unified framework of endogenous followership, leadership and mass participation. We begin by recognizing that in most situations where a social practice or political institution is challenged, change often occurs through the voluntary and systematic switch of actions of a large number of individuals. While a leader cannot directly engineer such mass change through coercion, he can facilitate it through helping the populace mount a coordinated challenge to the status-quo. A salient feature of our framework is that we distinguish between different groups of participants in a mass movement. Some individuals are drawn early to invest in becoming “committed” followers and activists — for example, the members of a political party or social movement. In contrast to these core supporters, the support of other individuals may be more contingent. They may join the process at a later stage when the benefits from doing so are more apparent. Both the committed activists and these contingent supporters are important in making a mass movement successful. By distinguishing between them, our model contributes to the understanding of the *mechanics* of how broad based mass revolution is engineered.

Our framework focuses on the individual decisions to become committed followers and the two-way relationship of this decision with the leader’s actions and the overall size of the movement. Endogenizing followership provides us insights into what makes some leaders particularly effective. For instance, (in a political context) such a committed group of followers,

“...can be ordered to the polls or out onto the streets at will... to swell audiences, and campaign for him with extraordinary vigor and often at sacrifice to themselves. A leader can use such followers as a means of subtle or overt intimidation...He has in short, a most malleable instrument to use at will.”(Willmer, 1984, pp.184)

By rallying support for the leader, committed followers thus form a crucial part of the process of bringing about institutional change. In this context, more able leaders are better able to engender change both by (i) attracting more committed followers, and (ii) by allocating more effort at identifying whether the conditions are ripe for change and then rallying popular support for it

through their followers and through effective communication. In fact, the two are interrelated. While individuals are more easily attracted towards a dynamic leader, by giving him the strength and flexibility to rally support among the populace, followers themselves contribute importantly to his dynamism. In other words, Gandhi's successful Salt March cannot be understood without accounting for how he was empowered by his foot soldiers in the Congress Party, just as it is difficult to fathom Barack Obama's successful campaign without dissecting his symbiotic relationship with his followers.

Our first set of results shows that this leader-follower interaction may give rise to (endogenous) threshold effects for effective leadership. This result implies that even if structural conditions were identical, 'small' differences in the leader's ability can result in dramatic differences in his effectiveness as a catalyst for change. In particular, if the leader's ability is higher than the (endogenous) threshold, he attracts a core group of committed followers which is of sufficient size to rally support amongst the broader populace, thereby transforming disaffection into a *mass* movement. The existence of threshold effects suggests that a leader can have an independent and first-order role in affecting the trajectory of a country's institutional evolution. Slight differences in the quality of leaders of two otherwise similar countries can lead to significant differences in the institutions adopted (or not).

We further demonstrate that expectations about the underlying structural environment also matter. For instance, if the prevailing zeitgeist is one where 'change is in the air' then even a mediocre leader may attract committed followers and be effective at catalyzing change. In contrast if change is perceived to be unlikely, even a leader of high ability will fail. Therefore, by allowing us to disentangle the role of structural conditions and a leader's ability, our framework provides a natural way to reconcile the classical debate between the 'structuralist' and the 'Great Man' schools of historical change.<sup>2</sup> We demonstrate that public perceptions determine the threshold for effective leadership. However, once this threshold is crossed, the leader's actual ability helps determine the overall probability of change. Thus, this conforms with what is popularly known as the "Weberian" view which stresses the importance of individual leader characteristics, but only under the right structural conditions.

Our framework is naturally applicable in the analysis of mass movements that challenge the socio-political status-quo, especially in non-democratic societies. The twentieth century saw leaders such as Kwame Nkrumah in Ghana to Ho Chi Minh in Vietnam lead mass political movements that helped end colonization and establish new political institutions. However, apart from the

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<sup>2</sup>The earliest proponent of the 'structural' view were perhaps Marx and Tolstoy while in recent years this view has received its most systematic exposition in Gilpin (1981). The original exponent of the 'Great Man' school was Carlyle (1841). Subsequent work by Kissinger (1968) and Ionescu (1991) has also taken this view.

instance of the change itself, an additional issue arises in this context. The nature of political institutions established as a result of the change differed dramatically across these countries. Indeed in some of these countries the political systems established were nothing more than a vehicle for the leader's personal ambition, while in others the new institutions were more in accord with the preferences of the majority. A related issue here is that there are dedicated and committed followers of both good and bad leaders. The puzzle is how so many leaders from Lenin, Stalin to Hitler and Mao, were able to mobilize a large number of followers to invest in socially inefficient institutional change?

We examine this question by analyzing the role of leadership when a leader's preferences are not always aligned with that of the broader population. Ambitious, self-serving leaders may try and engineer a change in political institutions even if it is not in the broader interest of society. The *possibility* that a leader may be self-serving has important consequences for the dynamics of the leader-follower relationship. On the one hand, in such a scenario the exercise of leadership is difficult. This is because in a divided polity, a self-interested leader faces a credibility gap. Individuals hesitate in responding to a leader who may mislead them – the *credibility* effect.

However, our framework which endogenizes the followership decision, unearths an important additional channel at work. Self-interested leaders will typically catalyze change that is personally beneficial, quite irrespective of whether or not it adversely affects the wider populace. In this situation, an individual has a further incentive to become a follower in order to insulate oneself against adverse changes that a ruthless leader may catalyze – the *insulation* effect. In other words, individuals may become members of the ZANU-PF in Zimbabwe, the Nazi Party in Germany or the Baath Party in Iraq to align one's interests with those of the leader or at least reduce for oneself the negative consequences of change wrought by a ruthless, self-interested leader.<sup>3</sup>

Therefore, we have two effects that work in opposite directions when analyzing the chances of success at catalyzing change for a leader with preferences divergent from the broad population. One, the “credibility effect” means that the mass response to such a leader's call for change may be more muted; on the other hand, the “insulation effect” enhances the individual incentive to become committed followers. We show that under some conditions the latter effect can dominate so that a ruthless, self-interested leader may be an even more effective agent for change than a benevolent one. This is because the individual incentive for self-preservation may result in the

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<sup>3</sup>Victor Kravchenko (1947) documents how prudent self-insurance was a motivation driving many individuals to become followers of the Communist Party in the USSR. Similarly, many Chinese small-holders joined the Red Army and some Russian kulaks joined the Bolsheviks in an attempt to insure themselves against the possible consequences of revolutionary change that resulted in a Communist political system (Conquest, 1991). See also Daniel Goldhagen (1996) for followership of the Nazi Party.

self-interested leader having a larger pool of committed followers to draw on, overall leading to higher chances of ‘good’ *as well as* ‘bad’ changes. A priori in terms of ex-ante welfare it is not clear that a majority of the populace will want to select such a leader. Quite strikingly, we show that an ambitious leader with divergent preferences may often be preferred to a leader whose preferences are congruent with those of the majority. Indeed in the context of this result, we can view Machiavelli’s famous claim that for a leader “it is much safer to be feared than loved” in a new light. This is especially true when the expected gains from change are small relative to the costs and coordination is difficult otherwise. In such situations, a self-serving leader with preferences differing from that of the majority may be preferred ex-ante by everyone.

Historians have often cited the examples of Churchill during the second World war and Roosevelt during the Great Depression to suggest that leaders who emerge at times of crisis are often particularly effective (Burns, 1978, Popper, 2005). Some ascribe this in part to an improved selection effect — focus on the crisis at hand engenders the selection of a high ability leader who is best suited to tackle the crisis. However, by endogenizing followership, this paper suggests that during a crisis an additional mechanism may be at work in making leaders effective. In particular, during an economic crisis the opportunity cost of becoming a follower comes down. Therefore, by increasing the number of committed followers available to a leader, an economic crisis bolsters the effectiveness of any leader, regardless of ability. Thus, it suggests that even if the crisis were an economic one, the leader would be able to count on the support of (a larger number of) activist-followers for successful change on all issues, including non-economic ones.

## 1.1 Related Literature

Our paper contributes to both the literature on leadership as well as the work on mass movements and revolutions. We begin by briefly describing the relationship of this paper to work on leadership, before turning to its connection to the literature on revolutions and institutional change.

Leadership plays an important role in all forms of human and primate (Brown, 1991 and Wilson, 1975) societies. Despite long recognition of its importance, there have been relatively few formal models to study the notion of effective leadership, especially by social scientists in the rational choice tradition. Fiorina and Shepsle (1989) contains an early survey of formal theories of political leadership, especially within the principal-agent and agenda-setting frameworks. But as they point out, the incentive considerations in these frameworks constitute only a part of leadership and “.....*one cannot understand leadership without understanding followership.*” (emphasis in the original text) Focusing on the calculus underlying a leader’s choice, Canes-Wrone, Herron and Shotts (2001) and Majumdar and Mukand (2004) analyze when may electoral concerns cause

a leader to pander to public opinion (and thus be lead by the followers). A prominent recent contribution is that of Dewan and Myatt (2008), who examine the role of leadership and communication in coordinating followers. They show that while a leader’s ability to communicate clearly is more important for coordination than his information-gathering capability, leaders may deliberately obfuscate in order to attract more attention from the followers. In a similar vein, Dewan and Myatt (2007) analyze the role of a leader in resolving coordination problems amongst party activists. In particular, the paper provides an analytical characterization of the Michels ratio – situations under which members of a political party rally behind the party leadership. In contrast, our framework focuses on the role of a leader in attracting party activists and encouraging them to help rally *mass* support. Furthermore, our framework also shows how the committed activists in turn empower the leader and induce him to put in greater initiative. These two distinctive features of our framework, along with the possibility of ‘good’ and ‘bad’ change, makes it particularly well suited to study the mechanics of broad based social and political revolutions.<sup>4</sup>

There is a long and distinguished tradition of historians, sociologists and political scientists analyzing the origins of mass movements - both in the social as well as the political arena. For instance, scholars such as Charles Tilly, Neil Smelser, Sam Huntington, Theda Skocpol have all analyzed various aspects of the origins of social movements and political revolutions. In recent years, there has emerged a large literature studying the mechanisms underlying political transitions in general and democratization in particular (see Robinson, 2006 for a survey).<sup>5</sup> For instance, the recent influential work on political transitions and institutional change by Acemoglu and Robinson (2006) emphasizes the role that lack of commitment and exogenous shocks play in affecting the cost-benefit calculus of persisting with the status-quo political set-up. Our framework can be viewed as providing a micro foundation for the process of how such stochastic shocks get translated into political change. In our framework, coordination is *not* automatic but occurs as a result of the leader’s ability at recognizing a window of opportunity and convincing the populace of the benefits from seizing it. Thus our focus is on how a leader takes advantage of structural conditions to transform disaffection and protest into a political revolution. It highlights that although opportunities for change may come about, not all societies are able to capitalize on them.

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<sup>4</sup>There is also a small literature analyzing the role of leadership in economics. This literature has primarily focused on *functional* characteristics of the leader, analyzing the role of various characteristics of a leader – be it his preferences, his self-confidence or his ability and vision that make him more or less effective at inspiring others. Indeed this literature focuses mostly on organizational transformation rather than mass movements and institutional change and has been recently surveyed by Bolton, Brunnermeier and Veldkamp (2008) and Hermalin (2007).

<sup>5</sup>For instance Bates (1991) and Rogowski (1998) argue that democratization is a concession to the populace to raise tax revenue. Others such as Llavador and Oxoby (2005) have shown how sections of a divided elite maybe inclined to form a coalition with a disenfranchised group with whom its interests are aligned.



Some, especially those with a low quality of leaders may remain trapped by their institutional inheritance.<sup>6</sup> Accordingly, given its emphasis on the mechanics of how a leader builds a mass movement and brings about change, the current paper is best viewed as a complement to much of this work on political transitions.

We start with a description of the basic model in the next section. In Section 3.1 we analyze the equilibrium when the preferences of the leader and the populace are congruent. We relax this assumption in Section 3.2 with the leader-follower preferences being not perfectly aligned (leading to the possibility of good and bad change). Extensions and some examples are discussed in Section 4. We conclude with a discussion in Section 5.

## 2 The Model

We develop a model that captures the mechanics of how a mass movement can get off the ground and bring about large-scale change. While simple, the model contains a number of interrelated elements. Accordingly before we turn to the details, we provide a brief road map that describes the key features of our framework.

The first key element is that followership is endogenous. Individuals account for the underlying environment and the leader's effectiveness and choose whether to make an early investment in becoming committed followers of the leader. The second important element of our framework is that it allows for activists to 'empower' the leader. Such an empowered leader puts in much greater effort at discovering and seizing an opportunity for change. This is because the leader can rely on follower-activists to help rally support and generate a groundswell of opinion in favor of change. It is the interaction between these three elements that together help determine the probability of successful change.

We now elaborate on the framework.

### *Uncertainty and Coordination:*

Many decisions such as a campaign's political strategy, the decision to endorse or veto a piece of legislation or even the decision to launch a war can be unilaterally implemented by a leader through fiat. However broad-based institutional or social change is far more difficult to bring about. It

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<sup>6</sup>At an empirical level, the literature on institutional change has recognized the importance of leaders in determining the trajectory of a country. For instance, Acemoglu, Johnson and Robinson (2003) acknowledge the importance of Seretse Khama in laying the foundations of growth in Botswana. Jones and Olken (2005) are the first to empirically demonstrate using a cross-country study, that leaders matter for growth and institutional change. Studying leader's characteristics, Besley and Reynol-Querol (2009) show that democracies select more highly educated leaders than autocracies.

often requires a coordinated switch in the beliefs and actions of a large number of individuals with possibly differing preferences, costs and prior beliefs, and is harder to achieve. Not only does an individual agent lack information about whether others also plan to switch, but further may even be uncertain if underlying conditions are such that change is optimal to begin with.

To capture uncertainty about whether or not the underlying conditions are appropriate for change, we assume that there are three possible states of nature:  $B, G_0$  and  $G_1$ . State  $B$  is one in which change is never possible; in this state, even a coordinated change of actions will not only never succeed, but also results in *all* participants (including the leader) becoming worse off, earning a very large negative utility. In other words, in state  $B$ , the status-quo action strictly dominates any action that facilitates change. This is meant to capture the idea that under some conditions, any attempt at change is futile and costly and should not be undertaken. The prior on the states being  $B, G_0$  and  $G_1$  are  $1 - \alpha, \alpha(1 - a)$  and  $\alpha a$  respectively.

In states  $G_0$  and  $G_1$ , change is possible but requires coordinated mass action. We assume that the probability of successful change in either of these states is given by  $\frac{1}{\theta} p \cdot m^\theta$ , where  $m$  is the fraction of the populace participating in the process,  $\theta > 0$ , and  $p \in (0, 1)$  is a parameter that denotes the degree of uncertainty inherent in the process. This formulation captures in a stylized manner two plausible aspects of the process of regime change — one, that it is stochastic and two, it is more likely to occur when there are more active participants. The parameter  $\theta$  captures the impact of the degree of complementarity amongst participants on the probability of success; when  $\theta$  is small, the marginal effect of increased participation  $m$  is large. For simplicity, in most of the analysis that follows, we assume  $\theta = 1$  and thus the probability of successful change equals  $p \cdot m$ . In section 4.4, we relax this assumption and examine the implications of differences in the degree of complementarity  $\theta$  on the qualitative results.

While change is possible in both states  $G_0$  and  $G_1$ , they differ in terms of the distributional consequences of successful change. The population is assumed to belong to one of two groups — the majority (group  $M$ ) or the minority elite (group  $E$ ). State  $G_1$  is a situation in which the gains from successful change are wide-spread and accrue to any individual who is an active participant in the process, irrespective of his or her group. In this state, we denote by  $G > 0$  the gain from successful change to a participant from either group; for non-participants, this is zero. Such gains could be psychological, arising for instance from the satisfaction of participating in the overthrow of a hated autocrat, or the status rewards from being a “freedom fighter” or a party official. Equivalently the rewards may be material, in the form of preferential access to scarce resources accruing to members of a successful political party or revolutionary group.<sup>7</sup> In

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<sup>7</sup>Ferguson and Voth (2008) document that firms that had ‘close and early connections’ with the Nazi Party in Germany during the thirties, reaped large financial rewards. Such early ‘follower’ firms outperformed the stock

contrast, in state  $G_0$ , the gains from change accrue to a much narrower segment of the population, namely, only to participants from the elite group  $E$ .<sup>8</sup> In this state, while participants from the majority group incur the cost and raise the chances of success, they enjoy none of the gains from change. Accordingly, popular perception of the leader's interests being aligned with one group or the other has important consequences for his credibility (and hence the degree of followership). Incorporating the two states  $G_0$  and  $G_1$  thus enables us in a simple way to address issues of leaders being of different types.

For simplicity, we assume that the minority group is of zero mass (while the majority has mass 1). Relaxation of this assumption does not qualitatively affect most of our results (footnote 25 characterizes the equilibrium in the case of a small but non-zero mass of group  $E$ ).

We have normalized the payoff from maintaining the status-quo as 0, and have also taken the gains to non-participants from successful change as being 0. This is largely to reduce unnecessary notation. The analysis would not change if instead we denoted the gains to non-participants from successful change by say  $\Delta$ , and  $G$  as the additional gains enjoyed by participants in the process of change that is over and above  $\Delta$ .

While change is possible in some states and not in others, at an individual level what makes it particularly difficult is the lack of information about the underlying state of the world. Indeed, in the absence of information, the large downside risk if the underlying state turns out to be  $B$  results in a lack of action and thus the persistence of institutions and the prevalence of the status quo. This is where we introduce a role for a leader.

#### *Leadership and Information:*

While the general populace lacks information about the underlying state of the world, we assume that there is an exogenously given leader who is in a position to invest in acquiring such information and communicating it to the masses. For instance, in the case of political change, it could be private information that the ruling regime is currently internally divided, weak and politically vulnerable. However, ascertaining whether there exists a suitable 'window of opportunity' is not easy for the leader to do (Hirschman, 1970).<sup>9</sup> It requires a mixture of skill and instincts as well as initiative

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market to the tune of 5 to 8 percent.

<sup>8</sup> Alternately, it could also be interpreted as a state in which the gains from change accrue only to the leader (e.g. consolidation of political power), while the population gain nothing. For example, state  $G_0$  could require a process of change that involved a large scale destruction of resources that is unlikely to be of benefit to the majority.

<sup>9</sup> Indeed, Hirschman (1970) argues that it is an essential aspect of leadership. For instance, when discussing the example of Carlos Lleras Restrepo, Colombia's 'reform-mongering' President in the sixties, he argues that good leaders have "the ability to perceive change when most of one's contemporaries are still unable to do so.... that would enable a leader to take advantage of new opportunities as soon as they arise."

as exemplified in Lyndon Johnson’s ability to spot and utilize a unique ‘window of opportunity’ to push through the Voting Rights Act of 1957.<sup>10</sup>

Accordingly we assume that if the leader expends resources  $e(i) = li^2/2$ , then with probability  $i$  he learns perfectly the state of nature, while with probability  $1 - i$ , he learns nothing. On learning of a right opportunity, the leader next needs to convey this information to the populace. To capture the leader’s ability at communication, we denote by  $\tau \in (0, 1)$  the probability that any member of the population receives the leader’s message. The population is assumed to be a continuum so that equivalently  $\tau$  is also the fraction that receives the leader’s message. Thus the two parameters  $l$  and  $\tau$  capture two aspects of the leader’s ability: his dexterity at identifying the right opportunities (a smaller  $l$ ), and his skill at effectively communicating with the populace (a higher  $\tau$ ).

While the model here ostensibly focuses on the leader’s decision to expend effort  $e(i)$  in acquiring information about the underlying state, the interpretation can be broader. For example, it could also be effort at finding a feasible solution to a problem or method for change. We can easily extend it to analyze other activities of the leader too, such as the intensity of his communication and persuasion of others to invest in change. For instance, one could alternately formulate (with similar qualitative results) the leader’s choice variable as the amount of effort spent at communicating information, with  $i$  being the fraction of the populace that receives his message if he expends resources  $e(i)$ .

A second aspect of the model also deserves comment. Our framework allows us to distinguish between a leader’s formal authority and leadership, the probability that the leader is likely to bring about change. While the leader here is one by virtue of his position i.e. is the only one in a position to acquire and communicate information, this formal authority in and of itself does not translate into catalyzing change. Instead effective leadership is a function of not just good information and the underlying structural conditions, but crucially also dependent on individuals’ willingness to respond to the leader in challenging the status-quo. As we show below, even under suitable circumstances, only certain leaders will exhibit effective leadership in the sense of being

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<sup>10</sup>Lyndon Johnson (LBJ) spent an enormous amount of time and effort in identifying the requirements, weaknesses and strengths of all parties necessary to the striking of a deal to get through the Voting Rights Act (Caro, 2002). LBJ’s leadership skill lay in being the first to ‘discover’ a window of opportunity for an agreement in the form of a mutually advantageous deal between two key factions in the Senate: the Southern Senators who cared about civil rights legislation and the senators from the mountain states who wanted a hydro-electric project at Hells Canyon. According to Caro, Johnson was skilled enough to see “...a potential connection between the two realities. No one else had seen it. During the ten years that Hells Canyon had been before Congress, there had not been the slightest link between the dam and civil rights.” His efforts paid off and he got enough senators to make a (costly) investment in supporting the bill and on August 7, 1957 the path-breaking Voting Rights bill was finally approved.”

able to successfully catalyze change.

To capture the leader’s incentives in the simplest manner, we denote by  $L_s$  the leader’s payoff from successful change in state  $G_s$ ,  $s \in \{0, 1\}$ . This payoff could be either a monetary or political gain as a result of successful change. The following restriction on gains  $L_s$  and costs  $l$  ensures that the choice variable  $i$  (which is the probability that the leader acquires information about the present state) is always less than 1.

**Assumption 1:**  $\alpha p \tau L_s < l$

Given that there are two groups in the economy, the majority  $M$  and minority elite  $E$ , the leader’s interests could be aligned with either group. Notice that the above formulation allows us to easily capture such differences in preferences. A “benevolent” or “non-partisan” leader here is one who cares about the welfare of the majority and thus would like to see change coming about only in state  $G_1$  where the benefits are wide-spread and accrue to all groups. Thus for such a leader we assume that  $L_1 > 0$  and  $L_0 = 0$ . On the other hand, a leader may have preferences aligned with the narrow elite or could be self-interested in the sense of pursuing modes of change that benefit only himself. Such a “self-interested” or “elitist” leader would like to see change enacted even in state  $G_0$ , where only the elite (and himself) gain while all bear the cost. Accordingly, such a leader is assumed to have  $L_1 > 0$  and  $L_0 > 0$ . We should emphasize that the above formulation of payoffs can be adapted to capture the diversity of experiences with political transitions in the Third World (see Section 4.1). Since successful change requires coordinated participation in the process by a large number of individuals, we now describe the costs and benefits from participation.

*Participation and followership:*

There exists a unit mass of individuals, some of whom may choose to participate in the process of changing the status-quo. Any such transformation of the status-quo requires a variety of participants, where some individuals are part of the leader’s core team of followers and other participants whose support is more contingent. Our framework endogenizes this heterogeneity between different kind of participants. Participation by an individual in the process of changing the status-quo involves costly investments. However, an individual has the option of lowering his participation cost by making an up-front investment.

We begin by assuming that with probability  $y$ , the personal cost  $c$  of participating in the process is 0, and with probability  $1 - y$ , this cost  $c$  is drawn from a uniform distribution with support  $[0, c_H]$ . We will assume that  $c_H$  is high enough so that not all people participate in the process of change even in the best possible circumstances:

**Assumption 2:**  $p \tau G < c_H$

Depending on the context, these participation costs can take different forms. In a political context such as a revolution against a government, this participation may involve costly actions in the form of participation in street protests, boycotts, and even armed struggle.

In keeping with what is often observed, we allow an individual to make an ex-ante costly commitment to become a follower. This captures the idea that some of those who invest in change are “committed” followers. In a political context, such committed followers can be thought of as members and activists of a political party. In our framework we distinguish between these “committed” followers and others whose support is more contingent and dependent on circumstances. Accordingly in the model we assume that people can invest before-hand in  $y$  i.e. in lowering their ex-post cost of participation. The cost of investing  $y$  is given by  $f(y) = ky^2/2$ . We assume that with probability  $y$ , the personal cost  $c$  of participating in the process is 0, and with probability  $1 - y$ , this cost  $c$  is drawn from a uniform distribution with support  $[0, c_H]$ .

This formulation provides us with a simple way to distinguish between the “committed” followers and other participants whose support is “contingent” on circumstances. We label as “committed” followers all those individuals with a low cost  $c = 0$  of participation in any change, as they participate whenever called upon to do so by the leader. On the other hand, individuals with costs drawn between 0 and  $c_H$  decide whether or not to participate depending on their own realized costs as well as their expectations of the movement succeeding — we call these “contingent” followers. While a fraction of this group may participate in the process, their decision to follow the leader’s call for action is not automatic and is contingent on their individual costs of participation and perceived benefits.<sup>11</sup> Observe that the parameter  $k$  captures the opportunity cost of becoming a committed follower and is likely to be low when economic conditions are adverse.

Dramatic institutional change such as the onset of democracy, the extension of civil rights or revolution of any kind typically involves numerous participants. This distinction between committed and contingent followers is a simple way to emphasize the differences between different kinds of participants that is common in many social and political movements for change. These committed followers are crucial for laying the groundwork and rallying support for a leader. Indeed, this activist base of followers can help other individuals get off the fence and throw in their support behind the leader. Arguably, a core, committed band of followers was crucial to the success of Deng Xiaoping’s Southern Tour to rescue economic reform (Zhao, 1993), Lenin’s Bolshevik revolution as well Adolf Hitler’s rise to power.<sup>12</sup>

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<sup>11</sup>While the followers here are modeled as those with (endogenously) lower participation costs  $c$ , they could also be thought of as those who have psychologically adopted the leader’s ideology or invested in learning his “language” and thus require less persuasion by the leader to participate.

<sup>12</sup>For example, Hitler saw the advantage of such a fanatical band of followers and recognized the power of his Nazi party as early as 1921. When talking about the Storm troopers, Hitler said “the young movement was to supply

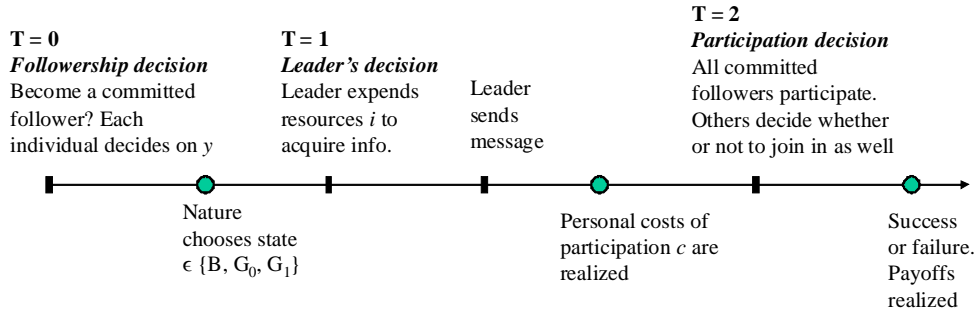


Figure 1: Timing of events

*Timing of events.* Figure 1 gives a diagrammatic depiction of the timing of events. Initially, at date  $T = 0$ , each member of the population decides how much  $y$  to invest in reducing his or her ex-post cost of participation. A higher  $y$  at this stage results in a larger proportion of “committed” followers, who are more likely to respond positively to any subsequent call for action by the leader. The remainder of the populace are “contingent” followers, whose participation at a later stage is contingent on other factors. The state of the world is subsequently realized, and at date  $T = 1$  the leader invests  $i$  in acquiring information about it. If the leader identifies the state of the world, he communicates this to the populace. People’s personal costs of participation are then realized. At date  $T = 2$ , while all “committed” followers follow the leader’s recommendation, each “contingent” follower decides whether or not to participate based on her personal costs and expectations on the prospect for change. Depending on the state of the world and the number of people participating, change occurs or not and payoffs are realized.

### 3 Leadership and Change: Equilibrium Analysis

As pointed out earlier, the framework described above seeks to capture the dynamic between a leader and his followers and its overall consequences for large scale change such as economic reform, institutional and organizational transformation. In determining the leader’s effectiveness at catalyzing change, one has to account for not just his ability but also his preferences. As

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what the others lacked: a volkisch movement with a strictly public base, including the broadest masses, welded together by iron-hard organization, filled with blind obedience and inspired with brutal determination, a party of battle and action.” For instance, Hitler’s Storm troopers could be either encouraged or “restrain(ed) from action or violence if it seemed advantageous.” (Willmer, 1984, pp. 184).

described above, depending on the value of  $L_0$ , the leader may have objectives aligned with the majority or not, and this may impact individual participation and followership decisions. In our analysis below, we consider each case separately.

### 3.1 Leadership and Followership under Congruent Preferences

We begin by exploring the leader-follower dynamic in the case where there is perfect alignment of preferences between the leader and the majority i.e. the case of a non-partisan or benevolent leader. Such congruence could arise either because the leader belongs to group  $M$  and/or is non-partisan by nature or because underlying political considerations force the leader to only take into account the welfare of the majority. For example, if the political framework is one where the majority  $M$  has the power to determine whether or not the leader is re-selected, we can expect a closer congruence in the objectives of the leader with those of group  $M$ . To not introduce additional issues of imperfect information, we assume the leader's preferences are common knowledge. Note that in this case, both the leader *and* potential participants only gain in state  $G_1$ ; thus issues of the leader misleading or signaling by example (as in Hermalin, 1998) do not arise here. This helps us focus on the two-way interaction between the demand for and supply of leadership without having to take into account a possible conflict of interest between the leader and followers.

**Participation:** In analyzing the equilibrium, let us start from period  $T = 2$  where each individual knows his own opportunity cost of participation  $c$  and decides whether or not to participate. For an individual who has not received any message from the leader, given that there is a very large negative utility to attacking in a bad state, he will not participate irrespective of his cost.

Thus the only consideration is for individuals who have received message of a good state from the leader. Since the leader here is a benevolent one, all such individuals will infer that the state must be  $G_1$  as a benevolent leader will never issue a call for action in states  $B$  or  $G_0$ . If this individual faces zero cost of participation, as is the case for a committed follower, he will indeed participate. For an individual with a positive cost  $c$ , he will have to weigh the costs and benefits from participation in making his decision. If his expectation about how many other people will participate is  $m^e$ , this individual will also choose to participate only if  $c \leq pGm^e$ . Thus the marginal participant is one whose participation cost is given by  $c^* = pGm^e$ .

Given the leader's ability  $\tau$  at communicating his message, a fraction  $\tau$  of the populace receives it. Of this, a fraction  $y$  are committed followers and have zero realized cost of participation and surely do so; among the rest, only those with costs less than  $c^*$  participate. Thus aggregating



across all individuals, the total mass of people who participate in the process is given by:

$$m = \tau \left[ y + (1 - y) \frac{c^*}{c_H} \right]$$

In equilibrium, individual expectations about aggregate participation are realized. Thus, incorporating this into the marginal participation decision gives the equilibrium cut-off cost  $c^*$  for participation:

$$c^* = p\tau \left[ y + (1 - y) \frac{c^*}{c_H} \right] G \quad (1)$$

For a given level of followership  $y > 0$ , this equation gives the degree of participation  $c^*$  by non-followers, and is represented by the increasing curve  $P$  in figure 2(a) – the *participation* curve.

The following proposition shows that  $c^*$  is unique and analyzes some of its properties.

**Proposition 1** *For any given level of followership  $y > 0$ , there is a unique level of participation  $c^*$ , which is determined from equation (1). Increases in  $y$ ,  $\tau$ ,  $p$  or  $G$  or a decrease in  $c_H$  raise the probability of change in state  $G_1$ .*

**Proof.** See Appendix. ■

An increase in the number of followers  $y$  or better communication ability of the leader  $\tau$  or a decrease in  $c_H$  raise the mass of participants for a given  $c^*$ , thus raising the chances of success. This encourages more marginal participants thereby raising  $c^*$ . As the overall probability of change is related to the total mass of participants in the process, variations in the underlying parameters that raise  $c^*$  also serve to increase the probability of successful change. For instance, in the presence of a leader who is perceived to be an effective communicator, each individual expects the leader’s message to reach more people. Thus each is more encouraged to participate and hence overall there is greater participation (and a higher chance of success) in bringing about change.

It is interesting to note some additional features of this solution. As  $y$  increases,  $c^*$  increases i.e. as the number of committed followers increase, so too does participation by the rest of the population. Thus there is complementarity between followers and mass participation. This captures, in a reduced-form way, the impact of followers on encouraging participation by the broader population in the movement. Note also that when  $y = 0$ , the only equilibrium involves  $c^* = 0$  i.e. no possibility of change<sup>13</sup>. Thus a core group of committed followers is *necessary* to have any positive chance of successful change.

**Leadership:** Next we move back to period  $T = 1$  where the leader decides on how much effort  $i$  to devote in trying to discover the underlying state. If the benevolent leader uncovers no information

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<sup>13</sup>This is because under Assumption 2, the equilibrium condition  $p\tau G \frac{c^*}{c_H} = c^*$  cannot hold for any  $c^* \in (0, c_H]$ .

or discovers that the conditions are not right (i.e. in states  $G_0$  or  $B$ ), he will not send out any message urging people to participate as there is zero probability of success. On the other hand if the underlying state is good (i.e.  $G_1$ ), the leader issues a call to initiate change. Of course, whether or not people will act on the leader's message depends on their own personal costs as well as their expectation about action by others (as described above).

Taking the participation decision of the populace in response to a call for action as given, the leader chooses his effort  $i$  at discovering the underlying state to maximize  $\alpha aipm^e L_1 - e(i)$ . The first-order condition for the problem yields the leader's degree of initiative:

$$\alpha apm^e L_1 = \alpha ap\tau[y + (1 - y)\frac{c^*}{c_H}]L_1 = li \quad (2)$$

As the leader expects a greater degree of response  $m^e$  by the populace to his message, it encourages him to expend more resources. In other words, the leader's dynamism or the supply of initiative is increasing in the number of activists or "committed" followers  $y$  as well as the expected participation of the "contingent" followers in the general populace (given by  $c^*$ ). It is also increasing in the rewards from change, either for himself (a higher  $L_1$ ) or for the participants (via an increase in  $c^*$ ) or an increase in his communication-ability ( $\tau$ ). The effect of  $\tau$  on the leader's incentives can be both direct as well as indirect. First, the marginal rewards from increasing effort at discovering the underlying state is larger for a leader who can reach a bigger audience – the direct effect. This is reinforced by an indirect effect – namely, expectations of a larger fraction of the population receiving the leader's message encourages increased participation by non-followers (i.e. a higher  $c^*$ ), which again feeds back to the leader investing more in  $i$ .

**Followership:** Finally, we move back to the initial period  $T = 0$  to analyze the decision by individuals to invest resources  $y$  in becoming "committed" followers or activists. Recall that a higher  $y$  lowers the expected cost of participation in the future, and thus by investing in  $y$ , people commit themselves to more closely following the leader whenever called upon to do so. Of course, this decision to invest in followership depends on the expectations about the leader's dynamism and mass participation in subsequent periods.

To compute the expected payoff from investing  $y$ , note that in period  $T = 2$ , an individual participates in the process of change only if the leader's message is received (which occurs only if the leader uncovers the state  $G_1$ ) and if her cost of participation is either 0 or below  $c^*$ . Investing in followership (a higher  $y$ ) helps lower the expected participation cost in the future. With probability  $y$ , this cost is 0, while with probability  $1 - y$  it is distributed between 0 and  $c_H$ . Denoting by  $V$

the expected gains from participating, an individual's payoff from investing  $y$  is thus:

$$\alpha ai^e \tau [yV + (1-y) \int_0^{c^*} (V-c) \frac{dc}{c_H}] - f(y) = \alpha ai^e \tau [yc^* + (1-y) \frac{(c^*)^2}{2c_H}] - k \frac{y^2}{2} \quad (3)$$

as  $V = pm^e G = c^*$  (from (1)). Optimizing with respect to  $y$  gives the first-order condition:

$$\alpha ai^e \tau [c^* - \frac{(c^*)^2}{2c_H}] = ky \quad (4)$$

The left hand side of (4) captures the marginal value of followership and is dependent on the leader's expected dynamism,  $i^e$ , and the level of participation  $c^*$ . Equating this with the marginal cost, equation (4) thus gives the level of individual investment in followership  $y$  for a given level of participation  $c^*$  and leadership effort  $i$ . We label this the *followership* curve and it is represented by the curve  $F$  in figure 2(a). In the above relationship, note that for any given level of participation  $c^*$ , the degree of followership  $y$  is increasing in the level of initiative  $i^e$  that is expected from the leader. As analyzed in equation (2), the feedback is in fact two way; a higher level of followership  $y$  has a positive effect on the resources  $i$  that is put forth by the leader also. Furthermore, an increased number of committed followers encourages participation by the rest of the populace, raising  $c^*$ . However, as the above equation shows, there is a reverse effect too: as  $c^*$  increases i.e. as general participation rises (thereby increasing the chances of success), it enhances the incentives for any individual to become a committed follower.

While the above three individual decisions of participation, followership and the leader's initiative satisfy intuitively simple comparative statics properties, our objective is to focus on the interaction between the three decisions and how that translates into the overall prospects for successful change. This is what we do next.<sup>14</sup>

**Overall equilibrium:** In this game, there always exists a no-action *status-quo* equilibrium in which no one invests in  $y$  i.e. everyone chooses  $y = 0$ , following which (from (1))  $c^* = 0$  i.e. no

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<sup>14</sup>Our framework, with an emphasis on coordination, shares many features common to global games (e.g. Morris and Shin 2003). However, there are also important differences. First, there is no state where attacking the status-quo is a dominant strategy for an individual (thus ruling out the use of the iterated dominance argument which is commonly used in global games to attain a unique equilibrium). This assumption is perhaps apposite when studying mass movements. Second, our framework endogenizes the degree of complementarity by allowing individuals to invest in becoming "followers" *prior* to the leader's public signal. Third, the leader here is not a passive recipient of information that he makes public. Rather, he actively invests effort and resources in seeking and 'discovering' appropriate conditions for an attack on the status-quo. Section 4.2 analyzes the robustness of our results allowing for a dispersion in beliefs about the leader's ability or prospects for change.

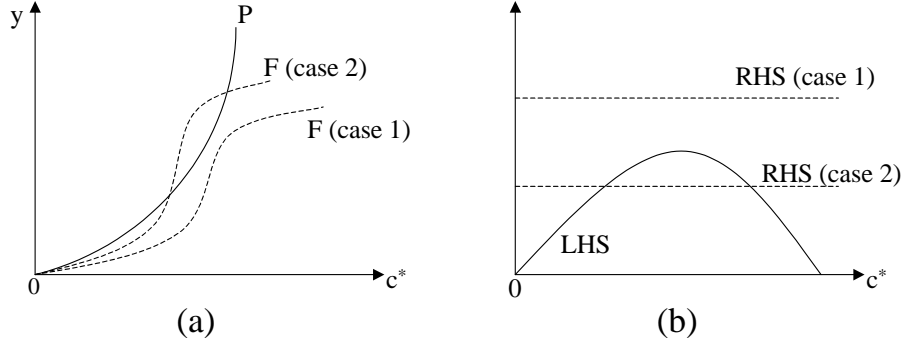


Figure 2: Overall equilibrium

one participates, and  $i = 0$ . Anticipating this, the choice of  $y = 0$  at the initial stage is a rational response. In this equilibrium, there is no probability of change and the status-quo is retained.

To investigate interior equilibria, one needs to combine the ex-ante followership decisions of individuals with the leader’s initiative decision in period  $T = 1$  and the participation decision of “contingent” followers in period  $T = 2$ . While the Appendix contains the details, here we outline the steps required to obtain the overall equilibrium. Recall that equation (1) (curve  $P$  in Figure 2(a)) gives the degree of participation  $c^*$  by non-followers for a given level of followership  $y$ , and that equation (4) (curve  $F$  in Figure 2(a)) provides the degree of investment in followership  $y$  for a given level of participation  $c^*$  and leadership effort  $i$ . Together, these two relationships pin down the overall equilibrium to the model, and this point of intersection of the  $P$  and  $F$  curves is given by:

$$\frac{(\alpha a)^2 L_1 \tau}{l G k} (c^*)^2 \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) = c^* \left(\frac{1}{p G \tau} - \frac{1}{c_H}\right) \quad (5)$$

Solution(s) to this equation (if any) determine equilibria for the overall game. Clearly one possible equilibrium involves  $c^* = 0$ . Here no one becomes a follower, the leader expends no effort and overall there is zero probability of change. However, there can be interior equilibria too.

Thus if the situation is as in case 1 of the figure, the only intersection is at  $c^* = 0$  and the only equilibrium for the game involves no change. On the other hand, in case 2, there are two interior equilibria in addition to the status-quo equilibrium. To determine the precise condition for each case, one needs to take into account the relative speed of change of the two curves; equation (5) incorporates this. Eliminating a  $c^*$  from both sides of the equation, the left-hand side is inverse U-shaped in  $c^*$ , as depicted in figure 2(b), while the right hand side is a constant. Thus, depending on whether the right hand side lies above or below the highest point of the inverse U, there is either no interior equilibrium or two such. This is captured in the proposition below.

**Proposition 2** *If*

$$\frac{(\alpha a)^2 L_1 \tau c_H}{3\sqrt{3}lkG} < \frac{1}{pG\tau} - \frac{1}{c_H} \quad (6)$$

*then the only equilibrium for the overall game is where no one becomes a follower i.e.  $y = 0$ , and  $i = 0$  and there is no possibility of change. On the other hand, if this condition does not hold, then there are two interior equilibria in addition to the no action equilibrium.*

**Proof.** See Appendix. ■

The above proposition demonstrates that the overall equilibrium to the game can be of two kinds. First, there always exists a degenerate *status-quo* equilibrium where there is no possibility of regime change. Under some circumstances, it is the only equilibrium. As condition (6) shows, this will be the case when the general prior  $\alpha$  about the prospects for change is highly pessimistic or the perceived gains from change  $G$  are relatively low, or the leader is of lower ability in terms of his ability at gathering information or communicating it. In all other circumstances, the above proposition points out the possibility of multiple interior equilibria. One is a high probability-of-change equilibrium involving a high level of followership  $y$ , a high degree of effort by the leader  $i$ , and overall a good amount of participation. At the same time, there also exists a low-level equilibrium with few becoming committed followers as well as less effort by the leader; in this case there is a relatively low (but non-zero) possibility of change. Among the three equilibria (in case 2), the status quo equilibrium and the equilibrium with the highest level of  $c^*$  are stable, while the middle one involving moderate levels of followership, participation and change is unstable.<sup>15</sup>

Observe the impact of dynamic interaction between the leader and his group of committed followers. As more people invest in becoming committed followers, there is a larger set of individuals on whom the leader can count on for rallying broader mass support. This provides the leader with stronger incentives to put in effort at discovering the underlying state, thereby raising the prospect of successful change. In turn this encourages more people to invest in followership in the first place. Indeed, this two-way feedback between followership, leadership and participation is common to many mass movements of sociopolitical change. For instance take Gandhi's mass social movement against untouchability in India. Gandhi had strong convictions and viewed the elimination of untouchability as a very important issue early on. However, lacking a sufficiently strong base of committed followers and activists, Gandhi bided his time. First, as argued by

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<sup>15</sup>This can be seen from figure 2(a). At the middle equilibrium, consider a slight increase in  $y$ . From  $(P)$ , this translates into an increase in participation  $c^*$ , which feeds back into increased followership  $y$  through the followership curve  $(F)$ . The resulting feedback is in fact greater than the initial increase in  $y$ , implying that the overall dynamics move away from this equilibrium. On the other hand, it is the opposite case for the status quo equilibrium and the equilibrium with the highest level of  $c^*$  i.e. these two are stable.

Dalton (1993) Gandhi waited until he had a sufficiently large number of social activists and committed followers that he could depend on to rally support in the larger populace. Second, Gandhi waited until the underlying state of the world was right. In particular, when the British proposed to have separate electorates for the untouchables, Gandhi immediately perceived that this was the right moment to strike (i.e. a state corresponding to  $G_1$ ) — since not only did he now have a large number of committed followers, but also because he could obtain broad support by fusing a fight against untouchability with a fight against British rule.<sup>16</sup> In an era where there was almost no mass media such as radio and television, Gandhi’s ability to mobilize the masses and spur a broader movement of social change was arguably due to his ability to rely on his base of followers to rally support.

We now discuss the implications of the above proposition.

### 3.1.1 Leadership, Change and Endogenous Threshold Effects

Several scholars of leadership have observed that there is a ‘mystery’ and elusive aspect to understanding what separates successful from failed leadership (see Popper, 2005, Burns, 1978). Is it due to ability, luck or the structural environment? Are there some barriers in the technology of leadership itself that need to be overcome for effective leadership? The result below helps throw light on both of these questions. In particular, a key implication of the above proposition is that it demonstrates that even if all aspects of the underlying leadership technology are ‘continuous’, there can arise endogenous threshold effects for effective leadership. This implies that small differences in the leader’s ability may have a large non-linear effect on the prospect of successful change. However, what makes leadership hard to pin down is that even small variations in the underlying environment may have a sizeable impact. Indeed, disentangling the effect of ability, luck or the structural environment on the threshold helps understand better the interplay of the different factors for effective leadership. We now elaborate on this result.

To begin with observe that when condition (6) is not satisfied, no movement for change gets off the ground and there is no possibility of change. This is further illustrated in Figure 3(a):<sup>17</sup>

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<sup>16</sup>According to Willmer (1984) this resulted in “.....events that astounded all who knew of the almost automatic loathing and fear felt by caste Hindus at the very thought of being touched by or in close proximity to an Untouchable..... Even more astonishing was the public fraternization of Hindus with Untouchables. In the streets of the cities, high caste Hindus were seen eating together with the cobblers, street cleaners, sweepers and scavengers.....Gandhi had produced a miracle. The long tradition of acceptance and approval of untouchability was shattered and the basis was laid for its ultimate disappearance.”

<sup>17</sup>The figure is drawn under the assumption that the Pareto-dominant (and stable) equilibrium prevails i.e. the one with the highest  $c^*$ . As is clear from (6), a similar figure could also be drawn with any of the variables  $\alpha, a, L_1, \tau, k$  or  $G$  on the X-axis.

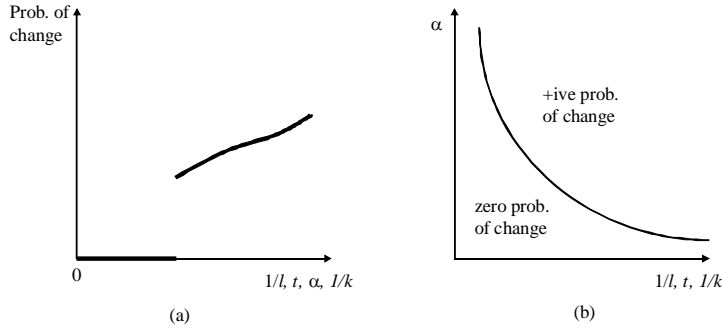


Figure 3: Effect on the probability of successful change

here, if the leader’s ability is below an endogenous threshold (i.e. if  $\tau$  or  $1/l$  is small enough), the probability of catalyzing change is zero. Above this threshold, the prospects for change increase discontinuously. This discontinuity is quite striking, given that all the underlying variables are continuous. It suggests that even though the leader here is exogenously given in the sense of being in a position to acquire and distribute pertinent information, not all leaders are able to get started a movement for change. Thus a distinction between leaders and effective leadership, the positive probability of bringing about change, emerges endogenously here. Looking at condition (6), change requires not only a leader of high enough ability, but also a combination of the right underlying conditions in the sense of an optimistic general outlook about the possibility and gains from change. Thus the view of leadership that emerges here conforms with what is popularly known as the “Weberian” view which stresses the importance of individual leader characteristics, but only under the right structural conditions. Figure 3(b) further highlights this interaction between the leader’s ability  $l$  and the public prior  $\alpha$  in determining the chances for change. When the general outlook  $\alpha$  is very optimistic, even leaders of low ability are able to catalyze change; on the other hand, in pessimistic times, the threshold ability level for effective leadership is much higher.

The mechanics underlying the threshold effects can be understood by looking at Figure 2(a). Consider the impact of a change in the leader’s ability variable  $l$ . This has no effect on the  $P$ -curve since it represents the participation decision of non-followers which takes place *after* uncovering of the state by the leader. On the other hand, the  $F$ -curve represents *ex-ante* investment in followership. A lowering of  $l$  implies increased initiative  $i$  by the leader for any given level of participation  $c^*$ , and thereby encourages increased followership  $y$ . In other words, the  $F$ -curve shifts upward with a decrease in  $l$ , thus making (intersection and) interior equilibria more likely.

To see the intuition, we begin by observing that in the absence of a leader there is a coordi-

nation failure. By providing information, the leader helps resolve this coordination failure, but his effectiveness depends on the degree of underlying strategic complementarities. There are two channels through which strategic complementarities work in the model. First, is the complementarity that arises between the participation decision of the “committed” and the “contingent” followers. Second, the complementarity between mass participation and individual investment in followership. This latter channel is influenced by the leader’s ability at gathering information. A leader of higher ability makes each individual’s followership decision less dependent on the decisions of others thus mitigating the coordination problem. Therefore, an increase in the leader’s ability attracts more committed and loyal followers. Moreover, this direct effect of a larger set of core followers further encourages participation by the contingent followers. Together these two effects result in the leader’s ability having a disproportionate impact on the probability of change.

### 3.2 Leaders and Followers under Imperfectly Congruent Preferences

The analysis above was for a “benevolent” leader i.e. one whose preferences for change are perfectly aligned with that of the majority. While this may be true in some instances, the leader may also have his or her own agenda for change separate from that desired by the majority. For instance, in a political context the institutional change that was catalyzed by Mugabe in Zimbabwe or by Lenin in Russia may not have been as desired by followers. When the leader’s interests are known to be *not* aligned with a particular group, individuals from this group have reason to suspect his motives when he issues a call for action. For instance, a Shiite leader’s call to arms with the aim of overthrowing Saddam Hussein in Iraq may be viewed quite differently by a Sunni than a Shiite. We now explore two questions in this context: (i) which leader is more ‘effective’ at catalyzing change – the benevolent or the self-interested leader? and (ii) what leader would the populace prefer to select (or elect)?

Accordingly, we now analyze the case where the leader may belong to or have interests aligned with group  $E$  and thus his preferences for change may diverge from that of the majority group  $M$ . In doing so, it also allows us to discuss in the same framework instances of “good” as well as “bad” changes i.e. changes in which gains accrue to only a narrow minority while all bear the cost. Recall that in state  $G_0$ , only participants from group  $E$  gain; those from group  $M$  gain nothing but incur the cost of participation  $c$ . The ex-ante prior on the state being  $B$  is given by  $1 - \alpha$ , while that on it being  $G_1$  is  $\alpha a$  and on it being  $G_0$  is  $\alpha(1 - a)$ . A higher  $a$  implies a greater coincidence of objectives between the two groups and thus also between a leader from group  $E$  and the majority.

We assume that the leader’s initial reputation of being ‘benevolent’ (i.e. having preferences



congruent with group  $M$ ) is given by  $\lambda \in (0, 1)$ . Such a leader calls for investment in changing the status quo only in state  $G_1$ . In contrast, a ‘self-interested’ leader is one whose preferences are aligned with group E (the elite). Accordingly, such a self-interested leader is assumed to earn rents  $L_1 > 0$  in state  $G_1$  as well as  $L_0 > 0$  in state  $G_0$ . Therefore, in contrast to the benevolent leader, such a self-interested leader will issue a call for investment in both state  $G_1$  *as well* as in  $G_0$ . We should point out that one can also think of state  $G_0$  as one in which change is personally beneficial for the leader (e.g. consolidates his hold on power) without bringing any widespread benefits.<sup>18</sup>

This formulation allows us to capture (in a parsimonious way), both the overlap *and* the conflict between various groups that often underlies institutional change. For example, in the developing world, leaders have led mass movements of a variety of kinds. In some instances (e.g. much of South Asia and Latin America) the elite and the broader populace were in direct conflict on both the economic and political dimensions - we label this the *conflict* scenario. In other instances (e.g. South Africa and Zimbabwe), while the status-quo elite and the populace may be in political conflict, optimal institutional reform may require economic accommodation between the elite and the majority - the *accommodation* scenario. In Section 4.1, we elaborate on this and describe how our framework can be adapted to capture the diverse experience with political transitions.

### 3.2.1 Equilibrium analysis

*On Becoming a Follower: the Role of Credibility:*

When the leader’s preferences are different, people in group  $M$  are no longer sure about the credibility of any message sent by the leader. The populace would be wary of being misled and manipulated by such a leader. If the leader uses his bully-pulpit to exhort the populace to invest, they update their probability about the state being  $G_1$  to:  $Prob(G_1|message) = \hat{a} = \frac{a}{a+(1-\lambda)(1-a)}$ . While all committed followers participate (as their cost of doing so is 0), among the non-followers only those with low enough costs do so. This cutoff cost  $c^*$  is now given by:

$$c^* = \hat{a}p\tau[y + (1 - y)\frac{c^*}{c_H}]G \quad (7)$$

The higher the likelihood that the leader is benevolent (i.e. higher  $\lambda$ ), the higher is  $\hat{a}$ . The above equation implies that as a result  $c^*$  also rises. In other words, an increase in  $\lambda$  raises credibility of the leader. Given that there is a smaller probability of being misled, a rise in  $\lambda$  encourages greater

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<sup>18</sup>While the leader’s message here has been assumed to only involve a call for action or not, enriching it in the sense of allowing the leader to also declare the state of the world as  $G_1$  or  $G_0$  would not change the analysis. The benevolent leader would declare the state truthfully while the self-interested leader would identify both states  $G_1$  and  $G_0$  as being  $G_1$ . Thus the inference problem for the population would be the same as here.

mass participation and thus raises the prospect of successful change – we call this the “*credibility effect*”.

As pointed out above, a self-interested leader would be willing to be unscrupulous and would not hesitate to encourage the populace to make even an inefficient investment in overturning the status quo, if it is personally advantageous for him. This makes it more likely that such a leader may also (on occasion) unearth a socially optimal window of opportunity for change (i.e. in state  $G_1$ ). To see this, note that a politically ambitious leader gains both in states  $G_1$  and  $G_0$ . Thus, taking the expected mass of participants  $m^e$  as given, a self-interested leader’s optimization problem is given by:  $\max_{i_s} \alpha i_s p m^e (a L_1 + (1 - a) L_0) - e(i_s)$ . Comparing the self-interested leader’s effort choice  $i_s$  with that of a benevolent leader  $i_b$  (who gains only in state  $G_1$ ), we see that  $i_s = (1 + \frac{1-a}{a} \frac{L_0}{L_1}) i_b$ . We call this increased effort as being due to the “ambition effect”, and in determining the overall probability of change trades-off against the lack of credibility that a self-interested leader faces.

When the set of followers is high to begin with, credibility among the rest of the population is not as important and therefore the “ambition effect” due to a self-interested leader dominates and serves to increase the probability of change under such a leader. On the other hand, when the number of followers is low, the lack of credibility faced by a self-interested leader impedes chances of successful change even in state  $G_1$ .<sup>19</sup> In what follows, we deliberately minimize the “ambition” effect by assuming that in state  $G_0$ , the leader’s payoff  $L_0$  is very small but positive. In this case, the issue of credibility will remain as a self-interested leader will continue to call for popular action even if the state is  $G_0$ . However the difference between  $i_s$  and  $i_b$  will be minimal.<sup>20</sup>

*On Becoming a Follower: the Insulation Effect:*

When the leader is selfish and may undertake change that is not in the society’s long term interest, there is an additional incentive for an individual to become a committed follower. In particular, becoming a follower by becoming a party member or activist, helps provide some insulation against harmful changes. We now consider the effect of the leader’s type on followership

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<sup>19</sup>The probability of change in state  $G_1$  (under a leader who is benevolent with probability  $\lambda$ ) is given by

$$P_1 = \lambda i_b p m^e + (1 - \lambda) i_s p m^e = \frac{\alpha p^2 \tau^2 L}{l} (\lambda a + 1 - \lambda) [y + (1 - y) \frac{c^*}{c_H}]^2$$

It can be seen that  $P_1$  is U-shaped in the leader’s type  $\lambda$ . For low values of  $\lambda$ , the effect of an increase in  $\lambda$  is to lower the probability of change, while beyond a certain point, this effect is positive. This emerges due to the trade-off between the “credibility” and “ambition” effects. Furthermore, the impact of an increase in the number of followers  $y$  is to raise the turning point of the above U-shaped relationship between  $\lambda$  and  $P_1$ . In other words, as the number of followers rises, the effect of increased  $\lambda$  is negative over a bigger range.

<sup>20</sup>We make this assumption in order to focus on the mechanisms that we regard as key. After all, it can be argued that benevolent leaders may direct more effort towards discovering states of type  $G_1$ , in which case (unlike in our present model)  $i_s$  maybe smaller than  $i_b$ .

itself and consequently on the overall chances of change.

In Section 3.1, we dealt with the case where the leader is a benevolent type. For comparison, we now consider the diametric opposite case where the leader is known to be of the self-interested type i.e.  $\lambda = 0$ . In this case,  $\hat{a} = a$  and the marginal participant is given by:  $c^* = ap\tau[y + (1 - y)\frac{c^*}{c_H}]G$ .

To evaluate the value of followership for an individual from group  $M$ , one needs to calculate the date  $T = 2$  expected gains in states  $G_0$  and  $G_1$ . In either state, provided the leader uncovers it and one receives the leader's message, one will participate if either one's cost is 0 (which happens with probability  $y$ ) or it is below  $c^*$ . Thus in state  $G_x$ ,  $x \in \{0, 1\}$ , the expected future gains are:  $i_s\tau[yV_x + (1 - y)\int_0^{c^*}(V_x - c)\frac{dc}{c_H}]$  where  $V_x$  is the expected gain to participating in state  $G_x$  and is given by  $V = 0$  in state  $G_0$  and  $V = p\tau[y^e + (1 - y^e)\frac{c^*}{c_H}]G = \frac{c^*}{a}$  in state  $G_1$ . Combining the two payoffs gives the overall value of followership  $y$  :

$$i_s\tau[\alpha a\{y\frac{c^*}{a} + (1 - y)\frac{(c^*)^2}{c_H}(\frac{1}{a} - \frac{1}{2})\} - \alpha(1 - a)(1 - y)\frac{(c^*)^2}{2c_H}] \quad (8)$$

Compared with the case of a benevolent leader, there is an added incentive for followership here, namely the alignment of one's interests with those of the leader. This is important in the state  $G_0$ ; being a follower participant in this state incurs zero loss as one's cost of participation then is 0. Being a non-follower participant however, one incurs the positive costs of participation  $c$ , without getting any benefit. Investing in followership thus provides insulation by reducing the expected loss in this situation. The last term in the above expression captures the added incentive to become a follower here due to the "insulation effect" of followership.<sup>21</sup>

Weighing the marginal gain from increased investment in followership  $y$  against its marginal cost  $f'(y)$ , one gets the condition for the optimal degree of followership here. As before, incorporating  $y$  from (7), and rearranging terms, one gets the overall equilibrium condition:

$$\frac{\alpha^2\tau}{lGk}(aL_1 + (1 - a)L_0)(c^*)^2(1 - \frac{c^*}{c_H})(1 - \frac{c^*}{2c_H}) = c^*(\frac{1}{pG\tau} - \frac{a}{c_H}) \quad (9)$$

This expression is similar to the equilibrium condition for a benevolent leader (5). Thus the equilibrium structure here is the same as before and again involves threshold effects in the probability of effecting change. Since the model here endogenously develops a notion of effective leadership in

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<sup>21</sup>While we have cast followership in the model in terms of a lower cost of participation, it could analogously be modeled as investing in *higher gains from change*. Again, the incentive for a follower would be to align one's interests more closely with those of the leader (or his group) so as to reap greater gains under all circumstances. For example, this could be by adopting a technology or an occupation that is closer in line with that of the elite group  $E$  so as to achieve gains in both states  $G_1$  *as well as*  $G_0$ .

terms of the threshold level of ability required to catalyze change, one can thus compare the level of effectiveness of a benevolent versus a self-interested leader in terms of these thresholds.<sup>22</sup>

The following proposition then makes the comparison between a benevolent and selfish leader.

**Proposition 3** *If  $\frac{c_H}{2} > p\tau G$ , then for all  $a$ , the threshold level of ability  $l$  that is required for a benevolent leader to be effective is higher than that for a self-interested leader. If  $\frac{c_H}{2} < p\tau G$ , then there exists a cutoff level  $a^*$  such that for  $a < a^*$ , a benevolent leader needs to satisfy a higher threshold ability level to demonstrate effective leadership. In contrast, for  $a > a^*$ , the threshold ability level required for effective leadership is higher for a self-interested ambitious leader.*

**Proof.** See Appendix. ■

What kind of leader is more effective at transforming the status-quo — a benevolent or a self-interested one? In terms of the minimum ability level required for effective leadership, the above proposition highlights that the answer depends on the expected participation costs (given by  $c_H/2$ ) and the degree of congruence between the two groups (given by  $a$ ). The key to the intuition here is that when  $c_H$  is high or when the relative probability of state  $G_1$  is low (i.e.  $a$  is small), the expected cost of mistaken participation ex-post is high. Therefore in such circumstances, the desire to insulate oneself from the prospect of adverse change provides a stronger ex-ante incentive to invest in followership under a self-interested leader. Thus in these cases, the level of followership is greater for a self-interested leader and consequently the threshold ability level required for effective leadership is lower for such a leader.

Note that while the potential for effective leadership is greater for a self-interested leader in certain circumstances, such a leader is also more likely to enact change that is costly for all but benefits only a narrow minority. Thus a natural question is: for a given level of leader ability  $l$ , what kind of leader is preferred by each group? In other words, in ex-ante welfare terms can it be that a self-interested leader may be preferred by the majority to a benevolent one? This is addressed in the next proposition. Of course, given multiple interior equilibria, in making welfare comparisons, the choice of equilibria is important. In all cases, we consider the Pareto-dominant one i.e. the one with the highest  $c^*$ .

**Proposition 4** *If  $\frac{c_H}{2} > p\tau G$ , the ex-ante welfare in the Pareto-dominant interior equilibrium (if it exists) under a self-interested leader is higher than that under a benevolent leader of the same ability. If  $\frac{c_H}{2} < p\tau G$ , the above is true for small values of  $a$ .*

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<sup>22</sup>The credibility, ambition and insulation effects all have a role to play in this comparison. However, as discussed earlier we assume that  $L_0$ , the leaders gain in state  $G_0$ , is close to 0 in order to minimize the role of the ‘ambition’ effect in the following proposition.

**Proof.** See Appendix. ■

This proposition shows that in terms of ex-ante welfare, there is a broad range of parameters under which a self-interested leader would be preferred not only by the elite group  $E$  but *also* by the majority  $M$  with whom it is known that the leader’s interests do not always coincide. Thus even if one were to consider the issue of leader selection at the beginning of the game, it is possible that the majority may wish to select a leader with objectives not always congruent with theirs.

The intuition for the above result can be understood by observing that there are two opposing considerations at work. First, a self-interested leader’s lack of credibility tends to lower overall participation. On the other hand, the desire to align interests means that an ambitious leader may have a larger number of followers (the insulation effect) — this tends to drive up  $c^*$ . As in proposition 3, the insulation effect (and thus followership) is likely to be strongest when the expected costs of participation ( $c_H/2$ ) is high as well as when the relative probability of the good state,  $a$ , is low. In these cases, the insulation effect dominates the credibility effect, and overall  $c^*$  is high. In this case individuals prefer a self-interested leader to a benevolent one from their own group.

The above proposition suggests why individuals may willingly choose to follow leaders such as Hitler, Lenin or Mugabe. Our analysis shows that there are two reasons as to why individuals may become members of the ZANU-PF party in Zimbabwe, the Baath Party in Iraq or indeed even the Nazi party in Germany. The first is the perception that (probabilistically) these ambitious leaders can be effective and are likely to catalyze a transition that may result in direct rewards for all followers. However as discussed above, individuals have the added incentive to become followers in order to insure themselves against adverse change – the “insulation effect”. This aspect of followership is described (in the Nazi case) by Thyssen (1941) and Brustein (1996) and by Kravchenko (1947) (in the Soviet case), who document how (among other motivations) prudent self-insurance was an additional consideration driving individuals to become members of the Nazi (or Communist) party when Hitler (respectively, Stalin) came to power. Individuals may become followers of leaders they know to be mendacious in an attempt to insulate themselves from the adverse impact of any changes that may occur under the aegis of such leaders.

## 4 Leadership in Different Environments: A Discussion

### 4.1 An Example: Leadership and Political Transitions in the Third World

The twentieth century saw the demise of colonialism in many parts of the developing world. In many of these cases, leaders of political movements were key actors responsible for the drive to-

wards independence and the introduction of new political and economic institutions. However, the outcomes from these transitions have been widely varied. While Nehru's role in establishing democracy in India has been a relative success, Kwame Nkrumah's Ghana or Zambia under Kenneth Kaunda was a relative failure. Of course, the disappointment which many followers and participants in the process of revolutionary change felt was a function of the nature of the change that materialized. In some countries, the failure of the new political institutions was absolute – with the establishment of a one-party autocracy in countries such as Zambia or the establishment of a communist autocracy in Lenin's Soviet Union. In other instances the failure was perhaps less obvious. For example, in “democratic” countries such as Argentina, Brazil and Mexico the levers of government policy were captured by a landed and industrial elite, resulting in long term economic stagnation.

To begin with notice that many of the key features of our basic framework suit the trajectory of political movements and revolution in the developing world. Be it Mujibur Rehman in Bangladesh, Nkrumah in Ghana or Ho Chih Minh in Vietnam – all were leaders who attracted committed followers and activists. Furthermore, these committed followers were not merely passive supporters of a revolution. Rather they were organized into political parties and played an important supporting role in empowering their respective leaders and encouraging the broader populace to participate in the revolution – be it members of the Awami League in Bangladesh, the Viet Minh in Vietnam or the Convention People's Party in Ghana. We now illustrate how our framework (with small modifications) can be applied towards explaining the wide diversity of outcomes with independence from colonial rule – both the relative successes as well as the failures.

To help put our modeling choices into context, consider a scenario where the status-quo autocracy is such that power is held by a narrow “elite” group. In this society, the elite controls not just political power, but also economic power in the sense that they own (or have monopoly rights over) large parts of the economy. Mass movements directed at overthrowing the status-quo autocracy may result in complete or partial change in one or both dimensions. However, the actual benefits for the populace may depend on the precise nature of the change enacted and can involve inefficiencies of two types. We discuss each in turn.

*I: The Conflict Scenario* – In some instances, the status-quo elite and the broader populace are in not only direct political but also economic conflict. In this case the only way to have a successful political transformation is for it to be accompanied by the dismantling of the economic power of the elite group (in the form of a large-scale asset redistribution). Otherwise, there remains the danger of encroachment and rigging of “democratic” politics by the economically powerful erstwhile elite. In other words, the political openness of subsequent elections depends

on whether the political transition has resulted in cosmetic or comprehensive institutional change. For example, comprehensive land reform played an important role in destroying the economic basis of the agricultural landed elite in much of South Korea, Japan and Taiwan and broke their stranglehold on the political process. In contrast, democratic institutions in newly independent Pakistan remained weak and in the grip of a landed aristocracy.

The chances of success for a mass movement directed at toppling the autocratic elite depends not only on the number of participants in the process, but also on the resources  $R$  the elite can marshal against such a movement. Fluctuations in demand conditions in the sectors controlled by the elite can result in ups and downs over their current resources – making it easier or more difficult for a successful challenge of the status-quo.<sup>23</sup> When the economic rents of the elite are sufficiently strong (i.e. rents  $R^{high}$ ), the chances of success are minimal and would correspond to state  $B$  in our model. On the other extreme, if the elite finds itself in a relatively weak position (i.e. their current rents are  $R^{low}$ ), then we can expect that it is not only easy to topple the status quo regime, but also to bring about comprehensive change involving both a political transformation as well as an economic redistribution. Such a change is much more likely to be directly beneficial to the majority not only by breaking up the monopoly economic power of the elite, but also by extinguishing the possibility that they may use their economic clout to indirectly influence politics. This type of change, which in our terminology is change of type  $G_1$ , benefits the majority as well as the leader, who now stands a high chance of being the political leader of the entire country.

On the other hand, if the economic elite is moderately powerful (i.e. if their current rents are at an intermediate level  $R^{med}$ ), it may be amenable to a ‘cosmetic’ change, where it relinquishes political power to the mass movement, but may still be powerful enough to stop any restructuring of its economic power. While the leader of the mass-movement may stand to gain from such a political transition by becoming the new leader of the entire country, the gains to the broader populace from such a partial and cosmetic change is likely to be minimal as the elite continue to maintain their influence on the political process and ensure the perpetuation of their economic rents. Thus, in our previous terminology, this would be a change of type  $G_0$ , which is personally beneficial to the leader but brings only limited rewards for the population at large.

In this framework, the economic power base of the elite corresponds to the various states of the world. The bad state  $B$  corresponds to a world where the economic rents of the elite are sufficiently strong (i.e. rents  $R^{high}$ ) so as to prevent any challenge to the status-quo. In contrast, if the stochastic rents are at an intermediate ( $R^{med}$ ) or high level ( $R^{high}$ ), then this accords with

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<sup>23</sup>For example, in several Caribbean nations, owners of sugarcane plantations yielded enormous economic power as well as say over the government. Fluctuations in the prices of sugarcane can create uncertainty over the resources that these plantation owners can marshal to retain their clout.

state being either  $G_0$  or  $G_1$  respectively. Thus, uncertainty about the relative current economic position of the elites dictates which strategy for change (if at all) is the optimal one.

*II: The Accommodation Scenario* – In other instances, while the status-quo elite and the populace may be in political conflict, socially optimal institutional reform may require economic accommodation between the elite and the majority. For instance, if the elite group possess valuable human capital related to the economic areas under their control, complete dismantling of their economic power may not be socially desirable. Consider the examples of Zimbabwe and South Africa. In both countries, the expropriation of assets owned by the white minority held the danger of resulting in an exodus of scarce high skill and managerial labor, in addition to capital flight and inadequate foreign investment (as happened in Zimbabwe). This flight of skilled labor may prove devastating for the interests of the black majority and hence, the optimal policy may well be some kind of economic (and political) accommodation with the white minority.

In this case, change of type  $G_1$  involves transfer of political power from the minority elite to the populace, but with sufficient safeguards for the minority's economic assets to allow them to maintain control over them. This is the type of change that provides for maximum welfare. On the other hand, a leader who is unsure of his electoral prospects in the post-change regime may be tempted to improve his prospects through populist moves such as demonizing the elite and encouraging revolution in which the assets of the elite are seized and redistributed, with deleterious consequences for the economy. Mugabe's strategy in Zimbabwe could be said to be along these lines. In our terminology, encouraging change through such populist measures which maybe personally beneficial, but would be a bad policy, correspond to change of type  $G_0$ .

Uncertainty about the relative importance of the elites for the overall economy dictates which strategy for change is the optimal one. While the leader is in a position to best ascertain the underlying state, his reputation as being a benevolent or a self-interested one dictates his choice of implementing changes of type  $G_1$  or  $G_0$ . People take this into account in making their decision of whether or not to follow the leader's recommendation, and thereby determine the chances of success for each type of change.

Having put some of our modelling choices into context via the above examples, we next the discuss the robustness of our results as well as other implications of the framework.

## **4.2 What Makes a Leader Effective? Perceptions or Reality**

Is the leader's effectiveness at transforming the status-quo a function of public perceptions or actual leader ability? Addressing this issue helps throw some light on the long-standing debate in leadership of whether change is driven by actual leader ability (the 'Great Man theory') or



whether the underlying ‘spirit of the times’ was ripe for change. In addressing these questions we also examine the robustness of our results to allowing for a dispersion in beliefs in the population about underlying parameters, such as the leader’s ability  $l$  or the prospects for change,  $\alpha$ .

In the model so far, we have assumed that all individuals share the same belief  $\alpha$  about the possibility for change, about the congruence parameter  $a$  and are perfectly aware of the leader’s ability  $l$ . It can be argued that in reality individuals may differ in their perceptions about any or all of these parameters. As emphasized by Morris and Shin (2003) and others, it is more than likely that there is a heterogeneity in beliefs about underlying parameters. For instance, some individuals may be more optimistic than others about the leader’s ability or the underlying conditions. Accordingly, in what follows we capture a possible heterogeneity in beliefs by focusing on dispersed perceptions about the leader’s ability.

In particular, suppose the leader’s ability  $l$  is not known, but is commonly believed that this ability parameter is given by a random variable  $\tilde{l}$  which is distributed over the interval  $[\underline{l}, \bar{l}]$  according to the cdf  $F(\tilde{l})$ , where  $\bar{l} > \underline{l} > \alpha p \tau L_s$ . Equivalently, one could assume that there is a dispersion in beliefs about the leader’s ability, with  $F(\tilde{l})$  being the fraction of the population who believe the leader’s ability to be below  $\tilde{l}$ . The rest of the game is the same as before.

Uncertainty about  $l$  does not affect the participation decision in the second period, as this decision is taken *after* the discovery of the state by the leader. Thus equation (1) still characterizes participation of non-followers. Moving back to  $T = 1$ , the effort decision  $\tilde{i}$  for a leader of ability  $\tilde{l}$  depends on the expected mass of participants  $m^e$  in period  $T = 2$ , and is given by a condition analogous to (2):  $\tilde{i} = \alpha a p m^e L_1 / \tilde{l}$ .

At the initial period  $T = 0$ , the followership decision of an individual is related to the expected effort that will be put in by the leader  $E(\tilde{i})$  and is given by<sup>24</sup>:  $y = \alpha a \tau E(\tilde{i}) [c^* - \frac{(c^*)^2}{2c_H}] / k$ , which is analogous to equation (4). As before, incorporating  $\tilde{i}$  from the leader’s decision and  $y$  from the participation equation gives the overall equilibrium condition for  $c^*$  as:

$$\frac{(\alpha a)^2 L_1 \tau}{Gk} E\left(\frac{1}{\tilde{l}}\right) (c^*)^2 \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) = c^* \left(\frac{1}{pG\tau} - \frac{1}{c_H}\right)$$

This is almost identical to equation (5) before, and therefore as in proposition 2, the condition for whether or not the only equilibrium is the no action one is given by the condition:

$$\frac{(\alpha a)^2 L_1 \tau c_H}{3\sqrt{3}kG} E\left(\frac{1}{\tilde{l}}\right) \leq \frac{1}{pG\tau} - \frac{1}{c_H}$$

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<sup>24</sup>In the case of dispersed beliefs, investment in followership by an individual who believes that the leader’s ability is  $\tilde{l}$  is given by:  $\tilde{y} = \alpha a \tau \tilde{i} [c^* - \frac{(c^*)^2}{2c_H}] / k$ . Now, integrating over the whole population, the total mass of followers is given by  $y = \alpha a \tau E(\tilde{i}) [c^* - \frac{(c^*)^2}{2c_H}] / k$ .

Now observe that in the above condition, the leader's actual ability  $l$  does not enter this inequality. This has a striking implication, in that it suggests that the threshold for effective leadership depends solely on the public perception about the leader's ability  $E(1/\tilde{l})$ . In other words, in the absence of a good reputation, even a high ability leader will be quite ineffective. However, once the threshold is crossed, the leader's actual ability plays a positive role in determining the prospect of change. In terms of figure 3(a), an increase in the leader's actual ability raises the non-zero part of the graph, but has no effect on the threshold at which the probability of change jumps discretely up. Therefore, our analysis suggests that a society's *perceptions* of a leader's ability are important because they influence the decision to become a follower. Gandhi's reputation (acquired in South Africa) was crucial in helping generate a cadre of committed followers when he arrived in India in 1915 and made him immediately effective.

Similarly, a dispersion in beliefs about the prospects for change,  $\alpha$ , can also be accommodated into the structure of the basic model. While individual beliefs  $\tilde{\alpha}$  affect followership decisions, the leader's personal belief  $\alpha_L$  affects his leadership initiative  $i$ . Together, these result in an analogous overall equilibrium condition:

$$\frac{\alpha^2 L_1 \tau \alpha_L E(\tilde{\alpha})}{l G k} (c^*)^2 \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) = c^* \left(\frac{1}{p G \tau} - \frac{1}{c_H}\right)$$

where  $E(\tilde{\alpha})$  is the mean of the beliefs in the population. Again, as in proposition 2, if either  $\alpha_L$  or  $E(\tilde{\alpha})$  is too small, then the only equilibrium involves persistence of the status quo. This result has interesting implications. It suggests that the prevailing zeitgeist directly impinges on the prospects of change. If expectations for change are sufficiently optimistic, even a leader of relatively modest talents can bring about revolution. For instance, Lenin's return to Petrograd in April 1917 was so effective, because the prospects for a successful revolution were believed to be high. This is not to deny the possibility that Lenin was a leader of high ability and his role in the October Revolution was key (see Service, 2000 for a discussion). Rather it is to emphasize that most cases of change occur due to some combination of the expectations about the underlying prospects and the leader's reputation. Indeed it is precisely this possibility that has perhaps contributed to the diverse viewpoints among social scientists regarding the importance of the leader's inherent ability versus the underlying public belief in contributing to change.

We summarize the above argument that both expectations as well as fundamentals matter for the exercise of effective leadership in the following proposition.

**Proposition 5** *The population's perception of the leader's ability  $E(1/\tilde{l})$  or of the prospects for change  $E(\tilde{\alpha})$  determines the threshold for effective leadership i.e. where there is a positive probability of change. However, once this threshold is crossed, the leader's actual ability helps determine*

the overall probability of change.

### 4.3 Leadership and Threshold Effects: the Role of Followership

The two-way relationship between the leader’s actions and followership has been central to our results on (endogenous) threshold effects in the leader’s ability. However, are our results predicated on the assumptions of the nature of followership? In particular, does the fact that in our model all individuals face the same followership costs make a difference to our results? Similarly, will the presence of a positive mass of exogenously given “committed” followers alter the qualitative nature of our results? Indeed, for reasons of ideology or psychological disposition, it may well be that in certain instances some leaders can always count on a positive mass of blind followers. In what follows we show that our results are robust to relaxing both the above assumptions.

First, suppose the costs  $f_i$  of committing to followership are not identical but distributed uniformly among the population over the interval  $[0, f_H]$ . This could reflect the variation in opportunity costs faced by different individuals or even their ideological bent in committing to following this particular leader. The overall commitment cost for individual  $i$  is given by  $kf_i$ , with the parameter  $k$  representing the magnitude of these opportunity costs. The rest of the model is the same as before.

As before, a potential “committed” follower trades off the gain from commitment against the cost of doing so. For the marginal “committed” follower, the two are equated and are given by the condition:

$$\alpha a i e^{\tau} [c^* - \frac{(c^*)^2}{2c_H}] = k f_i^*$$

where the left-hand side is the gain from followership (as derived in (4)) and the right-hand side the cost. Now the mass of followers  $y$  is those with followership costs less than or equal to  $f_i^*$  i.e.  $y = f_i^*/f_H$ . Replacing  $f_i^*$  by  $y f_H$  yields the same equation for followership as before i.e. (4). Thus even with dispersed costs of followership, the overall equilibrium condition is the same viz. equation (5), and hence all of the previous results hold here too.

We now investigate the role of exogenous followership. Suppose that for exogenous reasons, a small fraction  $x$  join as “committed” followers before period  $T = 0$ . How does this affect the subsequent game? Since the marginal costs of both followership and participation at  $y = 0, c^* = 0$  are zero, this exogenous positive mass of committed followers will obviously influence individuals to invest small positive amounts into followership and participation. Thus instead of the no-action equilibrium, there will now always be an equilibrium with small amounts of followership, participation and a low but positive probability of change. But can the leader’s ability have a discontinuous effect on this probability? We find that the answer to this question is still affirmative. In terms of

the analysis, the presence of exogenous followers does not affect the marginal followership decision (4) for a given level of  $c^*$ . Thus the followership curve ( $F$ ) in figure 2(a) is unchanged. Participation however increases, as the level of committed followership now is  $y + x$ ; the participation curve ( $P$ ) thus moves to the right. Now, while there is always at least one intersection between the two curves (the low level equilibrium), whether or not there is a second intersection at a higher level of  $y$  and  $c^*$  depends on the position of the F-curve. As before, this is impacted by the leader's ability. Thus again we have a discrete jump in the overall probability of successful change as a function of the leader's ability. Even with an exogenous set of followers, low ability leaders are unable to inspire others to commit deeply, thus resulting in only a shallow movement for change. By making each individual's followership decision much less contingent on participation by others, high ability leaders have a transformative effect on the prospects for change.

#### 4.4 Leadership and Threshold Effects: the Role of Complementarity

How does the degree of complementarity in individual participation decisions matter for the equilibrium and therefore for the overall probability of successful change? In addressing this question we revert to the general formulation, where the probability of change is given by  $\frac{1}{\theta}pm^\theta$ , with  $\theta > 0$ . Recall that the parameter  $\theta$  now captures the degree of complementarity in the process, as a smaller  $\theta$  corresponds to a higher marginal product of increased participation  $m$ . The structure of the game is the same as before except that (similar to Assumption 2), we now assume:

**Assumption 2':**  $p\tau G < \theta c_H$

The analysis of the participation decision, the degree of leadership effort exerted and the investment into followership is very similar to that above and are derived in the Appendix. Together, the overall equilibrium condition for  $c^*$  is now given by the equation:

$$\frac{(\alpha a)^2 L_1 \tau}{lGk} (c^*)^2 \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) = c^* \left( \left(\frac{\theta}{pG\tau}\right)^{\frac{1}{\theta}} (c^*)^{\frac{1}{\theta}-1} - \frac{1}{c_H} \right) \quad (10)$$

Clearly  $c^* = 0$  (i.e. one where no one becomes a follower, the leader expends no effort and overall there is zero probability of change), is an equilibrium now too. Looking for interior equilibria, the left hand side of (10) is the same as that of (5). However the right-hand side is now different and the interior equilibria in some cases will now be unique and may involve no threshold requirements for leaders to be effective. The following Corollary to Proposition 2 analyzes this in more detail.

**Corollary 1** *For  $\theta < 1$ , in addition to the status-quo equilibrium, there always exists an interior equilibrium with a positive probability of change. For  $\theta \geq 1$ , there are threshold effects since there exists a range of parameters under which the status-quo is the only equilibrium.*

**Proof.** See Appendix. ■

This proposition shows that when  $\theta$  is low, there *always* exists an interior equilibrium. This implies that there are no threshold effects in leadership when  $\theta$  is less than 1. In other words, over the *entire range* of leadership ability  $l$  or  $\tau$ , small changes in the leader’s ability or in any of the underlying parameters result only in a small change in the probability of successful change. On the other hand, when strategic complementarity is high i.e. for any  $\theta \geq 1$ , there exists thresholds similar to condition (6) that must be satisfied for a leader to be effective.

The underlying intuition for this difference stems again from the strategic complementarity between committed followers, non-followers and the leader. When  $\theta < 1$ , slight increases in the number of followers (at  $y = 0$ ) results in a big increase in the participation of non-followers, thus overall leading to a substantial increase in the mass of participants. Together this implies that a small increase in followership also results in a significant improvement to the leader’s incentive in light of the expected change in overall participation. On the other hand when  $\theta \geq 1$ , a marginal increase in  $y$  (at  $y = 0$ ) results in only a small marginal increase in the overall number of participants and thus is not enough to spur the leader into putting in more effort. In this case only a leader of sufficiently high ability helps resolve the coordination failure by making successful outcome to each individual’s investment much less dependent on the actions of others. Thus, when  $\theta \geq 1$ , there exist threshold effects in catalyzing change.

## 5 Conclusion

In this paper we took a first step towards analyzing the mechanics of mass movements that help bring about social and political change. Our analysis emphasizes that while both the leader’s ability as well as underlying structural conditions are important, what separates successful from failed mass movements is the nature of the relationship between a leader and his followers in transforming the prospects for change. The two-way interaction between followership and the supply of leadership initiative can endogenously give rise to threshold effects, with slight differences in the underlying structural conditions or in the leaders’s ability resulting in dramatic differences in the prospects for change. Further the model shows that under a broad set of conditions, the populace may deliberately prefer to follow an ambitious leader whose interests may not always be congruent with theirs. As a result, while such leaders are more likely to bring about change, this change may often not be in the best interests of the majority. Thus our analysis also throws light on why ‘good’ as well as ‘bad’ leaders may both have their followers.

However our analysis is but a first step. Our framework explored only the broad contours of the impact of leaders in encouraging followership and participation to bring about change. Several

other important elements of the process are obvious directions for future study. For instance, while the mode of change (captured by parameters such as the uncertainty of the process  $p$ , the gains  $G$  and the costs to change  $c$ ) is taken as given in our model, an important aspect of leadership is perhaps in choosing the right instrument for change. For example, in the context of political change, violent insurgency, peaceful demonstrations or strategic propaganda could be several possible means to achieve the same end. The leader's role would then be to determine which of these instruments would be the most appropriate under the given circumstances. A second aspect of leadership which has not been studied explicitly in our model (except in the welfare comparisons for different types of leaders) is leader selection. For example, if there were different individuals espousing different paths to change, who gets selected as the leader and how does this depend on the underlying environment? Aspects of the leader-follower relationship also deserve to be explored further. As pointed out by Levi (2006), 'leaders have the power to misinform and to manipulate, but they also have the power to inspire change'. In this context it would be useful to analyze in more detail the psychological and emotional underpinnings of the leader-follower relationship.

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## Appendix: Proofs

PROOF OF PROPOSTION 1: Consider equation (1) for a given level of  $y > 0$ . At  $c^* = 0$ , the *LHS* is less than the *RHS* as  $y > 0$ . At  $c^* = c_H$ , the *RHS* =  $p\tau G < c_H = LHS$  (by assumption 1). Both sides of the equation are linear in  $c^*$  (and are as depicted in figure 2); thus there is a unique solution to the equation in the range  $c^* \in [0, c_H]$ .

The probability of successful change in state  $G_1$  is given by:  $p\tau m^e = p\tau[y + (1 - y)\frac{c^*}{c_H}] = \frac{c^*}{G}$ . The two sides of equation (1) are depicted in figure 4. Increases in  $y$ ,  $p$ ,  $G$  or  $\tau$  or a decrease in  $c_H$  raise the *RHS* of (1) but have no effect on the *LHS*, and thus from the figure, result in an increase in  $c^*$ . Hence, these changes in the underlying parameters raise the probability of successful change in state  $G_1$ .

DERIVATION OF THE OVERALL EQUILIBRIUM:

Incorporating (from (2))  $i = \alpha p \tau [y + (1 - y)\frac{c^*}{c_H}] L_1 / l = \frac{\alpha a L_1}{l G} c^*$  into (4) characterizes for a given level of  $c^*$ , the degree of investment into followership by any individual:

$$\frac{(\alpha a)^2 L_1 \tau}{l G} (c^*)^2 \left(1 - \frac{c^*}{2c_H}\right) = ky \quad (11)$$



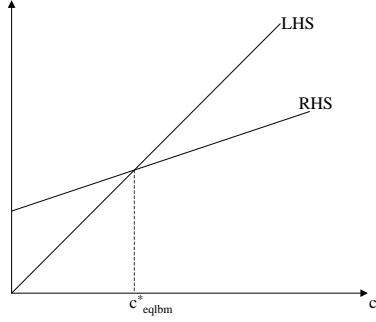


Figure 4: Equilibrium level of participation,  $c^*$

Given that the population is a continuum, if each individual invests  $y$  in followership, then  $y$  is also the fraction of the population with realized cost of participation  $c = 0$  i.e. it is the fraction of committed followers. For a given level of followership  $y$ , the degree of participation by the general populace is given by the equilibrium condition (1):

$$p\tau\left[y + (1 - y)\frac{c^*}{c_H}\right]G = c^* \quad \implies \quad y\left(1 - \frac{c^*}{c_H}\right) = c^*\left(\frac{1}{p\tau G} - \frac{1}{c_H}\right) \quad (12)$$

Incorporating this into (11) gives the overall equilibrium condition for the model, equation (5)<sup>25</sup>:

$$\frac{(\alpha a)^2 L_1 \tau}{lGk} (c^*)^2 \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) = c^* \left(\frac{1}{pG\tau} - \frac{1}{c_H}\right)$$

PROOF OF PROPOSITION 2: Consider equation (5). Clearly  $c^* = 0$  is a solution. Eliminating a  $c^*$  from both sides, we see that while the *RHS* is independent of  $c^*$ , the *LHS* has three roots, at  $c^* = 0$ ,  $c_H$  and  $2c_H$ . In the relevant range i.e. between  $c^* = 0$  and  $c^* = c_H$ , it is inverse U-shaped. Thus, as depicted in figure 2(b), there will be either two solutions to equation (5) (case 1 in the

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<sup>25</sup>Equation (5) characterizes the overall equilibrium in the case where the elite group is of zero mass. Suppose instead the elite had a small but positive mass given by  $n_e$ , while that for the majority is  $n_m = 1 - n_e$ . It can be shown that in this case, the overall equilibrium is characterized by:

$$\frac{\alpha^2 L\tau}{lGk} (c^*)^2 \left[n_e \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) + an_m \left(1 - \frac{ac^*}{c_H}\right) \left(1 - \frac{ac^*}{2c_H}\right)\right] = c^* \left(\frac{1}{pG\tau} - \frac{n_e + an_m}{c_H}\right)$$

which is very similar in its properties as equation (5). Thus, the threshold effect holds here too.

figure) or none (case 2 in the figure, in which case there is no interior equilibrium, and the only equilibrium involves  $c^* = 0, y = 0$  and  $i = 0$ ).

Which case occurs thus depends on whether or not the *RHS* is greater or less than the highest point of the *LHS*. In the range  $c^* \in [0, c_H]$ , the maximum of the *LHS* occurs at  $c^* = c_H(1 - \frac{1}{\sqrt{3}})$ , and its value at that point is  $\frac{(\alpha a)^2 L_1 \tau c_H}{3\sqrt{3}lGk}$ . Whether or not this exceeds the *RHS* is given by (6).

PROOF OF PROPOSITION 3: We first use the solution of  $c^*$  from (7) to rewrite  $P_1$  as:

$$P_1(\lambda) = \frac{\alpha a y^2 L}{lG^2} \frac{1}{\hat{a}[\frac{1}{p\tau G} - \frac{(1-y)\hat{a}}{c_H}]^2}$$

Denote  $f(\hat{a}) = \hat{a}[\frac{1}{p\tau G} - \frac{(1-y)\hat{a}}{c_H}]^2$ ; we find that  $f'(\hat{a}) \geq 0$  according as  $\frac{c_H}{3(1-y)p\tau G} \geq \hat{a}$ . Since  $P_1$  is inversely related to  $f(\hat{a})$ , and  $\hat{a}$  is increasing in  $\lambda$ , this establishes the result.

PROOF OF PROPOSITION 4: With  $L_0 = 0$  and eliminating a  $c^*$ , the *LHS* of both (5) and (9) can be written as  $\frac{\alpha^2 L_1 \tau}{lGk} c^*(1 - \frac{c^*}{c_H})(1 - \frac{c^*}{2c_H})$ , implying that it is inverse U-shaped, as in Figure 2(b).

The *RHS* of (5) is then  $(\frac{1}{pG\tau} - \frac{1}{c_H})/a^2$ , while that for (9) is  $\frac{1}{a}(\frac{1}{pG\tau} - \frac{a}{c_H})$ . Comparing the two, the *RHS* of (5) is bigger or less than the *RHS* of (9) according as  $c_H \geq pG\tau(1+a)$ .

Thus, if  $c_H > 2p\tau G$ , then the *RHS* of (5) is always bigger than the *RHS* of (9) and therefore the threshold for a benevolent leader is more stringent.

On the other hand, if  $c_H < 2p\tau G$ , then for  $a < \frac{c_H}{p\tau G} - 1 = a^*$ , the *RHS* of (5) is bigger than the *RHS* of (9), meaning that the threshold for a benevolent leader is more stringent. For  $a > a^*$ , the reverse holds and the threshold is more stringent for a self-interested leader.

PROOF OF PROPOSITION 5: To derive the ex-ante welfare  $W_B$  under a benevolent leader, we take the period 0 payoff from (3) and plug back the optimal  $y$  from (4) together with the leader's equilibrium choice  $i_B = \frac{\alpha a L_1}{lG} c^*$  to get:

$$W_B = a^2 \frac{\alpha^2 L_1 \tau}{2lG} \frac{(c^*)^3}{c_H} + a^4 \frac{1}{2k} \left\{ \frac{\alpha^2 L_1 \tau}{lG} (c^*)^2 \left(1 - \frac{c^*}{2c_H}\right) \right\}^2$$

Similarly the ex-ante welfare  $W_S$  under a self-interested leader (with  $L_0 = 0$ ) is derived by plugging in the optimal  $y$  to obtain:

$$W_S = \frac{\alpha^2 L_1 \tau}{2alG} \frac{(c^*)^3}{c_H} + \frac{1}{2k} \left\{ \frac{\alpha^2 L_1 \tau}{alG} (c^*)^2 \left(1 - \frac{c^*}{2c_H}\right) \right\}^2$$

Note that for a given  $c^*$ ,  $W_B < W_S$  for all  $a < 1$  and as expected are equal for  $a = 1$ . Also note that  $W_B$  and  $W_S$  are both increasing in  $c^*$ ; thus, if  $c^*$  under a self-interested leader is bigger than that under a benevolent leader,  $W_S$  will exceed  $W_B$ .

To compare the equilibrium  $c^*$  under the two types of leaders, let us rewrite the two equilibrium conditions:

$$\frac{\alpha^2 L_1 \tau}{lGk} c^* \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) = \frac{1}{a^2} \left(\frac{1}{pG\tau} - \frac{1}{c_H}\right) \quad (\text{Benevolent})$$

$$\frac{\alpha^2 L_1 \tau}{lGk} c^* \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) = \frac{1}{a} \left(\frac{1}{pG\tau} - \frac{a}{c_H}\right) \quad (\text{Self-interested})$$

The left-hand side of both are identical and represent an inverse U-shaped function of  $c^*$  as depicted in figure 2. The right hand side of both are constant and whether the Pareto-dominant equilibrium  $c^*$  under a self-interested leader exceeds that under a benevolent leader depends on if  $\frac{1}{a} \left(\frac{1}{pG\tau} - \frac{1}{c_H}\right) > \frac{1}{pG\tau} - \frac{a}{c_H}$  i.e. if  $c_H > pG\tau(1+a)$ .

If  $c_H > 2p\tau G$ , then this holds for all  $a \in [0, 1]$ , while if  $c_H < 2p\tau G$ , it holds for  $a$  small enough. Thus in either of these two cases, the (Pareto-dominant) equilibrium  $c^*$  under a self-interested leader is higher than that under a benevolent leader, and consequently the ex-ante welfare under a self-interested leader  $W_S$  is greater than that under a benevolent leader  $W_B$ .

*Derivation of Equilibrium for a general  $\theta$ :*

Again starting from period 2, the cutoff cost for the marginal non-follower is given by equating the costs and expected benefits of undertaking action:

$$c^* = \frac{p\tau}{\theta} \left[ y + (1-y) \frac{c^*}{c_H} \right]^\theta G \quad (13)$$

Under assumption 2', (13) always has a unique interior solution for any  $y > 0$ .

In period 1, the leader's problem of how much to invest in acquiring information about the appropriateness of the current situation is almost identical to that before, and is characterized by the first-order condition:  $\frac{\alpha a p \tau}{\theta} \left[ y + (1-y) \frac{c^*}{c_H} \right]^\theta L_1 = li$  or using (13),  $i = \alpha a L_1 c^* / (Gl)$ .

Finally, the period 0 problem of deciding on followership is identical to the previous analysis, and thus the optimal choice of  $y$  is again given by:  $\alpha a i \tau \left[ c^* - \frac{(c^*)^2}{2c_H} \right] = ky$ .

As before, using  $y$  from (13) and  $i = \alpha a L_1 c^* / (Gl)$ , we can rearrange the above first-order condition to obtain the overall equilibrium condition for  $c^*$  :

$$\frac{(\alpha a)^2 L_1 \tau}{lGk} (c^*)^2 \left(1 - \frac{c^*}{c_H}\right) \left(1 - \frac{c^*}{2c_H}\right) = c^* \left( \left(\frac{\theta}{pG\tau}\right)^{\frac{1}{\theta}} (c^*)^{\frac{1}{\theta}-1} - \frac{1}{c_H} \right)$$

Solutions to this equation (if any) characterize equilibria for the overall game here.

PROOF OF COROLLARY 1: Clearly  $c^* = 0$  is a solution to (10) and is an equilibrium here too. To look for interior equilibria, we eliminate a  $c^*$  from both sides of (10). The *LHS* now is the same as that of (5) and thus between  $c^* = 0$  and  $c^* = c_H$ , it is inverse U-shaped (as in figure 2(b)).

The *RHS* however is different and depends on  $\theta$ . For  $\theta < 1$ ,  $\frac{1}{\theta} - 1 > 0$ , and thus the *RHS* =  $(\frac{\theta}{pG\tau})^{\frac{1}{\theta}}(c^*)^{\frac{1}{\theta}-1} - \frac{1}{c_H}$  is increasing in  $c^*$ . At  $c^* = 0$ , *RHS* =  $-\frac{1}{c_H} < 0 = LHS$ . While at  $c^* = c_H$ , *RHS* =  $\frac{1}{c_H}((\frac{\theta c_H}{pG\tau})^{\frac{1}{\theta}} - 1) > 0 = LHS$  (by assumption 2'). Thus there is always at least one interior solution to (10). In other words, for  $0 < \theta < 1$ , in addition to the no-action equilibrium, there always exists an interior equilibrium with a positive probability of change.

For  $\theta > 1$ ,  $\frac{1}{\theta} - 1 < 0$  and hence the *RHS* is decreasing in  $c^*$ . Note that the *LHS* is inverse U-shaped and attains its maximum value at  $c^* = c_H(1 - \frac{1}{\sqrt{3}})$ , where its value is  $\frac{(\alpha a)^2 L_1 \tau c_H}{3\sqrt{3}lGk}$ . The minimum for the *RHS* occurs at  $c^* = c_H$  where its value is  $\frac{1}{c_H}((\frac{\theta c_H}{pG\tau})^{\frac{1}{\theta}} - 1)$ .

Thus if  $\frac{(\alpha a)^2 L_1 \tau c_H}{3\sqrt{3}lGk} < \frac{1}{c_H}((\frac{\theta c_H}{pG\tau})^{\frac{1}{\theta}} - 1)$ , there will be no interior solution for the equilibrium condition (10) which implies that in this case the only equilibrium is the no-action one.