Social reform as a path to political leadership: A dynamic model☆

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ABSTRACT

A political leader, aiming to replace a repressive regime, wishes to establish her credibility with citizens whose participation in her movement affects its success. If her perceived ability is in an intermediate range of values, her optimal strategy is to masquerade as a no-threat before announcing a movement directly against the regime. In this range, for low costs of repression, the regime finds it optimal to exert force even against a movement that has purely non-political motives. Interestingly, if the average ability of the political leader is low (high) relative to the non-political type, then the range where the regime exerts force against a non-political movement, increases (decreases) with the leader's likelihood of being non-political.

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1. Introduction

This paper formulates and analyzes a model of political leadership, specifically the leadership of a political movement. We have in mind various movements of the twentieth century but also civil disobedience and opposition to democratic regimes that spill out from the halls of parliament to the streets. We focus on one particular aspect/question of these revolutions, namely how does a leader mobilize followers for a movement against the present regime?[1] We also look at how the present regime, which is considered to be strategic, reacts to the leader's announced movement when her intentions are unknown. A leader who is not in power cannot coerce the population into obedience; she can only exhort people to join her and

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[1] Our model can be applied more broadly to situations where the intention of movements may be to influence the status quo ethos or policies of a current regime and not necessarily to overthrow it. Our model can be applied to understand such movements where the intended change can be met only with major opposition and mobilizing citizen participation, for example,the Black Lives Matter movement and other recent movements. The civil rights movement headed by Dr Martin Luther King, Jr., did not seek a change in government. Likewise the movement in China from the left-wing radicalism of Mao to the more eclectic approach of Deng.

individuals will do so based on their belief about her ability to deliver an outcome that is beneficial for them. Successful political action is, of course, one way of generating this belief. However, in environments where political action is met with a strong reaction, perhaps force, a would-be leader would be unwise to attempt such action without already having a strong reputation.

We model the process by which such a reputation might be constructed. There are several different instances that share this common theme. Lech Walesa in Poland, for example, came into prominence as a union leader by successfully organizing a strike at Lenin Shipyard in Gdańsk. Our main motivation for the model here was the success in India of Arvind Kejriwal. Kejriwal had been part of an anti-corruption movement in 2012–13. Like other such figures, Kejriwal was perhaps considered to be selflessly participating in a non-political movement without ambitions of obtaining power - he thereby avoided any focused criticism from the government. However, later he formed a political party and was elected in his state by a massive landslide victory. Kejriwal and his mentor, Hazare, mentioned Mohandas Karamchand Gandhi (Gandhi) often. Gandhi is a leading example of the kind of leadership we have in mind.

Gandhi began his political journey in India by small-scale social movements, without any overt threat to British rule, first in Champaran against (mainly British) indigo planters and then in Ahmedabad against mill owners. When the successful prosecution of these movements made him well-known, he launched the non-cooperation movement in 1920, which might well have ended the British rule if he had not called it off himself in 1922. In Appendix B, we spend some time explaining the relevance of Gandhi's example to the problem that we analyze. We restrict ourselves to Gandhi's rise to dominance in the Indian National Congress (effectively the main Indian nationalist movement) during the period 19171922 and the steps that he took before becoming the face of the political movement that undermined the British empire's presence in India.

What we take away from these examples is that often the first step some leaders have taken in building a reputation is to undertake some non-political activity which does not threaten the existence of the current regime and be successful at it, to demonstrate the ability to plan and execute complex public tasks. For Walesa, Kejriwal and Gandhi, it was both the perception of selflessness in exposing oneself to some risk without any immediate prospect of reward, as well as the fact that the task undertaken was completed successfully.[2] As far as the ultimate intention of leaders like Gandhi and Walesa is concerned, there is no evidence one way or the other. However, we know that both of them were opposed to the regimes in the country. In our paper, we assume that the successful non-political activity helps build reputation about the leader's ability to accomplish tasks.

There are three main strategic players in our model - the leader, the regime, which we shall label as the government and individual citizens. The leader can have a political motive to overthrow the current regime or a non-political motive to not do so. The political leader's ability to lead a successful movement could either be high or low. We assume that the non-political leader's ability is known to be high.[3] The ability and motive is assumed to be unknown to the populace and the government. The leader privately knows her own motive. To begin with, we assume that the political leader does not know her own ability, e.g., a new political entrant may not know how capable he/she is in leading a successful movement. However, this assumption is later relaxed. Each individual citizen has a (possibly negative) cost of participating in a movement and decides whether or not to do so based on a myopic (single-period) analysis of his or her payoff and the likelihood of success.

There are two periods in the model. In each period, first the political leader chooses the nature of the movement which can either be one that threatens to overthrow the government (revolution) or one that leaves the government intact (social movement).[4] The government then chooses whether to expend force to suppress the movement (at a cost) or not. The government's choice of exerting force must anticipate not only the leader's ability but her perceived motive. Each choice is observed by all players. Following the moves of the leader and the government, the citizens (or the masses) decide whether to participate in the movement or not. Each citizen decides independently whether or not to take part in the announced movement, given his private cost, the common cost of fending off government suppression, and the probability that the movement will be successful. Thus, for the same individual costs, a higher perception of the leader's ability increases the level of participation. There are two possible outcomes in each period-success or failure of the announced movement. The probability of success depends on the ability of the leader and citizen participation, which in turn depends upon the belief about the leader's ability and motive and the level of government force exerted in that period. If the social movement actually succeeds, the posterior belief about the leader's ability goes up, thus making success of subsequent movements more likely. We assume that revolution in the first period ends the game irrespective of its outcome. In the current two-period model, the political leader will always choose a revolution in the second period. The question is what does she choose in the first period?

We look in this paper for (pure-strategy) Perfect Bayesian Equilibria of a threshold type. We show that for extreme beliefs about her ability, the leader with political intentions does not experiment and opposes the government immediately.

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[2] To cast the net further back in time, consider the different attributes of two of the leaders of the French Revolution, Danton and Robespierre. Danton from all accounts, was not averse to enriching himself, but seemed to be able to get things done, even allegedly bribing the Duke of Brunswick to stop the invasion of France. Robespierre was known as the incorruptible and lived as a tenant in a house owned by a carpenter follower. So both ability and selflessness could lead to a public following.

[3] We also discuss the case when she is known to be of low ability in Section 4.3.

[4] A social movement does not imply "inaction" on the part of the leader. On the contrary it is a non-political movement for a social cause that allows the leader to showcase her ability.

However, she follows a path of gradualism for intermediate beliefs about her ability. She announces a social movement in the first period and then conducts a revolution in the second period. We also find that as belief about the leader being non-political increases, the political leader benefits from masquerading as a non-political kind and hence the range where the political leader announces a social movement in the first period increases.

There are tradeoffs associated with the choice of conducting a social movement by the political leader in the first period. Since the non-political leader is always of high ability, the political leader finds it optimal to mimic the non-political type and conduct a social movement. Citizens are more likely to join a social movement in the first period, increasing its chances of being successful. Thus, the benefit of a successful social movement is an increased belief about the leader's ability and the likelihood of a successful revolution in the second period. However, there are costs of conducting a social movement. First, overthrowing the government is delayed, delaying the benefits associated with it. Next, failure of a social movement lowers the belief about the leader's ability. There is also a possibility of the leader facing government repression on conducting a revolution, if the updated second-period belief is high enough. Lowered belief about ability and government repression reduces citizen participation and hence lowers the likelihood of a successful revolution in the second period. We find that the net benefit of conducting a social movement is non-monotonic in belief about the leader's ability. Hence, the leader announces a social movement only for intermediate beliefs about her ability.

The interesting results concern the government's actions. Though a social movement leaves the government intact, it might still choose to suppress such movements if the cost of exerting force is not too high. As mentioned before, if the government chooses to expend force in suppression, this leads fewer people to participate and therefore reduces the probability of success of a social movement. Failure of a social movement reduces belief about the political leader's ability and hence lowers the chance of a successful revolution in the second period. More interestingly, the range where the government exerts force upon observing a social movement in the first period, increases as the belief about the leader's motives being political decreases. This is because the government anticipates that in such a case the leader with political ambition is more likely to masquerade as a non-political leader. Without stretching our model's credibility too much, this might be one of the reasons why, for example, the Chinese government reacted disproportionately to Falun Gong or why environmental NGOs are treated in many countries as equivalent to political enemies. We find that the above result reverses when the ability of the non-political leader is low: that is if the non-political leader is assumed to have low ability, the range of beliefs where the government exerts force upon observing a social movement, reduces as the leader's motive of being political decreases.

The leader who does not know her own ability is reminiscent of the similarly uninformed agent in Holmström (1999). In Holmstrom, this creates an incentive for the agent to garble the signal of her ability by undertaking high effort. In our model, the government can make the signal of ability by the leader less informative by exerting force. It is only concerned with increasing the probability of failure of the movement (and hence decreasing the probability of success) and not with the the fact that the posterior probability of ability given a failure is higher with force being exerted.

The rest of the paper is organized as follows. Related literature is discussed in Sections 2 and 3 outlines the model. Section 4 characterizes the equilibrium. In Section 5 we analyse the case when the leader knows her own ability and show that the results remain robust. Section 6 provides additional discussions. In this section we extend our results to an empirical framework (Section 6.1) and show how our model can be adapted to a more broader framework of corporate literature (Section 6.2). Section 7 concludes the paper.

2. Related literature

Researchers in the field of management (Yukl, 1989; Elkins and Keller, 2003; Turner and Müller, 2005) have studied different aspects of leadership. It is only recent that economists have started focusing on the question of leadership. Much of the previous literature on leadership in management and economics has focused on corporate or business leadership. This literature analyses the scenario where a leader (typically a chief executive) gives orders with a reasonable expectation that they will be obeyed.[5] We differ from this strand of literature as we model a political leader that can only exhort, not order, and individual citizens, each with his or her own preferences, have to decide whether to follow, often at some risk to their own well-being.

Hermalin (1998), a pioneering paper in the field of economics of leadership looks at the problem of a (corporate) leader that wants to maximize effort of its subordinates. They find that when the leader has private information about the state of the world that determines return, the optimal way to elicit maximum effort of its subordinates is to lead by example when agents are self-interested. This has also been shown to hold in a voluntary contribution games in an experimental setting by Potters et al. (2007). Hermalin (2007) extends the static framework to a repeated game framework and shows that it is possible for the leader to develop a reputation of honesty (i.e., announce the actual state of the world) if she is patient enough. They show that the greater is the ex-ante uncertainty over the state, the larger is the range of discount factors for which such an honest equilibrium can be supported. In both these papers, Hermalin assumes that participation by team members is voluntary even when a leader in an organizational setting may have some degree of formal authority. Our paper deviates from an organizational framework to a political setting where a leader does not have any such authority (formal or informal) over the followers.[6]

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[5] There is also an undeveloped area on leadership of academic or research institutions, which do not work in this way, though not for want of trying.
[6] See other work on political leadership De Mesquita (2010); Shadmehr (2014, 2015) and Shadmehr and Bernhardt (2019).

Majumdar and Mukand (2008) extend Hermalin's analysis to political leadership where the leader wants to bring about a change. The leader's ability and hence success in a movement is identified by two dimensions, her ability to correctly identify circumstances when change is possible and her skill at effectively communicating this to the citizens. Majumdar and Mukand shows that when the leader's ability is perfectly known, there is a threshold level of ability below which the probability of change is zero while this is positive above the threshold. However, when there is heterogeneity in beliefs about the ability of the leader, this threshold for effective leadership depends solely upon citizens' perception about the leader's ability. They show that even if a leader is of high ability, she might still be unsuccessful in a movement if the citizens do not perceive her to be of high ability. Our paper shares a common feature with Majumdar and Mukand where the probability of success in a movement is dependent on citizen participation. Majumdar and Mukand are silent on how a leader can build a reputation or perception about her ability among the citizens when they have low priors about her ability. Our paper contributes to the literature in explaining how a political leader can build perceptions about her ability by undertaking some non-political activity. Another major difference of our paper from Majumdar and Mukand is that they abstract away from strategic reaction of the government which is very crucial in political contexts.

Another important problem in the context of revolutions is the coordination problem faced by the leader.[7] We focus instead on a different aspect - the reputation of the leader. There has also been work on leadership, particularly in the context of organizations which focus on certain key personality traits of being a successful leader.[8] Dewan and Squintani (2018) show that good leadership depends on the judgement of her "trustworthy associates". This network of associates emerge endogenously in their model. In our paper, we do not focus on any such personality traits of a leader, but she has a differential ability to execute a movement, closer to the notion used in Majumdar and Mukand (2008).

Shadmehr and Boleslavsky (2015), though not in the context of leadership, show that citizens can participate in a protest following government repression on a group of activists. In our paper, upon observing a social movement, the government exerts force when it is not very costly for it to do so. However, there can be instances when repression against social movements can lead to a backlash from citizens against the government. This can lead to increased citizen participation and widespread protests. In our model, we do not allow for such cascading effects.

There is also an extensive literature on political regime change. Acemoglu and Robinson (2006) and De Mesquita et al. (2005) provide introductions to the literature on the political economy of regime change. Edmond (2013) models political regime change in a static global game setting where the regime can engage in strategic information manipulation so that citizens perceive that the regime is difficult to overthrow. Angeletos et al. (2007) study global games of regime change in a dynamic setting. These models of regime change include a continuum of agents who decides to participate in the protest or not against the government, whose strength is unknown to the protesters. The protest is successful only when the strength of the government is less than the groups of protesters. Our paper is different from the regime change literature in two fundamental ways. First, our model incorporates the leader as a strategic player along with the government or regime being strategic. Second, the leader has private information in our model unlike global games where the regime has private information about its type.

3. Model

There are three types of agents - the leader (L), government (G) and a unit mass of citizens (C).[9] The leader does not belong to the government but can overthrow the government by garnering sufficient support from the citizens. The leader has two characteristics - ability to execute a movement, θ and a motive to conduct a movement, ζ. The leader's motive to conduct a movement can either be political (P) or non-political (NP), i.e., $\zeta \in \{P, NP\}$. Only a leader with a political motive wants to overthrow the government that is presently in power. The leader's motive, ζ is privately known to the leader but unknown to others. Let $Pr(\zeta = NP) = \lambda_1$ be the common initial prior that the leader is non-political.

The leader's ability to execute a movement can either be high, θ_H or low, θ_L, i.e. $\theta \in \{\theta_H, \theta_L\}$ and $0 < \theta_L < \theta_H < 1$. The actual ability of the leader is not known either to the government or to the citizens. To begin with we assume that the leader is inexperienced, i.e. she does not know her own ability.[10] The motive (ζ) and ability (θ) of the leader are drawn independently. Let $Pr(\theta = \theta_H) = \alpha_1$ be the common initial prior that the political leader is of high type. We denote the type of the leader by $\tau = (\theta, \zeta) \in \mathbb{T}$, where $\mathbb{T} = \{\theta_H, \theta_L\} \times \{P, NP\}$. We assume that the non-political leader is only of the high type.[11]

We consider a two-period model. At the beginning of each period, $t \in \{1, 2\}$ the leader of type, τ, chooses the nature of movement that she conducts, a_t. The movement can either be a revolution, R or a social movement, sm, i.e., $a_t \in \{R, sm\}$. Only a successful revolution overthrows the government in power. Upon hearing the leader's announcement in period t, the government and citizens update their belief about the leader's motive. The prior on the motive of the leader is updated to

$\hat{\lambda}_t$.[12] Next, the government announces the level of force, g_t with which it combats the leader's announced movement, $g_t \in \{0, E\}$. After observing the nature of the movement, a_t and government's force, g_t, each citizen decides either to participate or not in the announced movement. Let the proportion of citizens who choose to participate in the movement at period t be $m_t(g_t)$.[13] Following citizen participation, nature determines the outcome of the movement, γ_t. The outcome of the movement can be a success, (S) or failure, (F) i.e. $\gamma_t \in \{S, F\}$. The probability of success of a movement announced at t, depends upon the ability of the leader, θ and the proportion of citizens that participate in the movement, $m_t(g_t)$, i.e. $Pr(\gamma_t = S) = \theta m_t(g_t)$. The success or failure of the movement is common knowledge at the end of each period. Upon revelation of γ_1 in period 1, the common prior about the ability of the political leader is upated to $\hat{\alpha}_1$.

If the leader announces a revolution in period 1, the government decides whether to exert force or not, citizens decide whether to participate in the movement or not, the outcome of the movement is revealed and the game ends. However, if the leader announces a social movement in period 1, the belief about the leader's motive is updated, the government decides whether to exert force or not, citizens decide whether to participate or not, the outcome of the movement is revealed, the belief about the leader's ability is updated and the game continues to the next period where she can announce a movement of either kind and the same sequence of events follows.

Let $h_t = (a_{t-1}, g_{t-1}, m_{t-1}, \gamma_{t-1}, \alpha_t, \lambda_t)$ be the public history at the beginning of time period t with the initial history, $h_1 = (\alpha_1, \lambda_1)$. Let $\mathbb{H}_t$ be the set of all possible histories at the beginning of period t. Let $\lambda_{t+1} = \hat{\lambda}_t$ and $\alpha_{t+1} = \hat{\alpha}_t$ be the updated belief about the leader's motive and the leader's ability at the beginning of period $t + 1$, respectively. Therefore, at the beginning of period 2, $\lambda_2 = \hat{\lambda}_1$ and $\alpha_2 = \hat{\alpha}_1$

We now describe the strategies and payoffs of agents in the model. The ex-ante utility of a leader in each period depends upon her motive ζ, the nature of the movement announced, a_t, and success of the movement, γ_t. The ex-ante per period utility of a leader with a political motive, $\zeta = P$ at time period t is given as follows:[14]

$$U_t^P(a_t, \gamma_t) = \begin{cases} 0 & \text{if } a_t = sm \text{ and } \gamma_t = S/F, \\ 0 & \text{if } a_t = R \text{ and } \gamma_t = F, \\ W & \text{if } a_t = R \text{ and } \gamma_t = S. \end{cases}$$

The ex-ante per period utility of a leader with a non-political motive, $\zeta = NP$ at time period t is given as follows:

$$U_t^{NP}(a_t, \gamma_t) = \begin{cases} W & \text{if } a_t = sm \text{ and } \gamma_t = S, \\ 0 & \text{if } a_t = sm \text{ and } \gamma_t = F, \\ 0 & \text{if } a_t = R \text{ and } \gamma_t = S/F. \end{cases}$$

A leader that has a political motive, $\zeta = P$ derives a positive payoff of W only from a successful revolution and receives zero payoff from a social movement irrespective of its outcome. W is the rent that the political leader obtains from assuming office by overthrowing the current government. However, a leader that has a non-political motive, $\zeta = NP$ is assumed to derive a positive payoff of W only from a successful social movement. We can easily assume that a successful social movement provides a different payoff than W without changing the nature of the results.

The utility derived by the leader is independent of her ability. The cost of implementing a movement for the leader is assumed to be zero irrespective of the type of the movement and the ability of the leader.[15] A strategy of the leader of type, $\zeta \in \{P, NP\}$ at time period $t \in \{1, 2\}$ is a function, $\sigma_t^\zeta : \mathbb{H}_t \to \{0, 1\}$ that maps every history, $h_t \in \mathbb{H}_t$ to the leader's action at time period t. $\sigma_t^\zeta(h_t)$ takes value 1 if the leader announces a social movement ($a_t = sm$) and 0 for a revolution ($a_t = R$) at time period t.

The ex-ante per period utility of the government at time period t depends upon the nature of the movement announced, a_t, the extent of force announced, g_t, and success of the movement, γ_t. The ex-ante per period utility of the government, that exerts a force, g_t at time period t is given as follows:

$$U_t^G(a_t, g_t, \gamma_t) = \begin{cases} W - cg_t & \text{if } a_t = sm \text{ and } \gamma_t = S/F \\ W - cg_t & \text{if } a_t = R \text{ and } \gamma_t = F \\ -cg_t & \text{if } a_t = R \text{ and } \gamma_t = S. \end{cases}$$

We assume that only a successful revolution can overthrow the government. W is the rent enjoyed by the government from being in power. The government incurs a cost, cg_t for implementing force g_t, where $c \in [0, 1]$ is the marginal cost of exerting force, $g_t \in \{0, E\}$. Hence, the cost of exerting force, E is cE which we assume is no more than the rent that the government enjoys by being in power, i.e. $cE < W$. A strategy of the government at time period t is a function, $G_t : \mathbb{H}_t \times \{R, sm\} \to \{0, 1\}$ that maps every history, $h_t \in \mathbb{H}_t$ and nature of the movement announced, $a_t \in \{R, sm\}$, to government's

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[12] The nature of a movement announced by the leader does not reveal anything about the ability of the leader, θ. The prior about the ability of the leader changes only upon the success or failure of the movement, as described later.

[13] $m_t(g_t)$ depends on everything that is known to have happened in the game prior to the point when citizens take a decision. For notational convenience, we suppress this dependence.

[14] In the event of a successful revolution, a political leader may enjoy additional payoff over and above that which is received by the citizens. Our model can easily incorporate this without changing any results.

[15] Our results remain unchanged qualitatively with non-zero costs to the leader. We discuss this in some detail in Section 6.3.

action in time period t. $G_t(h_t, a_t)$ takes value 1 if the government uses force at time period t and 0 otherwise. The leader and the government, discount the future with the same discount factor, $\delta \in (0, 1)$.

We assume that citizens are myopic and each citizen bears a private cost of participating in any movement, $e_i \sim U[-e_L, e_H]$. We allow the private cost of participation to be negative, implying a positive payoff to the citizen from participation in the movement, irrespective of its outcome. Citizens also bear a common cost equal to the force implemented by the government, g_t. Thus, the total cost of participating in a movement for an individual citizen i is $c_i = e_i + g_t$.

The ex-ante per period utility of the citizen depends upon the success of a movement, γ_t irrespective of the nature of announced movement, a_t.[16] An individual citizen $i's$ per period payoff conditional on participation in a movement is given as follows:

$$U_{it}^C(a_t, \gamma_t) = \begin{cases} W - c_i & \text{if } a_t = R/sm \text{ and } \gamma_t = S \\ -c_i & \text{otherwise.} \end{cases}$$

We assume that citizens derive positive utility W from any successful movement conditional on participating in a movement and zero otherwise.[17] Citizens decide to participate in a movement at time period t if their per period payoff is greater than the cost of doing so. We assume $e_L > E$ and $e_H > \theta_H W$ which ensures that for any type of movement and for any level of government force in every period, there is a non-degenerate fraction of citizen participation. The collective decision of the citizens in our model represents a coordination game in the spirit of the global games literature introduced by Carlsson and Van Damme, 1993. The global games approach has been adopted in various settings of coordination games, such as currency attacks, liquidity crises and protests (Edmond, 2013; Morris and Shin, 1998; Oh, 2013). The central assumption in these settings is strategic complementarities i.e., payoff increases with the number of other citizens taking the same action. In our model, the main source of strategic complementarity is the following. As the number of citizens participating in a movement increases, the chance of a successful movement is higher.

A strategy of a citizen of type $e_i \in [-e_L, e_H]$ at time period t depends upon the nature of movement, $a_t \in \{R, sm\}$ and government force, $g_t \in \{0, E\}$. Thus, the strategy of a citizen is a function $\upsilon_t : \mathbb{H}_t \times \{R, sm\} \times \{0, E\} \times [-e_L, e_H] \to \{0, 1\}$ that maps citizen's action for type of citizen, e_i and every history, $h_t \in \mathbb{H}_t$, announcement by the leader, a_t, and government force, g_t. $\upsilon_t(h_t, a_t, g_t, e_i)$ takes value 1 if the citizen participates in the announced movement a_t, given government's force g_t and 0 otherwise.

4. Analysis

In this section, we solve for pure strategy Perfect Bayesian Equilibrium (PBE) of this game. Before solving for the equilibrium, we discuss the updating rule of the motive and ability of the leader, i.e., $\hat{\lambda}_t$ and $\hat{\alpha}_t$, respectively. Announcement of the nature of the movement, a_t by the leader at time period t reveals private information about her motive. It does not provide any information about the ability of the leader to execute a movement. The outcome of the announced movement at the end of the period reveals information about the leader's ability but nothing about her motive.

A leader with a non-political motive will always announce a social movement in equilibrium in both periods, i.e. $a_t = sm$. A leader with a political motive will always announce a revolution in the second period, i.e. $a_2 = R$. Thus,

$$\hat{\lambda}_2(h_2, a_2 = sm) = 1$$

and

$$\hat{\lambda}_t(h_t, a_t = R) = 0, \qquad \forall t \in \{1, 2\}$$

The leader that announces a social movement in the first period in equilibrium, could either be political or non-political. Thus, the updated prior about the leader's motive upon conducting a social movement does not change i.e., $\hat{\lambda}_1(h_1, a_1 = sm) = \lambda_1$.[18]

At the end of every period, the common prior about the ability of the political leader is updated after observing the nature of movement, a_t and its success or failure, γ_t, which in turn depends upon the government's force, g_t and citizen participation, m_t. Let $\alpha_2^S(\alpha_1, g_1) = \hat{\alpha}_t(\alpha_1, g_1, \gamma_1 = S)$ be defined as the updated belief about the ability of the leader at the beginning of the second period if the social movement in the first period was successful. Using bayesian updating, the value

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[16] The payoffs from successful revolution and social movements can ideally be different but for simplicity we have taken it to be the same. The results are unaltered if this assumption is relaxed.

[17] We assume that there is no free riding for the citizens. However, benefits of a revolution involving a regime change are generally non-excludable. We can normalize the benefit from a successful revolution to be zero and W can be interpreted as the additional benefit that participating citizens receive because the leader by assuming office can reward them with additional benefits like job security, access to different subsidy programmes, etc.

[18] The updated belief about the motive of the leader can be written as follows:

$$\hat{\lambda}_t(h_t, a_t) = Pr(\zeta = NP|h_t, a_t) = \begin{cases} \frac{\sigma_t^{NP}\lambda_t}{\sigma_t^{NP}\lambda_t + \sigma_t^P(1-\lambda_t)} & \text{if } a_t = sm \\ \frac{(1-\sigma_t^{NP})\lambda_t}{(1-\sigma_t^{NP})\lambda_t + (1-\sigma_t^P)(1-\lambda_t)} & \text{if } a_t = R. \end{cases}$$

of $\alpha_2^S(\alpha_1, g_1)$ is given by:

$$\alpha_2^S(\alpha_1, g_1) = \frac{\theta_H \alpha_1 m_1(g_1)}{\theta_H \alpha_1 m_1(g_1) + \theta_L (1 - \alpha_1) m_1(g_1)} = \frac{\theta_H \alpha_1}{\theta_H \alpha_1 + \theta_L (1 - \alpha_1)}$$

It is interesting to note that $\alpha_2^S(\alpha_1, g_1)$ is independent of the level of citizen participation and government force. Let $\alpha_2^F(\alpha_1, g_1) = \hat{\alpha}_t(\alpha_1, g_1, \gamma_1 = F)$ be defined as the updated belief about the ability of the leader at the beginning of the second period if the social movement in the first period was a failure.

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

We first consider the decision of a citizen i to participate in a movement, a_t announced by the leader at time period t. The expected payoff of each citizen of type, e_i from participating in a movement, a_t given that government puts in force, g_t is:

$$Pr[\gamma_t = S \mid h_t, a_t, g_t, \hat{\lambda}_t] W - c_i$$

where $Pr[\gamma_t = S \mid h_t, a_t, g_t, \hat{\lambda}_t]$, is the probability of success of a movement, a_t given history, h_t, government force, g_t and updated belief about the leader's motive, $\hat{\lambda}_t$. c_i is the cost of participation in a movement for a citizen i where, $c_i = e_i + g_t$. Notice that the expected payoff is a function of the updated belief about the leader's motive, $\hat{\lambda}_t$ after the announcement of the movement, a_t at the beginning of period t. The probability of success of a movement, a_t given government force, g_t depends upon the leader's ability, θ and citizens' participation, $m_t(g_t)$. With probability, $\hat{\lambda}_t$ a leader has a non-political motive and is of ability θ_H. The leader has political motive with $(1 - \hat{\lambda}_t)$ probability and has high (low) ability, $\theta_H(\theta_L)$ with $\alpha_t(1 - \alpha_t)$ likelihood. Thus, the probability of success of a movement, a_t given g_t, h_t, and $\hat{\lambda}_t$ is:[19]

$$Pr[\gamma_t = NP \mid h_t, a_t, g_t, \hat{\lambda}_t] = [\hat{\lambda}_t \theta_H + (1 - \hat{\lambda}_t)(\alpha_t \theta_H + (1 - \alpha_t)\theta_L)] m_t(h_t, a_t, g_t, \hat{\lambda}_t)$$

where, $m_t(h_t, a_t, g_t, \hat{\lambda}_t)$ is the proportion of citizens that participate in the announced movement, a_t given that the government exerts force, g_t.

A citizen of type i will participate only if

$$Pr[\gamma_t = S \mid h_t, a_t, g_t, \hat{\lambda}_t] W - c_i \geq 0$$

Therefore, the proportion of citizens that participate in a movement, a_t, given that the government announces force g_t, at any period t is given by:

$$m_t(g_t, \alpha_t, \hat{\lambda}_t) = \frac{e_L - g_t}{(e_H + e_L) - [(1 - \hat{\lambda}_t)(1 - \alpha_t)\theta_L + [(1 - \hat{\lambda}_t)\alpha_t + \hat{\lambda}_t]\theta_H] W} \tag{1}$$

Citizen participation in period t decreases as government increases its level of force, i.e.

$$m_t(g_t = 0, \alpha_t, \hat{\lambda}_t) > m_t(g_t = E, \alpha_t, \hat{\lambda}_t)$$

As government puts more effort, total cost of participating in a movement increases for an individual citizen thus decreasing total citizen participation. Citizen participation increases as belief about the political leader's ability increases, i.e., m_t increases with α_t for any given $\hat{\lambda}_t$. This is because the chances of a successful movement increases with increase in belief about the leader's ability. Citizen participation also increases with the increase in likelihood of a non-political leader, $\hat{\lambda}_t$. As likelihood of a non-political leader increases, the expected ability of the leader improves, thus increasing citizen participation.

4.1. Second period

In this section, we solve for the last period problem of the game. Given the payoffs and the structure of the game, a non-political leader always announces a social movement in both periods, i.e., $\sigma_t^{NP} = 1, \forall t \in \{1, 2\}$. Similarly, a political leader always announces a revolution in the second period, i.e., $\sigma_2^P = 0$.

Consider the problem of the government in the second period. The government observes nature of the movement, a_2 announced by the leader at the beginning of the second period and updates its belief about the leader's motive, $\hat{\lambda}_2$. Upon observing a social movement in the second period, the government believes that the leader is non-political, i.e. $\hat{\lambda}_2 = 1$. Since, the government is not overthrown by a social movement and its payoff remains the same irrespective of the success

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[19] The probability of success of movement, a_t given government's force, g_t is:

$$Pr[\gamma_t = S \mid h_t, a_t, g_t, \hat{\lambda}_t] = \sum_{\theta \in \{\theta_H, \theta_L\}} \sum_{\zeta \in \{P, NP\}} [Pr(\zeta \mid h_t, a_t) Pr(\theta \mid h_t, a_t, \zeta_t) Pr(\gamma_t = S \mid \theta, h_t, a_t, g_t)]$$

$$= [(1 - \hat{\lambda}_t)(1 - \alpha_t)\theta_L + [(1 - \hat{\lambda}_t)\alpha_t + \hat{\lambda}_t]\theta_H] m_t(h_t, a_t, g_t, \hat{\lambda}_t)$$
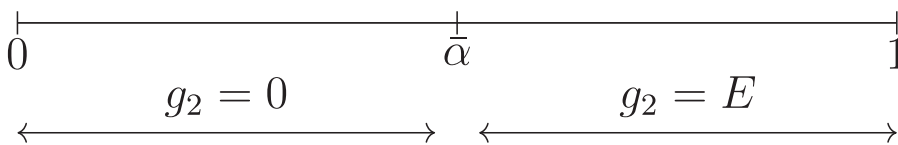
Fig. 1. Optimal second period strategy of the government against revolution when $c \in (c', c'')$.

of a social movement, the government's optimal strategy in the last period upon observing a social movement is to exert no force. i.e.

$$G_2(h_2, a_2 = sm) = 0, \forall h_2 \in \mathbb{H}_2$$

However, optimal strategy of the government against a revolution in the second period depends upon the updated prior about the political leader's ability. Upon observing a revolution in the second period, the government believes that the leader is political, i.e. $\hat{\lambda}_2 = 0$. If the cost of exerting force for the government is low enough, i.e. $c \leq c'$, where $c' = \frac{\theta_L W}{e_H + e_L - \theta_L W}$, the government exerts force against a revolution irrespective of the prior about the leader's ability. However, if the cost of exerting force is too high, i.e. $c \geq c''$, where $c'' = \frac{\theta_H W}{e_H + e_L - \theta_H W}$, the government does not suppress a revolution irrespective of the prior about the leader's ability. We look at the more interesting case where the government's policy depends upon belief about the leader's ability. For the rest of the paper, we assume that $c \in (c', c'')$ where government's policy against a revolution is a threshold policy. If the updated belief about political leader's ability at the beginning of the second period is not too high, i.e. α_1 is less than $\bar{\alpha}$, the government exerts no force upon observing a revolution but does so for beliefs greater than or equal to $\bar{\alpha}$ where, $\bar{\alpha} = \frac{1}{(\theta_H - \theta_L)} \left[\frac{(e_H + e_L)c}{(1+c)W} - \theta_L \right]$. $\bar{\alpha}$ is the government's belief about the political leader's ability at which it is indifferent between exerting force or not, in opposing a revolution. If belief about the leader's ability is high, then the likelihood of the second period revolution being successful is also high. This increases the chances of the government being overthrown inducing it to exert force against an observed revolution in the second period. The following lemma summarizes the second period strategy of all agents.

Lemma 1 (Second Period Equilibrium). *If $c \in (c', c'')$*

- *A political leader announces a revolution while a non-political leader announces a social movement.*
- *Government does not exert force against a social movement. However, government exerts force against a revolution if the updated belief about the political leader's ability at the beginning of the second period is more than $\bar{\alpha}$ but does not otherwise (Fig. 1).*
- *Citizen participation for any announced movement is given by Eq. (1).*

Proof. See Appendix C. □

4.2. First period

In this section, we solve the first-period problem of the leader and the government. Since citizens are myopic, their optimization problem is the same as that in the second period. Citizen participation given the announced movement, a_1, and government's force, g_1 is determined by Eq. (1). For the rest of the paper, we solve for equilibria where the political leader follows a threshold policy in the first period of the following kind:

$$\begin{aligned} \sigma_1^P = 0 \quad & \forall \alpha_1 < \alpha_L(\lambda_1) \\ = 1 \quad & \forall \alpha_1 \in [\alpha_L(\lambda_1), \alpha_H(\lambda_1)) \\ = 0 \quad & \forall \alpha_1 \geq \alpha_H(\lambda_1) \end{aligned} \quad (2)$$

where, $\alpha_L(\lambda_1)$ and $\alpha_H(\lambda_1)$ are endogenously determined. That is, we look for those equilibria where the political leader announces a social movement in the first period only for intermediate values and conducts a revolution for extreme beliefs about her ability.

A leader does not get a chance to conduct another movement after announcing a revolution. Therefore, the government's strategy against a revolution in the first period is the same as its strategy against a revolution in the second period. Specifically, if $c \in (c', c'')$ then the government does not exert force if the initial belief about the political leader's ability is less than the threshold value $\bar{\alpha}$ but does so otherwise. Next, we analyze the government's optimal strategy against a social movement in the first period.

From Lemma 1 we know that the government exerts force upon observing a revolution only when the belief about the leader's ability is above $\bar{\alpha}$. Let α_1^S be the belief about the political leader's ability at the beginning of the first period such that a successful social movement in the first period causes the updated belief at the beginning of the second period to be equal to $\bar{\alpha}$, i.e. $\alpha_2^S(\alpha_1^S, g_1) = \bar{\alpha}$. Similarly, $\alpha_1^{FE}(\lambda_1)$ and $\alpha_1^{F0}(\lambda_1)$ are defined as $\alpha_2^F(\alpha_1^{FE}(\lambda_1), g_1 = E) = \bar{\alpha}$ and $\alpha_2^F(\alpha_1^{F0}(\lambda_1), g_1 = 0) = \bar{\alpha}$. That is $\alpha_1^{FE}(\lambda_1)$ and $\alpha_1^{F0}(\lambda_1)$ are initial beliefs about the political leader's ability at the beginning of the first period such that upon a failed social movement in the first period and government's force, $g_1 = E$ and $g_1 = 0$, respectively, the updated

belief at the beginning of the second period is equal to $\bar{\alpha}$. Note that α_1^S is independent of λ_1. For notational simplicity, let us denote $\alpha_1^{FE} = \alpha_1^{FE}(\lambda_1)$ and $\alpha_1^{F0} = \alpha_1^{F0}(\lambda_1)$. The following lemma describes the relation between these three thresholds and $\bar{\alpha}$.

Lemma 2. $\alpha_1^S < \bar{\alpha} < \alpha_1^{FE} < \alpha_1^{F0}$

Proof. Note that $\alpha_2^S(\alpha_1, g_1) - \alpha_2^F(\alpha_1, g_1) = \frac{\alpha_1(1-\alpha_1)(\theta_H - \theta_L)}{[\theta_H\alpha_1 + \theta_L(1-\alpha_1)][(1-\theta_H m_1(g_1))\alpha_1 + (1-\alpha_1)(1-\theta_L m_1(g_1))]}$ which is always positive for any given α_1.

Next, since $\frac{\partial \alpha_2^F}{\partial m_1} < 0$ and $\frac{\partial m_1}{\partial g_1} < 0$, $\frac{\partial \alpha_2^F}{\partial g_1} = \frac{\partial \alpha_2^F}{\partial m_1} \frac{\partial m_1}{\partial g_1} > 0$. Hence, $\forall \alpha_1$

$$\alpha_2^S(\alpha_1, g_1) > \alpha_2^F(\alpha_1, g_1 = E) > \alpha_2^F(\alpha_1, g_1 = 0)$$

Since $\alpha_2^S(\alpha_1, g_1), \alpha_2^F(\alpha_1, g_1 = E)$ and $\alpha_2^F(\alpha_1, g_1 = 0)$ are increasing in α_1 and by the definition of α_1^S, α_1^{FE} and α_1^{F0}, we obtain $\alpha_1^S < \bar{\alpha} < \alpha_1^{FE} < \alpha_1^{F0}$. $\square$

A successful social movement in the first period increases the updated belief about the leader's ability in the second period, i.e. $\alpha_2^S(\alpha_1, g_1)$ is greater than the initial prior about the leader's ability, α_1. Since $\alpha_2^S(\alpha_1, g_1)$ is an increasing function of α_1, to obtain an updated belief equal to $\bar{\alpha}$ in the second period, the initial prior required is less than $\bar{\alpha}$. Therefore, by definition of α_1^S is less than $\bar{\alpha}$. Similarly, a failed social movement in the first period decreases the updated belief in the second period, i.e. $\alpha_2^F(\alpha_1, g_1 = E)$ and $\alpha_2^F(\alpha_1, g_1 = 0)$ are less than α_1. Since $\alpha_2^F(\alpha_1, g_1 = E)$ and $\alpha_2^F(\alpha_1, g_1 = 0)$ are increasing in α_1, to obtain an updated belief equal to $\bar{\alpha}$ in the second period, one requires initial prior greater than $\bar{\alpha}$. Therefore, by definition α_1^{FE} and α_1^{F0} are greater than $\bar{\alpha}$.

The updated belief about the political leader's ability upon a failed first period social movement is higher if government uses force in the first period than when it does not, i.e., $\alpha_2^F(\alpha_1, g_1 = E) > \alpha_2^F(\alpha_1, g_1 = 0), \forall \alpha_1$. In other words, the decrease in updated belief upon a failed social movement is larger if government uses no force in the first period than when it does. This is because when government uses no force, citizen participation in a movement is high than when it does. Thus, failure of a movement when there is no force by the government is more bad news about the leader's ability than when the movement fails conditional on government using force.

To analyze the government's first period strategy against a social movement announced by the leader, we first look at its discounted expected utility when it chooses force g_1 against a social movement, $a_1 = sm$. This is given as follows:

$$
\begin{aligned}
&EU_1^G(g_1, a_1 = sm, \alpha_2, \hat{\lambda}_2) \\
&= W - cg_1 \\
&\quad + \delta\Bigg[Pr(\zeta = P)\Big[Pr(\gamma_1 = S \mid \zeta = P, a_1 = sm)\Big[Pr(\gamma_2 = S \mid a_2 = R, g_2, \gamma_1 = S, \hat{\lambda}_2 = 0)(-cg_2) \\
&\quad + Pr(\gamma_2 = F \mid a_2 = R, g_2, \gamma_1 = S, \hat{\lambda}_2 = 0)(W - cg_2)\Big]\Big] \\
&\quad + \Big[Pr(\gamma_1 = F \mid \zeta = P, a_1 = sm)\Big[Pr(\gamma_2 = S \mid a_2 = R, g_2, \gamma_1 = F, \hat{\lambda}_2 = 0)(-cg_2) \\
&\quad + Pr(\gamma_2 = F \mid a_2 = R, g_2, \gamma_1 = F, \hat{\lambda}_2 = 0)(W - cg_2)\Big]\Big] \\
&\quad + Pr(\zeta = NP)W\Bigg]
\end{aligned}
$$

Irrespective of the success of the social movement in the first period, the government receives a gross benefit of W and incurs a cost cg_1 in the first period. The second period payoff of the government depends upon whether the leader is political or not. If the leader is non-political, the government is not overthrown and it receives a payoff of W. However, if the leader is political, then the government's payoff depends upon the success of the revolution in the second period.[20] A social movement in the first period does not overthrow the government but affects the likelihood of success of a revolution in the second period. If revolution fails in the second period, irrespective of the outcome of the social movement in the first period, the government is not overthrown and receives a gross benefit of W net of the cost cg_2 that it incurs in the second period. However, if the revolution is successful in the second period, irrespective of the outcome of the social movement in the first period, the government loses power and incurs a net loss of $-cg_2$. Lemma 3 describes the optimal strategy of the government in the first period against a social movement.

Lemma 3 (Government's First Period Strategy)**.** *Government's first period strategy against a social movement depends upon its marginal cost of exerting force, c.*

- *High Cost: If c is high, government exerts no force.*

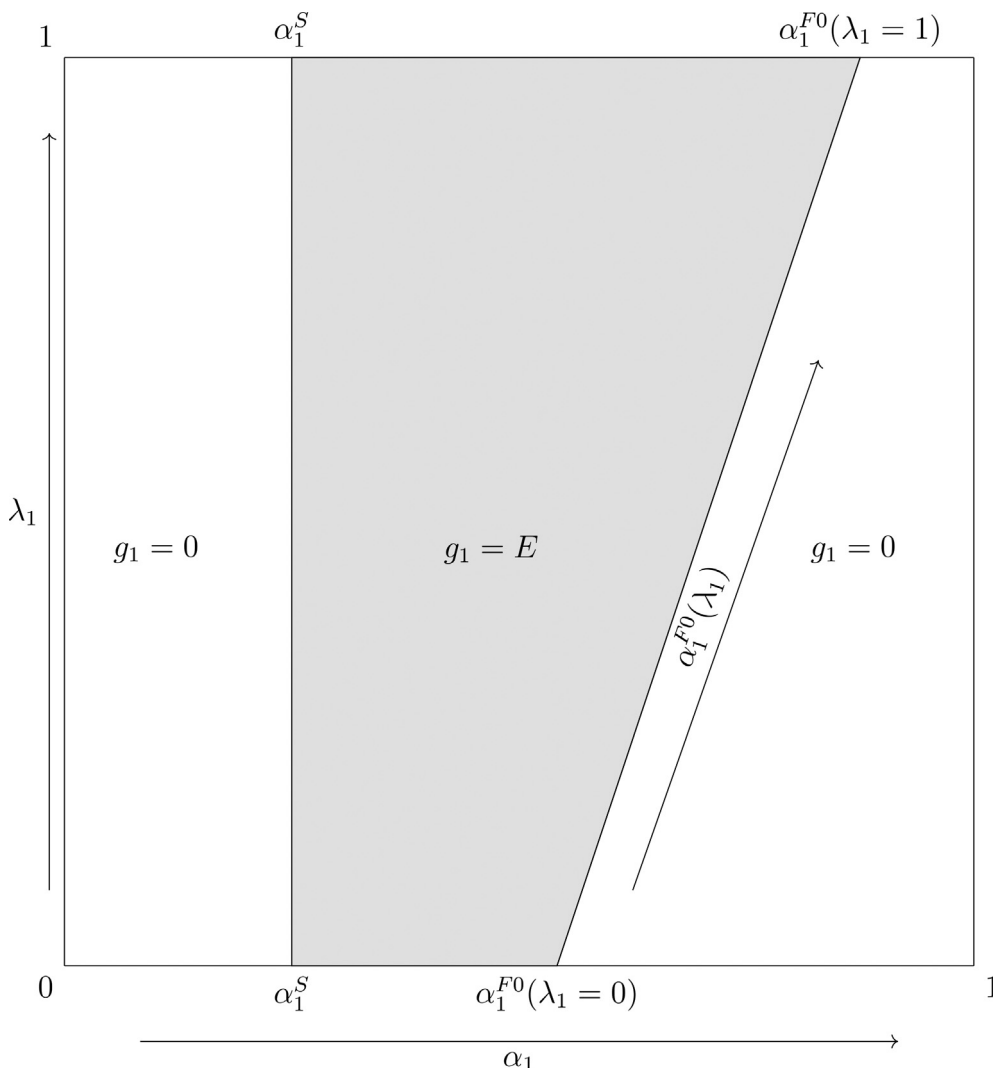[20] Note that the political leader always conducts a revolution in the second period.

Fig. 2. (Low c) Government's first period strategy against a social movement.

- *Low Cost: If c is low, government follows a threshold strategy and exerts force only in the intermediate range of initial prior about the political leader's ability. In particular, $G_1(h_1, a_1 = sm) = 1$, $\forall \alpha_1 \in [\alpha_1^S, \alpha_1^{F0}]$ and $G_1(h_1, a_1 = sm) = 0$ otherwise. This is illustrated in Fig. 2.*

Proof. See Appendix D. □

If exerting force is sufficiently costly for the government, then the government does not use force against a social movement irrespective of the initial prior about the leader's ability, α_1 and motive, λ_1. On the other hand, if marginal cost, c of exerting force is sufficiently low, then the government opposes social movement only for intermediate range of beliefs about the political leader's ability (refer to Fig. 2).[21] The intuition for the threshold policy of the government when marginal cost of exerting force is low is as follows. Given the prior about the leader's motive λ_1, government force reduces citizen participation in the first period. This reduces the likelihood of a successful social movement and the updated prior about the leader's ability at the end of the first period. This in turn reduces the likelihood of a successful revolution in the second period. Thus, the benefit of exerting force by the government in the first period against a social movement is an increased likelihood of retaining power in the second period by reducing the updated belief about the leader's ability. For extreme values of the leader's ability, the marginal benefit of exerting force (decrease in belief of the political leader's ability), is smaller than the marginal cost of exerting force by the government. Thus, the government does not exert force for extreme

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[21] $\alpha_1^{F0}(\lambda_1)$ is increasing in λ_1 but it need not be a linear function of λ_1.

values of initial belief about the leader's ability. However, for an intermediate range of beliefs, the marginal benefit is larger than the marginal cost of exerting force to the government.

Fig. 2 shows the range of initial priors about the political leader's ability where government exerts force against a social movement in the first period. This range is increasing in the likelihood of the leader being non-political, λ_1. The effect of the belief about the leader's motive, λ_1 on the government's optimal strategy is not obvious. If the leader is likely to be non-political, (i.e. high λ_1) then the incentive of the government to exert force against a social movement is low as the leader is less likely to be a threat to the regime. On the other hand, the likelihood of a leader being non-political has an indirect effect on the payoff of the government. If the likelihood of the leader being non-political is high then it induces greater citizen participation in the social movement in the first period. This is because the non-political leader is assumed to have high ability to execute movements.[22] Greater citizen participation in the first period increases the likelihood of a successful first period social movement, favorably updating the belief about the political leader's ability and the likelihood of a successful second period revolution. Increased likelihood of a successful revolution is a threat to the government. The indirect effect of the likelihood of the leader being non-political on the government's payoffs outweighs the direct effect. Therefore, the government exerts force against a social movement for a larger range of beliefs about the political leader's ability, if the leader is more likely to be of non-political kind. Fig. 2 illustrates this.

Next, we discuss the optimal strategy of the political leader in the first period. The discounted expected payoff of a political leader when she announces a social movement in the first period is as follows:

$$EU_1^P(a_1 = sm) = \delta W \big[Pr(\gamma_1 = S \mid \theta, h_1, a_1, g_1) Pr(\gamma_2 = S \mid \theta, h_2, a_2 = R, g_2)$$
$$+ Pr(\gamma_1 = F \mid \theta, h_1, a_1, g_1) Pr(\gamma_2 = S \mid \theta, h_2, a_2 = R, g_2) \big] \tag{3}$$

The political leader's expected payoff from a social movement in the first period depends upon the success of the social movement and that of revolution in the second period. Success of the social movement in the first period influences the updated belief about the leader's ability in the second period, which in turn influences citizen participation and the likelihood of success of revolution in the second period. Note that the political leader receives a positive payoff only if the revolution is successful.

The expected payoff of a political leader when she announces a revolution in the first period is given by:

$$EU_1^P(a_1 = R) = Pr(\gamma_1 = S \mid \theta, h_1, a_1, g_1) W$$

Next, the following proposition lays out the equilibrium of the game when the marginal cost of force for the government is high. Proposition 1 states that if the marginal cost of exerting force by the government is sufficiently high and the leader is patient enough i.e. $\delta > \bar{\delta}$, then for intermediate ranges of the leader's ability, $\alpha_1 \in [\bar{\alpha}, \alpha_1^{F0}]$, the political leader conducts a social movement in the first period and the government does not oppose it.[23] The value of $\bar{\delta}$ is equal to $\dfrac{e_L - E}{e_L \left[1 - \frac{\theta_H E}{e_H + e_L - \theta_H W} \right]}$ in equilibrium. For all other ranges of beliefs, the political leader conducts a revolution in the first period itself and the government follows the strategy as in Lemma 1.

Proposition 1 (High Cost). *A non-political leader conducts a social movement in both the periods. If $\delta > \bar{\delta}$ and c is sufficiently high,*

- *(Political Leader's Strategy): A political leader follows a threshold policy (refer to Fig. 3) in the first period which is given by*

$$\sigma_1^P(h_1) = 0 \quad \forall \alpha_1 < \bar{\alpha}$$
$$= 1 \quad \forall \alpha_1 \in [\bar{\alpha}, \alpha_1^{F0})$$
$$= 0 \quad \forall \alpha_1 \geq \alpha_1^{F0}$$

   In the second period, the political leader always conducts a revolution.

- *(Government's Strategy): Government does not oppose a social movement. However, upon observing a revolution - either in the first or second period, the government exerts force only if the belief about the political leader's ability is sufficiently high (i.e. greater than or equal to $\bar{\alpha}$).*

Proof. See Appendix E. □

Given the payoffs of a non-political leader, it always benefits her to conduct a social movement in both periods.[24] She has no current or future benefit from conducting a revolution in either period. When marginal cost for the government is sufficiently high, government does not exert any force against a social movement in the first period. The incentive for a political leader to conduct a social movement has trade-offs. The benefit of a successful social movement is increased

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[22] In Section 4.3 we assume that the non-political leader has low ability to execute movements.

[23] We restrict ourselves to a particular kind of separating equilibria where the non-political leader always conducts a social movement and the political leader has a threshold strategy as explained in Eq. (2). We make the assumption that the non-political leader does not have a threshold policy so that the updating rule of the leader's ability and motive is not complicated. However, allowing for the non-political leader to have a threshold policy will not change the nature of our results.

[24] As implied by the anecdotal examples, this could be because such a leader is selfless and purely motivated by society's welfare.
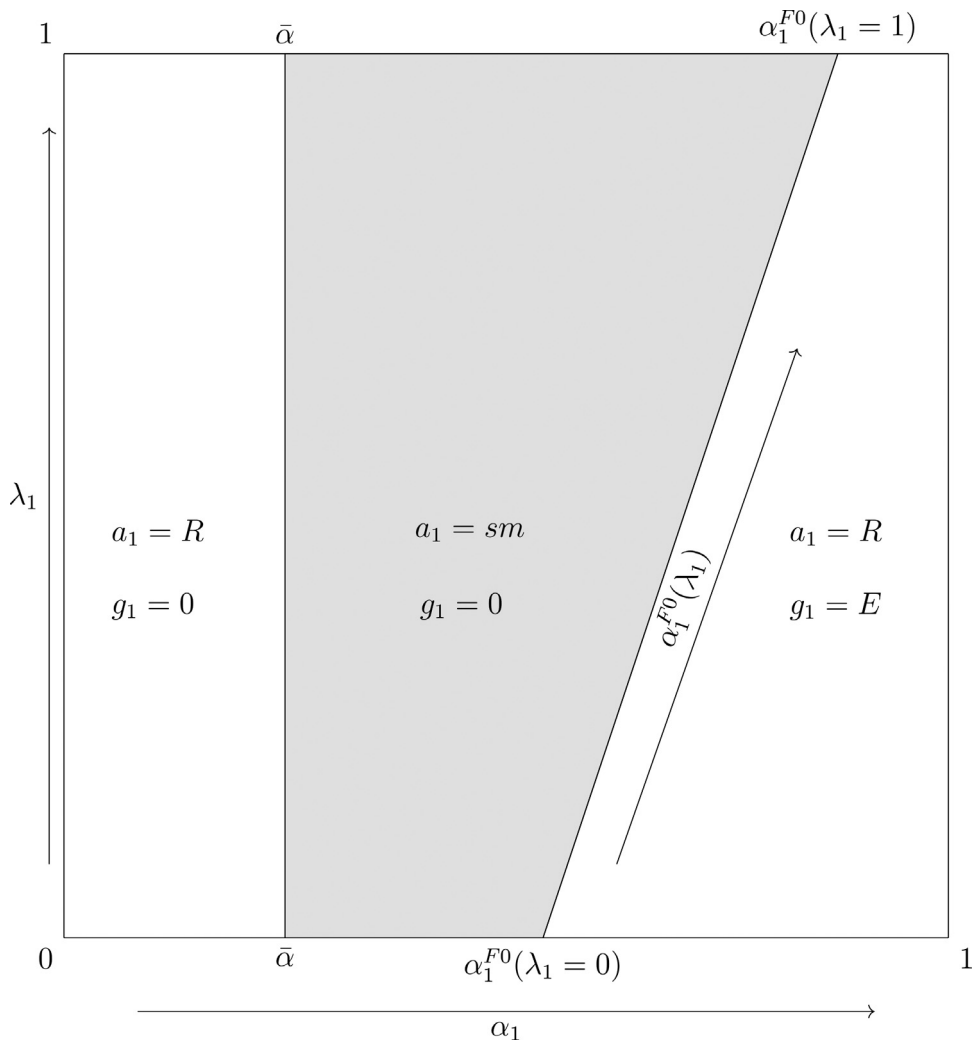
Fig. 3. (High c) Political leader and government's first period strategy.

belief about the leader's ability and the likelihood of a successful revolution in the second period. However, there are costs associated with conducting a social movement. First, there is a risk of lowering the belief about her ability in case of a failed social movement in the first period and hence lowering chances of a successful revolution in the second period. Second, a social movement also delays the expected return from conducting a revolution. Third, a successful social movement is not always good news for the leader. Upon a successful social movement in the first period, if the updated prior about the leader's ability is too high (i.e. $\hat{\alpha}_1$ is greater than $\bar{\alpha}$), then she would attract government repression in the second period on announcing a revolution. This reduces citizen participation and the likelihood of a successful second period revolution. We find that the net benefit of conducting a social movement is non-monotonic in the belief about the leader's ability, α_1. For extreme values of the leader's ability, the cost of experimentation outweighs the benefit, thus the political leader does not announce a social movement in the first period. However, for intermediate values, the net benefit of a social movement is positive.

Fig. 3 shows the range of beliefs where a political leader announces a social movement in the first period. This range is increasing in the likelihood of the leader being non-political, λ_1.[25] If the leader is more likely to be perceived as a non-political type then the expected ability of the leader is high. This increases citizen participation and likelihood of a successful social movement in the first period. This in turn increases the likelihood of a successful revolution in the second period, increasing the incentive of the political leader to announce a social movement in the first period. Thus, as the leader is more likely to be perceived to be non-political, the benefit from announcing a social movement and masquerading as a non-political type increases.

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[25] $\bar{\alpha}$ is invariant with λ_1 and α_1^{F0} increases with λ_1.

These theoretical results may help relate to Gandhi's path to leadership and political change. In the 1916 Lucknow session of the Congress, Gandhi was clearly in the second tier of leadership. When he arrived in India in 1915, he had already been the leader of a movement in South Africa, but this was known to only some leaders and was not common knowledge amongst the masses. Anecdotal evidence suggests that the initial belief about Gandhi's ability may not have been too extreme. According to Proposition 1, a political leader with an intermediate prior about her ability is more likely to masquerade as a non-political leader and announce "social movements". Gandhi did exactly that. He carried out multiple "social movements" like the Champaran satyagraha and Ahmedabad mill workers' strike which were not suppressed with extreme force by the British. The success of these movements, possibly increased the prior about Gandhi's ability motivating him to begin the non-cooperation movement in 1920 which was intended to end the British rule.[26]

Proposition 2 states the equilibrium when the marginal cost of exerting force by the government is sufficiently low. In this case, when the leader is patient enough, i.e. $\delta > \bar{\bar{\delta}}$, where $\bar{\bar{\delta}} = \frac{1}{\left[\frac{e_L}{e_L - E} - \frac{\theta_H E}{e_H + e_L - \theta_H W}\right]}$, the political leader's first period strategy is the same as that when government's marginal cost of force is high as in Proposition 1. For extreme values of belief about the political leader's ability, the political leader conducts a revolution. For intermediate ranges of belief, the political leader conducts a social movement. This range of initial prior where the political leader conducts a social movement is smaller when the government's marginal cost is low. The explanation for this is as follows. When marginal cost of repression is low, social movement in the first period may be followed by government repression. This reduces the likelihood of improving the belief about the leader's ability and eventually the chance of a successful second period revolution. Thus, when marginal cost is low, the benefit of conducting a social movement in the first period is lower than when government's marginal cost is high. Thus, the range of belief where the political leader announces a social movement in the first period is smaller when government's marginal cost is low. The following proposition describes the equilibrium of the game when government's marginal cost of exerting force is sufficiently low.

Proposition 2 (Low Cost). *A non-political leader conducts a social movement in both the periods. If $\delta > \bar{\bar{\delta}}$ and c is sufficiently low,*

- *(Political Leader) A political leader follows a threshold policy (refer to Fig. 4) in the first period which is given by*

$$\sigma_1^P(h_1) = 0 \quad \forall \alpha_1 < \bar{\alpha}$$
$$= 1 \quad \forall \alpha_1 \in [\bar{\alpha}, \alpha_1^{FE})$$
$$= 0 \quad \forall \alpha_1 \geq \alpha_1^{FE}$$

  In the second period, the political leader always conducts a revolution.
- *(Government's Strategy): Upon observing a social movement in the first period, the government opposes the movement only for an intermediate range of initial prior about the leader's ability. Government does not oppose a social movement in the second period.*
  Upon observing a revolution - either in the first or second period, the government exerts force only if the belief about the political leader's ability is greater than or equal to $\bar{\alpha}$.

Proof. See Appendix F. □

Unlike the case when the marginal cost of force is high, government follows a threshold policy when the marginal cost of force is low. We find that given a prior probability of the leader being non-political, λ_1, the government exerts no force for extreme values about the leader's ability, α_1. For intermediate values of the leader's ability the government exerts force. The benefit of exerting force against a social movement, is the reduction in the likelihood of a successful social movement which in turn reduces the updated belief about the leader's ability and finally, reducing the likelihood of a successful revolution. For extreme beliefs about the leader's ability, the likely benefit of exerting force to the government is lower than the cost. Therefore, the government does not exert force for extreme ranges of beliefs about the leader's ability. However, for intermediate range of beliefs the expected benefit of exerting force to the government is higher than the cost, inducing the government to exert force.[27]

This range of belief where the leader opposes a social movement with force, increases with increase in the likelihood of the leader being non-political. The intuition for this result is as follows. On one hand, if the leader is more likely to be of a non-political type, then the government does not find it beneficial to exert force to suppress a social movement as the leader is less likely to have a motive to over throw the regime. On the other hand, given that a non-political leader is of high ability, if the leader is more likely to be of the non-political type then this increases citizen participation and the likelihood of a successful first period social movement. This in turn increases the posterior belief about the leader's ability in the second period, which improves the likelihood of a successful revolution in the second period. We find that the latter force dominates the former, inducing the government to exert force against a social movement for a greater range of beliefs as the leader is more likely to be non-political.

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[26] We urge the reader to take such predictions with caution. The political environment in a country and other factors may play a role in shaping the initial priors about ability and motives of a leader which is not captured in our model and is beyond the scope of this paper.

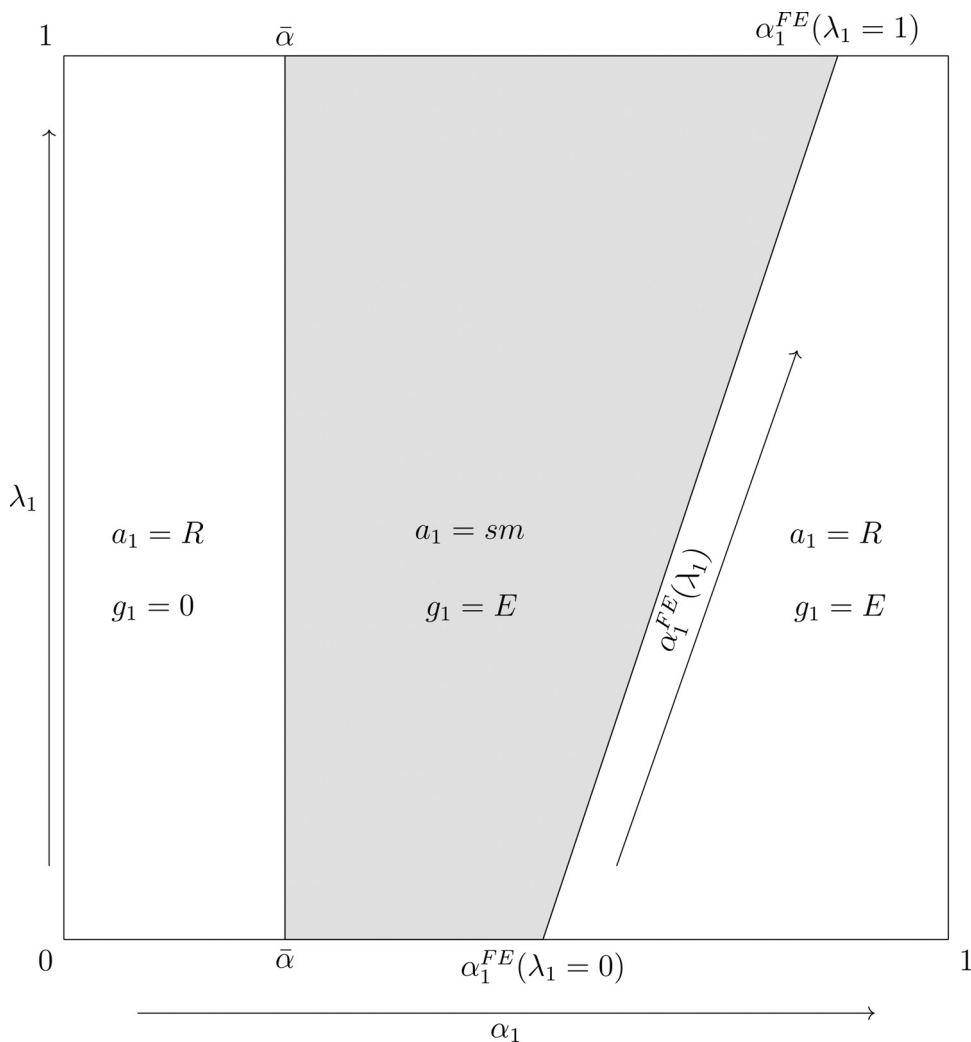[27] We thank one of the referees for helping us highlight this aspect.

Fig. 4. (Low c) Political leader and government's first period strategy.

The incentive for the political leader to conduct a social movement is similar to the case when the government's marginal cost is high. The benefit of a successful social movement is an increased belief about the leader's ability in the second period and hence higher likelihood of a successful revolution in the second period. Costs borne by the leader upon conducting a social movement in the first period are similar to those when marginal cost is high, except that now the government exerts force against a social movement for an intermediate range of beliefs about the leader's ability. Therefore, the range of beliefs where the political leader undertakes a social movement, is lower when government's marginal cost is low than otherwise.

The fact that the government is strategic makes the leader choose a social movement for intermediate range of beliefs about it's ability. If the government was non-strategic and responded with the same action irrespective of the nature of the movement and its outcome, then the political leader would always chose to conduct a revolution in the first period. That is the political leader would have no incentive to conduct a social movement. The rationale behind this as follows. The leader's benefit from adopting a gradual approach is improved belief about her ability upon a successful social movement. The cost of a gradual approach are delayed benefit from a revolution and possibility of a lowered belief about ability in case of a failed social movement. In the presence of a non-strategic government, a gradualistic approach is less informative of the leader's ability. Thus, the expected benefit to the leader of adopting gradualistic approach is less than the cost. Therefore, when the government is non-strategic the leader conducts a revolution in the first period.

A similar outcome as mentioned in the previous paragraph will hold if we allow the citizens to move before they observe government's action in each period. The primary motive of the government in exerting force in our model is to lower the chances of a successful movement by reducing citizen participation. When citizens move before the government, government's action does not influence citizen participation in our model. The citizens decide to participate in a movement based on their beliefs about the ability and motive of the leader which is independent of government's actions. In such a case,
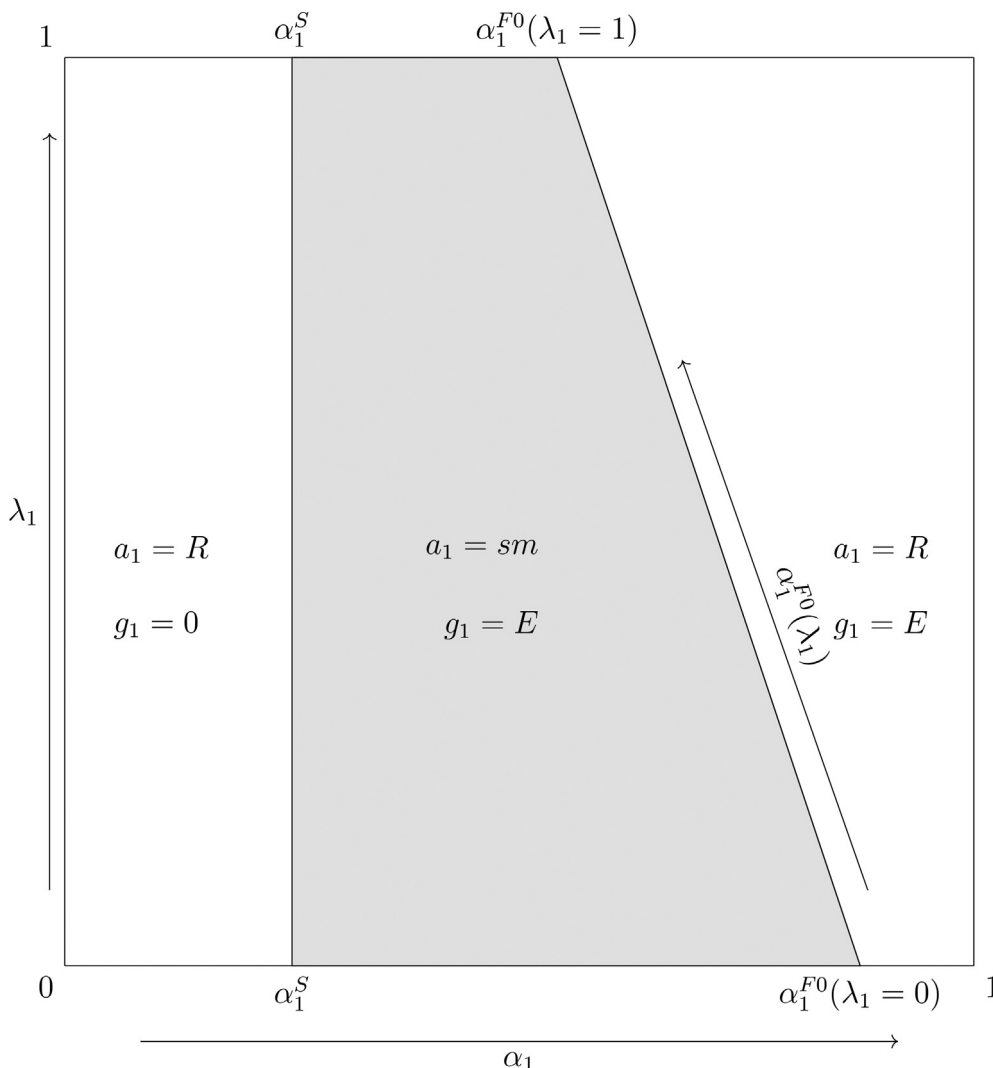
Fig. 5. (Low c, Non-Political Leader of Low Type) Political leader and government's first period strategy against a social movement.

the political leader always announces a revolution in the first period.[28] Therefore, the government has no incentive to exert force if it is costly to do so. However, this would not be the case if there was uncertainty about government's strength or intention. In such a case, government's action following that of the citizens' in the first period will act as a signal about its strength or intention and impact citizen participation in the next period. In the absence of such uncertainty about the government, and the presence of cost in exercising force, the government stays away from putting any force in the first or second period upon seeing any kind of movement if it moves after the citizens in each period.

4.3. Non-political leader is of low type

In this section, we assume that the non-political leader's ability is low. Under this condition, the government and the political leader follow similar threshold strategy as in Lemma 3 and Propositions 1 and 2, respectively. However, the value of the thresholds, α_1^{F0} and α_1^{FE} are different. Fig. 5 describes the political leader and the government's strategy when the non-political leader is of low type. As the belief that the leader is non-political increases, the range of beliefs where the government exerts force upon observing a social movement decreases. This is because as the leader is less likely to be political, it is a lesser threat to the government. This lowers the incentive of the government to exert force on observing a social movement in the first period. Moreover, given that the non-political leader is of low type, higher likelihood of the leader being non-political implies that the average ability of the leader is lower which lowers citizen participation and

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[28] Leader with a non-political motive will conduct a social movement in the first period.

lowers the likelihood of a successful social movement in the first period. Hence, the political leader's benefit to masquerade as a non-political leader decreases as the belief about the leader being non-political increases. With an increase in belief about the leader being non-political, these two effects reduce the range where the government exerts force upon observing a social movement. The leader's strategy is also similarly affected with the likelihood of the leader being non-political. If the leader is likely to be non-political, the political leader's benefit from announcing a social movement and masquerading as a non-political type decreases.

5. Leader knows her ability

So far, we have considered a political leader to be inexperienced and unaware of her ability. However, in reality, many leaders serve in publicly lesser known leadership positions before entering into active politics and are aware of their organizational ability. In this section, we consider the case when the political leader knows her own ability, $\theta \in \{\theta_H, \theta_L\}$. However, the ability is not known either to the government or to the citizens. The motive of the leader remains private information of the leader. We analyse the optimal strategy of the political leader and the government in this case.

First, we show that there is no separating equilibrium where strategies of the two types of political leader are perfectly revealing. We find that it is not beneficial for either type of the political leader to separate and reveal her ability. Perfect revelation will lead to lower citizen participation for the low ability leader, decreasing her chances of success in any movement that she undertakes. Hence, it will never be advantageous for the low ability political leader to separate and perfectly reveal her type. Instead, she would always like to imitate the strategy of the high ability leader. Thus, there is no equilibrium where high and low ability political leaders have different strategies.

Proposition 3. *There does not exist any separating threshold equilibrium.*

Proof. See Appendix G. □

Next, we solve for pooling equilibria where both types of the political leader's ability follow the same threshold policy as in equation(2). We find that the threshold pooling equilibrium when the political leader knows her ability, θ is the same as that when her ability is unknown.

Proposition 4 (Leader Knows Type and High Cost). *A non-political leader conducts a social movement in both the periods. If $\delta > \bar{\delta}$ and c is sufficiently high,*

- *(Political Leader's Strategy): A political leader of either type follows a threshold policy in the first period as given by Fig. 3.*

$$\sigma_1^P(h_1) = 0 \quad \forall \alpha_1 < \bar{\alpha}$$
$$= 1 \quad \forall \alpha \in [\bar{\alpha}, \alpha_1^{F0})$$
$$= 0 \quad \forall \alpha_1 \geq \alpha_1^{F0}$$

  In the second period, the political leader always conducts a revolution.
- *(Government's Strategy): Government does not oppose a social movement. However, upon observing a revolution - either in the first or second period, the government exerts force only if the belief about the political leader's ability is greater than or equal to $\bar{\alpha}$.*

Proof. See Appendix H. □

We observe that when the marginal cost of exerting force by the government is high, then the pooling equilibrium strategy of the leader who knows her own type is the same as in Proposition 1. The low ability type political leader never wants to separate and reveal her ability. This is because perfect revelation will lead to lower citizen participation decreasing her chances of success in any movement that she undertakes. Hence, she mimics the high ability political leader's strategy. Since, citizens and government do not know the ability of the leader, their prior and strategy is the same as in the case when the leader also does not know her own ability. Thus, with updating rules and payoffs remaining unchanged, the leader's strategy of high type does not change. Similarly, when the marginal cost of exerting force by the government is low, then the pooling equilibrium strategy of the leader that knows its type is the same as in Proposition 2.

6. Discussion

6.1. Empirical implications

The literature on dissent and government repression has a strong empirical connect. Numerous qualitative and quantitative studies have tried to ascertain the role of economic, social, and political factors in determining the nature of government's response, its effectiveness and conditions when violence gets escalated (Pierskalla, 2010; Girod et al., 2018). However, not many papers analyze the likelihood of a public opposition and the state's response to it. Our theoretical model has multiple empirical predictions in this regard. Propositions 1 and 2 which highlight political leader's and government's strategy naturally lend to the following empirical hypotheses.
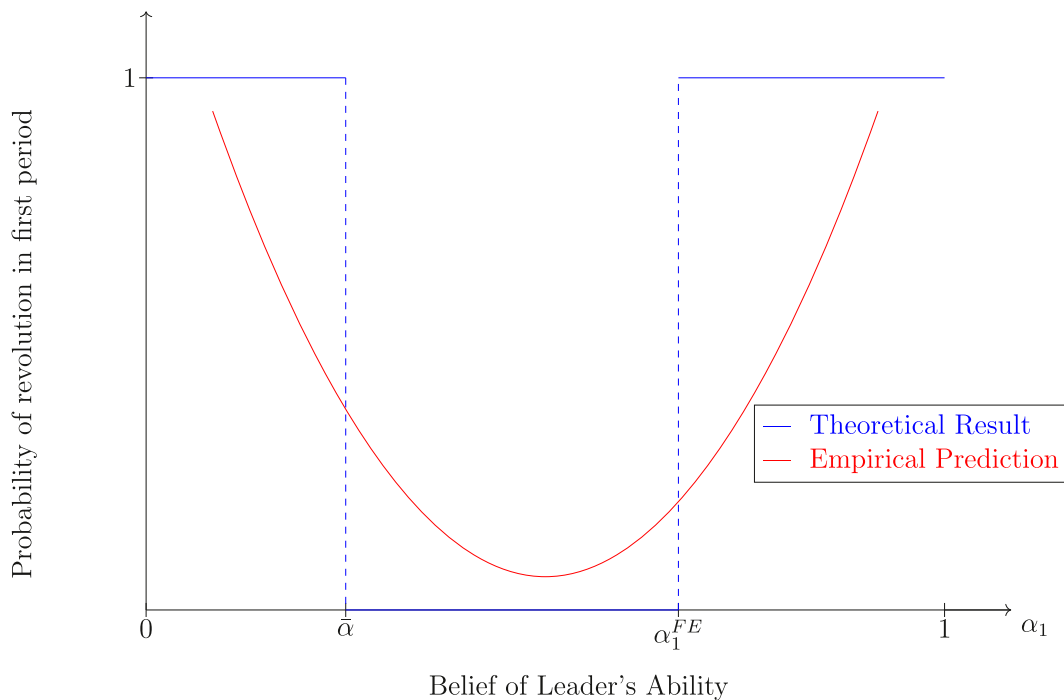
Hypothesis 1 (Political Leader's Strategy)**.**

Fig. 6. Theoretical and empirical predictions of leader's strategy.

1 a) A political leader's likelihood of calling a revolution depends upon the belief about her ability. This relationship is non-monotonic, specifically a U-shaped relationship. For extreme beliefs about the leader's ability, she is more likely to conduct a revolution.

1 b) With an increase in the belief that the leader is non-political (λ), a political leader calls for a revolution for a smaller range of beliefs about her ability(α).

Hypothesis 2 (Government's Strategy).

2 a) (Social Movement) A government's likelihood of using force to suppress a social movement depends the upon the belief about the leader's ability. This relationship is non-monotonic, specifically an inverted U-shaped relationship. For extreme beliefs about the leader's ability, the government is more likely to not use force to suppress a social movement.

2 b) The government uses force for a larger range of beliefs about the leader's ability (α) with an increase in the belief that the leader has non-political motive (λ).

2 c) (Revolution) A government's likelihood of using force against a revolution is monotonic in the prior about the leader's ability. Specifically, the government uses force to suppress a revolution only for extreme beliefs about the leader's ability.

These hypotheses can be tested using the following econometric models:

$$M_{it} = a_0 + a_1 L_{it}^2 + a_2 L_{it}^2 \cdot H_{it} + a_3 L_{it} + d_0 X_{it} + f_0 Y_{jt} + z_{it}$$
$$G_{jt} = b_0 + b_1 L_{it}^2 + b_2 L_{it}^2 \cdot H_{it} + b_3 L_{it} + d_1 X_{it} + f_1 Y_{jt} + e_{jt},$$
$$R_{jt} = c_0 + c_1 L_{it}^2 + c_2 L_{it}^2 \cdot H_{it} + c_3 L_{it} + d_2 X_{it} + f_2 Y_{jt} + \epsilon_{it}$$

where, M_{it} is a dummy variable which takes value 1 if the leader i conducts a revolution in period t and 0 otherwise. G_{jt} is a dummy variable which takes value 1 if the government j uses extreme measures to suppress a social movement in period t and 0 otherwise. R_{jt} is defined to be a dummy variable which takes value 1 if the government j uses extreme measures to suppress a revolution in period t and 0 otherwise. L_{it} is a measure of belief about the leader i being of high ability and H_{it} is a measure of belief about the leader i having non-political motive. X_{it} are leader specific controls while Y_{jt} are regime specific controls. z_{it}, e_{jt} and ϵ_{jt} capture corresponding error terms.

Figs. 6 and 7 represent the theoretical and empirical predictions of the leader and government's strategy when the government's cost of exerting force is low. Propositions 1 and 2 claim that for extreme beliefs about the leader's ability, the probability of a revolution is 1, whereas the same is 0 for intermediate range of beliefs. This gives a testable implication (Hypothesis 1 a)) that $a_1 + a_2 > 0$. Propositions 1 and 2 also claim that the range of beliefs where the leader conducts a
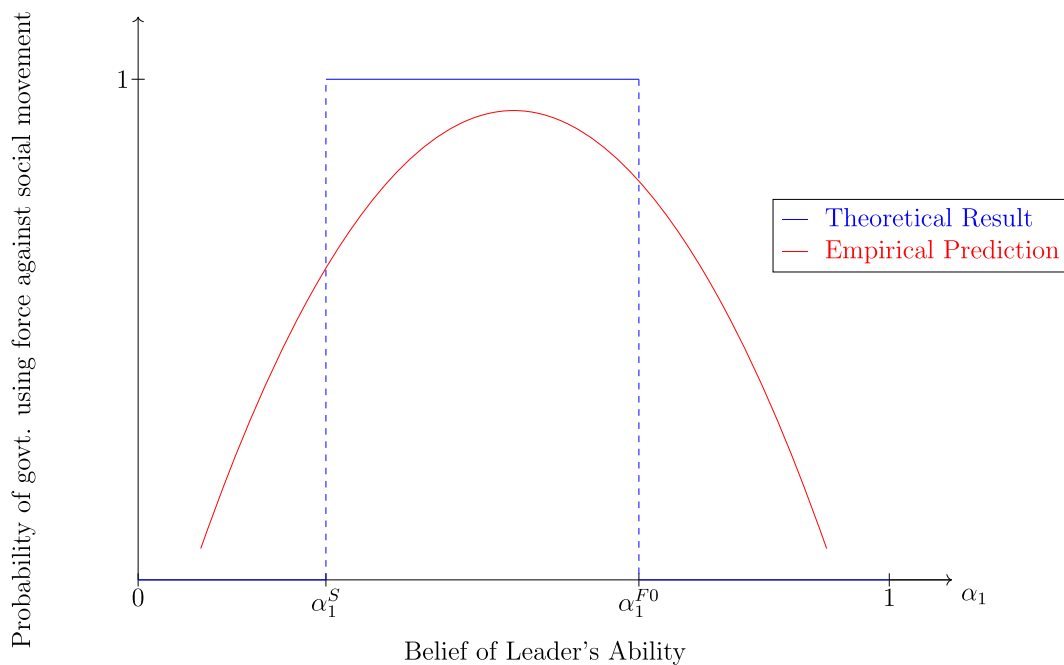
Fig. 7. Theoretical and empirical predictions of government's strategy.

revolution decreases with increase in belief about the leader's motive being non-political. This lends to the testable implication (Hypothesis 1 b)) that $a_2 < 0$. Similarly, the testable implication from Propositions 1 and 2 for the government's strategy lend to the testable implications (Hypothesis 2 a), and b)) that $b_1 + b_2 < 0$ and $b_2 > 0$.[29] Lemma 1 claims that a government that faces a revolution should exert force only for extreme beliefs about the leader's ability. To test this (Hypothesis 2 c)) implies that $c_1 = 0$, $c_2 = 0$ and $c_3 > 0$.

This kind of an empirical analysis would need disaggregated data on the timing of events, perception about leaders and beliefs about past revolutions. One can assume that a social movement is less likely to be violent and that a violent movement is more likely to have a political motive. The primary variables of interest are L_{it} and H_{it} in our empirical specification. L_{it} can be captured by fraction of successful protests in the past by the leader or a group. H_{it} can be measured by fraction of violent protests in the past by the leader or a group. Some of these variables are available in datasets like NAVCO (Non-violent and Violent Campaigns and Outcome). The data catalogues major nonviolent and violent resistance campaigns and response by the governments/regimes around the globe from 1900 to 2013. The dataset has annual country wise data on campaign behavior, participants of the campaign and full spectrum of regime response.

6.2. Connection to corporate literature

Our model can be extended to issues in corporate leadership. Research has found that for a significant portion of the time, talented inside directors tend to replace a Chief Executive Officer (CEO).[30] Similar to the political leader in our model, an insider executive of a company with an ambition to become a CEO could take up tasks to reveal his/her ability in leading teams and the company. The executive could choose between minor or major tasks, which could help in disclosing more information about his/her ability. Success in such tasks would improve the perception about his/her ability and increase his/her chances of being noticed and promoted to a CEO level. This fact is corroborated by a study by Kotter (1982). He finds that for most CEO (or GM) careers tend to follow a "success syndrome" pattern where the future CEO does well in an assignment early in her career, which helps her get promoted and get more challenging assignments. Further Kotter notes that the success of a minor assignment helps an individual get more knowledge, improve skills, and take up greater challenges, which in turn leads to further promotion and recognition. Future work could build on our model, with appropriate changes and apply it in the context of corporate leadership. It would be interesting to look at the role of insiders with an ambition to become a CEO on the extent of pandering (Prendergast, 1993), betrayals or hostile takeovers (Giammarino and Heinkel, 1986), and rent-seeking (Glazer, 2002).

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[29] Hypotheses 1 and 2 assume that the ability of the non-political leader is higher than the average ability of the political leader. Similar, but opposite hypotheses can be derived for the case when the non-political leader's ability is lower than the average ability of the political leader (Section 4.3).

[30] Parrino (1997) finds 50.4 percent of the new CEOs were insiders. For example, CEO Robert Nardelli of Home Depot was replaced in 2007 with an insider Executive Vice President Frank Blake following a drop in earnings.

6.3. Leader's cost

At present, our model does not incorporate a cost to the leader for conducting any kind of movement - social or revolution. The qualitative nature of our results will remain unchanged if the leader faces a common cost, $\mathcal{C} > 0$ for conducting any movement. One can also introduce the leader's costs that differ based on the ability of the leader and the nature of the movement chosen. Let us first consider the case when the leader's costs differ according to the nature of the movement chosen. Let the cost faced by the leader for conducting a revolution and social movement be $\mathcal{C}_R > 0$ and $\mathcal{C}_{sm} > 0$, respectively with $\mathcal{C}_R > \mathcal{C}_{sm}$. Our main results remain unchanged qualitatively except for changes in the thresholds as long as $\mathcal{C}_R$ or $\mathcal{C}_{sm}$ is not too high. Next, assume that the cost borne by the political leader in conducting a revolution differs based on her ability. Let the cost faced by the high and low ability leader in conducting a revolution be $\mathcal{C}_{RH}$ and $\mathcal{C}_{RL}$ respectively with $\mathcal{C}_{RH} < \mathcal{C}_{RL}$. When the leader does not know her own ability, the qualitative nature of our main results remain unchanged as long as the expected cost is not too high.

One can believe that the political leader faces the possibility of a cost, like imprisonment or other penalties imposed by the government/regime if the revolution fails. This is exogenously incorporated in our model as we assume that the payoff to the leader upon an unsuccessful revolution is zero. The nature of our results do not change if this cost incurred by the political leader upon a failed revolution is not too high and the leader obtains a negative payoff from an unsuccessful revolution instead of zero. Alternatively, one can believe that the leader enjoys an additional benefit from a successful revolution that is exclusive to the leader. Hence, the leader's benefit is $W + \Delta$ upon a successful revolution, where Δ is the additional benefit or privilege that the leader enjoys by overthrowing the present regime and assuming power.[31] Incorporating such costs and benefits to the political leader do not change the qualitative nature of our results but only make the calculations tedious.

7. Conclusion

How should a government combat an opposition whose true intentions are unknown? How should a leader that intends to overthrow an unpopular government sequence her decisions? In this paper, we try to answer these questions.

We find that a leader ultimately interested in changing the government will adopt gradualism, starting with non-threatening social movements and then progressing to challenging the regime, if beliefs about her ability lie in an intermediate range. If her ability is considered to be very high, she does not need to wait. If it is too low, she might as well take her chances immediately. We also find that the political leader's benefit from masquerading as a non-political leader increases as the belief about the leader being non-political increases.[32] This is because of increased citizen participation and greater likelihood of a successful social movement in the first period leading to greater likelihood of a successful revolution in the next period.

The more interesting results pertain to the government's strategy. We find that if the marginal cost of exerting force is sufficiently high, then the government never exerts force upon observing a social movement. However, if the cost of exerting force is not too high, the government exerts force to suppress social movements when there is a positive probability that the movement is being undertaken to establish the credentials of a politically ambitious leader. Paradoxically, when the probability of the leader being non-political increases, the government exerts force for a larger range of beliefs about the leader's ability.[33]

The current model allows for many interesting extensions. In our model, there is only one political leader. Citizens do not have an option to choose a movement to participate but rather choose whether to participate or not in the announced movement. If there are competing leaders with reputational concerns, leaders with higher reputations will attract more support. This will increase the incentive of the political leaders to use the gradualism strategy, conducting a social movement for a greater range of beliefs. We also assume that the leader's intentions, whether to overthrow the government or not - is exogenous. However, this can be a function of her confidence in her ability and hence evolve in the model as the success of movements conducted gets revealed. Future work can explore the possibility of allowing the motive of the leader to be endogenous.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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[31] This exclusive privilege can be interpreted as access to certain benefits which an ordinary citizen cannot have.

[32] As pointed out by one of the referees, our results are driven by the uncertainty about the ultimate motive of the leader. Similar effects may appear in other contexts, for e.g., in negotiations or bargaining where a concession might be a quick way to reach a mutually beneficial deal. This may lead to gridlocks just like inefficient crackdowns by the government in our context.

[33] If the belief about the leader's motive is either 0 or 1, bayesian updating will not change the belief. Our results hold only when belief about the leader is in the intermediate ranges.

Appendix A. Summary of notation used in our model

Description	Term
Leader	L
Government	G
Citizen	C
Ability of the leader to execute a movement	θ
Motive of the leader to conduct a movement	ζ
Type of ability	$\theta \in \{\theta_L, \theta_H\}$
Type of motive	$\zeta \in \{P, NP\}$
Probability leader is of high type in period t	α_t
Probability leader has non-political motive in period t	λ_t
Outcome of a movement in period t	γ_t
Types of outcomes of a movement	$\gamma_t \in \{S, F\}$
Action of the leader in period t	a_t
Types of action of leader	$a_t \in \{R, sm\}$
Force announced by government in period t	g_t
Total cost incurred by government to put force in period t	cg_t
Type of force announced by government	$g_t \in \{0, E\}$
Rent enjoyed by government in office	W
Citizen's private cost of participation	e_i
Citizen's total cost of participation in a movement	$c_i = e_i + g_t$
Distribution of citizen's private cost of participation	$e_i \sim U[-e_L, e_H]$
Payoff from a successful movement to a citizen	W
Threshold value of belief of the leader's ability beyond which revolution is opposed	$\bar{\alpha}$
Initial belief of ability which updates to $\bar{\alpha}$ given a successful social movement	α_1^S
Initial belief of ability which updates to $\bar{\alpha}$, given a failed social movement & $g_1 = 0$	α_1^{F0}
Initial belief of ability which updates to $\bar{\alpha}$, given a failed social movement & $g_1 = E$	α_1^{FE}
Utility of a political leader	U^P
Utility of a non-political leader	U^{NP}
Utility of government	U^G
Utility of individual citizen i	U_i^C
Proportion of citizen participation in period t	m_t
Public history at time t	h_t
Set of all possible histories at time t	$\mathbb{H}_t$
Discount factor (common to leader & government)	δ
Strategy of leader with motive ζ in period t	σ_t^ζ
Strategy of government in period t	G_t
Strategy of citizen in period t	υ_t

Appendix B. Rise of Gandhi as a political leader

In this paper, we restrict ourselves to Mohandas Karamchand Gandhi (Gandhi)'s rise to dominance in the Indian National Congress (effectively the main Indian nationalist movement) during the period 1917–1922. This subsection accounts for Gandhi's rise to dominance in the Indian National Congress and the relevance of this example to our context. Our account of Gandhi's rise relies on the book "Gandhi; The Years that Changed the World" Guha (2018) by the prominent historian Ramachandra Guha, especially the chapter on "The Three Satyagrahas", which covers this period.

He organized later successful political movements, such as the Salt satyagraha in 1930 but this was after the Congress had declared for complete independence, so there was no doubt about his eventual goal.[34] When he arrived in India in 1915, he had already been the leader of a movement in South Africa, but this, though known to other leaders, was not common knowledge among the masses.

Initially, Gandhi set up his base of operations in his home state of Gujarat in Western India. In the 1916 Lucknow session of the Congress, he was clearly in the second tier of leadership, even though he made a well-received speech, with people like Tilak and Malaviya the main leaders (and Jinnah, who belonged to both the Congress and the Muslim League, as a major figure). Rajkumar Shukla of Champaran, in the east of India, had come to the session to try to persuade Tilak or Malaviya to take an interest in the problems of the peasants of his district.[35] Gandhi also initially did not want to go but he gave in to Shukla's persistence and agreed to visit Champaran in conjunction with a trip to Bengal in 1917. In consonance with his later practice, he informed the British administration of his intention to go to Champaran to investigate the farmers' complaints. When he arrived, he was served with an externment order asking him to leave the district the following day. He challenged the order and refused to leave. The senior British administrators in the province did not see any grounds

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[34] Our account of Gandhi's rise relies on the book Guha (2018) especially the chapter on 'The Three Satyagrahas", which covers this period.

[35] The peasants were being forced by British indigo planters to set aside a third of their cultivable area for this crop much to the farmers' economic distress.

from excluding him from the district and he was asked to stay if he wished but in one town in the district. The challenge to the externment order evoked excitement in far-flung places. In Gujarat, described as a torpid backwater of nationalism, a young lawyer named Vallabhbhai Patel and his associates resolved to invite Gandhi to become the president of the Gujarat club when he returned. (Patel became Deputy Prime Minister in India's first independent government.) Meanwhile, Gandhi started this investigation and had public hearings on the complaints. Attempts to suppress these by the planters led to mass demonstrations and protests, the beginning of "Satyagraha". A commission was appointed to consider the evidence and the peasants' demands were accepted. When Gandhi left Champaran, a large crowd gathered to see him off, shouting "Hail to Gandhi the King".

Gandhi's next movement was in Ahmedabad in Gujarat and had even less to do with the British. This resolved the mill workers' strike with an agreement favorable to the workers. It was after this that Gandhi established a line to the Viceroy and, at the Viceroy's urging, helped recruit soldiers for the armed forces, an action that cost him some Congress support. After the war ended, the British instituted the Rowlatt Act, which suppressed freedom of speech and political activity. A protest against this act led to the massacre at Jallianwala Bagh in Amritsar in 1919.

A recent entrant to politics, Jawaharlal Nehru, was among those who called for complete independence. In 1920, Gandhi began the non-cooperation movement, which called on all Indians to begin days of fasting and prayer, essentially a continuing general strike. This was followed by bonfires of English-manufactured clothes. If Gandhi himself had not called off this movement in 1922, because of the burning of a police station in 1922, the movement might well have succeeded in its objective. By this time there was no doubt who called the shots in the Congress; the older leaders had been against the movement, not anticipating the massive popular response, and the younger leaders, like Nehru, were against its termination. But Gandhi's will prevailed. How did the British regard Gandhi, whom an American pastor had compared to Jesus during his South African years? They seemed more afraid of Nehru, at least if jail time and police surveillance was any indication.

Appendix C. Proof of Lemma 1

Proof. The government exerts an optimal force $g_2^* \in \{0, E\}$ that maximizes the following expected payoff

$$
\begin{aligned}
g_2^* &= \operatorname*{argmax}_{g_2} EU_2^G(g_2 | a_2 = R) \\
&= \operatorname*{argmax}_{g_2} Pr[\gamma_2 = F \mid h_2, a_2 = R, g_2, \hat{\lambda}_2 = 0] U_2^G(a_2 = R, g_2, \gamma_2 = F) - cg_2 \\
&= [(1 - \alpha_2)(1 - \theta_L m_2^*(a_2, g_2, \alpha_2, \hat{\lambda}_2 = 0)) + \alpha_2(1 - \theta_H m_2^*(a_2, g_2, \alpha_2, \hat{\lambda}_2 = 0))]W - cg_2
\end{aligned}
$$

The government gets a positive payoff W only when a revolution fails. We can write the difference in expected utility of the government from exerting no force, $g_2 = 0$ and the maximum force, $g_2 = E$ as follows:

$$
\begin{aligned}
L(\alpha_2) &= EU_2^G(g_2 = 0 | a_2 = R) - EU_2^G(g_2 = E | a_2 = R) \\
&= \frac{-E[(1 - \alpha_2)\theta_L + \alpha_2 \theta_H]W}{(e_H + e_L) - [(1 - \alpha_2)\theta_L + \alpha_2 \theta_H]W} + cE
\end{aligned}
$$

The function $L(\alpha_2)$ is continuous and decreasing in α_2. Hence, there exists a threshold value of $\alpha_2 = \bar{\alpha}$, such that, $L(\bar{\alpha}) = 0$. Hence for all $\alpha_2 < \bar{\alpha}$, the government's strategy is to exert no force, $G_2(h_2, a_2 = R) = 0 \ \forall h_2 \in \mathbb{H}_2$ while it exerts maximum force, $G_2(h_2, a_2 = R) = 1 \ \forall h_2 \in \mathbb{H}_2$ if $\alpha_2 \geq \bar{\alpha}$. The value of $\bar{\alpha}$ is given by:

$$
\bar{\alpha} = \frac{1}{(\theta_H - \theta_L)} \left[\frac{c(e_H + e_L)}{W + cW} - \theta_L \right] \tag{3}
$$

Given the assumptions on the parameters above, and $c \in (c', c'')$, we obtain an unique value of $\bar{\alpha}$ where $\bar{\alpha} \in (0, 1)$. □

Appendix D. Proof of Lemma 3

Proof. We find the optimal strategy of the government in four broad ranges of α_1 when it observes a social movement in the first period. The difference in the expected utility of the government from exerting force and none upon observing social movement in the first period changes with α_1 because the government's response to revolution in the second period changes with the updated belied at the beginning of the second period.

Let $m_1(g_1, a_1 = sm, \alpha_1, \hat{\lambda}_1 = \lambda_1) = m_1(g_1)$ and $m_2(g_2, a_2 = R, \alpha_2, \hat{\lambda}_2 = 0) = m_2(g_2, \alpha_2)$, where $m_1(g_1)$ is the citizen participation in the first period when $a_1 = sm$ and $m_2(g_2, \alpha_2)$ is the mass participation in the second period when $a_2 = R$.

Let us now consider each of the four ranges.

Range I: $\alpha_1 \in [\alpha_L, \alpha_1^S]$

In this range, α_1 is small enough such that even if the social movement is successful in the first period, the updated belief at the beginning of the second period, i.e. α_2^S is less than $\bar{\alpha}$. Hence, there is no government effort in the second

period irrespective of the outcome of the social movement in the first period. Let $\Delta^1(\alpha_1)$ be the difference in the expected payoff of the government from exerting $g_1 = 0$ and $g_1 = E$ and is given by:

$$\Delta^1(\alpha_1) = EU_1^G(a_1 = sm, g_1 = 0) - EU_1^G(a_1 = sm, g_1 = E)$$
$$= cE + \delta W(1 - \lambda_1)[A(\alpha_1) + B(\alpha_1) - C(\alpha_1)]$$

where,

$$A(\alpha_1) = (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)[1 - (\alpha_2^S\theta_H + (1 - \alpha_2^S\theta_L)m_2(0, \alpha_2^S)][m_1(0) - m_1(E)]$$
$$B(\alpha_1) = [1 - (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)m_1(0)][1 - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)m_2(0, \alpha_2^F(0))]$$
$$C(\alpha_1) = [1 - (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)m_1(E)][1 - (\alpha_2^F(E)\theta_H + (1 - \alpha_2^F(E))\theta_L)m_2(0, \alpha_2^F(E))]$$

We show that $A(\alpha_1) + B(\alpha_1) - C(\alpha_1)$ is always positive for all values of α_1. Hence, $\Delta^1(\alpha_1) > 0$ in range I. Thus, the optimal strategy of the government in the first period is $g_1 = 0$.[36]

Range II: $\alpha_1 \in [\alpha_1^S, \alpha_1^{FE}]$

In this range, the initial prior about political leader's ability is such that if the social movement is successful in the first period, then the updated belief at the beginning of the second period, i.e., $\alpha_2^S(\alpha_1)$ is greater than $\bar\alpha$. In this scenario, the government exerts force $g_2 = E$ to combat revolution in the second period. However, if the social movement is unsuccessful in the first period, then the government does not put any force upon observing a revolution.

Let $\Delta^2(\alpha_1, c)$ be the difference in the expected payoff of the government as above is as follows:

$$\Delta^2(\alpha_1, c) = EU_1^G(a_1 = sm, g_1 = 0) - EU_1^G(a_1 = sm, g_1 = E)$$
$$= cE + \delta W(1 - \lambda_1)[\bar A(\alpha_1) + B(\alpha_1) - C(\alpha_1)]$$

where

$$\bar A(\alpha_1) = (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)[1 - (\alpha_2^S\theta_H + (1 - \alpha_2^S\theta_L)m_2(E, \alpha_2^S) - c][m_1(0) - m_1(E)]$$
$$B(\alpha_1) = [1 - (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)m_1(0)][1 - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)m_2(0, \alpha_2^F(0))]$$
$$C(\alpha_1) = [1 - (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)m_1(E)][1 - (\alpha_2^F(E)\theta_H + (1 - \alpha_2^F(E))\theta_L)m_2(0, \alpha_2^F(E))]$$

The expression $\bar A(\alpha_1) + B(\alpha_1) - C(\alpha_1)$ is increasing in α_1. $\Delta^2(\alpha_1 = 0, c)$ is an increasing function in c and let c^1 be such that $\Delta^2(\alpha_1 = 0, c^1) = 0$. Also, $\Delta^2(\alpha_1 = 1, c)$ is an increasing function in c and let c^2 be such that $\Delta^2(\alpha_1 = 1, c^2) = 0$. Given that $[\bar A(\alpha_1) + B(\alpha_1) - C(\alpha_1)]$ is increasing in α_1, for all $c > \max\{c^1, c^2\}$, the government's optimal strategy is to exert no force in this range. By similar reasoning for all $c < \min\{c^1, c^2\}$, then the government's optimal strategy is to exert maximum force in the first period in this range.

Range III: $\alpha_1 \in [\alpha_1^{FE}, \alpha_1^{F0}]$

In this range, if the social movement is successful in the first period, then $\alpha_2^S(\alpha_1)$ is greater than $\bar\alpha$. In this case, the government exerts force, $g_2 = E$ to combat revolution in the second period. However, if the government exerts force in the first period and the social movement is unsuccessful in the first period, then the updated belief at the beginning of the second period is still above $\bar\alpha$. The government then exerts effort in the second period upon seeing a revolution. However, if the social movement is unsuccessful in the first period with government exerting no force in the first period, then the updated belief at the beginning of second period is less than $\bar\alpha$ and government does not combat the second period revolution with any force.

The difference in the expected payoff of the government same as above is as follows: Let

$$\Delta^3(\alpha_1, c) = EU_1^G(a_1 = sm, g_1 = 0) - EU_1^G(a_1 = sm, g_1 = E)$$
$$= cE + \delta W(1 - \lambda_1)[\bar A(\alpha_1) + B(\alpha_1) - \bar C(\alpha_1)]$$

where

$$\bar A(\alpha_1) = (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)[1 - (\alpha_2^S\theta_H + (1 - \alpha_2^S\theta_L)m_2(E, \alpha_2^S) - c][m_1(0) - m_1(E)]$$
$$B(\alpha_1) = [1 - (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)m_1(0)][1 - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)m_2(0, \alpha_2^F(0))]$$
$$\bar C(\alpha_1) = [1 - (\alpha_1\theta_H + (1 - \alpha_1)\theta_L)m_1(E)][1 - c - (\alpha_2^F(E)\theta_H + (1 - \alpha_2^F(E))\theta_L)m_2(0, \alpha_2^F(E))]$$

The expression $[\bar A(\alpha_1) + B(\alpha_1) - \bar C(\alpha_1)]$ is increasing in α_1. $\Delta^3(\alpha_1 = 0, c)$ is an increasing function in c and let c^3 be such that $\Delta^3(\alpha_1 = 0, c^3) = 0$. Also, $\Delta^3(\alpha_1 = 1, c)$ is an increasing function in c and c^4 be such that $\Delta^3(\alpha_1 = 1, c^4) = 0$. Given that $[\bar A(\alpha_1) + B(\alpha_1) - \bar C(\alpha_1)]$ is increasing in α_1 then for all $c > \max\{c^3, c^4\}$, the government's optimal strategy is to exert no force. By similar reasoning for all $c < \min\{c^3, c^4\}$, the government's optimal strategy is to exert maximum force in the first period.

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[36] For notational simplicity, let us denote $\alpha_2^F(\alpha_1, g_1 = 0) = \alpha_2^F(0)$ and $\alpha_2^F(\alpha_1, g_1 = E) = \alpha_2^F(E)$.

Let $\bar{c} = \max\{c^1, c^2, c^3, c^4\}$. Therefore, if $c \in [\max\{c', \bar{c}\}, c'']$, optimal strategy of the government is to exert no force $\forall \alpha_1 \in [\alpha_1^S, \alpha_1^{F0}]$. Let $\underline{c} = \min\{c^1, c^2, c^3, c^4\}$. Therefore if $c \in [c', \min\{\underline{c}, c''\}]$, optimal strategy of the government is to exert maximum force $\forall \alpha_1 \in [\alpha_1^S, \alpha_1^{F0}]$. Now, we consider the fourth and final range.

Range IV: $\alpha_1 \in [\alpha_1^{F0}, \alpha_H]$

In this range, initial prior about political leader's ability is such that the updated prior at the beginning of the second period is above $\bar{\alpha}$ irrespective of the outcome of the social movement in the first period. Hence, it always attracts government's force upon revolution in the second period.

The difference in the expected payoff of the government like before is as follows:
Let

$$\Delta^4(\alpha_1, c) = EU_1^G(a_1 = sm, g_1 = 0) - EU_1^G(a_1 = sm, g_1 = E)$$
$$= cE + \delta W(1 - \lambda_1)[\bar{A}(\alpha_1) + \bar{B}(\alpha_1) - \bar{C}(\alpha_1)]$$

where,

$$\bar{A}(\alpha_1) = (\alpha_1 \theta_H + (1 - \alpha_1)\theta_L)[1 - (\alpha_2^S \theta_H + (1 - \alpha_2^S \theta_L) m_2(E, \alpha_2^S) - c][m_1(0) - m_1(E)]$$
$$\bar{B}(\alpha_1) = [1 - (\alpha_1 \theta_H + (1 - \alpha_1)\theta_L) m_1(0)][1 - c - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L) m_2(E, \alpha_2^F(0))]$$
$$\bar{C}(\alpha_1) = [1 - (\alpha_1 \theta_H + (1 - \alpha_1)\theta_L) m_1(E)][1 - c - (\alpha_2^F(E)\theta_H + (1 - \alpha_2^F(E))\theta_L) m_2(E, \alpha_2^F(E))]$$

The expression $\bar{A}(\alpha_1) + \bar{B}(\alpha_1) - \bar{C}(\alpha_1)$ is always positive for all values of α_1. Hence, $\Delta^4(\alpha_1, c) > 0$ in this range. Thus, it is optimal for the government not to exert any force in this range irrespective of the value of c. $\square$

Appendix E. Proof of Proposition 1

Proof. Lemmas 1 and 3 provide the government's strategy upon observing a revolution and social movement in the first period respectively.

First, we illustrate the expected payoff of a political leader from conducting revolution in the first period and the expected payoff from conducting a social movement in the first period followed by a revolution in the second period. If $\alpha_1 < \bar{\alpha}$, conducting a revolution in the first period will imply that the government will exert no force. Let $H_0(\alpha_1, \hat{\lambda}_1 = 0)$ be the expected payoff of a political leader when it announces a revolution in the first period which is given by:

$$H_0(\alpha_1, \hat{\lambda}_1 = 0) = EU_1^P(a_1 = R, g_1 = 0)$$
$$= \frac{[\alpha_1 \theta_H + (1 - \alpha_1)\theta_L]e_L W}{e_H + e_L - [\alpha_1 \theta_H + (1 - \alpha_1)\theta_L]W}$$

If $\alpha_1 \geq \bar{\alpha}$, conducting a revolution in the first period will imply that the government will exert force upon the announcement of a revolution. Let $\bar{H}_0(\alpha_1, \hat{\lambda}_1 = 0)$ be the expected payoff of a political leader in this case which is given by

$$\bar{H}_0(\alpha_1, \hat{\lambda}_1 = 0) = EU_1^P(a_1 = R, g_1 = E)$$
$$= \frac{[\alpha_1 \theta_H + (1 - \alpha_1)\theta_L](e_L - E)W}{e_H + e_L - [\alpha_1 \theta_H + (1 - \alpha_1)\theta_L]W}$$

The expected utility of the political leader who conducts a social movement in the first period, $a_1 = sm$ followed by revolution, $a_2 = R$ in the second period is given by Eq. (3). However, this expected payoff varies according to initial prior about the leader being of high type, α_1. Let $H_1(\alpha_1, \lambda_1)$ be the expected payoff of the political leader when $\alpha_1 < \alpha_1^S$ and is given by:

$$H_1(\alpha_1, \lambda_1) = EU_1^P(\alpha_1, g_1 = 0, \hat{\lambda}_1 = \lambda_1, g_2 = 0)$$
$$= \delta W K(\alpha_1, \lambda_1) \left[\frac{(\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)e_L}{e_H + e_L - (\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)W} \right]$$
$$+ \delta W [1 - K(\alpha_1, \lambda_1)] \left[\frac{(\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)e_L}{e_H + e_L - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)W} \right]$$

where $K(\alpha_1, \lambda_1) = \frac{[\alpha_1 \theta_H + (1 - \alpha_1)\theta_L]e_L}{e_H + e_L - [\lambda_1 \theta_H + (1 - \lambda_1)(\theta_H \alpha_1 + (1 - \alpha_1)\theta_L)]W}$

Now, we describe the expected payoff of the leader from conducting a social movement in the range $\alpha_1^S \leq \alpha_1 < \alpha_1^{F0}$. In this range, a successful social movement in the first period leads to government's force in the second period upon revolution. However, if the social movement is unsuccessful in the first period, then the updated α_2 at the beginning of the second period is below $\bar{\alpha}$ and then the government applies no force in the second period to combat revolution. Let $\bar{H}_1(\alpha_1, \lambda_1)$ denote the expected payoff of the political leader from conducting a social movement in the first period followed by revolution

in the second period in this range and is given by:

$$
\begin{aligned}
\bar{H}_1(\alpha_1, \lambda_1) &= EU_1^P(\alpha_1, g_1 = 0, \hat{\lambda}_1 = \lambda_1, g_2) \\
&= \delta W K(\alpha_1, \lambda_1)\left[\frac{(\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)(e_L - E)}{e_H + e_L - (\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)W}\right] \\
&\quad + \delta W[1 - K(\alpha_1, \lambda_1)]\left[\frac{(\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)e_L}{e_H + e_L - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)W}\right]
\end{aligned}
$$

If $\alpha_1 \geq \alpha_1^{F0}$, in this range, irrespective of success or failure of the social movement in the first period, the government will always exert force in the second period to combat revolution. Thus, the expected payoff of the political leader which is represented by $\hat{H}_1(\alpha_1, \lambda_1)$ is expressed as follows:

$$
\begin{aligned}
\hat{H}_1(\alpha_1, \lambda_1) &= EU_1^P(\alpha_1, g_1 = 0, \hat{\lambda}_1 = \lambda_1, g_2 = E) \\
&= \delta W K(\alpha_1, \lambda_1)\left[\frac{(\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)(e_L - E)}{e_H + e_L - (\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)W}\right] \\
&\quad + \delta W[1 - K(\alpha_1, \lambda_1)]\left[\frac{(\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)(e_L - E)}{e_H + e_L - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)W}\right]
\end{aligned}
$$

$H_0(\alpha_1, \hat{\lambda}_1 = 0)$, $\bar{H}_0(\alpha_1, \hat{\lambda}_1 = 0)$, $H_1(\alpha_1, \lambda_1)$, $\bar{H}_1(\alpha_1, \lambda_1)$ and $\hat{H}_1(\alpha_1, \lambda_1)$ are all increasing in α_1. We now endogenously determine α_L and α_H from the political leader's optimization problem.

Let us assume that $\alpha_L < \alpha_1^S$. Thus, in the range $\forall \alpha_1 \in [\alpha_L, \alpha_1^S)$, the political leader must not find it beneficial to conduct a revolution in the first period as opposed to a social movement. However, $H_0(\alpha_1 = 0, \lambda_1 = 0) > H_1(\alpha_1 = 0, \lambda_1)$ and $H_0(\alpha_1 = 1, \lambda_1 = 0) > H_1(\alpha_1 = 1, \lambda_1)$. Since, $H_0(\alpha_1, \lambda_1 = 0)$ and $H_1(\alpha_1, \lambda_1)$ are increasing functions in α_1, this implies that $H_0(\alpha_1, \lambda_1 = 0) > H_1(\alpha_1, \lambda_1), \forall \alpha_1$. Hence, it is beneficial for the leader to conduct a revolution in the first period $\forall \alpha_1 \in [\alpha_L, \alpha_1^S)$ and hence $\alpha_L \neq \alpha_1^S$.

Let us now assume that $\alpha_L = \alpha_1^S$. For this to hold, the political leader must not find it beneficial to conduct a revolution in the first period as compared to a social movement, $\forall \alpha_1 \in [\alpha_1^S, \bar{\alpha})$. $H_1(\alpha_1, \lambda_1) > \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha_1$. Since, $H_0(\alpha_1, \lambda_1 = 0) > H_1(\alpha_1, \lambda_1), \forall \alpha_1$ as shown previously, therefore, $H_0(\alpha_1, \lambda_1 = 0) > \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha \in [0, 1]$. Hence, the necessary condition $H_0(\alpha_1, \lambda_1 = 0) < \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha_1 \in [\alpha_1^S, \bar{\alpha})$ does not hold and therefore $\alpha_L \neq \alpha_1^S$.

Let us assume that $\alpha_L \in (\alpha_1^S, \bar{\alpha})$. For this to hold, the political leader must not find it beneficial to conduct a revolution in the first period as compared to a social movement $\forall \alpha_1 \in [\alpha_L, \bar{\alpha})$. However, $H_0(\alpha_1, \lambda_1 = 0) > \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha \in [0, 1]$ and hence $\alpha_L \notin (\alpha_1^S, \bar{\alpha})$.

Let us now consider that $\alpha_H > \alpha_1^{F0}$. For this to hold the political leader must not find it profitable to conduct a revolution in the first period as opposed to a social movement $\forall \alpha_1 \in [\alpha_1^{F0}, \alpha_H)$. However, $\bar{H}_0(\alpha_1 = 0, \lambda_1 = 0) > \hat{H}_1(\alpha_1 = 0, \lambda_1)$ and $\bar{H}_0(\alpha_1 = 1, \lambda_1 = 0) > \hat{H}_1(\alpha_1 = 1, \lambda_1)$ holds. Since, $\bar{H}_0(\alpha_1, \lambda_1 = 0)$ and $\hat{H}_1(\alpha_1, \lambda_1)$ are increasing in α_1, this implies that $\bar{H}_0(\alpha_1, \lambda_1 = 0) > \hat{H}_1(\alpha_1, \lambda_1), \forall \alpha_1$. Hence, it is profitable for the political leader to conduct a revolution in the first period $\forall \alpha_1 \in [\alpha_1^{F0}, \alpha_H)$ and $\alpha_H \neq \alpha_1^{F0}$.

Now, the only possibility left is that $\alpha_L, \alpha_H \in [\bar{\alpha}, \alpha_1^{F0}]$. In this case, we can have four different situations

Case I: $\alpha_L > \bar{\alpha}, \alpha_H < \alpha_1^{F0}$
Case II: $\alpha_L = \bar{\alpha}, \alpha_H < \alpha_1^{F0}$
Case III: $\alpha_L > \bar{\alpha}, \alpha_H = \alpha_1^{F0}$
Case IV: $\alpha_L = \bar{\alpha}, \alpha_H = \alpha_1^{F0}$

We show that only *Case IV* holds. For $\alpha_L = \bar{\alpha}$ and $\alpha_H = \alpha_1^{F0}$, the following conditions should hold:

1. $\forall \alpha_1 < \alpha_1^S : H_0(\alpha_1, \lambda_1 = 0) > H_1(\alpha_1, \lambda_1 = 1)$
2. $\forall \alpha_1 \in [\alpha_1^S, \bar{\alpha}) : H_0(\alpha_1, \lambda_1 = 0) > \bar{H}_1(\alpha_1, \lambda_1 = 1)$
3. $\forall \alpha_1 \geq \alpha_1^{F0} : \bar{H}_0(\alpha_1, \lambda_1 = 0) > \hat{H}_1(\alpha_1, \lambda_1 = 1)$
4. $\forall \alpha_1 \in [\bar{\alpha}, \alpha_1^{F0}) : \bar{H}_0(\alpha_1, \lambda_1 = 0) < \bar{H}_1(\alpha_1, \lambda_1)$

Conditions 1, 2 and 3 state that the expected payoff from conducting revolution in the first period is higher than the expected payoff from conducting social movement in the first period followed by revolution in the second period in the respective ranges. Condition 4 states that the expected payoff from social movement in the first period followed by revolution in the second period is higher than conducting revolution in the first period in the range $\alpha_1 \in [\bar{\alpha}, \alpha_1^{F0})$.

Conditions 1, 2 and 3 hold and have been already proved. To prove condition 4, let us define $\delta_1 = \frac{e_L - E}{e_L\left[1 - \frac{\theta_L E}{e_H + e_L - \theta_H W}\right]}$. If $\delta >$ δ_1, $\bar{H}_0(\alpha_1 = 0, \lambda_1 = 0) < \bar{H}_1(\alpha_1 = 0, \lambda_1), \forall \lambda_1$. Now let us define $\delta_2 = \frac{e_L - E}{e_L\left[1 - \frac{\theta_H E}{e_H + e_L - \theta_H W}\right]}$. If $\delta > \delta_2$, $\bar{H}_0(\alpha_1 = 1, \lambda_1 = 0) < \bar{H}_1(\alpha_1 = 1, \lambda_1), \forall \lambda_1$.

Let $\bar{\delta} = \max\{\delta_1, \delta_2\} = \delta_2$. Then if $\delta > \bar{\delta}$, $\bar{H}_0(\alpha_1 = 0, \lambda_1 = 0) < \bar{H}_1(\alpha_1 = 0, \lambda_1)$ and $\bar{H}_0(\alpha_1 = 1, \lambda_1 = 0) < \bar{H}_1(\alpha_1 = 1, \lambda_1)$. Since, $\bar{H}_0(\alpha_1, \lambda_1 = 0)$ and $\bar{H}_1(\alpha_1, \lambda_1)$ are increasing in α_1, then $\bar{H}_0(\alpha_1, \lambda_1 = 0) < \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha_1, \lambda_1$. Thus, condition 4 holds and hence *Case IV* holds true.

Now, we rule out *Case I, Case II* and *Case III*. For *Case I* to hold, we need that the political leader must find it beneficial to conduct a revolution in the first period $\forall \alpha_1 \in [\alpha_H, \alpha_1^{F0})$ and $\forall \alpha_1 \in [\bar{\alpha}, \alpha_L)$. Similarly for *Case II* and *Case III* to hold, the political leader must find it beneficial to conduct a revolution in the first period $\forall \alpha_1 \in [\alpha_H, \alpha_1^{F0})$ and $\forall \alpha_1 \in [\bar{\alpha}, \alpha_L)$, respectively. However, if $\delta > \bar{\delta}$, then $\bar{H}_0(\alpha_1, \lambda_1 = 0) < \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha_1, \lambda_1$ as proved and hence these cases cannot hold.

The off-path equilibrium belief is assumed to be such that if the leader is supposed to announce a revolution on the equilibrium path but deviates and conducts a social movement in the first period, then $\hat{\lambda}_1$ is revised to 1 and she is thought to a non-political leader. If there is a revolution in the second period, then $\hat{\alpha}_2$ is revised according to the outcome in the first period. On the other hand, if the leader is supposed to announce a social movement on the equilibrium path but deviates and announces a revolution, then $\hat{\lambda}_1$ is revised to 0.

The non-political leader always enjoy a positive expected payoff by announcing $a_1 = s$ and hence calls for a social movement. □

Appendix F. Proof of Proposition 2

Proof. We know the government's strategy from Lemmas 1 and 3.

First, we illustrate the expected payoff of a political leader from conducting revolution in the first period and the expected payoff from conducting a social movement in the first period followed by a revolution in the second period. As stated in the proof of Proposition 1, if $\alpha_1 < \bar{\alpha}$, then the expected payoff of a political leader when it announces a revolution in the first period is given by $H_0(\alpha_1, \hat{\lambda}_1 = 0)$. On the other hand if $\alpha_1 > \bar{\alpha}$, the expected payoff of a political leader in this case is given by $\bar{H}_0(\alpha_1, \hat{\lambda}_1 = 0)$ as mentioned in Proposition 1.

Now, we calculate the expected utility of the political leader who conducts a social movement in the first period, $a_1 = sm$ followed by revolution, $a_2 = R$ in the second period for various ranges of α_1.

If $\alpha_1 < \alpha_1^S$, government does not apply force in the second period irrespective of the outcome of the social movement. Thus, the expected payoff of the political leader is given by $H_1(\alpha_1, \lambda_1)$ as in Proposition 1.

Now, we describe the expected payoff of the leader from conducting a social movement in the range $\alpha_1^S \leq \alpha_1 < \alpha_1^{FE}$. In this range, a successful social movement in the first period with government exerting force leads to facing government force upon conducting a revolution in the second period as well. However, if the social movement is not successful in the first period with government exerting force, then the updated belief at the beginning of the second period is below $\bar{\alpha}$ and then there is no effort by the government in the second period to combat revolution. Let $\bar{H}_1(\alpha_1, \lambda_1)$ denote the expected payoff of the political leader in this range which is given by:

$$
\begin{aligned}
\bar{H}_1(\alpha_1, \lambda_1) &= EU_1^P(\alpha_1, g_1 = E, \hat{\lambda}_1 = \lambda_1, g_2) \\
&= \delta W \bar{K}(\alpha_1, \lambda_1) \left[\frac{(\alpha_2^s \theta_H + (1-\alpha_2^s)\theta_L)(e_L - E)}{e_H + e_L - (\alpha_2^s \theta_H + (1-\alpha_2^s)\theta_L)W} \right] \\
&\quad + \delta W [1 - \bar{K}(\alpha_1, \lambda_1)] \left[\frac{(\alpha_2^F(E)\theta_H + (1-\alpha_2^F(E))\theta_L)e_L}{e_H + e_L - (\alpha_2^F(E)\theta_H + (1-\alpha_2^F(E))\theta_L)W} \right]
\end{aligned}
$$

where $\bar{K}(\alpha_1, \lambda_1) = \frac{[\alpha_1 \theta_H + (1-\alpha_1)\theta_L](e_L - E)}{e_H + e_L - [\lambda_1 \theta_H + (1-\lambda_1)(\theta_H \alpha_1 + (1-\alpha_1)\theta_L)]W}$

Next, we describe the expected payoff of the political leader from conducting a social movement in the range $\alpha_1 \leq \alpha_1^{FE} < \alpha_1^{F0}$. In this range, irrespective of the success or failure of the social movement in the first period when the government is exerting force, the updated belief at the beginning of the second period is always greater than $\bar{\alpha}$ and hence the government exerts force in the second period to combat revolution. On the other hand, if the government is not exerting force in the first period, then a successful social movement in the first period leads to government effort in the second period upon observing a revolution. If the social movement is not successful in the first period, then there is no effort by the government in the second period to combat revolution. Let $\hat{H}_1(\alpha_1, \lambda_1)$ be the expected payoff of the political leader from conducting a social movement in the first period followed by revolution in the second period in this range and is given by:

$$
\begin{aligned}
\hat{H}_1(\alpha_1, \lambda_1) &= EU_1^P(\alpha_1, g_1 = E, \hat{\lambda}_1 = \lambda_1, g_2 = E) \\
&= \delta W \bar{K}(\alpha_1, \lambda_1) \left[\frac{(\alpha_2^s \theta_H + (1-\alpha_2^s)\theta_L)(e_L - E)}{e_H + e_L - (\alpha_2^s \theta_H + (1-\alpha_2^s)\theta_L)W} \right] \\
&\quad + \delta W [1 - \bar{K}(\alpha_1, \lambda_1)] \left[\frac{(\alpha_2^F(E)\theta_H + (1-\alpha_2^F(E))\theta_L)(e_L - E)}{e_H + e_L - (\alpha_2^F(E)\theta_H + (1-\alpha_2^F(E))\theta_L)W)} \right]
\end{aligned}
$$

If $\alpha_1 \geq \alpha_1^{F0}$, in this range, irrespective of success or failure of the social movement in the first period, the government will always use force in the second period to combat the revolution. Let $\tilde{H}_1(\alpha_1, \lambda_1)$ denote the expected payoff of the political

leader which is given by:

$$
\begin{aligned}
\tilde{H}_1(\alpha_1, \lambda_1) &= EU_1^P(\alpha_1, g_1 = 0, \hat{\lambda}_1 = \lambda_1, g_2 = E) \\
&= \delta WK(\alpha_1, \lambda_1)\left[\frac{(\alpha_2^s\theta_H + (1-\alpha_2^s)\theta_L)(e_L - E)}{e_H + e_L - (\alpha_2^s\theta_H + (1-\alpha_2^s)\theta_L)W}\right] \\
&\quad + \delta W[1 - K(\alpha_1, \lambda_1)]\left[\frac{(\alpha_2^F(0)\theta_H + (1-\alpha_2^F(0))\theta_L)(e_L - E)}{e_H + e_L - (\alpha_2^F(0)\theta_H + (1-\alpha_2^F(0))\theta_L)W}\right]
\end{aligned}
$$

where, $K(\alpha_1, \lambda_1) = \frac{[\alpha_1\theta_H + (1-\alpha_1)\theta_L]e_L}{e_H + e_L - [\lambda_1\theta_H + (1-\lambda_1)(\theta_H\alpha_1 + (1-\alpha_1)\theta_L)]W}$

$H_0(\alpha_1, \hat{\lambda}_1 = 0)$, $\bar{H}_0(\alpha_1, \hat{\lambda}_1 = 0)$, $H_1(\alpha_1, \lambda_1)$, $\bar{H}_1(\alpha_1, \lambda_1)$, $\hat{H}_1(\alpha_1, \lambda_1)$ and $\tilde{H}_1(\alpha_1, \lambda_1)$ are all increasing in α_1. We now endogenously determine α_L and α_H from the political leader's optimization problem.

Let us assume that $\alpha_L < \alpha_1^S$. Thus, in the range $\alpha_1 \in [\alpha_L, \alpha_1^S)$, the political leader must not find it beneficial to conduct a revolution in the first period as opposed to a social movement. However, $H_0(\alpha_1 = 0, \lambda_1 = 0) > H_1(\alpha_1 = 0, \lambda_1)$ and $H_0(\alpha_1 = 1, \lambda_1 = 0) > H_1(\alpha_1 = 1, \lambda_1)$ holds. Since, $H_0(\alpha_1, \lambda_1 = 0)$ and $H_1(\alpha_1, \lambda_1)$ are increasing functions in α_1, which implies that $H_0(\alpha_1, \lambda_1 = 0) > H_1(\alpha_1, \lambda_1), \forall \alpha_1$. Hence, it is beneficial for the leader to conduct a revolution in the first period $\forall \alpha_1 \in [\alpha_L, \alpha_1^S)$ and hence $\alpha_L \not< \alpha_1^S$.

Let us now assume that $\alpha_L = \alpha_1^S$. For this to hold, the political leader must not find it beneficial to conduct a revolution in the first period as compared to a social movement, $\forall \alpha_1 \in [\alpha_1^S, \bar{\alpha})$. $H_1(\alpha_1, \lambda_1) > \bar{H}_1(\alpha_1, \lambda_1)$, $\forall \alpha_1$. Since, $H_0(\alpha_1, \lambda_1 = 0) > H_1(\alpha_1, \lambda_1), \forall \alpha_1$ as shown previously, therefore, $H_0(\alpha_1, \lambda_1 = 0) > \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha_1$. Hence, the necessary condition $H_0(\alpha_1, \lambda_1 = 0) < \bar{H}_1(\alpha_1, \lambda_1)$, $\forall \alpha_1 \in [\alpha_1^S, \bar{\alpha})$ does not hold and therefore $\alpha_L \neq \alpha_1^S$.

Let us assume that $\alpha_L \in (\alpha_1^S, \bar{\alpha})$. For this to hold, the political leader must not find it beneficial to conduct a revolution in the first period as compared to a social movement $\forall \alpha_1 \in [\alpha_L, \bar{\alpha})$. However, $H_0(\alpha_1, \lambda_1 = 0) > \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha \in [0, 1]$ and hence $\alpha_L \notin (\alpha_1^S, \bar{\alpha})$.

Let us now consider that $\alpha_H > \alpha_1^{F0}$. For this to hold, the political leader must not find it profitable to conduct a revolution in the first period as opposed to a social movement $\forall \alpha_1 \in [\alpha_1^{F0}, \alpha_H)$. However, $\bar{H}_0(\alpha_1 = 0, \lambda_1 = 0) > \tilde{H}_1(\alpha_1 = 0, \lambda_1)$ and $\bar{H}_0(\alpha_1 = 1, \lambda_1 = 0) > \tilde{H}_1(\alpha_1 = 1, \lambda_1)$ holds. Since, $\bar{H}_0(\alpha_1, \lambda_1 = 0)$ and $\tilde{H}_1(\alpha_1, \lambda_1)$ are increasing functions in α_1, this implies that $\bar{H}_0(\alpha_1, \lambda_1 = 0) > \tilde{H}_1(\alpha_1, \lambda_1), \forall \alpha_1$. Hence, it is profitable for the political leader to conduct a revolution in the first period $\forall \alpha_1 \in [\alpha_1^{F0}, \alpha_H)$ and $\alpha_H \not> \alpha_1^{F0}$.

Let us assume that $\alpha_H \in (\alpha_1^{FE}, \alpha_1^{F0})$. For this to hold, the political leader must not find it profitable to conduct a revolution in the first period as compared to a social movement in the range, $\forall \alpha_1 \in [\alpha_1^{FE}, \alpha_H)$. Now, $\bar{H}_0(\alpha_1 = 0, \lambda_1 = 0) > \hat{H}_1(\alpha_1 = 0, \lambda_1)$ and also $\bar{H}_0(\alpha_1 = 1, \lambda_1 = 0) > \hat{H}_1(\alpha_1 = 1, \lambda_1)$. Since $\bar{H}_0(\alpha_1, \lambda_1 = 0)$ and $\hat{H}_1(\alpha_1, \lambda_1)$ are increasing functions in α_1, this implies that $\bar{H}_0(\alpha_1, \lambda_1 = 0) > \hat{H}_1(\alpha_1, \lambda_1), \forall \alpha_1$ and hence $\alpha_H \notin (\alpha_1^{FE}, \alpha_1^{F0})$.

Let us now consider that $\alpha_H = \alpha_1^{F0}$. For this to hold, the political leader must not find conducting revolution in the first period more profitable $\forall \alpha_1 \in [\alpha_1^{FE}, \alpha_H)$. However, $\bar{H}_0(\alpha_1, \lambda_1 = 0) > \hat{H}_1(\alpha_1, \lambda_1), \forall \alpha_1$ and hence $\alpha_H \neq \alpha_1^{F0}$.

Now, the only possibility left is that $\alpha_L, \alpha_H \in [\bar{\alpha}, \alpha_1^{FE}]$. Under this situation, we have four different cases

Case I: $\alpha_L > \bar{\alpha}, \alpha_H < \alpha_1^{FE}$
Case II: $\alpha_L = \bar{\alpha}, \alpha_H < \alpha_1^{FE}$
Case III: $\alpha_L > \bar{\alpha}, \alpha_H = \alpha_1^{FE}$
Case IV: $\alpha_L = \bar{\alpha}, \alpha_H = \alpha_1^{FE}$

We show that only *Case IV* holds. For $\alpha_L = \bar{\alpha}$ and $\alpha_H = \alpha_1^{FE}$, the following conditions should hold:

1. $\forall \alpha_1 < \alpha_1^S : H_0(\alpha_1, \lambda_1 = 0) > H_1(\alpha_1, \lambda_1 = 1)$
2. $\forall \alpha_1 \in [\alpha_1^S, \bar{\alpha}) : H_0(\alpha_1, \lambda_1 = 0) > \bar{H}_1(\alpha_1, \lambda_1 = 1)$
3. $\forall \alpha_1 \in [\alpha_1^{FE}, \alpha_1^{F0}) : \bar{H}_0(\alpha_1, \lambda_1 = 0) > \hat{H}_1(\alpha_1, \lambda_1 = 1)$
4. $\forall \alpha_1 \geq \alpha_1^{F0}) : \bar{H}_0(\alpha_1, \lambda_1 = 0) > \tilde{H}_1(\alpha_1, \lambda_1 = 1)$
5. $\forall \alpha_1 \in [\bar{\alpha}, \alpha_1^{FE}) : \bar{H}_0(\alpha_1, \lambda_1 = 0) < \bar{H}_1(\alpha_1, \lambda_1)$

Conditions 1, 2, 3 and 4 state that the expected payoff from conducting revolution in the first period is higher than the expected payoff from conducting social movement in the first period followed by revolution in the second period in the respective ranges. Condition 5 states that the expected payoff from social movement in the first period followed by revolution in the second period is higher than conducting revolution in the first period in the range $\alpha_1 \in [\bar{\alpha}, \alpha_1^{FE})$.

Conditions 1, 2, 3 and 4 hold and have been already proved. To prove condition 5, let us define $\delta_3 = \frac{1}{\left[\frac{e_L}{e_L - E} - \frac{\theta_L E}{e_H + e_L - \theta_H W}\right]}$. If $\delta > \delta_3$, $\bar{H}_0(\alpha_1 = 0, \lambda_1 = 0) < \bar{H}_1(\alpha_1 = 0, \lambda_1), \forall \lambda_1$. Now, let us define $\delta_4 = \frac{1}{\left[\frac{e_L}{e_L - E} - \frac{\theta_H E}{e_H + e_L - \theta_H W}\right]}$. If $\delta > \delta_4$, $\bar{H}_0(\alpha_1 = 1, \lambda_1 = 0) < \bar{H}_1(\alpha_1 = 1, \lambda_1)$.

Let us now define $\bar{\bar{\delta}} = \max\{\delta_3, \delta_4\} = \delta_4$. If $\delta > \bar{\bar{\delta}}$ then $\bar{H}_0(\alpha_1 = 0, \lambda_1 = 0) < \bar{H}_1(\alpha_1 = 0, \lambda_1)$ and $\bar{H}_0(\alpha_1 = 1, \lambda_1 = 0) < \bar{H}_1(\alpha_1 = 1, \lambda_1)$. Since $\bar{H}_0(\alpha_1, \lambda_1 = 0)$ and $\bar{H}_1(\alpha_1, \lambda_1)$ are increasing functions in α_1, then $\bar{H}_0(\alpha_1, \lambda_1 = 0) < \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha_1, \lambda_1$. Thus, condition 5 holds and hence *Case IV* holds true.

Now we rule out *Case I, Case II* and *Case III*. For *Case I* to hold, we need that the political leader must find it beneficial to conduct a revolution in the first period $\forall \alpha_1 \in [\alpha_H, \alpha_1^{FE})$ and $\forall \alpha_1 \in [\bar{\alpha}, \alpha_L)$. Similarly, for *Case II* and *Case III* to hold, the political leader must find it beneficial to conduct a revolution in the first period $\forall \alpha_1 \in [\alpha_H, \alpha_1^{FE})$ and $\forall \alpha_1 \in [\bar{\alpha}, \alpha_L)$, respectively. However, if $\delta > \bar{\bar{\delta}}$, then $\bar{H}_0(\alpha_1, \lambda_1 = 0) < \bar{H}_1(\alpha_1, \lambda_1), \forall \alpha_1, \lambda_1$ as proved and hence these cases cannot hold.

We use the same-off path equilibrium beliefs as in Proposition 1. The non-political leader always has a positive expected payoff by announcing $a_1 = s$ and hence calls for a non-political protest. $\square$

Appendix G. Proof of Proposition 3

Proof. Suppose the threshold policy of a political leader with ability $\theta_i \in \{\theta_H, \theta_L\}$ is defined by endogenously determined thresholds $\underline{\alpha}^i$ and $\bar{\alpha}^i$ such that

$$
\begin{aligned}
\sigma_1(P) &= 0 \quad \forall \alpha_1 < \underline{\alpha}^i \\
&= 1 \quad \forall \alpha \in [\underline{\alpha}^i, \bar{\alpha}^i) \\
&= 0 \quad \forall \alpha_1 \geq \bar{\alpha}^i
\end{aligned}
$$

where $i \in \{H, L\}$. Suppose that $\underline{\alpha}^H \neq \underline{\alpha}^L$ and $\bar{\alpha}^H \neq \bar{\alpha}^L$. Consider the ranges $\forall \alpha_1 \in [\min\{\underline{\alpha}^H, \underline{\alpha}^L\}, \max\{\underline{\alpha}^H, \underline{\alpha}^L\}]$ and $\forall \alpha_1 \in [\min\{\bar{\alpha}^H, \bar{\alpha}^L\}, \max\{\bar{\alpha}^H, \bar{\alpha}^L\}]$ In both these ranges, the two types of political leader announces different actions. Hence, there can be two different possibilities, which are

Case 1 High type political leader announces revolution and low type political leader announces social movement
Case 2 High type political leader announces social movement and low type political leader announces revolution

Let us first consider *Case 1*. If the government observes a revolution in the first period, then $\hat{\lambda}_1 = 0$ and $\hat{\alpha}_1 = 1$ because the leader is then believed to be a high ability political leader ($\tau = (\theta = H, \zeta = P)$). Hence, in this case, the government's force is $g_1 = E$ because $\bar{\alpha} < \hat{\alpha}_1 = 1$ where $\bar{\alpha}$ is as given in Eq. (3). If the government observes a social movement in the first period, then $\hat{\lambda}_1 = \lambda_1$ and $\hat{\alpha}_1 = 0$. In this case the government's force is $g_1 = 0$ according to Lemma 3.

The expected payoff of the political leader of type θ_i from revolution is given by:

$$
EU_1^P(\theta, a_1 = R, g_1 = E) = \frac{\theta_i W(e_L - E)}{e_H + e_L - \theta_H W}
$$

The expected payoff of the political leader of type θ_i from conducting a social movement in the first period followed by revolution in the second period is given by:

$$
\begin{aligned}
&EU_1^P(\theta, a_1 = sm, g_1 = 0, \hat{\lambda}_1 = \lambda_1, g_2 = 0) \\
&= \delta W K_i(\lambda_1) \left[\frac{\theta_i e_L}{e_H + e_L - \theta_L W} \right] + \delta W [1 - K_i(\lambda_1)] \left[\frac{\theta_i e_L}{e_H + e_L - \theta_L W} \right] \\
&= \left[\frac{\theta_i e_L}{e_H + e_L - \theta_L W} \right] \delta W
\end{aligned}
$$

where, $K_i(\lambda_1) = \frac{\theta_i e_L}{e_H + e_L - [\lambda_1 \theta_H + (1 - \lambda_1) \theta_L] W}$

We can find $\delta^* = \left(\frac{e_L - E}{e_L} \right) \left(\frac{e_H + e_L - \theta_L W}{e_H + e_L - \theta_H W} \right)$ such that $\forall \delta \geq \delta^*$, the expected payoff from conducting social movement is higher than announcing revolution in the first period for both types of ability of the political leader. On the other hand, if $\forall \delta < \delta^*$, the opposite is true. Hence, both types of the political leader cannot announce different actions given a value of δ.

Now, consider *Case 2*. If the government observes a revolution in the first period, then $\hat{\lambda}_1 = 0$ and $\hat{\alpha}_1 = 0$ because the leader is then believed to be a low ability political leader ($\tau = (\theta = L, \zeta = P)$). Hence, in this case, the government's effort is $g_1 = 0$ because $\bar{\alpha} > \hat{\alpha}_1 = 0$. If the government observes a social movement in the first period, then $\hat{\lambda}_1 = \lambda_1$ and $\hat{\alpha}_1 = 1$ and by Lemma 3, $g_1 = 0$. Similar to the proof in *Case 1*, we can show that there exists a $\delta = \delta^{**}$ such that $\forall \delta \geq \delta^{**}$, the expected utility from social movement in the first period followed by revolution is higher than by conducting revolution in the first period for both the types of the political leader. Similarly, $\forall \delta < \delta^{**}$, the opposite is true for both the types of political leader. Hence, again both the types of the political leader cannot announce different actions given a value of δ. $\square$

Appendix H. Proof of Proposition 4

Proof. Lemmas 1 and 3 specify the government's strategy upon observing a revolution and a social movement in the first period, respectively.

If $\alpha_1 < \bar{\alpha}$, conducting a revolution in the first period will imply that the government will use no force. Let $H_0(\theta, \alpha_1, \hat{\lambda}_1 = 0)$ denote the expected payoff of a political leader when she announces a revolution in the first period and is given by:

$$H_0(\theta, \alpha_1, \hat{\lambda}_1 = 0) = EU_1^P(\theta, a_1 = R, \alpha_1, g_1 = 0)$$

$$= \frac{\theta_i e_L W}{[e_H + e_L - [\alpha_1 \theta_H + (1 - \alpha_1)\theta_L]W]}$$

where $\theta_i \in \{\theta_L, \theta_H\}$. We will use θ_i in the rest of the proof.

If $\alpha_1 \geq \bar{\alpha}_1$, let $\bar{H}_0(\theta, \alpha_1, \hat{\lambda}_1 = 0)$ be the expected payoff of a political leader, when she announces a revolution and is given by:

$$\bar{H}_0(\theta, \alpha_1, \hat{\lambda}_1 = 0) = EU_1^P(\theta, a_1 = R, \alpha_1, g_1 = E)$$

$$= \frac{\theta_i (e_L - E)W}{e_H + e_L - [\alpha_1 \theta_H + (1 - \alpha_1)\theta_L]W}$$

The expected payoff of the political leader from announcing a social movement in the first period followed by revolution in the second period depends upon the initial common prior about the leader's ability, α_1. If $\alpha_1 < \alpha_1^S$, government does not exert effort in the second period irrespective of the outcome of the social movement. Let $H_1(\theta, \alpha_1, \lambda_1)$ denote the expected payoff of the political leader and is given by:

$$H_1(\theta, \alpha_1, \hat{\lambda}_1 = \lambda_1) = EU_1^P(\theta, a_1 = sm, \alpha_1, g_1 = 0, g_2 = 0)$$

$$= \delta W K(\alpha_1, \lambda_1) \left[\frac{\theta_i e_L}{e_H + e_L - (\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)W} \right]$$

$$+ \delta W [1 - K(\alpha_1, \lambda_1)] \left[\frac{\theta_i e_L}{e_H + e_L - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)W} \right]$$

where $K(\alpha_1, \lambda_1) = \frac{\theta_i e_L}{e_H + e_L - [\lambda_1 \theta_H + (1 - \lambda_1)(\theta_H \alpha_1 + (1 - \alpha_1)\theta_L)]W}$

Similar to the proofs in Propositions 1 and 2, let $\bar{H}_1(\theta, \alpha_1, \lambda_1)$ denote the expected payoff of the political leader of type θ_i from conducting a social movement when $\alpha_1^S \leq \alpha_1 < \alpha_1^{F0}$. Thus, $\bar{H}_1(\theta, \alpha_1, \lambda_1)$ is given by:

$$\bar{H}_1(\theta, \alpha_1, \hat{\lambda}_1 = \lambda_1) = EU_1^P(\theta, a_1 = sm, \alpha_1, g_1 = 0, g_2)$$

$$= \delta W K(\alpha_1, \lambda_1) \left[\frac{\theta_i (e_L - E)}{e_H + e_L - (\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)W} \right]$$

$$+ \delta W [1 - K(\alpha_1, \lambda_1)] \left[\frac{\theta_i e_L}{e_H + e_L - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)W} \right]$$

If $\alpha_1 \geq \alpha_1^{F0}$, let $\hat{H}_1(\theta, \alpha_1, \lambda_1)$ denote the expected payoff of the political leader of type θ_i from announcing a social movement in the first period which is given by:

$$\hat{H}_1(\theta, \alpha_1, \hat{\lambda}_1 = \lambda_1) = EU_1^P(\theta, a_1 = sm, \alpha_1, g_1 = 0, g_2 = E)$$

$$= \delta W K(\alpha_1, \lambda_1) \left[\frac{\theta_i (e_L - E)}{e_H + e_L - (\alpha_2^s \theta_H + (1 - \alpha_2^s)\theta_L)W} \right]$$

$$+ \delta W [1 - K(\alpha_1, \lambda_1)] \left[\frac{\theta_i (e_L - E)}{e_H + e_L - (\alpha_2^F(0)\theta_H + (1 - \alpha_2^F(0))\theta_L)W} \right]$$

$H_0(\theta, \alpha_1, \hat{\lambda}_1 = 0)$, $\bar{H}_0(\theta, \alpha_1, \hat{\lambda}_1 = 0)$, $H_1(\theta, \alpha_1, \lambda_1)$, $\bar{H}_1(\theta, \alpha_1, \lambda_1)$ and $\hat{H}_1(\theta, \alpha_1, \lambda_1)$ are all increasing in α_1. By using similar arguments as in Proposition 1, we can show that $\alpha_L = \bar{\alpha}$ and $\alpha_H = \alpha_1^{F0}$.

The non-political leader always has a positive expected payoff by announcing $a_1 = sm$ and hence calls for a social movement. $\square$

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