



Revolutionary leaders and the punishment of critics

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Received: 2 January 2023 / Accepted: 26 January 2024
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Abstract

I explore a previously neglected mechanism of mass mobilization in autocracies. Revolutionary leaders may deliberately provoke punishment from the incumbent regime to signal their political conviction and thus encourage citizens to identify with and support the revolutionary movement. I model the interplay of repression, criticism, and revolutionary actions as a dynamic game with incomplete information about the leader's type. The role of the revolutionary leader is to enable people to identify with the movement by credibly embodying political change. From the incumbent's perspective, repression turns out to be a double-edged sword. On the one hand, a severe punishment of critics increases citizens' cost of participating in revolutionary actions. On the other hand, harsh repressions may simultaneously establish a trustworthy leader whom people want to follow in order to replace the current political regime. My results thus help explain a stylized fact, namely that revolutionary leaders sometimes need to fail before they can succeed.

Keywords Revolutions · Protests · Revolutionary leader · Repression

JEL Classification D74 · K42

1 Introduction

I study how a revolutionary leader might use the punishment of critics by the incumbent regime to mobilize otherwise passive citizens to revolt. In general, revolutionary movements suffer from the problem of collective action. Although large groups of citizens might benefit from a regime change, it is in the best interest of members of these groups not to undertake revolutionary actions individually. Even in cases where every single citizen would be better off after a regime change, being passive is likely the most promising individual strategy for the following reason. Active and passive citizens would benefit equally from a potential regime change, so that personal benefits from revolutionary

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actions are usually low. By contrast, the individual risk or cost of punishments is usually high, especially in repressive regimes.¹

Facing this situation, a revolutionary leader might use the repressions of the incumbent regime against it. She might willingly bear the cost or risk of being punished to signal her political motivation to the citizens and gain support. Citizens' beliefs about the leader's motivation are decisive for their support, as purely power motivated leaders are interested merely in the spoils of holding office, whereas politically or ideologically motivated leaders may be more inclined to fundamentally change the political system in the citizens' interest. Although a potential regime change itself is a public good that benefits all citizens equally, individuals may derive additional expressive utility from being an active member of the revolutionary movement, if they believe that its leader's goal is to fundamentally change the political system. A trustworthy leader may serve as a symbol and enable citizens to identify with the revolutionary movement.² Naturally, a leader's motivation cannot be observed directly. Nevertheless, citizens may observe if she was willing to participate in risky protest, went to jail or accepted personal disadvantages. If the perceived cost of punishment is higher for solely power motivated leaders compared to politically or ideologically motivated ones or the potential benefits from gaining office are lower, bearing punishments may reveal her true motives. If citizens are convinced of the ideological motivation of the revolutionary leader, they will be more willing to follow her and participate in revolts, thereby increasing the likelihood of a successful regime change.

Historically, there are some examples of leaders who gained broad support after they first failed and suffered from repression. Nelson Mandela was imprisoned for twenty-seven years, became the symbol of resistance against the apartheid regime and later the democratically elected president of South Africa (Maanga, 2013; Mandela, 1993). The leading figure of the national independence movement in India, Mahatma Gandhi, was famous for his willingness to suffer in order to express his critique and civil disobedience (Komarov, 1970; Livingston, 2018). Fidel Castro was imprisoned after his failed attempt to conquer the Moncada barracks. After his release, he went into exile and fought for years in the jungle, before he was able to gain broad public support (Skierka, 2014).

Recently, Vladimir Putin's political opponent, Alexei Navalny, voluntarily returned to Russia after he had been poisoned and received medical treatment in Germany. He did so, even though he expected to be arrested on return (Kramer, 2021). Given that he had discussed his plan with various allies and advisors, it is reasonable to assume that his choice to go back to Russia was guided by the hope of gaining supporters through his action, and was thus strategic in nature.

To analyze the strategic interdependence between repression, criticism, and revolutionary actions, I model the behavior of an autocratic incumbent, a revolutionary leader, and citizens, within a dynamic game with incomplete information about the revolutionary leader's motivation. First, the autocratic incumbent decides how to deal with critics by choosing a level of repression. Then, the revolutionary leader - who may be motivated by power or ideology - chooses whether or not to criticize the autocratic regime, thus bearing the

¹ The general issue of free-riding within (political) groups is analyzed by Olson (1965). Tullock (1971, 1974, 1987) and Apolte (2012, 2019) discuss how various commitment problems thwart groups from taking revolutionary (collective) actions in autocracies.

² Goldstone (2001) renders the need to incorporate leadership and the process of identification into the analysis of revolutionary movements. Finkel et al. (1989) introduce an interest in group success and a moral duty to participate in political collective action to explain individual participation in political collective action.

risk of punishment, or not. Each citizen observes the level of repression and the revolutionary leader's action. Afterwards, the citizens decide whether to take part in revolts against the regime or remain passive. In cases of successful revolution, the revolutionary leader becomes the new incumbent and may change the polity to citizens' advantage.

Low levels of repression fail to deter citizens from engaging in revolutionary actions, even if they are uncertain about the type of revolutionary leader and thus do not identify strongly with the revolutionary movement. If the incumbent has an interest in maintaining power, he would avoid choosing such a low level of repression, provided he has sufficient repressive means at his disposal. However, this may not be the case, especially in autocracies where the incumbent's power is less extensive. In these non-strict autocracies, merely power orientated revolutionary leaders will also not be deterred from taking action, thus it is likely that in these regimes only the incumbent will change after a successful revolution, but not the political system.

In strict autocracies, where the incumbent is free to choose from a wide set of repressive means, increasing repression from a very low level may initially deter citizens from taking revolutionary actions as long as citizens are uncertain about the revolutionary leader's political conviction and thus identification with the revolutionary movement is low. However, raising the level of repression to intermediate levels may simultaneously establish a trustworthy revolutionary leader whom people actually want to follow. If the expressive utility from being part of an ideological movement is sufficiently high and the potential net benefits from gaining power are rather low for solely power motivated leaders compared to ideologically motivated leaders, there exists a separating equilibrium in which ideologically motivated revolutionary leaders bear the cost of being punished, whereas power motivated leaders do not. Citizens then only follow a revolutionary leader and take action against the regime, if they observe her agitating. Otherwise, they remain passive. Increasing the level of repression even further may prevent criticism and mass mobilization altogether; however, such high levels of repression are also associated with a low net value of holding office.

In summary, the theoretical analysis suggests that mass revolutions are unlikely to occur in strict autocracies. However, if they do occur, a change in policy in favor of citizens should be observed more frequently than after successful revolutions in less repressive regimes, where the incumbent does not have sufficient deterrent repression at his disposal, and merely power orientated revolutionary leaders are not deterred from taking action.

The literature on revolutions commonly distinguishes between two types of revolutions, namely elite revolutions and mass revolutions. While the former are led by a part of the old elite, mass revolutions - which are the subject of this paper - involve large parts of the population previously excluded from political power. Because coordination is particularly challenging in large, anonymous, and unorganized groups, the collective action problem is especially severe in mass revolutions, and leadership as well as identification are particularly important (Vahabi et al., 2020). This paper contributes to the literature on mass revolutions by introducing a novel mechanism that explains how committed leaders - who stand in opposition to the old elite - may mobilize otherwise passive citizens by encouraging them to identify with the revolutionary movement.

In this regard, the study also establishes a connection with the literature on identity investments. Akerlof and Kranton (2000) were the first to introduce identity into economic models. A key feature of their framework is that an individual's identity is incorporated into his or her utility function, and that this identity is shaped by both one's own behavior and the behavior of others. Similarly, in my model, citizens' utility is influenced by their identification with the revolutionary movement, which is fostered

by their own revolutionary actions and the actions of the revolutionary leader. Moreover, the decision of revolutionary leaders to provoke punishment from the incumbent regime to signal their political conviction can be considered a costly investment in the leader's identity. This concept of identity as an investment asset has been proposed by Bénabou and Tirole (2011). Closely related is the literature on reputational investments through actions that entail significant risks, particularly within the historical context of 'duels of honor' (Allen & Reed, 2006; Kingston & Wright, 2010; Vahabi and Hassani-Mahmoei, 2016). In these historical duels, individuals engaged in encounters that could be lethal to signal their unobservable social capital or personal creditworthiness in the absence of a formal enforcement mechanism. However, to the best of my knowledge, no paper so far investigates the potential for using the punishment of critics as a signaling device for the political conviction of a revolutionary leader, and thereby ultimately against the incumbent regime itself, since citizens who can identify with the leader are more willing to join the revolutionary movement.

The remainder of the paper is structured as follows. The next section provides a brief literature review. Section 3 lays out the model, which is analyzed in Sect. 4. Section 5 provides a brief discussion and Sect. 6 concludes.

2 Related literature

This paper is related to other work which analyzes how individual leaders or small groups can mobilize the general public against the incumbent regime. Bueno de Mesquita (2010) models a society in which citizens differ with respect to their (private) attitude towards government. In this setting, a revolutionary vanguard may use violence to manipulate citizens' beliefs about the attitude of others, as violent actions become less risky if more citizens support the revolutionary vanguard's campaign. The use of violence may then mobilize the citizens, as they are more willing to participate in revolutionary actions, since they believe that there is a high probability of others joining. However, the paper concentrates on information asymmetries and coordination problems among citizens when the number of other participants is their major concern, while I focus on citizens' uncertainty about the character and motivation of the leader they need to support, if they want to replace the incumbent with this person. Ginkel and Smith (1999) analyze a setting where professional dissidents may mobilize citizens to revolt against the incumbent regime by altering their beliefs about the regime's power, whereas (Edmond, 2013) analyzes a regime's usage of propaganda to manipulate citizens' beliefs about its strength in order to prevent being overthrown.

Another strand of the literature focuses on the interplay of repression and revolutionary actions. Pierskalla (2010) develops a model in which the opposition decides whether to protest against the incumbent regime, which may react with repressive actions. After observing the incumbent's reaction, the opposition either escalates the conflict or acquiesces, taking the level of repression as a signal as to the strength of the incumbent regime in a violent conflict. Shadmehr and Bernhardt (2011) provide a framework for analyzing citizens' decisions to revolt in the presence of repression and incomplete information about payoffs. More precisely, the authors assume that citizens receive different private information about their payoff in the event of a successful revolution. Moreover, they assume that all players decide simultaneously whether to remain passive or to revolt against the incumbent regime. Consequently, the possibility that the observed

behavior of other players and their punishment may influence the behavior of citizens is neglected in their framework. Tolstrup et al. (2019) investigate how the support of foreign powers affects the repressive behavior of autocrats. They find that consistent support from foreign powers increases the use of violent repressions by the domestic incumbent autocrat. Finally, Davenport (2007) and Chenoweth et al. (2017) provide literature reviews of repressive behavior in alternative political regimes.

The role of revolutions in holding autocratic political leaders accountable is studied, for example, by Gilli and Li (2015). They extend a model of Besley and Kudamatsu (2008) to analyze how the threat of a revolution by ordinary citizens, in combination with the threat of a coup organized by the elite, may force a dictatorial incumbent to forgo private benefits and select efficient policies in the primary interest of others. Acemoglu and Robinson (2006) describe how revolutionary threats limit the level of inequality within autocratic societies. However, the focus of their work is on the disciplinary effects on the incumbent's policy choice, rather than on mobilizing the mass public.³ Thus, the present study contributes to the literature by analyzing a previously neglected mechanism of mass mobilization.

3 A model of repression, criticism, and revolutionary actions in autocracies

I analyze the behavior of an autocratic incumbent, I , a revolutionary leader, L , and a group of citizens, C , within a dynamic revolutionary game with incomplete information. Let $x \in \mathbb{R}_{++}$ denote the value derived from holding office in an autocratic regime. The incumbent decides how to secure his hold on power by choosing a level of repression, $\rho \in \mathbb{R}_{++}$, with upper and lower limits reflecting the incumbent's power constraints, $\rho \in [\underline{\rho}, \bar{\rho}]$.

Repressions are costly ($c_I(\rho) > 0$, $c_I(\rho)' > 0$, $c_I(\rho)'' > 0$ for all ρ), but they may increase the likelihood of remaining in office, as the incumbent's power is contested by a revolutionary leader who wants to replace him.

The revolutionary leader is either ideologically motivated or power motivated, depending on her type $\theta \in \{i, p\}$. I assume that an ideologically motivated leader wants to change the political system fundamentally, while a power motivated leader is only interested in the spoils of holding office. If the revolutionary leader gains power, her political motivation would determine the policies, as a new person in power may decide to maintain the political system or change the polity fundamentally, $\delta_\theta \in \{0, 1\}$.

Model-wise the differences in leader's motivation are reflected in the following way. A fundamental change of the regime alters the value of holding office, x , by the amount of $\Delta \in \mathbb{R}_{++}$. A power motivated leader would lose this amount through power sharing, while an ideologically motivated leader would gain it. Consequently, a solely power motivated leader prefers to leave the autocratic political system unchanged ($\delta_p = 0$), while an ideologically motivated leader aims to transform the regime ($\delta_i = 1$).⁴

³ For an extensive review of game-theoretic models of politics in non-democracies, see Gehlbach et al. (2016).

⁴ The notion that convinced, ideologically motivated leaders aim to reshape the political system for the citizens' benefit by relinquishing power is undoubtedly simplistic and lacks nuance. Ideological revolutionary leaders do not always have the intention to democratize the political system; their motivations might originate from religious, nationalist, or other factors. Nevertheless, the pivotal factor in citizens' decision to join the revolutionary movement is their enthusiasm for the movement and its political objectives. The belief in

For a successful leadership turnover, the revolutionary leader needs the support of the citizens. In order to convince them to support her, she may agitate against the incumbent, criticize the autocratic regime harshly and risk being punished for doing so ($\lambda = 1$). Alternatively, she might oppose only moderately or even remain passive ($\lambda = 0$). The perceived cost of punishment for harsh criticism, $c_\theta(\rho)$, increases with higher levels of repression ρ and may depend on her type. I assume that the perceived cost of punishment is either equal to or lower for ideologically motivated leaders compared to power motivated ones, positive, and increases with the level of repression at an increasing rate, that is $c_\theta(\rho) > 0$, $c_\theta(\rho)' > 0$, $c_\theta(\rho)'' > 0$, and $c_i(\rho) \leq c_p(\rho)$ for all ρ .⁵ The revolutionary leader's type remains her private information, although all citizens can observe if she was willing to participate in risky protest, went to jail, accepted personal disadvantages, et cetera.

After observing the leader's behavior, the citizens decide whether to revolt against the autocratic incumbent in order to replace him ($\alpha = 1$). Alternatively, they may remain passive ($\alpha = 0$). Undertaking revolutionary actions is associated with (expected) costs of $c(\rho)$ for citizens, with $c(\rho) > 0$, $c(\rho)' > 0$, and $c(\rho)'' > 0$. However, revolting citizens may derive expressive utility, $E \in \mathbb{R}_{++}$, from being an active member of the revolutionary movement, if they believe they are part of a movement that fundamentally changes the political system. Let $\mu(\delta = 1|\lambda) \in [0, 1]$ denote citizens' belief that a revolutionary leader who took action λ , will fundamentally change the regime if she gains power. The expressive value citizens derive if they are active and certain about the leader's intention to change the current autocratic regime, is denoted by $e \in \mathbb{R}_{++}$. Then, the expressive utility derived from active participation can be expressed as $E = \mu_j(\delta = 1|\lambda)e$.⁶ Citizens will revolt, only if the expressive utility from taking revolutionary actions outweighs the associated costs. Assuming that the citizens remain passive if they are indifferent, their best response, α^{BR} , reads:

$$\alpha^{BR}(\lambda, \rho) = \begin{cases} 0 & \text{if } \mu(\delta = 1|\lambda)e \leq c(\rho) \\ 1 & \text{if } \mu(\delta = 1|\lambda)e > c(\rho) \end{cases} \quad (1)$$

Only if the citizens decide to revolt ($\alpha = 1$), the revolution succeeds and the incumbent is replaced by the revolutionary leader. Note that while citizens might benefit from a successful leadership change, as they may hope for and indeed acquire a leader who wants to change the political system to their advantage, a transformation of the political system would benefit all citizens, regardless of their individual action. Thus, these public benefits

Footnote 4 (Continued)

a change of power balance after a possible takeover is not essential for this decision. I delve into this matter more extensively in Sect. 5.

⁵ Kim (2018) argues that successful revolutionary leaders are often ideologically motivated, more risk tolerant and pursue radical social and political transformations. Unfortunately, he also finds that their idea of a radical transformation is often used to legitimize violence against groups of citizens. If ideologically motivated leaders gain power, they are evidently more likely to commit mass killings of unarmed citizens than other leaders.

⁶ Tullock (1971) introduces the idea that citizens may derive some 'entertainment value' from participating in revolutionary actions. However, the author assumes that citizens 'enjoy' this entertainment independent of the type of group they join, while I assume that citizens actually do care and want to identify with the group's political goals.

do not enter into the decision calculus of citizens whether or not to participate in the revolutionary movement.⁷

The utility of both the revolutionary leader and the incumbent is expressed as a function of the success of the revolutionary movement. The revolutionary leader's utility reads

$$U^{L_i}(\lambda_i, \delta_i, \alpha, \rho) = \begin{cases} x + \delta_i \Delta - \lambda_i c_i(\rho) & \text{if } \alpha = 1 \\ -\lambda_i c_i(\rho) & \text{if } \alpha = 0 \end{cases} \quad (2)$$

if she is motivated ideologically, and

$$U^{L_p}(\lambda_p, \delta_p, \alpha, \rho) = \begin{cases} x - \delta_p \Delta - \lambda_p c_p(\rho) & \text{if } \alpha = 1 \\ -\lambda_p c_p(\rho) & \text{if } \alpha = 0 \end{cases} \quad (3)$$

if she is power motivated. Finally, the incumbent's utility function, U^I , is given by

$$U^I(\rho, \alpha) = \begin{cases} 0 & \text{if } \alpha = 1 \\ x - c_i(\rho) & \text{if } \alpha = 0 \end{cases} \quad (4)$$

If the incumbent remains in power ($\alpha = 0$), he receives his benefit from holding office x , minus the costs of repression $c_i(\rho)$. In the event of a revolution ($\alpha = 1$), his payoff is zero. It should be noted that the action of the revolutionary leader affects the utility of the incumbent only indirectly through the leader's influence on the behavior of citizens.

The timing of the game is now as follows:

1. The incumbent, I , chooses the level of repression, $\rho \in [\underline{\rho}, \bar{\rho}]$.
2. Nature determines the type, $\theta \in \{p, i\}$, of the revolutionary leader, L_θ . Her type is a leader's private information, whereas the probability of acquiring an ideological leader, $\pi \in (0, 1)$, is common knowledge.
3. The revolutionary leader, L_θ , observes her type, θ , the level of repression, ρ , and chooses whether to agitate against the regime, $\lambda_\theta \in \{0, 1\}$.
4. Citizens observe the level of repression, ρ , and the revolutionary leader's action, λ , but not her type, θ . Based on ρ and λ , citizens choose whether or not to follow the revolutionary leader and revolt against the incumbent regime, $\alpha \in \{0, 1\}$.
5. If citizens revolt, the incumbent is replaced by the revolutionary leader. She decides whether to share power with citizens $\delta_\theta \in \{0, 1\}$. Then, payoffs are realized.

I analyze the behavior of the incumbent regime, the revolutionary leader, and citizens, using the concept of Perfect Bayesian Equilibrium. This concept requires players to choose strategies which maximize their (expected) utility and that they update their beliefs according to Bayes' rule whenever applicable. I concentrate on pure strategies and solve the game by backward induction, starting with the last period's policies. Equilibrium choices are indicated by a star.

⁷ Following Acemoglu and Robinson (2006), I do not analyze the problem of free-riding or coordination within the group of citizens. Instead, I focus on citizens' uncertainty about the character and motivation of the revolutionary leader, as well as the measures the leader might take to reduce this uncertainty and foster identification with the revolutionary movement.

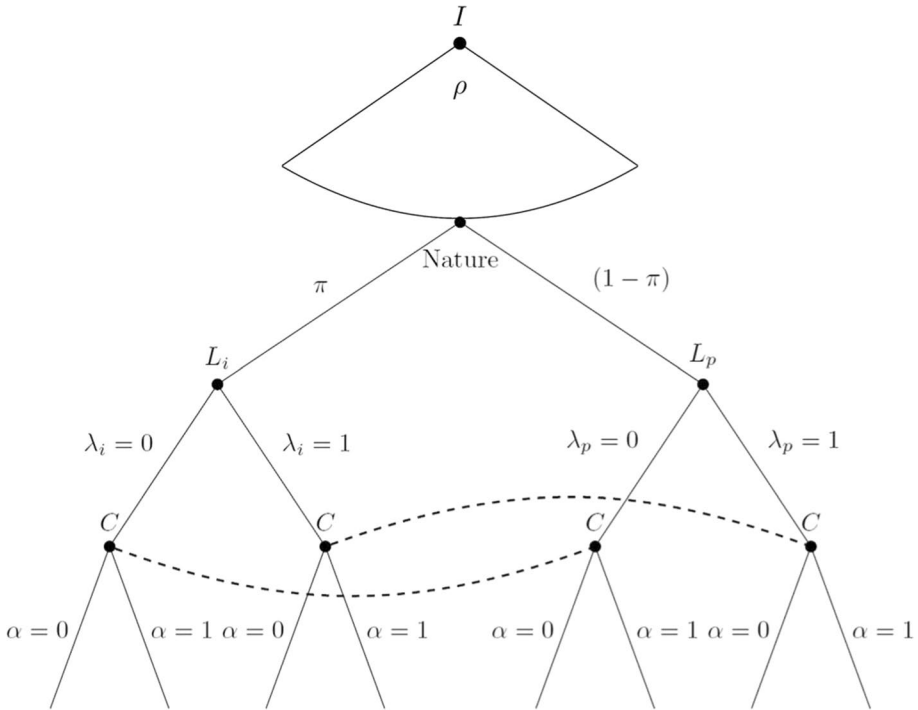


Fig. 1 Reduced form representation of the revolutionary game

4 Analysis

4.1 Last period policies

In the last period, there are three potential policymakers. In each setting, the person holding office simply chooses her preferred policy: (1) If the revolution failed, the autocratic incumbent remains in power and there is no power sharing. (2) If the revolution succeeded and a power motivated revolutionary leader came to power, she does not share power with citizens ($\delta_p^* = 0$). (3) If the revolution succeeded and the revolutionary leader is ideologically motivated, she does share power with citizens and changes the political regime fundamentally ($\delta_i^* = 1$). It is the citizens' choice to revolt or remain passive, which determines whether the incumbent or a revolutionary leader is the policymaker in the last period. The citizens' choice depends on their beliefs about the type of the revolutionary leader and the level of repression. Figure 1 illustrates the reduced form of the game.

4.2 Beliefs and best responses of citizens

Given the last period's equilibrium policies, the level of repression, ρ , and the revolutionary leader's action, λ , citizens decide whether to take part in revolutionary actions. They choose their best response, denoted by α^{BR} , in order to maximize their expected utility.

Citizens anticipate that a power motivated leader won't change the political system to their advantage once she is in power, whereas an ideologically motivated leader would. However, citizens cannot observe the political motivation of a leader directly. They know only the ex ante probability of the different types of leaders and update their beliefs about the leader's type dependent on her action λ . Thus, citizens' expected utility depends on their belief that a revolutionary leader, who chose λ , is ideologically motivated. Technically, $\mu(\delta = 1|\lambda)$ in Eq. 1 is replaced by $\mu(i|\lambda)$. Thus, the citizens' best response, α^{BR} , now reads:

$$\alpha^{BR}(\lambda, \rho) = \begin{cases} 0 & \text{if } \mu(i|\lambda)e \leq c(\rho) \\ 1 & \text{if } \mu(i|\lambda)e > c(\rho) \end{cases} \tag{5}$$

$\mu(i|\lambda)$ is calculated using Bayes' rule,

$$\mu(i|\lambda) = \frac{Pr(i)Pr(\lambda|i)}{Pr(i)Pr(\lambda|i) + Pr(p)Pr(\lambda|p)}, \tag{6}$$

where $Pr(i)$, and $Pr(p)$ denote the ex ante probability of acquiring a revolutionary leader of the corresponding type, given by π . $Pr(\lambda|i)$, as well as $Pr(\lambda|p)$, denote the revolutionary leader's choice, λ_i or λ_p respectively. Thus, if citizens observe $\lambda = 1$, their belief is given by

$$\mu(i|\lambda = 1) = \frac{\pi \lambda_i(\rho)}{\pi \lambda_i(\rho) + (1 - \pi) \lambda_p(\rho)} \tag{7}$$

and

$$\mu(i|\lambda = 0) = \frac{\pi(1 - \lambda_i(\rho))}{\pi(1 - \lambda_i(\rho)) + (1 - \pi)(1 - \lambda_p(\rho))} \tag{8}$$

if $\lambda = 0$. Thus, if citizens observe harsh criticism and agitation against the incumbent ($\lambda = 1$), their best response reads:

$$\alpha^{BR}(\lambda = 1, \rho) = \begin{cases} 0 & \text{if } \frac{\pi \lambda_i(\rho)}{\pi \lambda_i(\rho) + (1 - \pi) \lambda_p(\rho)} e \leq c(\rho) \\ 1 & \text{if } \frac{\pi \lambda_i(\rho)}{\pi \lambda_i(\rho) + (1 - \pi) \lambda_p(\rho)} e > c(\rho) \end{cases} \tag{9}$$

and

$$\alpha^{BR}(\lambda = 0, \rho) = \begin{cases} 0 & \text{if } \frac{\pi(1 - \lambda_i(\rho))}{\pi(1 - \lambda_i(\rho)) + (1 - \pi)(1 - \lambda_p(\rho))} e \leq c(\rho) \\ 1 & \text{if } \frac{\pi(1 - \lambda_i(\rho))}{\pi(1 - \lambda_i(\rho)) + (1 - \pi)(1 - \lambda_p(\rho))} e > c(\rho) \end{cases} \tag{10}$$

if they observe no criticism ($\lambda = 0$).

Best responses of citizens, α^{BR} , are dependent on the choices of the revolutionary leader and those of the incumbent. I analyze the revolutionary leaders' decision to criticize the incumbent in the next section.

4.3 Revolutionary leader's choice

After getting to know her type θ , the revolutionary leader maximizes her expected utility, $\mathbb{E}[U^{L_\theta}]$, by choosing her best response λ_θ^{BR} , depending on the anticipated behavior of citizens, α , and the observed level of repression, ρ :

$$\mathbb{E}[U^{L_\theta}(\lambda_\theta^{BR}|\alpha, \rho)] \geq \mathbb{E}[U^{L_\theta}(\lambda_\theta|\alpha, \rho)] \quad \forall \lambda_\theta. \quad (11)$$

Taking into account her own equilibrium policy choice in the last period by inserting $\delta_i = \delta_i^* = 1$ into Eq. 2 and differentiating between citizen reactions, the expected utility of an ideologically motivated revolutionary leader, L_i , who chooses to criticize the incumbent, $\lambda_i = 1$, reads

$$\mathbb{E}[U^{L_i}(\lambda_i = 1|\alpha(\lambda = 1), \rho)] = \begin{cases} x + \Delta - c_i(\rho) & \text{if } \alpha(\lambda = 1) = 1 \\ -c_i(\rho) & \text{if } \alpha(\lambda = 1) = 0 \end{cases} \quad (12)$$

and

$$\mathbb{E}[U^{L_i}(\lambda_i = 0|\alpha(\lambda = 0), \rho)] = \begin{cases} x + \Delta & \text{if } \alpha(\lambda = 0) = 1 \\ 0 & \text{if } \alpha(\lambda = 0) = 0 \end{cases} \quad (13)$$

if she is passive ($\lambda_i = 0$).

Analogously, inserting $\delta_p = \delta_p^* = 0$ into Eq. 3 and differentiating between citizen reactions yields the expected utility of a power motivated leader, L_p . Her utility is given by

$$\mathbb{E}[U^{L_p}(\lambda_p = 1|\alpha(\lambda = 1), \rho)] = \begin{cases} x - c_p(\rho) & \text{if } \alpha(\lambda = 1) = 1 \\ -c_p(\rho) & \text{if } \alpha(\lambda = 1) = 0 \end{cases} \quad (14)$$

if she criticizes the incumbent ($\lambda_p = 1$), and

$$\mathbb{E}[U^{L_p}(\lambda_p = 0|\alpha(\lambda = 0), \rho)] = \begin{cases} x & \text{if } \alpha(\lambda = 0) = 1 \\ 0 & \text{if } \alpha(\lambda = 0) = 0 \end{cases} \quad (15)$$

in case that she is passive ($\lambda_p = 0$).

It applies to both types of leader, that they derive the maximum possible benefit from coming to power without having to take action themselves. This is the case if citizens revolt, although they observe moderate or no criticism ($\lambda_\theta = 0$ in combination with $\alpha(\lambda = 0) = 1$ for $\theta \in \{i, p\}$). Furthermore, both types of leader obtain the lowest payoff, if they decide to criticize the incumbent regime harshly, but their criticism does not mobilize the citizens to take revolutionary actions ($\lambda_\theta = 1$ in combination with $\alpha(\lambda = 1) = 0$ for $\theta \in \{i, p\}$).

The preference order of the remaining two outcomes (active leader in combination with active citizens, and passive leaders in combination with passive citizens), depends on the ratio of potential benefits from gaining office to the perceived cost of agitation. This order may differ between types. If the potential benefits of holding office outweigh the cost of agitation, a leader prefers the combination of agitation and revolting citizens over the passive scenario.

An ideologically motivated leader's best response to the citizens' strategy choices is as follows:

If citizens remain passive regardless of the leader's action ($\alpha(\lambda = 1) = 0$ combined with $\alpha(\lambda = 0) = 0$), the utility-maximizing choice is to remain passive herself ($\lambda_i^{BR} = 0$), as the cost of agitation, $c_i(\rho)$, is not compensated for by any returns in this case:

$$\lambda_i^{BR}(\alpha(\lambda = 1) = 0, \alpha(\lambda = 0) = 0, \rho) = 0 \quad (16)$$

The same is true, if citizens revolt regardless of the leader's action ($\alpha(\lambda = 1) = 1$ combined with $\alpha(\lambda = 0) = 1$), as there is no additional benefit from agitation:

$$\lambda_i^{BR}(\alpha(\lambda = 1) = 1, \alpha(\lambda = 0) = 1, \rho) = 0 \quad (17)$$

If citizens would follow a passive leader, but would not support someone who agitates against the incumbent ($\alpha(\lambda = 1) = 0, \alpha(\lambda = 0) = 1$), it is again utility-maximizing for an ideological leader to remain passive. Deviating is not only associated with the cost of agitation, but also with the loss of citizens' support in this case, thus:

$$\lambda_i^{BR}(\alpha(\lambda = 1) = 0, \alpha(\lambda = 0) = 1, \rho) = 0 \quad (18)$$

Finally, if her actions motivate otherwise passive citizens to support her ($\alpha(\lambda = 1) = 1, \alpha(\lambda = 0) = 0$), and, in addition, the benefits of gaining office ($x + \Delta$) outweigh the cost of agitation ($c_i(\rho)$), an ideological leader's decision to agitate against the incumbent regime is the best response ($\lambda_i^{BR} = 1$). Otherwise remaining passive is again her utility-maximizing strategy choice ($\lambda_i^{BR} = 0$), that is:

$$\lambda_i^{BR}(\alpha(\lambda = 1) = 1, \alpha(\lambda = 0) = 0, \rho) = \begin{cases} 0 & \text{if } x + \Delta \leq c_i(\rho) \\ 1 & \text{if } x + \Delta \geq c_i(\rho) \end{cases} \quad (19)$$

Analogously, a power motivated leader's decision to agitate against the incumbent regime is only the best response ($\lambda_p^{BR} = 1$), if her actions motivate otherwise passive citizens to follow her ($\alpha(\lambda = 1) = 1, \alpha(\lambda = 0) = 0$), and, in addition, her benefits from gaining office (x) outweigh the cost of agitation ($c_p(\rho)$). In all other cases, remaining passive is a power motivated leader's utility-maximizing strategy choice ($\lambda_p^{BR} = 0$). More technically, a power motivated leader's best response to citizens' strategy choices reads:

$$\lambda_p^{BR}(\alpha(\lambda = 1) = 0, \alpha(\lambda = 0) = 0, \rho) = 0 \quad (20)$$

$$\lambda_p^{BR}(\alpha(\lambda = 1) = 1, \alpha(\lambda = 0) = 1, \rho) = 0 \quad (21)$$

$$\lambda_p^{BR}(\alpha(\lambda = 1) = 0, \alpha(\lambda = 0) = 1, \rho) = 0 \quad (22)$$

$$\lambda_p^{BR}(\alpha(\lambda = 1) = 1, \alpha(\lambda = 0) = 0, \rho) = \begin{cases} 0 & \text{if } x \leq c_i(\rho) \\ 1 & \text{if } x \geq c_i(\rho) \end{cases} \quad (23)$$

4.4 Equilibria of the signaling subgame

For a given level of repression ρ and given equilibrium policy choices in the last period, the revolutionary game simplifies to a basic signaling game between citizens and revolutionary leader, where citizens and the revolutionary leader select mutually consistent best

responses. This game is characterized by the following Perfect Bayesian Equilibria, which follow directly from the analysis above:

4.4.1 Separating equilibrium with $\lambda_i^* = 1, \lambda_p^* = 0$

Proposition 1 *If $e > c(\rho)$, $x + \Delta \geq c_i(\rho)$, and $x \leq c_p(\rho)$, there exists a unique Perfect Bayesian Equilibrium, where*

$$\lambda_i^* = 1, \lambda_p^* = 0, \delta_i^* = 1, \delta_p^* = 0,$$

$$\alpha^*(\lambda = 1) = 1, \alpha^*(\lambda = 0) = 0,$$

$$\mu(i|\lambda = 0) = 0 \text{ and } \mu(i|\lambda = 1) = 1.$$

In this equilibrium, the level of repression deters power motivated leaders from agitation, whereas ideologically motivated leaders criticize the regime harshly. Thus, after observing her action, citizens are able to infer the leader's political motives. If they observe that the leader agitated against the incumbent, they follow her and revolt, as the expressive utility from being an active supporter of a revolutionary movement, whose unambiguous goal is to transform the regime, outweighs the cost of potential punishments.

4.4.2 Pooling equilibria with active revolutionary leaders, $\lambda = 1$

Proposition 2 *If $\pi e > c(\rho)$, $x + \Delta \geq c_i(\rho)$, and $x \geq c_p(\rho)$, there exist a continuum of Perfect Bayesian Equilibria, where*

$$\lambda_i^* = 1, \lambda_p^* = 1, \delta_i^* = 1, \delta_p^* = 0,$$

$$\alpha^*(\lambda = 1) = 1, \alpha^*(\lambda = 0) = 0,$$

$$\mu(i|\lambda = 0) \leq \frac{c(\rho)}{e} \text{ and } \mu(i|\lambda = 1) = \pi.$$

In these equilibria, both types of leaders agitate against the incumbent. Although citizens can not infer the leader's type from her action, they revolt, as the cost of revolutionary actions does not outweigh the potential benefits. However, a deviation from equilibrium agitation to moderate criticism would result in passive citizens. This is due to their off-equilibrium belief, that it would be relatively unlikely for moderate or passive leaders to be ideologically motivated.

4.4.3 Pooling equilibria with passive revolutionary leaders, $\lambda = 0$

In addition, there are four sets of different pooling equilibria with passive revolutionary leaders.

Proposition 3 *If $\pi e \leq c(\rho)$, $x + \Delta \leq c_i(\rho)$, and $x \leq c_p(\rho)$, there exist a continuum of Perfect Bayesian Equilibria, where*

$$\lambda_i^* = 0, \lambda_p^* = 0, \delta_i^* = 1, \delta_p^* = 0,$$

$$\alpha^*(\lambda = 1) = 1, \alpha^*(\lambda = 0) = 0,$$

$$\mu(i|\lambda = 0) = \pi \text{ and } \mu(i|\lambda = 1) > \frac{c(\rho)}{e}.$$

In this first set of passive pooling equilibria, the level of repression is high enough to deter both types of leaders, as well as citizens, from action. However, citizens would follow a leader who chose off-equilibrium agitation, based on their off-equilibrium beliefs.

Proposition 4 *If $\pi e \leq c(\rho)$, there exist a continuum of Perfect Bayesian Equilibria, where*

$$\lambda_i^* = 0, \lambda_p^* = 0, \delta_i^* = 1, \delta_p^* = 0,$$

$$\alpha^*(\lambda = 1) = 0, \alpha^*(\lambda = 0) = 0,$$

$$\mu(i|\lambda = 0) = \pi \text{ and } \mu(i|\lambda = 1) \leq \frac{c(\rho)}{e}.$$

The second set is characterized by high cost and beliefs, which, in combination, completely prevent agitation and revolutionary actions.

Proposition 5 *If $\pi e > c(\rho)$, there exist a continuum of Perfect Bayesian Equilibria, where*

$$\lambda_i^* = 0, \lambda_p^* = 0, \delta_i^* = 1, \delta_p^* = 0,$$

$$\alpha^*(\lambda = 1) = 1, \alpha^*(\lambda = 0) = 1,$$

$$\mu(i|\lambda = 0) = \pi \text{ and } \mu(i|\lambda = 1) > \frac{c(\rho)}{e}.$$

By contrast, in the third set of passive pooling equilibria, the potential cost of punishment perceived by the citizens is so low, that citizens revolt in any case, even though they receive no new information about the leader's type from observing her actions.

Proposition 6 *If $\pi e > c(\rho)$, there exist a continuum of Perfect Bayesian Equilibria, where*

$$\lambda_i^* = 0, \lambda_p^* = 0, \delta_i^* = 1, \delta_p^* = 0,$$

$$\alpha^*(\lambda = 1) = 0, \alpha^*(\lambda = 0) = 1,$$

$\mu(i|\lambda = 0) = \pi$ and $\mu(i|\lambda = 1) \leq \frac{c(\rho)}{e}$, which is not intuitive, since it implies $\mu(i|\lambda = 1) \leq \pi$.

In this last set of passive pooling equilibria, the potential cost of punishment perceived by the citizens is low, citizens revolt if they observe a moderate revolutionary

leader, but would stay passive in case that they would observe harsh criticism. However, the set of beliefs that supports this equilibrium is not intuitive, as citizens believe that a leader, who deviates from equilibrium play and agitates against the incumbent, is less or equally likely ideologically motivated compared to the ex ante probability, even though the cost of deviation is lower for ideologically motivated leaders compared to power motivated ones.

4.4.4 No separating equilibria with $\lambda_i^* = 0, \lambda_p^* = 1$ if $\Delta > c_i(\rho) - c_p(\rho)$

Proposition 7 *If $\Delta > c_i(\rho) - c_p(\rho)$ for all ρ , there exist no Perfect Bayesian Equilibria, where the ideologically motivated leader remains passive ($\lambda_i = 0$), while the power motivated leader criticizes the regime and accepts the punishment ($\lambda_p = 1$). This is always the case, if the perceived cost of punishment is not lower for solely power-orientated leaders compared to ideological ones.*

Finally, there exist no separating equilibria, where the ideologically motivated leader remains passive, while the power motivated leader criticizes the regime and accepts the punishment, as the potential gains from office are higher for ideologically motivated leaders in contrast to the perceived cost of agitation. Thus, if agitation is the best response for a power motivated leader, it follows directly that being passive is not utility-maximizing for a leader who is motivated ideologically.

Given citizens' and revolutionary leaders' equilibrium choices in the signaling subgame, I analyze the incumbent's choice of repression in the next section.

4.5 Incumbent's choice of repression

Given the equilibrium choices of citizens and the revolutionary leader in the signaling subgame, the incumbent chooses the level of repression, ρ^* , which maximizes his expected utility

$$\mathbb{E}[U^I(\rho^*|\alpha^*, \lambda^*)] \geq \mathbb{E}[U^I(\rho|\alpha^*, \lambda^*)] \quad \forall \rho. \quad (24)$$

I assume that a level of repression, which is too low to deter citizens from taking action if they are uncertain about the leader's type, is also too low to prevent power motivated leaders from agitation. That is, $c(\rho) < \pi e \implies c_p(\rho) < x$. Then, choosing a level of repression $\rho : c(\rho) < \pi e$ supports three different sets of Perfect Bayesian Equilibria in the following subgame:

1. Pooling equilibria with agitating leaders ($\lambda^* = 1$) and conditionally active citizens ($\alpha^*(\lambda = 1) = 1, \alpha^*(\lambda = 0) = 0$) as in Proposition 2.
2. Pooling equilibria with passive leaders ($\lambda^* = 0$) and unconditionally active citizens ($\alpha^*(\lambda = 1) = 1, \alpha^*(\lambda = 0) = 1$) as in Proposition 5.
3. Pooling equilibria with passive leaders ($\lambda^* = 0$) and conditionally active citizens ($\alpha^*(\lambda = 1) = 0, \alpha^*(\lambda = 0) = 1$) as in Proposition 6.

What these equilibria have in common is that the level of repression does not deter citizens from taking revolutionary actions, although they cannot infer the leader's type from her action. The cost of revolutionary actions does not outweigh the potential benefits. Thus, the incumbent gets replaced by the revolutionary leader in each of these scenarios. Consequently, the incumbent's expected utility is zero,

$$\mathbb{E}[U^I(\rho|\alpha^*, \lambda^*)] = 0 \quad \forall \rho : c(\rho) < \pi e. \quad (25)$$

Now, if the incumbent raises the level of repression ρ , such that $c(\rho) \geq \pi e$, citizens are not willing to support a leader, if they are uncertain about her type. These levels of repression are compatible with the following sets of Perfect Bayesian Equilibria in the Signaling subgame:

1. Pooling equilibria with passive leaders ($\lambda^* = 0$) and unconditionally passive citizens ($\alpha^*(\lambda = 1) = 0$, $\alpha^*(\lambda = 0) = 0$) as in Proposition 4.
2. Additionally, if $c_i(\rho) \leq x + \Delta$, $c_p(\rho) \geq x$ and $c(\rho) \leq e$, a separating equilibrium with $\lambda_i^* = 1$, $\lambda_p^* = 0$ and conditionally active citizens ($\alpha^*(\lambda = 1) = 1$, $\alpha^*(\lambda = 0) = 0$) as in Proposition 1.
3. Finally, if $c_i(\rho) \geq x + \Delta$ and $c_p(\rho) \geq x$, pooling equilibria with passive leaders ($\lambda^* = 0$) and conditionally passive citizens ($\alpha^*(\lambda = 1) = 1$, $\alpha^*(\lambda = 0) = 0$) as in Proposition 3.

In case 1.) and 3.) the incumbent remains in power with certainty and his expected utility is

$$\mathbb{E}[U^I(\rho|\alpha^*, \lambda^*)] = x - c_I(\rho). \quad (26)$$

Moreover, if the level of repression is high enough to establish a functioning signaling device but, simultaneously, does not prevent convinced citizens from revolutionary actions as in case 2.), the incumbent gets replaced if an ideologically motivated leader challenges him. If the revolutionary leader is power motivated, the incumbent's power remains unchallenged and he stays in office. Thus, his incumbents expected utility in case 2.) reads

$$\mathbb{E}[U^I(\rho|\alpha^*, \lambda^*)] = (1 - \pi)(x - c_I(\rho)). \quad (27)$$

Interestingly, case 2.) may require a higher level of repression than case 1.), as the level of repression needs additionally to deter power motivated revolutionary leaders from agitation. Consequently, there may be a discontinuity in the range of intermediate levels of repression, where choosing higher levels does not necessarily imply that an incumbent's probability of staying in office is higher.

Finally, raising the level of repression even further, such that $c(\rho) \geq e$, would guarantee the incumbent's hold on power, because citizens would remain passive, even when they are certain about a revolutionary leader's intention to change the current autocratic regime to their advantage in the event of a leadership turnover. Nevertheless, choosing such high levels might not be optimal for the incumbent, as the net value of actually holding office is relatively low in this case. Consequently, if the probability for non-power motivated revolutionary leaders is relatively low, the expected utility might be higher in the separating equilibrium in case 2.), as the higher net value of holding office might be worth taking the low risk of losing power.

However, as long as the value from holding office exceeds the cost of repression ($x > c_I(\rho)$), a necessary condition for the incumbent's optimal choice of repression, ρ^* , is that the level of repression prevents citizens from taking action in cases when they are

uncertain about the revolutionary leader's type, that is $c(\rho^*) \geq \pi e$. The prerequisite for this is that the autocratic incumbent has sufficient deterrent repressions at his disposal ($c(\bar{\rho}) \geq c(\rho^*)$), which might not always be the case. Then, for any given response of citizens, the incumbent maximizes his utility by selecting the lowest possible level of repression, as higher levels of repression lower the net value of holding office. The exact level of optimal repression depends on the cost functions of the citizens and revolutionary leaders. I discuss the empirical implications of the model and its limitations in the next section.

5 Discussion

The theoretical model suggests that autocratic rulers in non-strict autocracies, lacking the ability to employ sufficient deterrent repressions, are less likely to maintain their grip on power, in contrast to rulers in strict and repressive regimes, who tend to enjoy greater stability. This hypothesis aligns with empirical findings (Escribà-Folch, 2013), which indicate a higher likelihood of revolutions occurring in less repressive regimes.

The model also suggests that leaders who have experienced severe repression are more inclined to transform the political system in favor of citizens if they come into power. This is because an effective selection mechanism in repressive regimes deters purely power-motivated revolutionary leaders from taking action. However, the narrative that convinced, ideologically motivated leaders are willing to self-sacrifice for the people is certainly overly simplistic and naive. As Kim (2018) points out, successful revolutionary leaders are not only often ideologically motivated, risk tolerant and pursue radical social and political transformations. He also finds that their idea of radical transformation is often used to legitimize violence against groups of citizens. If ideologically motivated leaders gain power, they are more likely to commit mass killings of unarmed citizens than other leaders. Moreover, a fundamental change in an autocratic regime does not necessarily lead to a democratization of the political system. Cases such as the Iranian revolution show that this is not always the case Burns (1996). Ideological and political beliefs about what constitutes radical change for the better can vary widely. A recent empirical study by Callais and Young (2023) examines changes in the design of constitutions in cases of regime changes. They find that constitutions following a successful revolution are between 22 and 28 percent more likely to be associated with a de facto democracy. However, the study does not distinguish between strict and non-strict regimes or levels of repression.

The analysis is further limited in the following ways. First, I focus on the interaction between identical citizens and revolutionary leaders and how they challenge the power of the incumbent. I thereby ignore heterogeneous interests among citizens and possible differences in the ideological motivations of leaders. Diverging preferences among citizens and heterogeneous ideological motivations among ideological leaders might make identification with the leader's political goals more difficult and may allow the incumbent to play citizens off against each other. For example, Acemoglu et al. (2004) analyze how an autocrat can use a 'divide-and-rule'-strategy to appropriate private benefits from holding office. The desire to impose one's ideology on others has been formally examined by Bernholz (2001). However, if the desire of citizens to change the political system outweighs other interests, and identification with the revolutionary movement is still possible, this simplification might be acceptable.

Moreover, autocratic societies are organized more hierarchically than reflected by the model, as an incumbent usually surrounds himself with a powerful elite, which secures his power. Within this inner circle, individuals are committed to each other and fear a change in leadership, as they might lose their privileges if the new leader forges other alliances to secure his power. The various loyalty problems between elite and incumbent are analyzed, for example, within the 'selectorate' framework, developed by Bueno et al. (2005). However, Caspar and Tyson (2014) and Gerling (2017) show that mass protests might help elites to coordinate on coup activities. This aspect could be incorporated into the model by assuming that citizens' actions do not mechanically determine the next officeholder, but rather influence the incumbent's hazard rate. Nevertheless, if the incumbent's likelihood of remaining in office is reduced by mass protests, these adjustments would not change the results qualitatively.

Furthermore, it may be reasonable to allow expressive utility to increase as repression increases, since higher (potential) punishments may increase group identification and reduce loyalty to the incumbent. This assumption would lead to a more frequent occurrence of pooling equilibria with active citizens as in Proposition 2, 5, and 6. This is consistent with empirical evidence on the stability of political regimes, as Sanhueza (1990) finds that widespread dissatisfaction with leaders in autocratic regimes (which would be fostered by an increase in repression) significantly increases their hazard rate.

Regarding the incumbent's scope of action, the opportunity to share power and democratize the regime in order to prevent being overthrown is worth consideration, and integrable into the model. If the expected loss in value of holding office by giving up power is less than the cost savings of democratization versus repression, the incumbent would choose to share power. This aligns with findings from Boix and Svobik (2013), Gandhi and Przeworski (2006), and Inata (2021), indicating that power-sharing may be an optimal strategy for an autocratic incumbent facing a credible threat of revolution and seeking to maintain control.

Furthermore, revolutionary dynamics may be influenced by foreign powers, who might back up the incumbent regime or oppose against it, as Tolstrup et al. (2019) show. Further research could include these players.

Finally, the model is limited to the analysis of revolutionary dynamics in autocratic regimes and does not apply to democracies, as within democratic regimes, citizens have a much easier alternative they can use to express their ideological beliefs than that of joining a revolutionary movement. They can simply use their vote to express themselves and replace the incumbent at virtually no cost. Furthermore, agitation and violent actions against the incumbent would normally be considered illegitimate by citizens in a democracy when there is the possibility of legitimate opposition.

6 Conclusion

I analyze the interplay of repression, criticism and revolutionary actions in non-democratic regimes within a dynamic revolutionary game with incomplete information about the revolutionary leaders' type. In this game, the incumbent uses repression to secure power, as he is contested by a revolutionary leader who wants to replace him.

The revolutionary leader needs to mobilize citizens for a successful leadership turnover. She may criticize the incumbent and accept the punishment for doing so, in order to signal her (unobservable) political motivation and gain support. Her political motivation is

decisive for politics in the event that she gains power. An ideologically motivated leader wants to change the polity to citizens' advantage, while a solely power motivated leader prefers to leave the autocratic political system unchanged.

After observing the leader's signal, citizens decide whether to follow the revolutionary leader in order to replace the incumbent. While revolutionary action bears the risk of being punished by the incumbent regime, citizens may benefit from a leadership change, as they may hope for a better leader, who wants to change the political system. Although the regime change itself is a public good, individuals may experience expressive utility from being part of a movement if they can identify with the leader of that movement, as they have a common goal, namely to fundamentally change the political system.

If the expressive utility from being part of a revolutionary movement is sufficiently high, there exists a Perfect Bayesian Equilibrium, where ideologically motivated revolutionary leaders bear the cost of being punished, whereas power motivated leaders do not. In this case, citizens only follow a revolutionary leader and take actions against the regime, if they observe her agitating. Otherwise, they remain passive. Under these conditions, leaders need to fail first and suffer from repression before they can succeed.

From the incumbent's perspective, finding the optimal level of repression is not straightforward. High levels of repression are associated with low net benefits from holding office, whereas low levels do not deter citizens from revolutionary actions. While increasing repression from a low level may deter citizens at first, intermediate levels of repression may help establish a trustworthy revolutionary leader whom people actually want to follow.

The theoretical analysis implies that leaders who themselves suffered from severe repression are more likely to alter the political system to citizens' advantage if they come to power. Whether this is actually the case, remains an open (empirical) question, although historical examples like Nelson Mandela and Mahatma Gandhi support this view. Fidel Castro's political legacy is more controversial. Indisputably, he changed Cuba's society and political system fundamentally. Nonetheless, since he did not democratize the country, it remains contentious to what extent citizens benefited from his seizure of power. The most recent cases where opposition leaders have suffered from repressions, such as Maria Koleznikova or Alexei Navalny, may reveal more over time.

Acknowledgements I am grateful to Thomas Apolte, Alexander Cukierman, Marina G. Petrova, Aloys Prinz, Horst Raff, and two anonymous referees, as well as the editors-in-chief, for their helpful suggestions. I would also like to thank the participants at the International Workshop on the Political Economy of Democracy and Dictatorship 2021 for their valuable comments.

Funding Open Access funding enabled and organized by Projekt DEAL.

Declarations

Conflict of interest The author(s) 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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References

- Acemoglu, D., Verdier, T., & Robinson, J. A. (2004). Kleptocracy and divide-and-rule: A model of personal rule. *Journal of the European Economic Association*, 2(2–3), 162–192.
- Acemoglu, D., & Robinson, J. A. (2006). *Economic origins of dictatorship and democracy*. Cambridge University Press.
- Akerlof, G. A., & Kranton, R. E. (2000). Economics and identity. *The Quarterly Journal of Economics*, 115(3), 715–753.
- Allen, D. W., & Reed, C. G. (2006). The duel of honor: Screening for unobservable social capital. *American Law and Economics Review*, 8(1), 81–115.
- Apolte, T. (2012). Why is there no revolution in North Korea?: The political economy of revolution revisited. *Public Choice*, 150(3), 561–578.
- Apolte, T. (2019). *Der Mythos der Revolution*. Springer.
- Bénabou, R., & Tirole, J. (2011). Identity, morals, and taboos: Beliefs as assets. *The Quarterly Journal of Economics*, 126(2), 805–855.
- Bernholz, P. (2001). Ideocracy and totalitarianism: A formal analysis incorporating ideology. *Public Choice*, 108, 33–75.
- Besley, T. J., & Kudamatsu, M. (2008). Making autocracy work. In E. Helpman (Ed.), *Institutions and economic performance*. Harvard University Press.
- Bueno de Mesquita, B., Smith, A., Siverson, R. M., & Morrow, J. D. (2005). *The logic of political survival*. The MIT Press.
- Bueno de Mesquita, E. (2010). Regime change and revolutionary entrepreneurs. *American Political Science Review*, 104(3), 446–466.
- Burns, G. (1996). Ideology, culture, and ambiguity: The revolutionary process in Iran. *Theory and Society*, 25, 349–388.
- Boix, C., & Svolik, M. W. (2013). The foundations of limited authoritarian government: Institutions, commitment, and power-sharing in dictatorships. *The Journal of Politics*, 75(2), 300–316.
- Callais, J. T., & Young, A. T. (2023). Revolutionary constitutions: Are they revolutionary in terms of constitutional design?. *Public Choice*.
- Casper, B. A., & Tyson, S. A. (2014). Popular protest and elite coordination in a coup d'état. *The Journal of Politics*, 76(2), 548–564.
- Chenoweth, E., Perkowski, E., & Kang, S. (2017). State repression and nonviolent resistance. *Journal of Conflict Resolution*, 61(9), 1950–1969.
- Davenport, C. (2007). State repression and political order. *Annual Review of Political Science*, 10(1), 1–23.
- Edmond, C. (2013). Information manipulation, coordination, and regime change. *Review of Economic Studies*, 80(4), 1422–1458.
- Escribà-Folch, A. (2013). Repression, political threats, and survival under autocracy. *International Political Science Review*, 34(5), 543–560.
- Feddersen, T., & Sandroni, A. (2006). A theory of participation in elections. *American Economic Review*, 96(4), 1271–1282.
- Finkel, S. E., Muller, E. N., & Opp, K.-D. (1989). Personal influence, collective rationality, and mass political action. *The American Political Science Review*, 83(3), 885–903.
- Gandhi, J., & Przeworski, A. (2006). Cooperation, cooptation, and rebellion under dictatorship. *Economics & Politics*, 18(1), 1–26.
- Gehlbach, S., Sonin, K., & Svolik, M. W. (2016). Formal models of nondemocratic politics. *Annual Review of Political Science*, 19(1), 565–584.
- Gerling, L. (2017). Urban protests, coups d'état and post-coup regime change. *Peace Economics, Peace Science and Public Policy*, 23(4).
- Gilli, M., & Li, Y. (2015). Coups, revolutions and efficient policies in autocracies. *European Journal of Political Economy*, 39, 109–124.
- Ginkel, J., & Smith, A. (1999). So you say you want a revolution: A game theoretic explanation of revolution in repressive regimes. *Journal of Conflict Resolution*, 43(3), 291–316.
- Goldstone, J. A. (2001). Toward a fourth generation of revolutionary theory. *Annual Review of Political Science*, 4(1), 139–187.
- Inata, K. (2021). Power-sharing negotiation and commitment in monarchies. *Public Choice*, 187(3), 501–518.
- Kim, N. K. (2018). Revolutionary leaders and mass killing. *Journal of Conflict Resolution*, 62(2), 289–317.
- Kingston, C. G., & Wright, R. E. (2010). The deadliest of games: The institution of dueling. *Southern Economic Journal*, 76(4), 1094–1106.
- Komarov, E. N. (1970). Mahatma Gandhi & the revolution. *India Quarterly*, 26(4), 368–389.

- Kramer, A. E. (2021). Navalny is moved to infirmary as his health declines. *The New York Times*.
- Livingston, A. (2018). Fidelity to truth: Gandhi and the genealogy of civil disobedience. *Political Theory*, 46(4), 511–536.
- Maanga, G. S. (2013). The relevance and legacy of Nelson Mandela in the twenty-first century Africa: An historical and theological perspective. *African Journal of History and Culture*, 5(5), 87–95.
- Mandela, N. (1993). South Africa's future foreign policy. *Foreign Affairs*, 72(5), 86–97.
- Olson, M. (1965). *The logic of collective action: Public goods and the theory of groups*. Harvard University Press.
- Pierskalla, J. H. (2010). Protest, deterrence, and escalation: The strategic calculus of government repression. *Journal of Conflict Resolution*, 54(1), 117–145.
- Sanhueza, R. (1990). The hazard rate of political regimes. *Public Choice*, 98(3), 337–367.
- Shadmehr, M., & Bernhardt, D. (2011). Collective action with uncertain payoffs: Coordination, public signals, and punishment dilemmas. *American Political Science Review*, 105(4), 829–851.
- Skierka, V. (2014). *Fidel Castro: A biography*. John Wiley & Sons.
- Tolstrup, J., Seeberg, M. A., & Glavind, J. G. (2019). Signals of support from great power patrons and the use of repression during nonviolent protests. *Comparative Political Studies*, 52(4), 514–543.
- Tullock, G. (1971). The paradox of revolution. *Public Choice*, 11, 89–99.
- Tullock, G. (1974). *The social dilemma: The economics of war and revolution*. University publications Blacksburg.
- Tullock, G. (1987). *Autocracy*. Springer.
- Vahabi, M., & Hassani-Mahmoei, B. (2016). The role of identity and authority from anarchy to order: Insights from modeling the trajectory of dueling in Europe. *Economic Modelling*, 55, 57–72.
- Vahabi, M., Batifoulier, P., & Da Silva, N. (2020). The political economy of revolution and institutional change: The elite and mass revolutions. *Revue d'économie politique*, 130(6), 855–889.

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