Revolution or Gradualism:Optimal Strategy of a Leader*

Manaswini Bhalla† Kalyan Chatterjee‡ Souvik Dutta§

September 30, 2016

Abstract

Political leader wishes to confront/overthrow an unpopular government and every period chooses the nature of its opposition. Opposition can either be a small protest which does not threaten the existence of the present regime or a revolution. Each type of opposition is costly and its success depends upon the unknown ability of the political leader and mass participation. We find that for low enough cost of a small protest, it is optimal for a political leader to follow a strategy of gradualism in which it undertakes small protest initially to favorably update the belief about his ability and mobilize a higher participation for the final revolution.

*Very preliminary and incomplete. The authors are grateful to Indian Institute of Management Bangalore for funding this project.

†Indian Institute of Management Bangalore (manaswinib@iimb.ernet.in)

‡The Pennsylvania State University (kchatterjee@psu.edu)

§Indian Institute of Management Bangalore (souvik@iimb.ernet.in)

1. Introduction

"Effective leadership is putting first things first. Effective management is discipline, carrying it out."- Stephen Covey

A leader is an architect of change. Leaders or heads of organizations, be it political parties, corporates or any institution play an important role in choosing optimal actions and coordinate with the followers to bring about the desired change. We observe substantial variation in the outcomes of organizations depending upon the ability of the leader. Some leaders be it in business or politics are better able to manage resources and direct the followers effectively and hence achieve the desired change while others fail. Apart from an individual's leadership ability, one cannot be a leader without followers. The most important aspect of successful leadership in any organization or setting is to have a sufficient pool of dedicated followers. However the question is then how does a leader able to draw a set of dedicated followers to bring about a successful change.

It is widely agreed that the "Salt March" by Mahatma Gandhi in 1930 was the first shot that eventually brought down the British Empire in India. However, Gandhi's effectiveness in transforming a novel protest into a broad movement for change was also driven his ability to draw on a cadre of followers that he had attracted by this time (Dalton, 1993). The question is how was he able to draw this pool of followers. Looking back at history, Gandhi's first great experiment in *Satyagraha* came in 1917, in Champaharan in Bihar, followed by Kheda satyagraha (1918) and then the Ahmedabad Mill workers strike (1918) and none of these events were a direct revolt against the British regime and hence a threat to their existence. However Gandhi emerged as one of the most popular and acceptable figure in Indian politics by his technique of mass mobilization through smaller protests that he initially undertook after coming back to India in 1915. Similarly Lenin's ability to leverage his followers in the Bolshevik party was crucial in shaping the contours of Soviet political institutions, just as a group of committed guerrillas empowered Fidel Castro to carry out the Cuban revolution.

Turning to modern India, Arvind Kejriwal formed a new political party named the Aam Admi Party (AAP) and is now the chief minister of Delhi where his party swiped the assembly elections winning 67 seats out of 70 in 2015. However Kejriwal started his career as a leader with formation of a movement named "Parivartan" in December 1999 which addressed citizens' grievances related to Public Distribution System (PDS), led many other smaller protests by filing public interest litigation (PIL) demanding transparency in public dealings of the Income Tax department and then in 2011 joined several other activists to form the India Against Corruption (IAC) group. By this time he was successful in gathering enough momentum to have a dedicated pool of followers which he leveraged to contest the assembly elections in which his party won with a massive mandate. On the other hand, the Lok Satta party started by Jayaprakash Narayan in 2006 which wanted to project itself as an alternative in Indian politics has hardly been successful.

In the examples above on Gandhi and Arvind Kejriwal, the leaders took a strategy of gradualism through which they were successful in mobilizing the mass before attacking the regime directly. On the other hand leaders can also choose to attack the regime directly rather than following a process of gradualism. In this paper, we show that under what conditions it might be optimal to take a gradual path and then announce a revolution against the regime versus announcing a revolution against the regime immediately.

In this paper there are two types of leaders - a leader with a political objective and a leader with a social objective. This is because for every Mahatma Gandhi there is Keshav Karve or for every Arvind Kejriwal there is Medha Patkar. In this paper a leader with a political objective, P, aims at overthrowing the present regime while a leader with a social objective, NP, is one who aims at protesting against social injustice and tries to bring about social reforms. We call the protest to overthrow the regime as a "revolution" and a protest against social injustice and reforms as "social protest". A leader with a political objective, despite her aim being to overthrow the present regime might still undertake small protest initially to favorably update the belief about his ability and mobilize a higher participation for the final revolution. The underlying assumption is that revolution directly threatens the existence of the regime while any social protests do not directly threaten the existence of the regime.

In this model, there are three types of agents - the present regime or the Government, a Leader and a unit mass of citizens. We assume that there are two types of leaders who have different objectives or motives - a leader with a social objective (NP) who never intends to over throw the regime. However, a leader with a political motive (P) can choose to do so. A leader can also be of two different abilities, high and low. Given the same resources a high ability leader is able to manage more efficiently and hence has a higher probability of success in a small protest or revolution as compared to a low ability leader. The probability of success in a small protest or revolution depends upon the unknown ability of the political leader and mass participation. In this paper the leader is assumed to be inexperienced and does not know his own ability. However the objective is known to the leader privately. All players in the society have initial priors about the objective as well as about the ability of the leader. It is always more costly for the leader, P to do a revolution as compared to a social protest. However this leader might still do a social protest because upon success in the social protest, the beliefs about his ability is revised upwards and hence helps her to mobilize more masses in future which ultimately helps in overthrowing the present regime by announcing a revolution. The mass is assumed to be myopic and enjoys some benefit from a successful small protest and revolution but also bears a cost of participation in either of the movements. We assume that the objective of the leader P is aligned with the broader populace and wants to overthrow the present regime. Hence the mass enjoys a higher payoff from a successful revolution as compared to a successful small protest.[1]

The Government can exert force to suppress a revolution and also a small protest but is costly to do so. The problem that the present regime faces is that if there is a social protest, then it does not know with certainty whether it is by a leader, NP or it is by a

[1] In the background it is assumed that the leader has enforcement as well as persuasive powers.

leader with a political objective, P and is being used as a device to mobilize mass. If the case is the former and the government knows with certainty, then it does not need to exert any force while it would probably like to suppress the movement if it is by a leader with a political objective. In this paper we solve for a two period model and we characterize the equilibrium depending upon the costs of doing a social protest for a leader. If the costs of executing a social protest is sufficiently low, then in equilibrium the leader P with very low ability does not do anything in both the periods and the government puts zero effort. For very high ability, the leader of type P does a social protest and the government does not put any effort to suppress it while in the second period the leader announces a revolution and the government suppresses. While for intermediate values of ability, the leader calls for a social protest in the first period and conditional on success calls for a revolution in the second period. The government suppresses in both the periods. If the costs of executing a social protest is large enough then, a leader of type P calls for a revolution in the first period if the ability is above a threshold and does not do anything if the ability is below the threshold. The government suppresses conditional on a revolution being announced by the leader. Hence this paper shows that under certain circumstances, it is optimal for the leader to follow a path of gradualism and then attack the regime rather than attacking the regime immediately.

Related Literature: The topic on leadership has long been studied by political theorists and social scientists (Ahlquist and Levi, 2010). However this has been relatively understudied by economists. Majumdar and Mukund (2010) in their paper, "The Leader as Catalyst: On Mass Movements and the Mechanics of Institutional Change" is one of the early work on the effect of leadership on mass movements in bringing socio and political change. This paper argues that it is important to dissect the symbiotic nature of the leader- follower relationship, which is key to understanding why some leaders fail, and some are successful. 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. However in our paper we want to move a step further and try to explain what makes an individual to become a leader at first and then to look into further how and when these individuals become a good or a bad leader. Hermalin (1998) in his paper, "Toward an Economic Theory of Leadership: Leading by Example" explores leadership within organizations. This paper considers how a leader in- induces rational agents to follow her in situations when the leader has incentives to mislead them. This papers adds to the literature in explaining the process through which a leader is able to mobilize mass support and then call for a regime change.

The study of leadership and change has been pursued in much greater detail in disciplines other than economics. For instance, the study of leadership is a central theme in many studies of organization behavior and management (see Bass, 1990 and Northouse, 2004). Similarly, it has been explored in political science (Burns, 1978), international relations (Young, 1991) and social psychology (Van Vugt and De Cremer, 1999), among other fields.

2. The Model

In the society there are three types of agents - Government(G), Leader of political movement (L) and a unit mass of citizens (m). The leader does not belong to the government, and wants to bring about a change in the society by garnering sufficient support from the masses. The leader is endowed with a efficiency or quality parameter, θ which can either be high, θ_H or low, θ_L. At the beginning of the game, the common prior that the leader is of the high type is α_1 i.e., $\theta = \theta_H$. The leader is inexperienced i.e. does not know his own quality. The actual quality parameter of the leader is not known to any of the agents in the society. A leader has private information about his motives or objectives, ζ. A leader with a social objective, $\zeta = NP$, never intends to over throw the government. However, a leader with a political motive, $\zeta = P$ can choose to do so. β_1 is the prior probability that the leader has a non political objective, $\zeta = NP$. We denote the type of the leader by $\tau = \theta \times \zeta \in \mathrm{T}$, where

$\mathrm{T} = \{\theta_{\mathrm{H}}, \theta_{\mathrm{L}}\} \times \{\mathrm{NP}, \mathrm{P}\}$. We assume that the leader with social objective is only of high type.[2]

The sequence of events in each period t is as follows. At the beginning of each period, the leader makes an announcement about the nature of the movement it would lead/conduct. The movement can either be a revolution, R, a small protest, s or nothing ϕ. Action of a leader in time period $t$is $a_t \in \{R, s, \phi\}$. Upon hearing the leader's announcement, the government and mass update their belief about the leader's quality, $\hat{\alpha_t}$ and about the objective of the leader, $\hat{\beta_t}$. The government announces the extent/level of force with which it wishes to combat the leader's movement, $g_t \in \mathbb{R}_+$. After hearing leader's nature of movement and government's force, each participant decides on its participation in the movement. Each participant bears a private cost of participating in the movement, $e_i \sim U[-e_L, e_H]$ and a cost equal to the force implemented by the government, g_t. There can be some individuals who draw satisfaction by being a part of the movement and hence might have negative private costs of participation. The total cost of participating in a movement for a participant i is $c_i = e_i + g_t$. Let the number of participants who choose to participate in the movement at time period $t$be m_t. After the participants take a decision, nature determines the success or failure of the movement announced at time period t, i.e. $\gamma_t \in \{S, F\}$. The probability of a movement announced at $t$being a success, $Pr(\gamma_t = S)$ depends upon the quality of the leader, θ and the mass of people that participate in the movement, m_t, i.e. $Pr(\gamma_t = S) = \theta m_t$.

Let $h_t = (a_t, g_t, m_t \gamma_t)$ be the public history at the beginning of time period t,with $h_0 = \phi$ and $\mathbb{H}_t$as the set of all possible histories at time period t. At the end of each period, $t \in \{1, 2, 3, ..., N-1\}$, government, leader and masses, observe nature of movement chosen by the leader, government's force, fraction of mass that participated and the success or failure of the movement in the period. All agents in the society use this information to update their belief about the uncertain type of the leader, i.e. $\alpha_{t+1} = Pr(\theta = \theta_H \mid \gamma_t)$,

[2]Given the payoffs described later, the non political leader would never opt for a revolution. Given that the quality of the leader affects the government only if the movement is a revolution, nonpolitical leader's type does not influence the government.

$\beta_{t+1} = Pr(\zeta = NP \mid \gamma_t)$.

Upon the success of the movement, each participant receives a benefit dependent on the nature of the movement, $V_{at} \in \{V_R, V_s\}$ which is common to all participants. We assume that $V_R \geq V_s$ because there is a greater benefit to a regime change. The mass dislike the present government and dismantling the present government gives them a huge benefit than any other social movement. The failure of the movement gives the participants a benefit of 0. We assume that participants are myopic and decide to participate in a movement at time period $t$if their current period payoff is greater than the cost of doing so in the period. We assume $e_L > W$ and $e_H > \theta_H V_R$ where W is the benefit or the rents enjoyed by the government in every period t for being in power. Thus, at any time period there is always a mass of participants with $e_i \leq -W$ who would always participate in a movement and a mass of participants with $e_i > \theta_H V_R$ who would never participate in any movement.

Leader of type τ derives per period utility, $U^L(a_t, \tau, \gamma_t)$ from a movement of type a_t in state γ_t.

$$\begin{aligned} U^L(a_t, \tau = (\theta, \zeta), \gamma_t) &= V_s \qquad if\ a_t = s \qquad \& \qquad \zeta = NP\ \gamma_t = S,\ \forall\theta \in \{\theta_H, \theta_L\} \\ &= V_R \qquad if\ a_t = R \qquad \& \qquad \zeta = P\ \gamma_t = S,\ \forall\theta \in \{\theta_H, \theta_L\} \end{aligned}$$

In all other cases, $U^L(a_t, \tau = (\theta, \zeta), \gamma_t) = 0$. Conditional on the success of the movement the utility derived by the leader is independent of the quality of the leader. A leader that has non political objectives, $\zeta = NP$ derives positive payoff only from a successful small protest. It gains nothing from conducting a revolution that overthrows the government. However, a leader that has political objectives, $\zeta = P$ derives a positive payoff only from a successful revolution but gains nothing from a small protest. The cost of implementing a movement, a_t for a leader is C_{at}, where $C_R > C_s > 0$ and is independent of the type of leader implementing it.

We assume that the cost incurred by the leader during a revolution is bounded above and below. The following is the bound on C_R.

$$\frac{cV_R e_L}{W} \leq C_R \leq \frac{\theta_H V_R(e_L - W)}{e_L + e_H - V_R\theta_H}$$

The government derives per period utility, $U^G(a_t, \gamma_t)$ from a movement of type a_t in state γ_t.

$$\begin{aligned} U^G(a_t, \gamma_t) &= W \qquad if\ a_t = s/\phi \qquad \& \qquad \gamma_t = S/F \\ &= W \qquad if\ a_t = R\ \gamma_t = F, \end{aligned}$$

In all other cases the government receives a payoff 0. W is the benefit to the government from being in power. We assume that the government can be thrown out of power only if the movement is a successful revolution. The government also incurs a cost, cg_t for implementing force g_t against the movement. We assume that $g_t \in \{0, W\}$ for simplicity i.e., either the government puts no effort or puts all the effort. The leader and the government, discount the future with the same discount factor, δ. The bound on c is given by

$$\frac{\theta_L W}{e_L + e_H - V_R\theta_L} \leq c \leq \frac{\theta_H W}{e_L + e_H - V_R\theta_H}$$

In each period, $t \in \{1, 2, 3, ..., N-1\}$, the leader knows its own choice of nature of movement, extent of force exerted by the government to reduce the extent of mass participation and hence increase the probability of failure and the fraction of mass that participated in movements of all previous periods. A pure strategy of the leader of type $\tau \in \mathrm{T}$ at time period t is a function $\sigma_t : \mathbb{H} \times \top \rightarrow \{R,\ s,\ \phi\}$ that maps for every type of leader, $\tau$and every history, h_t to a nature of movement, a_t at time period t. Similarly a pure strategy of the government at time period $t$is a function $\Gamma_t : \mathbb{H} \to \mathbb{R}$ that maps for every history, h_t the level of force exerted by the government, g_t at time period t. We will now solve for the two period model. We solve for pure strategy Perfect Bayesian Equilibrium (PBE) for this game.

We assume that the game ends whenever the leader calls for a revolution. In a two period model, in the first period the leader with political objectives can either call for a revolution, R, or a small protest, s, or do nothing, ϕ whereas the leader with non-political objectives can either call for a small protest, s, or do nothing ϕ. If the game advances to the second stage then the leader with the political objective either calls for a revolution R or does nothing while the leader with non-political objectives can either call for a small protest, s, or do nothing ϕ. The leader with the political objective will not call for a small protest, $s$in the second period because she does not gain anything by doing so.

3.1 Last Period

Consider the decision of a participant that observes the nature of movement announced by the leader in period 2 as a_2 and government force, g_2. Upon hearing leader's announcement, the participants update their belief about the leader's quality, $\hat{\alpha_2}$ and about the objective of the leader, $\hat{\beta_2}$. Expected payoff of each participant of type e_i from participating in a movement is

$$Pr[\gamma_2 = S \mid a_2,\, g_2,\, \hat{\alpha_2}, \hat{\beta_2}]V_{a2} - c_i$$

where $c_i = e_i + g_2$ is the cost of participation in a movement. Also, the probability of a movement being successful given $a_2,\, g_2$ is

$$\begin{aligned} Pr[\gamma_2 = S \mid a_2,\, g_2,\, \hat{\alpha}_2, \hat{\beta_2}] &= \sum_{\theta \in \{\theta_h, \theta l\}} \sum_{\beta \in \{P, NP\}} [Pr(\theta \mid a_2, g_2) Pr(\beta \mid a_2, g_2) Pr(\gamma_2 = S \mid \theta; a_2, g_2)] \\ &= [(1 - \hat{\beta_2})(1 - \hat{\alpha_2})\theta_L + [(1 - \hat{\beta_2})\hat{\alpha_2} + \hat{\beta_2}]\theta_H]m_2 \end{aligned}$$

The equilibrium level of participation in a movement of type a_2 given that the government announces force g_2 is

$$m_2^*(a_2,\, g_2,\, \hat{\alpha_2}, \hat{\beta_2}) = \frac{e_L - g_2}{(e_H + e_L) - [(1-\hat{\beta_2})(1-\hat{\alpha_2})\theta_L + [(1-\hat{\beta_2})\hat{\alpha_2} + \hat{\beta_2}]\theta_H]V_{a2}}$$

Since $e_H > \theta_H V_{R,}$ $0 < m_2^* < 1$. $m_2^* > 0$.

Lemma 1: *The level of mass participation decreases as government increases its force* i.e., $m_2^*(g_2 = W,\, \hat{\alpha_2}, \hat{\beta_2}) < m_2^*(g_2 = 0,\, \hat{\alpha_2}, \hat{\beta_2})$

Proof:

$$m_2^*(g_2 = W,\, \hat{\alpha_2}, \hat{\beta_2}) - m_2^*(g_2 = 0,\, \hat{\alpha_2}, \hat{\beta_2}) = \frac{-W}{(e_H + e_L) - [(1-\hat{\beta_2})(1-\hat{\alpha_2})\theta_L + [(1-\hat{\beta_2})\hat{\alpha_2} + \hat{\beta_2}]\theta_H]V_{a2}}$$

We can write $(e_H + e_L) - [(1-\hat{\beta_2})(1-\hat{\alpha_2})\theta_L + [(1-\hat{\beta_2})\hat{\alpha_2} + \hat{\beta_2}]\theta_H]V_{a2} > (e_H + e_L) - \theta_H V_R$ because $\theta_H > \theta_L$. Since $e_H > \theta_H V_R$, then the denominator is positive. Hence $m_2^*(g_2 = W,\, \hat{\alpha_2}, \hat{\beta_2}) - m_2^*(g_2 = 0,\, \hat{\alpha_2}, \hat{\beta_2}) < 0$ ■

Now, consider the decision of the government that observes the nature of announcement by the leader in period 2, a_2. Upon hearing leader's announcement, the government updates their belief about the leader's quality, $\hat{\alpha_2}$ and about the objective of the leader, $\hat{\beta_2}$. Since, $U^G(a_t, \gamma_t = S) = U^G(a_t, \gamma_t = F)$, $\forall a_t = s,\, \phi$, optimal government force announced when $a_t = s, \phi$ will be zero. That is $g_2^*(a_2; \hat{\alpha_2}, \hat{\beta_2}) = 0$, $\forall a_2 \in \{s,\, \phi\}$. However if the leader with a political objective calls for a revolution i.e., $a_2 = R$ then the government loses power if the revolution is a success and in that case receives a payoff of zero while it will remain in power and obtain a payoff of W if the revolution is a failure. Hence the government chooses g_2^* in order to maximize the following expected payoff

$$Max_{g_2} Pr[\gamma_2 = F \mid a_2 = R; \hat{\alpha_2}, \hat{\beta_2}]U^G(a_2 = R, \gamma_2 = F) - cg_2$$

The government can choose $g_2 \in \{0, W\}$. Upon hearing about a revolution in period 2, i.e. $a_2 = R$, the belief about the objective of the leader is revised to $\hat{\beta}_2 = 0$ because given the payoff structure the leader with non-political objective will never call for a revolution. We can now find the optimal level of force i.e. g_2^* that will be exerted by the government given that it hears about a revolution. The payoff to the government given that it exerts a force g_2 is given by

$$U^G(g_2, a_2 = R, \gamma_2 = F; \hat{\alpha_2}) = [(1 - \hat{\alpha_2})(1 - \theta_L m_2(g_2)) + \hat{\alpha_2}(1 - \theta_H m_2(g_2))]W - cg_2$$

Given that the government has to choose between 0 or W, substituting for optimal m_2 from above we can write

$$U^G(g_2 = 0, \hat{\alpha_2}) - U^G(g_2 = W, \hat{\alpha_2}) = \frac{-[(1 - \hat{\alpha_2})\theta_L + \hat{\alpha_2}\theta_H]W^2}{[(e_H + e_L) - [(1 - \hat{\alpha_2})\theta_L + \hat{\alpha_2}\theta_H]V_R} + cW \qquad (1)$$

The government will choose $g = 0$ if eq(1) is greater than zero while it exert $g = W$ if eq(1) is less than zero while it will be indifferent between $g = 0$ and $g = W$ if eq(1) equals zero.

Lemma 2: *There exists a cutoff $\bar{\alpha}$ such that if $\hat{\alpha_2} < \bar{\alpha}$, then the government exerts $g_2 = 0$ while it exerts an effort $g_2 = W$ if $\hat{\alpha_2} > \bar{\alpha}$*

Proof: Setting equation (1) equal to zero gives,

$$\bar{\alpha_2} = \frac{1}{(\theta_H - \theta_L)}[\frac{c(e_H + e_L)}{W + cV_R} - \theta_L]$$

Given the assumptions on the parameters above, we obtain that $0 < \bar{\alpha_2} < 1$ and $g_2^* = 0$ if $\hat{\alpha_2} < \bar{\alpha}$ and $g_2^* = W$ otherwise.■

Given that we have determined the optimal choice for the participants and the government, we now need to determine the optimal choice for the leader. If the leader is with the political objective i.e., $\zeta = P$, then she has two options, either $a_2 = R$ or $a_2 = \phi$. She will not choose $a_2 = s$ in the last period, because the game ends and she derives zero benefit from doing a small protest. Hence the leader will call for a revolution i.e., $a_2 = R$ if the expected payoff from doing so is higher than doing nothing. This is given below

$$\begin{aligned} U^L(a_2 = R \mid \hat{\alpha}_2, \zeta = P) &= Pr[\gamma_2 = S \mid \hat{\alpha}_2, \hat{\beta}_2 = 0]V_R - C_R \geq 0 \\ &= [\hat{\alpha}_2\theta_H + (1 - \hat{\alpha}_2)\theta_L]m_2(\hat{\alpha}_2)V_R - C_R \geq 0 \end{aligned}$$

Lemma 3: *The leader with a political objective, ($\zeta = P$) calls for a revolution i.e., $a_2 = R$ if $\hat{\alpha}_2 > \alpha_2^{**}$ while it does nothing i.e. $a_2 = \phi$ if $\hat{\alpha}_2 < \alpha_2^{**}$. The leader with a non-political objective ($\zeta = NP$) always does a social protest.*

Proof: Now $\forall \alpha_2 < \bar{\alpha}$, the government puts zero effort and there exists a α_2^* such that $\forall \alpha_2 < \alpha_2^*$ the leader does not call for a revolution, i.e., $a_2 = \phi$ while $\forall \alpha_2 > \alpha_2^*$, the leader calls for a revolution, i.e. $a_2 = R$. α_2^* is given by

$$\alpha_2^* = \frac{1}{(\theta_H - \theta_L)}[\frac{C_R(e_H + e_L)}{V_R(e_L + C_R)} - \theta_L$$

Similarly for $\forall \alpha_2 > \bar{\alpha}$, the governments puts $g_2 = W$ and there exists a cutoff α_2^{**} such that $\forall \alpha_2 < \alpha_2^{**}$ the leader does not call for a revolution, i.e., $a_2 = \phi$ while $\forall \alpha_2 > \alpha_2^{**}$, the leader calls for a revolution, i.e. $a_2 = R$. α_2^{**} is given by

$$\alpha_2^{**} = \frac{1}{(\theta_H - \theta_L)}[\frac{C_R(e_H + e_L)}{V_R(e_L + C_R - W)} - \theta_L$$

From above it follows that $\alpha_2^{**} > \alpha_2^*$. Given the assumptions on C_R we can easily show that $0 < \bar{\alpha}_2 < \alpha_2^* < \alpha_2^{**} < 1$. This means that $\forall \alpha_2 < \alpha_2^{**}$, the leader will never call for a revolution while for $\forall \alpha_2 > \alpha_2^{**}$, the leader will call for a revolution. Given the assumptions on C_s, it is always beneficial for the leader with non-political objective to call for a social protest.■

Proposition 1: *In the second period, the leader with a political objective call for a revolution i.e.* $a_2(\zeta = P) = R$ *if* $\alpha_2 > \alpha_2^{**}$ *and the government takes an action* $g_2 = W$. *If* $\alpha_2 < \alpha_2^{**}$, *the leader does nothing, i.e.* $a_2(\zeta = P) = \phi$ *and the government puts zero effort,* $g_2 = 0$. *The leader with a non-political objective always does a social protest, i.e.*$a_2(\zeta = NP) = s$ *and the government puts zero effort,* $g_2 = 0$. *This is the equilibrium in the subgame.*

Proof: The results follows from Lemma 2 and Lemma 3.■

3.2 First Period

Since the participants in a movement are myopic, therefore their problem remains the same as in the last period. Hence $m_1^*(a_2, g_2, \hat{\alpha}_2, \hat{\beta}_2)$ is determined in the same way as in the last period.

Now to determine the government's optimal action in the first period, the problem of the government remains the same as in the second period if the leader announces a revolution i.e.$a_1 = R$ in the first period. Hence we now need to determine the optimal action if the leader announces a social protest, i.e.$a_1 = s$. The social protest can either be announced by a leader with a non-political objective in which case there is no threat to the government's existence. While the leader with a political objective might also call for a small protest in the first period and then try to improve his reputation, increase the mass participation in the second period and call for a revolution in the final period. In this case the government faces a threat to existence and hence may like to crush the social protest. Hence we can write the discounted payoff of the government as

$$
\begin{aligned}
U^G(g_1, a_1 = s; \hat{\alpha_2}, \hat{\beta_2}) = \quad & W - cg_1 \\
& +\delta[Pr(\zeta = P)Pr(\eta_1 = S)Pr[a_2 = R \mid \zeta = P, \eta_1 = S]* \\
& +Pr[\eta_2 = F \mid a_2 = R, \zeta = P, \eta_1 = S][W - cg_2(\hat{\alpha_2}, a_2)] \\
& +Pr(\zeta = P)Pr(\eta_1 = S)Pr[a_2 = \phi \mid \zeta = P, \eta_1 = S]W \\
& +Pr(\zeta = P)Pr(\eta_1 = F)Pr[a_2 = R \mid \zeta = P, \eta_1 = F]* \\
& Pr[\eta_2 = F \mid a_2 = R, \zeta = P, \eta_1 = F][W - cg_2(\hat{\alpha_2}, a_2)] \\
& +Pr(\zeta = P)Pr(\eta_1 = F)Pr[a_2 = \phi \mid \zeta = P, \eta_1 = S]W \\
& +Pr(\zeta = NP)W]
\end{aligned} \tag{2}
$$

Now we define the updating rules about the beliefs on the quality of the leader at the end of the first period. Upon success in the first period of a social movement, the updated belief about the quality of the leader is given by

$$\alpha_2^S = \frac{\theta_H \alpha_1}{\theta_H \alpha_1 + \theta_L (1 - \alpha_1)}$$

While upon failure in the social movement, the updated belief about the quality of the leader is given by

$$\alpha_2^F = \frac{[1 - \theta_H m_1(g_1)]\alpha_1}{\alpha_1[1 - \theta_H m_1(g_1)] + (1 - \alpha_1)[1 - \theta_L m_1(g_1)]}$$

It is interesting to note that while α_2^S is independent of the mass of citizens participating, α_2^F is dependent on the mass participating in the small movement. Now from the second period we know that the leader with a political objective will call for a revolution i.e. $a_2 = R$ if $\alpha_2 > \alpha_2^{**}$. Now we want to know the cutoffs on α_1 such that upon success or failure in the social protest in the first period leads to a value of α_2 which is greater than α_2^{**}. Solving $\alpha_2^S = \alpha_2^{**}$, we obtain $\alpha_1^{'}$ such that if $\alpha_1 \leq \alpha_1^{'}$, then $\alpha_2^S \leq \alpha_2^{**}$ while if $\alpha_1 > \alpha_1^{'}$ then $\alpha_2^S > \alpha_2^{**}$. We can obtain similar cutoffs $\alpha_1^{"}(g_1 = 0)$ and $\alpha_1^{"}(g_1 = W)$ by equating $\alpha_2^F = \alpha_2^{**}$

corresponding to $g_1 = 0$ and $g_1 = W$ respectively.

We can show that the following holds, $0 < \alpha_1^{'} \leq \alpha_1^{"}(g_1 = 0) \leq \alpha_1^{"}(g_1 = W) < 1$. Since $m_1(g_1 = 0) > m_1(g_1 = W)$, therefore we know that $\alpha_1^{"}(g_1 = 0) \leq \alpha_1^{"}(g_1 = W)$. Also α_2^S , $\alpha_2^F(g_1)$ are increasing in α_1 and $\alpha_2^S, > \alpha_2^F(g_1)$, therefore we have $\alpha_1^{'} \leq \alpha_1^{"}(g_1)$.

Lemma 4: *Conditional on social protest being announced by the leader in the first period i.e., $a_1(\hat{\alpha}_1, \hat{\beta}_1) = s$, the government takes an action $g_1 = \phi$ if $\alpha_1 < \alpha_1^{'}$ or $\alpha_1 > \alpha_1^{"}(g_1 = W)$ and takes an action $g_1 = W$ if $\alpha_1^{'} \leq \alpha_1 \leq \alpha_1^{"}(g_1 = W)$*

Proof: Appendix.

The above lemma suggests that for a given $\hat{\beta}_1$, i.e., the priors about the objective of the leader, there exists thresholds on the quality of the leader, such that if the quality is too low or too high then the government does nothing while if it is in the intermediate range, then the government exerts effort to crush the movement. This lemma proves that conditional on a social protest being announced by the leader in the first period, $\forall \alpha_1 < \alpha_1^{'}$, $g_1^* = 0$, i.e. government spends no effort, then $\forall \alpha_1$ such that $\alpha_1^{'} \leq \alpha_1 \leq \alpha_1^{"}(g_1 = W)$, the government spends all effort, i.e., $g_1^* = W$ and then $\forall \alpha_1$ such that $\alpha_1^{"}(g_1 = W) < \alpha_1 \leq 1$, the government spends zero effort, i.e. $g_1^* = 0$.

Now we look the optimal decision of the leader in the first period. We know that if the leader is with the objective of a non-political movement, i.e. $\zeta = NP$, then given the costs of doing a small protest being sufficiently low, the leader will do a small protest in both the periods. Now we look at the decision of a leader with a political objective. i.e., $\zeta = P$. Let us define history at the end of period 1 as $h_1 = (\alpha_1, \hat{\beta}_1)$. We can then write the expected payoffs of the leader with a political objective as follows. The expected payoff to the leader, if she does nothing in the first period is given by $U^L(a_1 = \phi, \alpha_1, \hat{\beta}_1, \zeta = P) = 0$. Now we can write the expected payoff of the leader if she announces a revolution in the first period. In this case $\hat{\beta}_1$ is updated to be zero and then after the revolution the game ends in the first period. Hence the expected payoff is given by

$$U^L(a_1=\phi,\alpha_1,\hat{\beta}_1,\zeta=P) \quad = Pr[\gamma_1=S \mid \alpha_1,\hat{\beta}_1,a_1=R]V_R-C_R$$
$$= [\alpha_1\theta_H+(1-\alpha_1)\theta_L]m_1(\alpha_1,\hat{\beta}_1=0)V_R-C_R$$

Similarly we can write the discounted payoff of the leader when he calls for a small protest in the first period and then does revolution in the second period, i.e. $a_1(\alpha_1,\hat{\beta}_1,\zeta=P)=s$ and $a_2(\alpha_2,\hat{\beta}_2,\zeta=P)=R$. The expected payoff is given by

$$U^L(a_1=\phi,\alpha_1,\hat{\beta}_1,\zeta=P) \quad = -C_s+\delta[Pr(\eta_1=S \mid a_1=s,h_1,g_1)*$$
$$Pr(a_2=R \mid h_1,g_1,a_1=s)Pr(\eta_2=S \mid h_1,g_1,a_1=s,a_2=R,\eta_1=S)*$$
$$(W-C_R)$$
$$+Pr(\eta_1=F \mid a_1=s,h_1,g_1)Pr(a_2=R \mid h_1,g_1,a_1=s)*$$
$$Pr(\eta_2=S \mid h_1,g_1,a_1=s,a_2=R,\eta_1=F)*(W-C_R)]$$

Now we know the optimal action of the government in the first period on observing a small protest or a revolution. We now have to determine the optimal action of the leader accordingly and hence can then characterize the pure strategy equilibrium in this game.

Proposition 2: *If the cost of executing a social protest is sufficiently low for a leader, i.e., $C_s \leq C_s^*$, then $\forall\alpha_1 \leq \alpha_1^{'}$, the leader does nothing in both the periods and the government also puts zero effort in both the periods. Then $\forall\alpha_1 \in [\alpha_1^{'},\alpha_1^{"}(g_1=W)]$, the leader does social protest in the first period and conditional on success in the first period announces a revolution in the second period. The government exerts effort in the first period and exerts effort iff there is a revolution in the second period. Then $\forall\alpha_1 > \alpha_1^{"}(g_1=W)$, the leader does social protest in the first period and announces a revolution in the second period, the government does not put effort in the first period while puts effort in the second period. The leader with social objective does social protest in both the periods, i.e. $a(\zeta=NP)=s$*

$$\forall \alpha_1 \leq \alpha_1^{'} \left\{ a_1(\zeta = P) = \phi \, , g_1(\hat{\alpha_1}, \hat{\beta_1}) = \phi \quad a_2(\zeta = P) = \phi \, , g_2(\hat{\alpha_2}, \hat{\beta_2}) = \phi \right.$$

$$\forall \alpha_1 \in [\alpha_1^{'}, \alpha_1^{"}(g_1 = W)] \begin{cases} a_1(\zeta = P) = s \, , g_1(\hat{\alpha_1}, \hat{\beta_1} \mid a_1 = s) = W \\ a_2(\zeta = P \mid \eta_1 = S) = R, \; g_2(\hat{\alpha_2}, \hat{\beta_2} \mid a_2 = R) = W \\ a_2(\zeta = P \mid \eta_1 = F) = \phi, \; g_2(\hat{\alpha_2}, \hat{\beta_2} \mid a_2 = \phi) = \phi \end{cases}$$

$$\forall \alpha_1 > \alpha_1^{"}(g_1 = W) \begin{cases} a_1(\zeta = P) = s \, , g_1(\hat{\alpha_1}, \hat{\beta_1}) = \phi \\ a_2(\zeta = P) = R \, , g_2(\hat{\alpha_2}, \hat{\beta_2}) = W \end{cases}$$

Proof: Appendix

This proposition shows that for very low abilities, the leader does nothing in both the periods. Her ability is so low that even on success on a social protest in the first period, the updated beliefs about her quality still remain so low that the probability of success in a revolution is low enough to make her expected payoff negative. For very high abilities, the leader does a social protest to update the beliefs about her quality even more since social protests are very less expensive to do and ensuring a very high probability of success in the revolution in the second period. She will do a revolution even when she fails in the social protest. For intermediate values of ability, the leader does a social protest, updates the belief upwards and then upon success calls for a revolution. If there is a failure, the beliefs are updated downwards and then the expected payoff from revolution is less than doing nothing. A gradualism approach is better than revolution immediately. The government does not do anything for very high abilities because despite a failure in the social protest, the leader will do a revolution. The government puts effort for intermediate values because by suppressing the social movement in the first period and hence a failure will deter the leader from taking a revolution in the second period.

Proposition 3: *If the cost of executing a social protest is sufficiently high for a leader, i.e., $C_s > C_s^{**}$, then $\forall \alpha_1 \leq \alpha_2^{**}$ the leader does nothing in both the periods and the government* *puts zero effort. Then* $\forall \alpha_1 > \alpha_2^{**}$*, the leader announces a revolution in the first period, the government puts effort and the game ends. The social leader does nothing.i.e.,*$a(\zeta = NP) = \phi$.

$$\forall \alpha_1 \le \alpha_2^{**} \begin{cases} a_1(\zeta = P) = \phi \,, g_1(\hat{\alpha_1}, \hat{\beta}_1) = \phi \quad a_2(\zeta = P) = \phi \,, g_2(\hat{\alpha_2}, \hat{\beta}_2) = \phi \end{cases}$$
$$\forall \alpha_1 > \alpha_2^{**} \begin{cases} a_1(\zeta = P) = R \,, g_1(\hat{\alpha_1}, \hat{\beta}_1) = W \end{cases}$$

Proof: Appendix

This proposition says that if it is too expensive to do a social protest then, a leader who is of very high ability calls for a revolution in the first period and the government suppresses it while if it is below a certain ability then it does nothing and the government spends zero effort.

3. Conclusion

In this paper we show that under certain circumstances depending upon the ability of the leader and the costs of executing protests, be it a social protest or a revolution against the present regime, gradualism might be an optimal action rather than attacking the regime immediately. On the other hand if the costs of doing so are relatively high, then it is optimal for the leader to attack the regime immediately if the leader's ability is perceived to be above a certain threshold. When there is uncertainty about the objective of the leader, the government might still suppress a social protest which do not threat the regime in the expectation that the social protests are being organized by a leader with a political objective and is being used as a device to mobilize the mass.

Appendix

Proof of Lemma 4:

Case 1: $\forall \alpha_1 < \alpha_1^{'}$

$$EU^G(g_1 = 0) = W + \delta W$$

$$EU^G(g_1 = W) = W - cW + \delta W$$

Therefore $g_1^* = 0$

Case 2: $\alpha_1 > \alpha_1^{"}(g_1 = W)$

$$\begin{aligned}
EU^G(g_1 = 0) - EU^G(g_1 = W) = \quad & cW + \delta(1-\beta_1)(1-c)W* \\
& [[Pr(\eta_1 = S \mid h_1, g_1 = 0) - Pr(\eta_1 = S \mid h_1, g_1 = W)]* \\
& Pr(\eta_2 = F \mid h_1, g_1, a_2 = R, \eta_1 = S) \\
& + Pr(\eta_2 = F \mid h_1, g_1 = 0, a_2 = R, \eta_1 = F) \\
& - Pr(\eta_1 = S \mid h_1, g_1 = 0) Pr(\eta_2 = F \mid h_1, g_1 = 0, a_2 = R, \eta_1 = F) \\
& - Pr(\eta_2 = F \mid h_1, g_1 = W, a_2 = R, \eta_1 = F) \\
& + Pr(\eta_1 = S \mid h_1, g_1 = W) Pr(\eta_2 = F \mid h_1, g_1 = W, a_2 = R, \eta_1 = F)]
\end{aligned}$$

We can show the following

$$\begin{aligned}
& Pr((\eta_1 = S \mid h_1, g_1 = 0) - Pr(\eta_1 = S \mid h_1, g_1 = W) \\
& = \tfrac{[\beta_1\theta_H + (1-\beta_1)(\alpha_1\theta_H + (1-\alpha_1)\theta_L]W}{e_H + e_L - [[\beta_1\theta_H + (1-\beta_1)(\alpha_1\theta_H + (1-\alpha_1)\theta_L)V_R]} > 0
\end{aligned}$$

Also

$$Pr(\eta_2 = S \mid a_1 = S, g_1, a_2 = R, \eta_1 = F) = \frac{e_L - W}{\frac{e_H + e_L}{\theta_L + \alpha_2^F(\theta_H - \theta_L)} - V_R}$$

$Pr(\eta_2 = S \mid a_1 = S, g_1, a_2 = R, \eta_1 = F)$ is increasing in α_2^F and therefore $Pr(\eta_2 = F \mid a_1 = S, g_1 = 0, a_2 = R, \eta_1 = F) < Pr(\eta_2 = F \mid a_1 = S, g_1 = W, a_2 = R, \eta_1 = F)$. We show that the term inside the square bracket is always non-positive and hence we can find that there exists a δ^* such that $\forall \delta > \delta^*$, $EU^G(g_1 = 0) - EU^G(g_1 = W) > 0$ and hence $g_1^* = 0$. Now we show that the term is negative.

$$
\begin{gathered}
[Pr(\eta_1 = S \mid h_1, g_1 = 0) - Pr(\eta_1 = S \mid h_1, g_1 = W)]Pr(\eta_2 = F \mid h_1, g_1, a_2 = R, \eta_1 = S) \\
+Pr(\eta_1 = F \mid h_1, g_1 = 0)Pr(\eta_2 = F \mid h_1, g_1 = 0, a_2 = R, \eta_1 = F) \\
-Pr(\eta_1 = F \mid h_1, g_1 = W)Pr(\eta_2 = F \mid h_1, g_1 = W, a_2 = R, \eta_1 = F) \\
\leq [Pr(\eta_1 = S \mid h_1, g_1 = 0) - Pr(\eta_1 = S \mid h_1, g_1 = W)]Pr(\eta_2 = F \mid h_1, g_1, a_2 = R, \eta_1 = S) \\
+[Pr(\eta_1 = F \mid h_1, g_1 = 0) - Pr(\eta_1 = F \mid h_1, g_1 = W)]Pr(\eta_2 = F \mid h_1, g_1 = W, a_2 = R, \eta_1 = F) \\
\leq [Pr(\eta_1 = S \mid h_1, g_1 = 0) - Pr(\eta_1 = S \mid h_1, g_1 = W)] \\
+[Pr(\eta_1 = F \mid h_1, g_1 = 0) - Pr(\eta_1 = F \mid h_1, g_1 = W)]Pr(\eta_2 = F \mid h_1, g_1 = W, a_2 = R, \eta_1 = F) \\
= 0
\end{gathered}
$$

Case 3: $\alpha_1^{'} \leq \alpha_1 \leq \alpha_1^{"}(g_1 = 0)$

Let us define $h_1 = (a_1 = S, \alpha_1, \beta_1)$

$$
\begin{aligned}
EU^G(g_1 = 0) - EU^G(g_1 = W) = \quad & cW + \delta(1-\beta_1)W* \\
& [(1-c)[Pr(\eta_1 = S \mid h_1, g_1 = 0)Pr(\eta_2 = F \mid h_1, g_1 = 0, a_2 = R, \eta_1 = S) \\
& -Pr(\eta_1 = S \mid h_1, g_1 = W)Pr(\eta_2 = F \mid h_1, g_1 = W, a_2 = R, \eta_1 = S)] \\
& +(Pr(\eta_1 = F \mid h_1, g_1 = 0) - Pr(\eta_1 = F \mid h_1, g_1 = W))]
\end{aligned} \tag{3}
$$

Substituting the values and simplifying the expression we obtain that

$$
EU^G(g_1 = 0) - EU^G(g_1 = W) = [\frac{W}{[\frac{e_H + e_L}{[\beta_1\theta_H + (1-\beta_1)(\alpha_1\theta_H + (1-\alpha_1)\theta_L)V_R]} - 1]}][c + \frac{(1-c)(e_L - W)}{[\frac{e_H + e_L}{\theta_L + (\theta_H - \theta_L)\alpha_2^S]} - V_R]}
$$

The above expression is increasing in α_1. Hence $\exists\, \alpha_1^G$ such that $\forall \alpha_1 < \alpha_1^G$ then $EU^G(g_1 = 0) > EU^G(g_1 = W)$ and $\forall \alpha_1 \geq \alpha_1^G$, $EU^G(g_1 = 0) \leq EU^G(g_1 = W)$.

Case 4: $\alpha_1^{"}(g_1 = 0) \leq \alpha_1 \leq \alpha_1^{"}(g_1 = W)$

$$
\begin{aligned}
EU^G(g_1 = 0) - EU^G(g_1 = W) = \quad & cW + \delta(1-\beta_1)W * \\
& [(1-c)((Pr(\eta_1 = S \mid h_1, g_1 = 0) - Pr(\eta_1 = S \mid h_1, g_1 = W))* \\
& Pr(\eta_2 = F \mid h_1, a_2 = R, \eta_1 = S)] \\
& + Pr(\eta_1 = F \mid h_1, g_1 = 0) Pr(\eta_2 = F \mid h_1, g_1 = 0, a_2 = R, \eta_1 = F)(1-c \\
& - Pr(\eta_1 = F \mid h_1, g_1 = W)
\end{aligned} \tag{4}
$$

Now equation (4) < equation (3). If we have equation (3) to be negative then equation (4) is also negative. Then $\forall \alpha_1 < \alpha_1^G$ equation (3) is negative and hence equation (4) is also negative. Hence $EU^G(g_1 = 0) - EU^G(g_1 = W) < 0$. Therefore $g_1^* = W$ in this case. We can show that given the conditions, α_1^G is less than $\alpha_1^{'}$. Hence we prove that conditional on a social protest being announced by the leader in the first period, $\forall \alpha_1 < \alpha_1^{'}$, $g_1^* = 0$, i.e. government spends no effort, then $\forall \alpha_1$ such that $\alpha_1^{'} \leq \alpha_1 \leq \alpha_1^{"}(g_1 = W)$, the government spends all effort, i.e., $g_1^* = W$ and then $\forall \alpha_1$ such that $\alpha_1^{"}(g_1 = W) < \alpha_1 \leq 1$, the government spends zero effort, i.e. $g_1^* = 0$.

Proof of Proposition 2:

We first prove the following: $0 < \alpha_1^{'} < \alpha_2^{**} < \alpha_1^{"}(g_1 = W) < 1$

Let $y = \alpha_1$ be the 45 degree line. Now $\frac{\theta_H \alpha_1}{\theta_H \alpha_1 + \theta_L(1-\alpha_1)} > \alpha_1$ since $\theta_H > \theta_L$. Now $\alpha_2^F = \frac{(1-\theta_H m_1)\alpha_1}{(1-\theta_H m_1)\alpha_1 + (1-\theta_L m_1)(1-\alpha_1)} < \alpha_1$ since $\theta_H > \theta_L$. Hence this proves the above.

Now hence to look at the optimal strategy of the leader, we need to look at the relevant ranges. The relevant ranges are $\alpha_1 \leq \alpha_1^{'}$, $\alpha_1 \in (\alpha_1^{'}, \alpha_2^{**}]$, $\alpha_1 \in [\alpha_2^{**}, \alpha_1^{"}(g_1 = W)]$ and then $\alpha_1 > \alpha_1^{"}(g_1 = W)$. Now for $\forall \alpha_1 \leq \alpha_1^{'}$, $g_1 = \phi$ and $EU^L(a_1 = \phi, \alpha_1, \hat{\beta}_1, \zeta = P) = 0$, while $EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P) < 0$ and $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) = -C_s + \delta.0 < 0$ since even upon success the leader will not announce a revolution in the second period. Hence $a_1(\alpha_1, \hat{\beta}_1, \zeta = P) = \phi$

Now $\forall \alpha_1 \in (\alpha_1', \alpha_2^{**}]$, $EU^L(a_1 = \phi, \alpha_1, \hat{\beta}_1, \zeta = P) = 0$ and $EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P) < 0$ since $\alpha_1 < \alpha_2^{**}$. If the leader takes a small protest then on success will have updated beliefs above α_2^{**} and hence will revolt but otherwise will do nothing. Now the expected utility of the leader if $a_1 = s$ is given by

$$EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) = -C_s + \delta(W - C_R) *$$
$$[Pr(\eta_1 = S \mid a_1 = s, h_1, g_1 = W]Pr(\eta_2 = S \mid a_1 = s, h_1, g_1 = W, \eta_1 = S]$$

Let us define α_{II} be the value of α_1 such that $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) = 0$ and $\forall \alpha_1 < \alpha_{\text{II}}$, $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) < 0$ and hence $a_1(\alpha_1, \hat{\beta}_1, \zeta = P) = \phi$ but $\forall \alpha_1 \geq \alpha_{\text{II}}$, $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) > 0$ and hence $a_1(\alpha_1, \hat{\beta}_1, \zeta = P) = s$

Now $\forall \alpha_1 \in [\alpha_2^{**}, \alpha_1''(g_1 = W)]$, $EU^L(a_1 = \phi, \alpha_1, \hat{\beta}_1, \zeta = P) = 0$. Now the expected utility from $a_1 = R$ is given by

$$EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P) = \frac{[\alpha_1 \theta_H + (1 - \alpha_1)\theta_L][e_L - W]}{(e_L + e_H) - [\theta_L + \alpha_1(\theta_H - \theta_L)]V_R}$$

The expected utility from $a_1 = s$ is given by

$$EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) = -C_s + \delta(W - C_R) *$$
$$[Pr(\eta_1 = S \mid a_1 = s, h_1, g_1 = W)Pr(\eta_2 = S \mid a_1 = s, h_1, g_1 = W, \eta_1 = S)$$

Let us define α_{III} be the value of α_1 such that $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) = EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$. Now $EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$ is always positive, so $\forall \alpha_1 < \alpha_{\text{III}}$, $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) < EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$ while $\forall \alpha_1 \geq \alpha_{\text{III}}$, $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) > EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$.

Now let us look at the last range where $\alpha_1 > \alpha_1''(g_1 = W)$. Here the leader will announce a revolution even if she fails in the small protest. This is because even the updated belief after failure in the social protest in the first period is greater than α_2^{**}. Now $\forall \alpha_1$ such that $\alpha_1 > \alpha_1^{"}(g_1 = W)$, $EU^L(a_1 = \phi, \alpha_1, \hat{\beta}_1, \zeta = P) = 0$. Now the expected utility from $a_1 = R$ is given by

$$EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P) = \frac{[\alpha_1\theta_H + (1-\alpha_1)\theta_L][e_L - W]}{(e_L + e_H) - [\theta_L + \alpha_1(\theta_H - \theta_L)]V_R}$$

The expected utility from $a_1 = s$ is given by

$$EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) = -C_s + \delta(W - C_R)*$$
$$[Pr(\eta_1 = S \mid a_1 = s, h_1, g_1 = 0)Pr(\eta_2 = S \mid a_2 = R, h_1, g_1 = 0, \eta_1 = S)$$
$$+Pr(\eta_1 = F \mid a_1 = s, h_1, g_1 = 0)Pr(\eta_2 = S \mid a_2 = R, h_1, g_1 = 0, \eta_1 = F)]$$

Let us define α_{IV} be the value of α_1 such that $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) = EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$. Now $EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$ is always positive, so $\forall \alpha_1 < \alpha_{\text{IV}}$, $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) < EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$ while $\forall \alpha_1 \geq \alpha_{\text{IV}}$, $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) > EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$.

It is easy to show that $\alpha_{\text{II}} < \alpha_{\text{III}}$ and $\alpha_{\text{IV}} < \alpha_{\text{III}}$. Now the value of C_s is such that $C_s < C_s^*$ and there$\alpha_{\text{IV}} < \alpha_1^{'}$. Hence from the above equations we obtain that $a_1(\alpha_1, \hat{\beta}_1, \zeta = P) = s \; \forall \alpha_1 > \alpha_1^{'}$. The rest of the proof follows from Proposition 1.■

Proof of Proposition 3:

Now we define the value of C_s is such that $C_s > C_s^{**}$ and hence $\alpha_{\text{II}} > \alpha_1^{"}(g_1 = W)$ and $\alpha_{\text{IV}} \geq 1$. Now for $\forall \alpha_1 \leq \alpha_1^{'}$, $g_1 = \phi$ and $EU^L(a_1 = \phi, \alpha_1, \hat{\beta}_1, \zeta = P) = 0$, while $EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P) < 0$ and $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) = -C_s + \delta.0 < 0$ since even upon success the leader will not announce a revolution in the second period. Hence $a_1(\alpha_1, \hat{\beta}_1, \zeta = P) = \phi$. However $\forall \alpha_1 \in (\alpha_1^{'}, \alpha_2^{**}]$, $EU^L(a_1 = \phi, \alpha_1, \hat{\beta}_1, \zeta = P) = 0$ and $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) < 0$ and hence $a_1(\alpha_1, \hat{\beta}_1, \zeta = P) = \phi$. However $\forall \alpha_1 \geq \alpha_2^{**}$, $EU^L(a_1 = s, \alpha_1, \hat{\beta}_1, \zeta = P) < EU^L(a_1 = R, \alpha_1, \hat{\beta}_1, \zeta = P)$ and hence $a_1(\alpha_1, \hat{\beta}_1, \zeta = P) = R$. The rest of the proof follows from Proposition 1.■

References

[1] Ahlquist, J. S., & Levi, M. (2011). Leadership: What it means, what it does, and what we want to know about it. Annual Review of Political Science, 14, 1-24.

[2] Burns, James MacGregor (1978), Leadership, Harper and Row, New York.

[3] Dalton, Dennis (1993), Mahatma Gandhi: Non-Violent Power in Action, Columbia University Press, New York

[4] Hermalin, B. E. (1998). Toward an economic theory of leadership: Leading by example. American Economic Review, 1188-1206.

[5] Komai, M., Stegeman, M., & Hermalin, B. E. (2007). Leadership and information. The American economic review, 97(3), 944-947.

[6] Majumdar, S., & Mukand, S. W. (2010). The leader as catalyst: on mass movements and the mechanics of institutional change.

[7] Van Vugt, M., & De Cremer, D. (1999). "Leadership in social dilemmas: The effects of group identification on collective actions to provide public goods." Journal of Personality and Social Psychology, vol. 76, pp. 587-99.

[8] Northouse, P. G. (2004). Leadership: Theories and practices.

[9] Young, Oran (1991), "Political Leadership and Regime Formation: On the Development of Institutions in International Society", International Organization, vol 45, pp. 281-308.