

# Rents from Power for a Dissident Elite and Mass Mobilization\*

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## Abstract

We study why the mass public follow a dissident group seeking regime change, if rents from change accrue only to the group. Our model predicts that higher rents decrease the incidence of public mobilization when the public observe the group's mobilization. Individuals in the broader public infer the group seeks rents from power only, confusing greed with correct information about the regime's strength. In contrast, when the public do not observe the group's mobilization, higher rents increase the incidence of public mobilization because rents facilitate coordination. Our model presents a non-coercive mechanism through which cohesive dissident groups seeking rents from power may have spurred seemingly spontaneous mobilizations that toppled autocratic governments in the past few decades.

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After massive mobilizations in 2011, three longstanding dictators were overthrown in the so-called Arab Spring—Zine El Abidine Ben Ali of Tunisia, Hosni Mubarak of Egypt, and Muammar el-Qaddafi of Libya. Despite the seemingly spontaneous mass participation of ordinary citizens in the mobilizations, three longstanding leaders of dissident groups came into high political office as a result—Moncef Marzouki from the Congress for the Republic party of Tunisia, Mohamed Morsi from the Muslim Brotherhood of Egypt, and Mohammed Magariaf from the National Front for the Salvation of Libya. Longstanding dissident leaders’ ascension to power as a result of collective action seems to be a general pattern, at least in the last few decades. Using the Domestic Conflict Event Data from Banks et al. (2015) for the period 1979-2012,<sup>1</sup> we find that members of an established and cohesive dissident group (legal or illegal) ended up controlling the new regime in 37 out of 42 cases (88%) in which the country’s chief executive was overthrown as a result of collective action.<sup>2</sup> In none of the remaining 5 cases of regime change preceded by collective action did a citizen who had no significant political or economic connections hold the country’s chief position.<sup>3</sup>

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<sup>1</sup>Most of the revolutions across the world after 1979 demanded free elections and transparency. The 1989 revolutions, the “Color” revolutions, and the Arab Spring are well-known examples. However, many of the revolutions before 1979 belong to the class of independence movements of former European colonies.

<sup>2</sup>We refer to “collective action” in this case to each situation in which there is at least one instance of general strikes (variable “Domestic 2” in Banks et al. 2015), or riots (variable “Domestic 6”), or anti-government protests (variable “Domestic 8”) for each country-year that have preceded, triggered, or caused the overthrow of the country’s chief executive during the period 1979-2012. We do not include military coups.

<sup>3</sup>From the remaining 5 cases, 2 of them feature a regime in which the incumbent chief executive swaps its position with another senior member of the incumbent elite (Ecuador 2005; and Yemen 2012); 2 of them feature no clear chief executive (Germany DR 1989;

In this paper we study why the mass public follow a dissident group (e.g., an opposition elite) seeking regime change, if the benefits from change accrue only to the group. This is an important question because it has been largely documented that dissident groups seeking regime change usually exert non-coercive influence over citizens. McCarthy and Zald (1977), for example, emphasize that mass movements are driven by political entrepreneurs who gain access to resources and create cohesive social movement organizations. Moreover, historical case studies of collective action leading to the overthrow of an incumbent often demonstrate that longstanding opposition leaders were instrumental in organizing mass demonstrations against the regime (for a well-documented example see the discussions about Iranian Revolution in 1979 by Kuran 1989, Kurzman 2009, and Shadmehr 2012).

The key idea in our model is that a sizable opposition group is pivotal if there is support from a large enough number of individual citizens. Each individual by him or herself, in contrast, is too small to drive change. Such difference in mobilization power between the opposition group and each individual grants the former a coordinating role. Coordination is at the core of mass mobilizations because each agent faces strategic uncertainty as to what others will do (see, e.g., Chong 2014). By mobilizing a contingent of loyal members, organized dissident groups reduce the uncertainty non-members face. In the 1979 Iranian revolution, for example, Ruhollah Khomeini, the cleric who masterminded the revolutionary mobilization process, was able to set up strategies to instill beliefs about the imminent collapse of the Shah's regime (Kuran 1989) when "[...]people were constantly guessing at the likelihood that other people would take to the streets, or go on strike, or demand the overthrow of the regime." (Kurzman 2009, p.10).

Coordination between the dissident group and each individual comprising the mass public

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Somalia 1991); and 1 of them (Guinea 2007) features a diplomat (who mediated conflict between incumbent and opposition elites) coming to power. See Table on the cases of regime change in the Online Appendix for details.

is facilitated by various structural factors (see e.g., Skocpol 1979). For example, the ability of the dissident group to draw upon ideologies, norms, and rituals (see e.g., Kurzman 2009); use international networks (see e.g., Skocpol 1988); utilize existent institutions to manipulate citizens' beliefs about the strength of the regime (see e.g., Little 2012; Gailmard and Patty 2012; Hollyer, Rosendorff, Vreeland 2015) and cater to grievances and anti-regime sentiments in the population (see e.g., Finer (1962); Bueno de Mesquita (2010); Passarelli (2013)) has been at the core of the analysis. To complement this literature, we study how the size of the rents the dissident group extracts from gaining power and the quality of information about the strength of the current regime affect mass protest. We posit that such rents and information have nuanced effects on mass public behavior.

Incentives, in the form of net benefits to those who participate in a successful revolution or net costs paid by those who refrain from doing so, are crucial to overcome the protest participation dilemma (see, e.g., Moore 1995). Just as incumbents might punish those who took part in a failed revolution, dissident groups that seize power after a successful revolution might reward former protesters (Lichbach 1998; Casper and Smith 2014). Dissident groups usually seize the rents from power too. Rents come from appropriation of the state apparatus (Tilly 1978) or the monopoly of corruption in states with weak or “extractive” institutions (Quinlivan 1999; Acemoglu and Robinson 2012; Boix and Svolik 2013; Dragu and Polborn 2013). As a result, rents do not distribute equally among those who mobilize. While the dissident group seizes power, the mass of individuals are often worse off under the new regime (see e.g., Tocqueville 1866; Kuran 1989; Shadmehr and Bernhardt 2011). Our model allows for the possibility of conflicting interests between the dissident elites and the mass public.

High rents from power may encourage the dissident group to mobilize.<sup>4</sup> Mobilization of

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<sup>4</sup>Rents have been shown to be important in the extant literature on armed conflict (see e.g. Hirshleifer 2001; Reed, 2003; Collier and Hoeffler, 2004; Humphreys 2005; Blattman and Miguel 2010).

the dissident group, however, does not necessarily lead to mass public mobilization against the current regime. On the one hand, individuals comprising the mass public may follow the group’s mobilization because it reveals that the incumbent regime is weak. On the other hand, individuals may refrain from following because they believe the dissident group seeks the rents from power only, confusing the greed of its members with correct information about the regime’s strength (see e.g., Piven and Cloward (1979); Lohmann 1994). Rents therefore may lead to nuanced mobilization behavior, as it depends on whether the dissident group publicly moves first. In our model, we consider mobilization decisions that happen “simultaneously,” (i.e., each individual responds to its private information only) and decisions in which the dissident group mobilizes first.

Considering different timings of mass mobilization is important not only because current theories of mass participation posit information at the heart of collective action (see e.g., Lohmann 1994, Little 2012, Chwe 2013, Bueno de Mesquita 2010), but because information about the regime interplays with rents and the timing of decisions. For example, a large enough number of individuals taking to the streets may reveal, to those in doubt, the regime is weak. A cohesive dissident group may use its organizational resources to mobilize, thereby indicating that the regime is weak enough to fall. Our model shows that when the dissident group moves first the mass public becomes less aggressive against the regime as rents from power for the group increase.<sup>5</sup> This is consistent with the information cascade arguments in Piven and Cloward (1979) and Lohmann (1994). This result, however, does not hold when agents move simultaneously. Our model shows that rents for the dissident group may actually *increase* the incidence of mass public mobilization when agents’ decisions are simultaneous. Rents from power in this case encourage the dissident group to mobilize regardless of its

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<sup>5</sup>We use the word “aggressiveness” to refer to an increased proneness to mobilize against the regime. Its precise meaning should be clear when we discuss equilibrium behavior in the model.

information. The size of the group motivates individuals in the mass public to coordinate with the group against the regime in this case.

This suggests that seemingly spontaneous mass public mobilization such as Tunisia 2011 or Egypt in 2011, may have been backed by strong opposition groups (e.g. the Congress for the Republic party in Tunisia or the Muslim Brotherhood in Egypt) even without their salient participation. Although this is an interesting and open empirical question, the fact that longstanding leaders of dissident groups came to power may suggest that they played some role in collective action. Our paper provides several prescriptions of behavior that lead to empirical hypotheses (see Section 5 for an initial descriptive analysis based on the results of the model).

The task is to study mechanisms through which rents and information affect the mass public's aggressiveness against the current regime. We separate our analysis in two: 1) agents' actions are not observed (the "simultaneous" case), and 2) the dissident group decides to publicly mobilize first (the "sequential" case). Our model provides a framework to answer the following questions: Is it the case that rents from power induce dissident group's mobilization? If so, do these rents spur mass mobilization? If the dissident group's assessment about the strength of the regime is no better than the individuals' assessment, do rents still induce the dissident group to mobilize? Are individuals in the broader public willing to mobilize in this situation?

To address these questions, we propose a model of regime change built upon Corsetti et al. (2004) in which a large dissident group interacts with a continuum of individuals. The dissident group can mobilize a sizable contingent to push for a new regime and it reaps most of the benefits if change occurs. The two types of agents act according to their assessment about the strength of the current regime. Although both types stand to gain when supporting the prevailing regime, the dissident group prefers overthrowing the current regime while individuals weakly favor it (this latter assumption could be relaxed without changing the qualitative results in the paper). This difference in preferences between the

group and individuals allows us to gauge the effect of rents from power for the group on players' aggressiveness against the current regime. We also allow the dissident group and individuals to differ in their assessment about the strength of the regime. Both types of agents are well-informed about the underlying strength, but they are not perfectly informed. Therefore, we can also explore the case in which the dissident group is better informed than individuals and *vice versa*. Although our model follows, to the extent possible, the notation in Corsetti et al. (2004), it elaborates on two important departures. First, our focus is on the conflicting interests between the dissident group and the individuals comprising the mass public, while Corsetti et al. (2004) focused on the effect of the large player's size on regime change. Second, we provide analytic comparative static results in the finite case for the parameters representing the conflicting interest (rents from power) between large and small players. This is an important departure because comparative statics may be tested empirically. We provide a preliminary descriptive empirical analysis in Section 5.

We derive three main conclusions from our exercise. First, the effect of rents depends on whether individuals observe the dissident group's mobilization. If individuals are uncertain about the dissident group's mobilization, high rents from power make it easier for the mass public to predict its behavior. Thus, rents from power for the dissident group are positively related to mass public aggressiveness. If individuals observe the dissident group's mobilization decision, on the other hand, rents distort the information transmitted through the group's action. Individuals become less aggressive as rents increase when the dissident group mobilizes first. In the case of an arbitrarily better-informed dissident group, rents from power are unrelated to mass public aggressiveness. This is true regardless of whether individuals observe the dissident group's action.

Second, a dissident group's information has differing effects on individuals' aggressiveness. When individuals do not observe the group's action, an increase in the precision of the dissident group's information makes individuals more aggressive, regardless of the group's action. When individuals do observe the dissident group's action, on the other hand, they

rely almost completely on that action to decide whether to mobilize in the case in which the dissident group's information is arbitrarily more precise than their own. Individuals ignore their own assessment of the regime's strength in this case.

Finally, when rents from power increase, the dissident group becomes more aggressive. Precise information about the regime's strength, however, mitigates this effect. When the group's rents are extremely high and its information is arbitrarily more precise than the mass public's information, the group almost always chooses to mobilize and individuals follow suit. When the group's dominant action is to mobilize, however, individuals decide as if no dissident group existed.

Our paper relates to the literature on collective action toward political change. One methodological building block is a global coordination game introduced by Carlsson and Van Damme (1993) and further developed by Morris and Shin (1998). In these games, a large number of privately informed agents choose whether to push for regime change when they hold asymmetric information about the strength of the current regime. This approach has recently spawned a literature on the role that influential players take in coordination of masses towards political regime change. Dewan and Myatt (2008) analyzes information transmission by leaders (see also Morris and Shin, 2002; and Hellwig, 2002 for the role of public information in global games), while Ekmekci (2009) and Edmond (2013) study the implications of strategic information manipulation by a leader. Bueno de Mesquita (2010) considers a vanguard, who uses costly violent actions as signals to mobilize masses. This signaling game features multiple equilibria each of which maps onto different versions of the structural theories of revolution (see Angeletos, Hellwig and Pavan, 2006). Shadmehr and Bernhardt (2014) find that, as in our sequential case, higher incentives of the vanguard for regime change reduces the likelihood for the citizens to follow the vanguard by differentiating between citizen leaders and committed vanguards. Smith and Tyson (2017) consider the simultaneous interaction between two massive groups when there is inter-group conflict of interest.



There are important differences between these papers and ours. At the heart of it is that in our set up there are no differences between the strategies used by the dissident group and the individuals comprising the mass public. The only difference is that the dissident group has significantly more mobilization power by virtue of its size. Under this assumption, we provide a rationale for why longstanding dissident groups may be inclined to push for regime change and how rents from power for this group affect mass mobilization. Second, by allowing the dissident group to have a non-negligible size we are able to concentrate on the pivotal role of a cohesive group in regime change. Third, we address the often mentioned but seldom explored effect of differential benefits that regime change brings to those who end up ruling (see e.g., Tilly 1978, ch. 4) and those comprising the mass public on the incidence of collective action. Finally, we show that rents from power for dissident elites may increase the incidence of mass public mobilization. This occurs when the elite and the mass public decide to mobilize simultaneously. This complements previous results which suggest that rents should decrease mass aggressiveness when the dissident elite move first, as it is unclear whether the elite respond to information or greed.

## 1 Regime change between 1979 and 2012

In this section, we provide a brief overview of regime change following collective action in recent decades (see the online appendix for the cases). We focus on the overthrow of a country’s chief executive leader since this event can be precisely identified.

Dissident elites usually come to power after collective action. In most of the cases of regime change, no significant constraints to the executive were in place prior to regime change.<sup>6</sup> Relatively unlimited power from office allows the new incumbent group to capture

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<sup>6</sup>From the 37 cases which the Polity IV dataset contains non-missing information about the “Executive Constraints” (XCONST) variable, only 3 of them (Bolivia 2003; East Timor 2006; and Romania 2012) feature “accountability groups [with] effective authority equal to

rents. For example, Nicaragua’s Sandinista revolution in 1979 was followed by the Junta de Reconstrucción Nacional’s government (Junta of National Reconstruction) led by Daniel Ortega. Ortega continued to rule after the initial Junta (1980-1990) and became increasingly corrupt. Despite these accusations and losing the elections in 1990, Ortega remained a powerful political figure. He returned to power in 2007 and his current government is internationally recognized for its nepotism and corruption (see, e.g., The Guardian ‘From comandante to caudillo’ by A. Anthony 2006 and El Pais ‘El poder queda en familia’ by C. Salinas 2015).

Kyrgyzstan 2005 and Egypt 2011 provide further examples. Askar Akayev’s government in Kyrgyzstan was characterized by widespread corruption and criminal practices. Although the “Tulip revolution” that unseated him was praised internationally (see, e.g., The Washington Times ‘Kyrgyzstan’s tulip revolution,’ March 26, 2005) the new government of Kurmanbek Bakiyev did little (if anything at all) to reduce corruption and criminals’ leverage over national politics. Among other reproachable practices, officials in Bakiyev’s government allegedly embezzled a large portion of the roughly US\$40 million that Kyrgyzstan’s major producer and retailer of hydro-power Elektricheskiye stansii reported in annual losses in 2007 (Marat 2008).<sup>7</sup> In Egypt 2011, the Muslim Brotherhood was the most powerful dissident group and played an important role mobilizing its own rank and file members against Mubarak (El-Sherif 2014, p. 11). Rather than attempting to change the dysfunctional and corrupt institutions of the Egyptian state under Mubarak, Mohamed Morsi’s government “simply appropriated them” (Miles 2013).

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or greater than the executive in most areas of activities” (XCONST = 7). In all the other cases, the executive has more effective authority than any other accountability group.

<sup>7</sup>Kyrgyzstan had a score of 2.1 in the Transparency International’s Corruption Perception Index (ranging from 0 (highly corrupt) to 10 (highly clean)) right after the Tulip revolution in 2007.

Another aspect of mass mobilization is that participation is risky, as incumbents generally retaliate against demonstrations. Reliable information about the strength of the regime is crucial in the mobilization decisions of both dissident elites and individuals. Closely connected dissident groups are arguably better placed to assess the regime's strength than outsider groups. In the sample of regime changes we use, dissident elites can be one of three types: part of the incumbent government (Georgia 2003; Nepal 2006; and Ivory Coast 2007); part of a preceding government (Kyrgyzstan 2005; Ukraine 2005; Ecuador 2005; Kyrgyzstan 2010; Maldives 2012); or part of a group with little or no connection to the incumbent regime (the rest of the cases in Table of regime changes in the online appendix).<sup>8</sup> The mobilization decisions of each one of these types of dissident groups may influence individuals in different ways. Mobilization by a connected group may provide a stronger signal the regime is weak than mobilization by an outsider group. In Ukraine 2005 and Kyrgyzstan 2010, for example, dissident groups were part of the incumbent regime and, by openly standing against the government, they were able to drive people to the streets. This by no means implies outsider dissident groups exert no influence. Outsider groups may rely on exogenous changes to influence the mass public to mobilize (e.g., outsider dissident groups in the eastern block nations such as Poland 1989, Czechoslovakia 1989, Bulgaria 1989, and Romania 1989 used Gorbachev's decision to abandon the Brezhnev doctrine in 1988 to openly pursue regime change). Suharto's fall in Indonesia 1998 may serve as a further example. Although the role played by opposition elites in the uprising is not clear (see e.g., Noble 2009), it took the mass public only a few weeks to mobilize in large numbers across the country. Rumors about Suharto's health and the Asian economic crisis of 1997 were key exogenous shocks that fueled protests. The former by signaling a weaker regime and the latter by decreasing the living standards of the society at large, even as Suharto and his cronies continued to enjoy

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<sup>8</sup>It is worth noting that in three cases (Philippines 2001; Iceland 2009; Yemen 2012) the head of the government was ousted, but the government itself was not.

the rents of power (see e.g. Fisman 2001). Outsider groups may also seek regime change through less visible means. Revolutions in Tunisia 2011, Egypt 2011, or Romania 2012 were arguably carried out by simultaneous participation of dissident groups and regular citizens. In what follows we describe a model that illustrates a potential mechanism through which rents and information affect mass public mobilization.

## 2 The Model

There is a dissident group and a continuum of individuals forming the whole society. The dissident group seeks to mobilize the society to overthrow the current regime. The distinguishing feature of the dissident group is that it controls a portion of size  $\lambda$ ,  $0 < \lambda < 1$ , of the society. In contrast, all the individuals comprising the mass public taken together have a combined size of  $1 - \lambda$ . This model captures a realistic feature of regime change: the dissident group is the only player who can be pivotal, as each individual's size in the mass public is negligible. In the supplementary appendix we consider a model in which both, the dissident group and the mass public, are cohesive players (so both could be pivotal).<sup>9</sup>

We start by studying mobilization decisions when each player does not observe each other's decisions. That is, each player decides independently and simultaneously whether to mobilize against the incumbent regime. The strength of the regime is indexed by the random variable  $\theta$ , which follows the improper uniform distribution over the real line.  $\theta$  could be interpreted as representing the maximum size of a protest that the current regime is able to repress. Whether the current regime is overthrown depends on its strength and the incidence of the mobilization. Using  $\mu$  to denote the mobilizing mass, the current regime falls if and

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<sup>9</sup>The model with two cohesive players is less tractable and uniqueness of equilibrium is not guaranteed for general specifications of the model. As a result it does not provide analytical comparative statics on the parameters of interest. Nevertheless, numerical calculations suggest the qualitative results in this case are similar to the ones in the paper.

only if  $\mu \geq \theta$ .

We also assume that every player has incentives to support the prevailing regime. The dissident group, however, prefers successful revolution to status quo; whereas individuals prefer status quo to successful revolution.<sup>10</sup> One way to think about this is that no one wants to participate in a failed protest or to refrain from participating in a successful one. The actual cost in each of these situations, however, does not matter for the results. The only thing we need for the model to work is that each player's payoffs for participating in a failed protest are lower than the payoffs for participating in a successful one. Likewise, we also need that the payoffs for not participating in a successful a mobilization are lower than the payoffs for participating. Precisely, we assume that successful revolution yields  $1 + \alpha$  to the dissident group, and  $1 - \beta$  to each individual, where  $\alpha, \beta \in (0, 1)$  are known parameters. The status quo, on the other hand, yields  $1 - \alpha$  to the dissident group, and  $1 + \beta$  to each individual. We decided to parametrize the payoffs from coordination in terms of  $\alpha$  and  $\beta$  to analyze later on how behavior in equilibrium changes with these parameters. Finally, whomever mobilizes in a failed revolution or refrains from mobilizing against an overthrown regime gets 0. This latter assumption is only a normalization.

We interpret  $\alpha$  to be the total rents that can be appropriated by the dissident group if regime changes. This assumes that the amount of rents captured does not depend on the size of that group. We may think of these rents as the total amount of resources appropriated from corruption or expropriation by, say, Ortega in Nicaragua 1979 or Bakiyev in Kyrgyzstan 2005 and shared with their respective families, friends, cronies, and minions. We interpret  $\beta$  to be the benefits to each individual in the mass public if the status quo prevails. These benefits can come from transfers from the incumbent regime to the individuals or the foregone punishment from the incumbent for not participating in a failed mobilization.

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<sup>10</sup>Individuals in the public mass being indifferent between revolution and status quo is a particular case in our model.

Note that when the current regime is very strong (i.e.  $\theta > 1$ ) regime change is impossible. One could think of this as a regime that is supported by a small, but extremely powerful army (a presidential or royal guard). When the regime is very weak (i.e.  $\theta \leq 0$ ), on the other hand, regime changes even without mobilization. As in Obstfeld (1996), Morris and Shin (1998), and Corsetti et al. (2004), we focus on intermediate regime strengths, i.e.  $0 \leq \theta < 1$  as large enough mobilization will bring down the regime, but the regime will survive otherwise.

## 2.1 Information structure

In reality, players are exposed to news or rumors about the weakness of the regime, which may affect their decision to mobilize. For example, it is likely that the rumors about Suharto's health may have contributed to the mobilization that led to the fall of his regime in Indonesia 1998 (see, e.g., Fisman 2001). We model information in the following standard way: both types of players, the dissident group and the individuals comprising the mass public, receive a private signal about  $\theta$ . The dissident group observes  $y = \theta + \tau\eta$ , where  $\tau$  is a positive real number, and  $\eta$  follows a continuously differentiable and symmetric probability distribution function  $g(\cdot)$  with mean 0.  $G(\cdot)$  is the corresponding cumulative distribution function.  $\tau$  therefore reflects how accurate is the dissident group's perception about the strength of the current regime.

Similarly, each individual  $i$  from the mass public receives the realization of the random variable  $x_i = \theta + \sigma\varepsilon_i$ , where  $\sigma$  is a positive number, and  $\varepsilon_i$  follows a continuously differentiable and symmetric probability distribution function  $f(\cdot)$  with mean 0.  $F(\cdot)$  is the corresponding cumulative distribution function. As before,  $\sigma$  represents the precision of the signal each individual receives about the strength of the regime. We assume that all the noise variables are independent of each other. All this is common knowledge.

## 2.2 Equilibrium in threshold strategies

A strategy for each player is a mapping from the realization of his signal to either mobilize or refrain. We focus on Bayesian Nash equilibria in which players choose their actions to maximize expected payoffs conditional on the realization of their signals, when everyone else is following their equilibrium strategies.

### 2.2.1 Public mass of individuals only

Let us first focus on the baseline case in which there is no dissident group ( $\lambda = 0$ ). As it is standard in global games, suppose that all the individuals comprising the mass public use switching strategies. This is without loss of generality as the equilibrium in threshold strategies is globally unique (see proposition 2). Players mobilize if they believe the regime is relatively weak. In other words, when the signal realizes below a given threshold,  $x_i \leq x^*$ , and to refrain otherwise. The probability that any individual mobilizes is  $F\left(\frac{x^* - \theta}{\sigma}\right)$ .

Mobilization overthrows the incumbent regime if and only if the total mass of individuals mobilizing is larger than what the regime is able to repress, i.e., when  $\mu \geq \theta$ . Given that individuals in the public mass are indexed in a continuum, the incidence of mobilization  $\mu$  coincides with this probability. Let us denote  $\theta^*$  the strength of the regime that exactly matches the mass mobilizing. Such critical strength of the incumbent regime  $\theta^*$  is given by

$$F\left(\frac{x^* - \theta^*}{\sigma}\right) = \theta^*. \quad (1)$$

This critical strength of the regime is crucial to pin down the mobilization decision by each individual. Individuals use  $\theta^*$  to compute how likely it is the regime to change. From an individual's perspective, the probability of regime change conditional on his signal is given by

$$P(\theta \leq \theta^* | x_i) = P(\varepsilon_i \geq \frac{x^* - \theta^*}{\sigma}) = F\left(\frac{\theta^* - x^*}{\sigma}\right).$$

Note this probability also depends on  $x^*$  which is in turn determined in equilibrium. We

need an additional equation to be able to solve for both  $\theta^*$  and  $x^*$ . Recall that we defined  $x^*$  as the cutoff such that if individual  $i$  receives a signal  $x_i < x^*$  he will decide to mobilize and if  $x_i > x^*$  he will decide not to. The additional equation therefore is given by the condition that represents individual  $i$  being indifferent between mobilizing and refraining, which is given by

$$(1 - \beta)F\left(\frac{\theta^* - x^*}{\sigma}\right) = (1 + \beta)\left(1 - F\left(\frac{\theta^* - x^*}{\sigma}\right)\right). \quad (2)$$

This condition also provides an important insight. There is no equilibria in which either everyone refrains or everyone mobilizes. To see this, let us assume everyone refrains. Regime changes if and only if  $\theta \leq 0$ , so  $\theta^* = 0$ . In this case, equation (2) yields a finite solution for  $x^* = x_0 = -\sigma F^{-1}\left(\frac{1+\beta}{2}\right)$ . For values of  $x_i$  lower than  $x_0$  individual  $i$  is better off deviating and mobilizing. An analogous argument shows there is no equilibrium where everyone mobilizes.

After re-arranging terms in equation (2), the (marginal) individual who receives signal  $x^*$  is indifferent between mobilizing and refraining if and only if

$$F\left(\frac{\theta^* - x^*}{\sigma}\right) = \frac{1 + \beta}{2}. \quad (3)$$

Combining equations (1) and (3) proves the following proposition:

**Proposition 1** *If  $\lambda = 0$ , then there exists a unique equilibrium. The equilibrium can be characterized by two thresholds  $x^*$ ,  $\theta^*$  which are defined as follows:*

$$\theta^* = \frac{1 - \beta}{2}, \quad x^* = \frac{1 - \beta}{2} + \sigma F^{-1}\left(\frac{1 - \beta}{2}\right). \quad (4)$$

An individual mobilizes against the current regime if the realization of his private signal is below  $\frac{1-\beta}{2} + \sigma F^{-1}\left(\frac{1-\beta}{2}\right)$ . The regime collapses if its strength  $\theta$  is smaller than  $\frac{1-\beta}{2}$ .

Note that the fact that  $x^*$  is finite implies that in any equilibrium in threshold strategies there will be individuals mobilizing even if the regime does not change. This result is consistent with the observation that regimes commonly survive mass public protests across



the world (see, e.g., Banks et al. 2015).

Also note that as signals become extremely noisy, most of the realized values entail refraining from mobilizing (since  $\beta > 0$ ). The threshold on the strength of the regime, however, remains constant at  $(1 - \beta)/2$  as there is still a significant mass of (radical) individuals whose signal takes on values below  $x^*$ . As  $\beta$  decreases, the incumbent regime is more likely to (ex-ante) fall.<sup>11</sup> Lower benefits for the mass public may weaken the regime provided there is noisy information about the regime's strength.

### 2.2.2 Dissident group and mass public of individuals

We now consider the case in which the dissident group controls a fraction  $\lambda > 0$  of the constituency. As before, we focus on threshold strategies. This equilibrium is unique (see the section for proofs in the online appendix). The dissident group chooses to mobilize if its private signal about the strength of the current regime is small enough, i.e.  $y \leq y^*$ , where  $y^*$  is the value of the signal that makes the group indifferent between mobilizing or refraining. As before, we label  $x^*$  as the threshold for individuals. Following Corsetti et al. (2004), the proportion of the mass public mobilizing is given by  $F\left(\frac{x^* - \theta}{\sigma}\right)$  (conditional on the strength of the regime  $\theta$ ). We define  $\underline{\theta}$  to be the threshold on  $\theta$  such that if  $\theta$  is lower than  $\underline{\theta}$  mobilization by individuals overthrows the regime, regardless of the action by the dissident group. We show that  $\underline{\theta}$  exists in equilibrium, which means that it may be the case that the mass public

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<sup>11</sup>Our assumption that  $\theta$  has an improper uniform prior distribution may make this last assertion illogical. If we interpret our improper prior assumption as the extreme case of individual signals being very precise relative to the information contained in the prior, the threshold  $\theta^*$  is directly related to the ex-ante probability of regime change. In Section 5 we elaborate on this. For further explanation see Corsetti et al. (2004) p. 97.

drive change if the strength of the regime is low enough. The threshold  $\underline{\theta}$  is defined by

$$(1 - \lambda)F\left(\frac{x^* - \underline{\theta}}{\sigma}\right) = \underline{\theta}. \quad (5)$$

By virtue of the group's size, stronger regimes fall when the group also mobilizes. In that case, the uprising is successful (conditional on  $\theta$ ) if  $\lambda + (1 - \lambda)F\left(\frac{x^* - \theta}{\sigma}\right) \geq \theta$ .  $\bar{\theta}$  is defined as the critical value of  $\theta$  at which mobilization is successful when the dissident group mobilizes:

$$\lambda + (1 - \lambda)F\left(\frac{x^* - \bar{\theta}}{\sigma}\right) = \bar{\theta}. \quad (6)$$

Note that  $\bar{\theta}$  is strictly greater than  $\underline{\theta}$  for any strictly positive  $\lambda$ .

The dissident group uses  $\bar{\theta}$  to calculate the probability the regime falls if it decides to mobilize. In other words, the dissident group's posterior probability that  $\theta < \bar{\theta}$  conditional on the signal  $y$  is given by  $G\left(\frac{\bar{\theta} - y}{\tau}\right)$ .

Comparing the expected payoffs from mobilizing and refraining, the indifference condition for the group is

$$(1 + \alpha)G\left(\frac{\bar{\theta} - y^*}{\tau}\right) + (1 - \alpha)G\left(\frac{\underline{\theta} - y^*}{\tau}\right) = 1 - \alpha. \quad (7)$$

This equation makes explicit a key feature of the model. For a fixed  $\alpha < 1$  and since  $\underline{\theta}$  and  $\bar{\theta}$  are both bounded between 0 and 1,  $y^*$  is finite. This implies that if the dissident group perceives the regime is very strong ( $y > y^*$ ), it will refrain from mobilizing for any  $\lambda$ . This seems to be consistent with the observation that large dissident groups, such as the Muslim Brotherhood in Egypt, do not seem to maintain a record of frequent mobilizations even when they represent established opposition forces.

Individual  $i$  compares the expected payoff to mobilization by using the probability that the mobilization is successful. The threshold  $x^*$  can be calculated from the following indif-

ference condition (after re-arranging terms):

$$\frac{1}{\sigma} \int_{-\infty}^{\underline{\theta}} f\left(\frac{\theta - x^*}{\sigma}\right) d\theta + \frac{1}{\sigma} \int_{\underline{\theta}}^{\bar{\theta}} f\left(\frac{\theta - x^*}{\sigma}\right) G\left(\frac{y^* - \theta}{\tau}\right) d\theta = \frac{1 + \beta}{2}. \quad (8)$$

Equations (5) and (6) uniquely determine  $\bar{\theta}$  and  $\underline{\theta}$  in terms of  $x^*$ ; equation (7) determines  $y^*$  in terms of  $\bar{\theta}$  and  $\underline{\theta}$ . Once we have  $\bar{\theta}$ ,  $\underline{\theta}$  and  $y^*$ , we can determine whether there is a unique  $x^*$  such that (8) holds. The following proposition shows that these four equations uniquely define an equilibrium four-tuple  $(\bar{\theta}, \underline{\theta}, y^*, x^*)$ .

**Proposition 2** *There exists a unique equilibrium. The equilibrium is in threshold strategies.*

The main goal of this paper is to study the motives the mass public may have to mobilize against the incumbent even if regime change does not make them better off. The key motive is coordination with the dissident group. Thus, even though rents accrue to the dissident group in case the regime changes, rents can actually be indirectly linked to mass public mobilization. The uniqueness of equilibrium result in proposition 2 allows us to explore whether rents make the dissident group more inclined to mobilize, and perhaps more interestingly, whether rents for the dissident group make the mass public more likely to mobilize: do  $y^*$  and  $x^*$  increase with  $\alpha$ ? On the flip side, do higher status quo benefits to individuals make regime change less likely, at a given strength of the regime? That is, does  $\bar{\theta}$  decrease with  $\beta$ ? What about players' aggressiveness: do  $y^*$  and  $x^*$  decrease with  $\beta$ ? The following proposition provides answers to these questions.

**Proposition 3** *The equilibrium thresholds,  $\bar{\theta}$ ,  $\underline{\theta}$ ,  $y^*$ , and  $x^*$  strictly increase in  $\alpha$ , the bias in the incentives of the dissident group, and strictly decrease in  $\beta$ , the bias in the incentives of individuals comprising the mass public.*

Equation (7) implies that increasing rents  $\alpha$ , makes the dissident group eager to mobilize, everything else constant. Thus, as  $\alpha$  increases, it is easier for the mass public to predict the dissident group's behavior and therefore to coordinate with it. As a result, exogenously

increasing  $\alpha$  would make individuals more inclined to protest as well. This result provides a rationale as to why we may observe mass public protests even if they end up ineffectively limiting the extent of corruption and rent appropriation that may have set them off.

Increasing  $\beta$  has two, perhaps intuitive, effects: it decreases the incidence of individual mobilization and makes regime change less likely (see equation (8)). In other words, the cut-off  $x^*$  and the critical mass thresholds,  $\bar{\theta}$  and  $\underline{\theta}$  decrease. Thus, the dissident group becomes more cautious as collective action is less likely to succeed.

To answer the questions about the impact of the dissident group's information on regime change may be difficult for general parameter values. From simulation exercises, however, we are able to assess how equilibrium thresholds behave as the dissident group's information becomes more precise compared to the public's information. Figure 1 shows the equilibrium response to an increase in the relative precision of the dissident group's information. Note that the dissident group becomes less aggressive ( $y^*$  decreases). In addition, the dissident group's cut-off converges to the threshold for regime change,  $\bar{\theta}$ . Individuals, on the other hand, become more inclined to mobilize ( $x^*$  increases) as the dissident group becomes relatively more informed. Individuals know the dissident group will respond more to information than to rents as its information becomes more precise. This better assessment of the fundamental strength of the regime leads individuals to push for regime change for a larger values of the signal, as the dissident group's information precision increases.

As is common in the literature, we consider the limiting case in which both types of players have very precise information to draw analytical conclusions about the role of information on regime change. The limiting case provides tractable expressions to perform comparative statics with respect to the information parameters. This exercise is useful as it allows us to study the role of rents and information on the incidence of mobilization in cases where uncertainty about the strength of the regime is high (e.g., Iran 1979, see Kurzman 2009) and cases in which uncertainty is low (e.g., Bulgaria 1989, see Bertschi 1994 p.438).

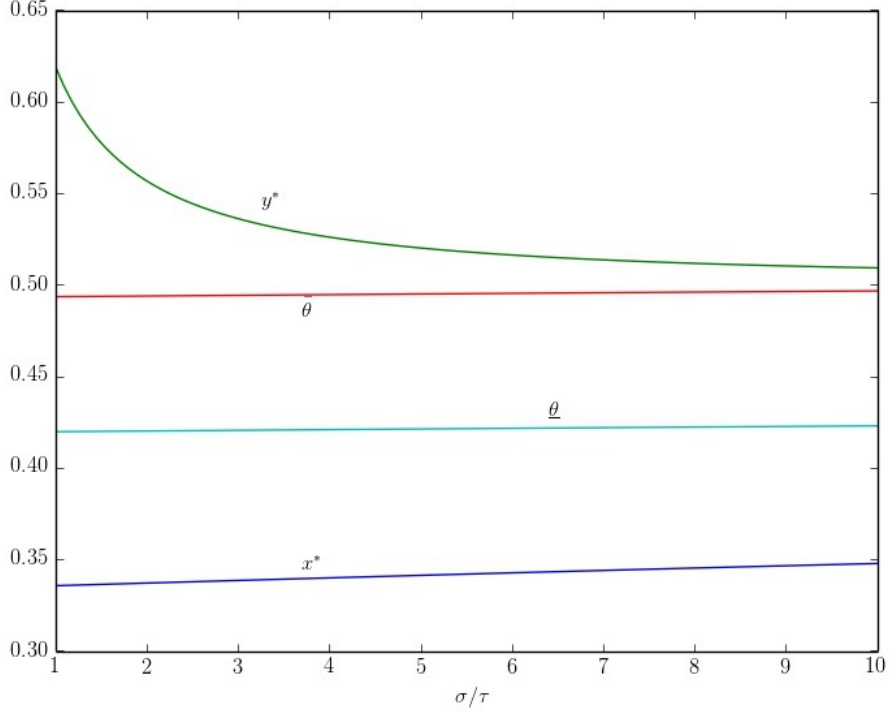


Figure 1: Equilibrium Response to Informational Advantage of the Leader  
 $\alpha = 0.1, \lambda = 0.1, \beta = 0.1.$

### 2.3 Limiting case

We consider the limiting case where both types of players have precise information, i.e.,  $\sigma \rightarrow 0$ ,  $\tau \rightarrow 0$ , and  $\sigma/\tau \rightarrow r$ , where  $r$  can be any positive real number or can diverge to infinity. The limiting case allows us to identify an analytic solution for the critical state at which regime changes and how rents from power affect such critical state when information is extremely precise.

In the limit both types of players predict regime change accurately. That means the dissident group and the individuals mobilize when the regime is weaker than  $\lim \bar{\theta}$ . In other words, as  $\sigma$  and  $\tau$  converge to 0  $\lim \bar{\theta} = \lim y^* = \lim x^*$ . This comes from re-organizing terms in equation (7) as follows

$$G\left(\frac{\bar{\theta} - y^*}{\tau}\right) = \frac{1 - \alpha}{1 + \alpha} G\left(\frac{y^* - \theta}{\tau}\right). \quad (9)$$

Suppose that  $\lim y^* > \lim \bar{\theta}$ , then  $G\left(\frac{\bar{\theta} - y^*}{\tau}\right) \rightarrow 0$ , which contradicts equation (9). On the other hand, suppose that  $\lim y^* < \lim \bar{\theta}$ . In this case, the LHS of equation (9) goes to 1 while the RHS is strictly less than 1.

To show  $\lim x^* = \lim \bar{\theta}$ , it is helpful to introduce the following notation. Let  $\bar{\delta} = \frac{\bar{\theta} - x^*}{\sigma}$ ,  $\underline{\delta} = \frac{\theta - x^*}{\sigma}$  and  $z = \frac{\theta - x^*}{\sigma}$ . Using this notation, equation (8) becomes

$$\int_{-\infty}^{\underline{\delta}} f(z) dz + \int_{\underline{\delta}}^{\bar{\delta}} f(z) G\left(\frac{y^* - x^* - \sigma z}{\tau}\right) dz = \frac{1 + \beta}{2} \quad (10)$$

As  $\sigma \rightarrow 0$  it must be the case that  $\lim x^* \leq \lim \bar{\theta}$ , otherwise the LHS of equation (10) goes to zero. As  $\sigma \rightarrow 0$  and  $\tau \rightarrow 0$ ,  $\lim x^* \geq \lim y^*$ . Otherwise the L.H.S. of equation (10) converges to 1, which is larger than the R.H.S. As a result,  $\lim \bar{\theta} = \lim y^* = \lim x^*$ .

We focus on the case in which the dissident group matters in equilibrium. That is, the mass public is not big enough to drive regime change by itself,  $\lim \bar{\theta} > 1 - \lambda$ .<sup>12</sup> In this case,  $\underline{\delta}$  diverges to  $-\infty$ , so by equation (5)  $\underline{\theta}$  converges to  $1 - \lambda$ , hence  $\lim \bar{\theta} > \lim \underline{\theta}$ . Equation (9) becomes  $\lim G\left(\frac{\bar{\theta} - y^*}{\tau}\right) = \frac{1 - \alpha}{1 + \alpha}$ , so equation (10) can be written as

$$\int_{-\infty}^{\bar{\delta}} f(z) G\left(\frac{\sigma}{\tau} (\bar{\delta} - z) - G^{-1}\left(\frac{1 - \alpha}{1 + \alpha}\right)\right) dz = \frac{1 + \beta}{2}. \quad (11)$$

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<sup>12</sup>When the mass public is extremely large, the region  $[\underline{\theta}, \bar{\theta}]$  where the dissident group is pivotal vanishes in the limit. Since we focus on the case in which the dissident group is pivotal, we would want to provide a lower bound for the size of the group,  $\lambda$ . From the discussion in the text, the exact lower bound is endogenous and equal to  $1 - \lim \bar{\theta}$ . Using the arguments in Lemma 1 in the online appendix, however, it is possible to find a (higher) exogenous lower bound given by  $\lambda \geq \min\left\{\frac{1 + \beta + (1 + \beta)\alpha}{1 + \beta + (5 + \beta)\alpha}, \frac{1}{2}\right\}$ . This provides a condition on the parameters for the case analyzed in the text.

The LHS of equation (11) is strictly increasing in  $\bar{\delta}$ , hence there is a unique solution for  $\bar{\delta}$ . This establishes the following Proposition 4.

**Proposition 4** *As  $\sigma \rightarrow 0$ ,  $\tau \rightarrow 0$ , and  $\sigma/\tau \rightarrow r$ ,  $\lim \bar{\theta} = \lim y^* = \lim x^*$ . In addition, if  $\lim \bar{\theta} > 1 - \lambda$  then  $\lim \underline{\theta} = 1 - \lambda$  and  $\lim \bar{\delta}$  is uniquely determined by equation (11).*

We are interested in assessing the role of rents and information on both types of players' aggressiveness. By implicitly differentiating equation (11) with respect to  $\alpha$ ,  $\beta$  and  $r$  it follows that  $\frac{\partial \bar{\delta}}{\partial r} < 0$ ,  $\frac{\partial \bar{\delta}}{\partial \alpha} < 0$  and  $\frac{\partial \bar{\delta}}{\partial \beta} > 0$ . The following result comes from expressing equations 5 and 6 as a function of  $\underline{\delta}$  and  $\bar{\delta}$ ,  $\underline{\theta} = (1 - \lambda)(1 - F(\underline{\delta}))$  and  $\bar{\theta} = \lambda + (1 - \lambda)(1 - F(\bar{\delta}))$ .

**Proposition 5** *If  $\lim \bar{\theta} > 1 - \lambda$ , as  $\sigma \rightarrow 0$ ,  $\tau \rightarrow 0$ , and  $\sigma/\tau \rightarrow r$ , the equilibrium thresholds  $\lim x^*$ ,  $\lim y^*$ , and  $\lim \bar{\theta}$  increase with  $r$ ,  $\alpha$  and decrease with  $\beta$ .*

This result corroborates the importance of rents when both types of players have extremely precise information about the strength of the regime. The dissident group and the individuals comprising the mass public become more likely to mobilize as rents from office for the group increase, and less so when individuals benefit more from the status quo. This result also allows us to assess the role of information in the limit. As uncertainty vanishes, both types of players become more aggressive against the regime when the dissident group has relatively better information. In addition, each individual member of the mass public mobilizes whenever the regime is weaker than his or her private information  $x_i$ , which in turn is equal to  $\bar{\theta}$ , the critical state at which regime changes.

### 3 Sequential Case

In this section, we study endogenous leadership by allowing both types of players to wait one period before deciding whether to join the insurgency.

In one equilibrium in this sequential case, the only player who decides in the first period is the dissident group. Individuals wait until the second period to decide. The player

who joins the insurgency in the first period does not observe the actions of those who move simultaneously. The player who moves in the first period, however, may signal its information to other players. Since a particular individual from the mass public is incapable of influencing a substantial mass of other individuals or the group by virtue of size, it can only induce mobilization by being focal. Such an individual could only lead, therefore, if other individuals, as well as his or herself, believe he or she is a leader. Even though it is theoretically possible to devise equilibrium expectations that could lead to this kind of behavior (see supplementary appendix, “Symbolic Leaders”), we focus on the case in which no player believes that an individual from the mass public is able to influence anyone else by moving first.

If every individual waits for the second period to decide, the information the dissident group has will not improve if it also waits until the second period. If the dissident group moves in the first period, however, it reveals information about the strength of the regime to the public. As a result, the dissident group conditions its action on the information that this will convey to the masses. The dissident group finds this strategic advantage useful because it prefers that the masses coordinate in joining the insurgency in case it is optimistic about the viability of regime change.

In this situation, individuals receive two signals in the second period: the private signal  $x_i$  about  $\theta$  and the dissident group’s action. As before, let  $y^*$  denote the threshold that the dissident group employs in its decision.

Since individuals’ posterior beliefs depend on the dissident group’s action, their behavior depends on that action too. In particular, we can assume that individuals base their decisions on two thresholds  $x_M^*$  and  $x_R^*$ , used by individuals when the dissident group mobilizes or refrains from doing so, respectively. It follows that  $x_M^*$  and  $x_R^*$  are determined by the



indifference conditions

$$P(\theta \leq \bar{\theta} | x_M^* \text{ and } y \leq y^*) = \frac{\int_{-\infty}^{\bar{\theta}} f\left(\frac{x_M^* - \theta}{\sigma}\right) G\left(\frac{y^* - \theta}{\tau}\right) d\theta}{\int_{-\infty}^{\infty} f\left(\frac{x_M^* - \theta}{\sigma}\right) G\left(\frac{y^* - \theta}{\tau}\right) d\theta} = \frac{1 + \beta}{2}, \quad (12)$$

$$P(\theta \leq \underline{\theta} | x_R^* \text{ and } y > y^*) = \frac{\int_{-\infty}^{\underline{\theta}} f\left(\frac{x_R^* - \theta}{\sigma}\right) G\left(\frac{\theta - y^*}{\tau}\right) d\theta}{\int_{-\infty}^{\infty} f\left(\frac{x_R^* - \theta}{\sigma}\right) G\left(\frac{\theta - y^*}{\tau}\right) d\theta} = \frac{1 + \beta}{2}. \quad (13)$$

The thresholds  $\bar{\theta}$  and  $\underline{\theta}$  are determined by

$$(1 - \lambda)F\left(\frac{x_R^* - \underline{\theta}}{\sigma}\right) = \underline{\theta} \quad (14)$$

$$\lambda + (1 - \lambda)F\left(\frac{x_M^* - \bar{\theta}}{\sigma}\right) = \bar{\theta}. \quad (15)$$

Finally, the dissident group's action depends on  $\bar{\theta}$  and  $\underline{\theta}$  via the following indifference condition:

$$(1 + \alpha)G\left(\frac{\bar{\theta} - y^*}{\tau}\right) + (1 - \alpha)G\left(\frac{\underline{\theta} - y^*}{\tau}\right) = 1 - \alpha. \quad (16)$$

The system of equations (12) to (16) is harder to solve analytically than the system of equations (5) to (8) that defined the equilibrium in the simultaneous move game. The main difference between these systems of equations lies in the posterior beliefs of individuals. In the sequential case, the posterior beliefs of an individual comprise information stemming from the private signal and the group's action. Processing the information revealed by the group's action adds an additional curvature to the posterior density functions, which keeps us from stating general uniqueness of equilibrium in threshold strategies when the dissident group moves first.<sup>13</sup>

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<sup>13</sup>We provide a sufficient condition for the existence of equilibria in the online appendix

### 3.1 The Limiting Case

In this part we show results for different limiting cases. In proposition 6, the dissident group has arbitrarily better information than the mass public. Corollary 1 presents results for the case in which rents from office are extremely large. These two results combined show that the dissident group's action completely determines mass mobilization unless rents from office are extreme, i.e.,  $\alpha = 1$ . In the extreme case, however, individuals ignore the dissident group's action and decide whether to mobilize simultaneously. Finally, proposition 7 summarizes the results for the case in which individuals have arbitrarily better information than the dissident group. In this case, rents from power do not affect the critical  $\bar{\theta}$  and the dissident group influences mass mobilization only by virtue of size.

**Proposition 6** *As  $\frac{\sigma}{\tau} \rightarrow \infty$ , the behavior of the dissident group completely determines individuals' behavior. That is,  $x_M^* \rightarrow \infty$ ,  $x_R^* \rightarrow -\infty$ ,  $\bar{\theta} \rightarrow 1$ ,  $\underline{\theta} \rightarrow 0$ . Moreover, if  $\tau \rightarrow 0$ , then  $\lim y^* = \lim \bar{\theta}$ .*

If the dissident group is arbitrarily better informed than each individual, they ignore their private information and follow the dissident group's action. The dissident group uses the coordination power over individuals to influence them to mobilize whenever the regime is vulnerable (i.e., when  $0 \leq \theta \leq 1$ ). Since the group's rents from office (i.e.,  $\alpha$ ) are common knowledge, individuals know that the dissident group holds this coordination power. Every player also knows that the dissident group's signal is more reliable than the individuals' private signals. As a result, each individual knows the other individuals will follow the dissident group, he or she will follow the group as well. Even if the dissident group is biased toward mobilizing, its coordinating role makes individuals to dismiss their own private information.

The following corollary shows that whenever  $\alpha \rightarrow 1$ , not only do individuals ignore their private information but the dissident group does so as well.

**Corollary 1** *As  $\frac{\sigma}{\tau} \rightarrow \infty$ ,  $\tau \rightarrow 0$  and  $\tau G^{-1}((1 - \alpha)/(1 + \alpha)) \rightarrow -\infty$ ,  $y^*$ ,  $x_M^* \rightarrow \infty$  and  $x_R^* \rightarrow -\infty$ .*

The condition that  $\tau \rightarrow 0$  and  $\tau G^{-1}((1 - \alpha)/(1 + \alpha)) \rightarrow -\infty$  requires that the speed of convergence of  $\alpha$  to 1 is high enough that increasing precision in the private information of the dissident group does not preclude it from mobilizing upon observing signals that are extremely in favor of the regime. In this limit case, the dissident group ignores its information because mobilizing is too profitable. Individuals ignore their own information because the dissident group has much better information and because the latter also has coordinating power over other individuals. The mass public follow the dissident group despite the fact that the group itself ignores its own private information and relies almost entirely on its coordinating power.

As long as  $\tau > 0$  and  $\alpha < 1$ , there is uncertainty about the motivation of the dissident group. This uncertainty renders the dissident group's action informative. Whenever the dissident group mobilizes, individuals learn that the signal of the dissident group was low enough. Each individual knows that the signal of the dissident group is low and also that all other individuals are aware of this after the dissident group mobilizes. As a result most of the individuals choose to mobilize as well.

Let us consider the other extreme case, in which the information advantage of the dissident group vanishes. In this case, rents from power do not affect the critical state  $\bar{\theta}$  and the dissident group exerts influence only by virtue of size. The following proposition states this result.

**Proposition 7** *As  $\frac{\sigma}{\tau} \rightarrow 0$ . Then  $\bar{\theta} \rightarrow \lambda + (1 + \beta)(1 - \lambda)/2$  and  $\underline{\theta} \rightarrow (1 + \beta)(1 - \lambda)/2$*

## 4 Summary of the results

We can now summarize the results and draw conclusions about the role of rents and information on regime change from collective action. We collect our results by answering the

following questions: 1) Do dissident group's potential rents induce mass mobilization? 2) Does a dissident group's precise assessment of the current regime's strength induce mass mobilization? And, 3) how do rents and information interplay in determining players' aggressiveness?

The effect of rents depends on whether individuals comprising the mass public are certain about the mobilization decision of the dissident group. If the mass public is uncertain about the decision of the group, higher rents make it easier for the mass public to predict its behavior. Therefore, as rents increase, so does the influence of the dissident group. However, when individuals in the mass public observe the mobilization decision of the dissident group, the informational content of rents is lower. In this case, higher rents accruing to the dissident group reduce the informativeness of the mobilization decision by the dissident group. Moreover, when the dissident group arbitrarily holds more precise information than individuals, its rents from power do not make individuals more aggressive against the regime.

Information has different effects on the mass public proneness to mobilize against the regime. When individuals in the mass public do not observe the dissident group's action, the group's precise assessment make individuals more aggressive regardless of the action of the dissident group. When individuals observe the dissident group's action, on the other hand, they rely completely on the group's action to decide whether to mobilize if the dissident group's information is extremely precise. Individuals ignore their own assessments of the current regime's strength in this case.

Regarding the dissident group's aggressiveness, higher rents make the group more aggressive, but precise information about the current regime's strength mitigates this effect. When the dissident group's rents are extremely high, but not high enough to make the mobilization decision a dominant action for the dissident group, and its information is arbitrarily more precise than the individuals' information, the dissident group almost always chooses to mobilize and individuals follow suit. When the dissident group's dominant action is to mobilize, however, individuals decide as if no dissident group existed.

## 5 A proxy for rents from power

Our main finding is that rents from power influence the incidence of collective action, hence the likelihood of regime change. Given we emphasize the role of rents in the context of collective action, one relevant question is whether there is any metric that could capture  $\alpha$  in reality. Although this paper focuses on studying a theoretical mechanism through which rents may affect collective action, we believe it is useful at least to check whether the main theory prescription is qualitatively borne out by available data.

Our simultaneous model prescribes a positive relation between rents from power and mass mobilization (see Proposition 3). A key first step is to define empirical proxies for rents from power to check whether there is a correlation between this measure and mass public mobilization. We construct an index of mass public mobilization using the political events data in Banks et al. (2015). Following Bueno de Mesquita and Smith (2010), we calculate a version of their “mass political movements” index. Our index adds up the number of events recorded as anti-government demonstrations, riots, general strikes, and revolutions. The total number of events is then divided by 4.<sup>14</sup> Then, we create an indicator variable that equals one if there was no political assassinations, guerrilla warfare, or revolutions in the past year (we also check two and three years prior for robustness). This variable is meant to capture any protest event that could be initiated by an organized group. Our main specification focuses on simultaneous mass movement because our theory provides a clear positive relationship between rents and collective action. Nevertheless, we also provide the results of a specification that relates rents to mass mobilization when there is evidence of other collective action events in the past year. Although our model does not provide any clear prediction in this case due to multiplicity of equilibria (see the online appendix) it is

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<sup>14</sup>Bueno de Mesquita and Smith (2010) build an index that averages out the logarithm of  $1 +$  the number of each of these events, instead of the number of events itself. Our results do not change when we use this measure.

instructive to check whether a correlation exists in this case.

A perhaps natural measure of rents from power is government revenue. Whomever rises to power happens to control these resources. This measure, however, does not take into account that institutions may constrain the use of those revenues. Our preferred measure of rents from power therefore is the interaction between government revenue and an indicator of the lack of constraints that government executives face and the resources available to the government from Polity IV. Precisely, we use the index for the constraints to executives, *xconst*, from Polity IV, which is a discrete grade variable with range from 1 to 7, 7 being the completely constrained executives. We create a dummy variable that captures the capability of the executive to expropriate resources. This variable is equal to one when the variable *xconst* in Polity IV is not equal to 7. As our exercise is only descriptive, we run the following specification

$$Collective\_action_{it} = C + \beta Revenue_{it} * Few\_Constraints_{it} + \Gamma' X_{it} + \varepsilon_{it},$$

where  $i$  denotes country and  $t$  years.  $X_{it}$  comprises socio-economic controls.

All the variables in Table 1 are standardized. The regression results for the simultaneous case are summarized in columns (1)-(3). For completeness, column (1) reports a positive correlation between collective action on government revenues only. Column (2) shows the results when the regressor is rents from power. One standard deviation increase in rents from power leads to a 7% increase in the standardized incidence of mobilization, which is equivalent to 3.6% points ( $0.07 \times 100 \times 0.50$ ) increase in the average number of collective action events. The positive and significant association between rents from power and the incidence of collective action is robust to the inclusion of socio-economic controls such as GDP per capita and its growth rate, education level, and population density as reported in column (3). This exploratory results are qualitatively consistent with the theoretical results in the paper. This positive association can also be observed for sequential collective actions

	Simultaneous Coll. Actions			Sequential Coll. Actions		
	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)	Model(6)
GovRev	0.03** (0.01)			0.15*** (0.03)		
GovRev		0.07*** (0.02)	0.06*** (0.02)		0.20*** (0.04)	0.18*** (0.05)
*FewExeConst						
GDPpCap			-0.05*** (0.01)			-0.10** (0.04)
LitRate			0.09** (0.01)			0.09** (0.02)
Gr.Rate			-0.002 (0.01)			-0.04 (0.02)
GDPpC						
PopDens			-0.002 (0.002)			-0.11 (0.08)
Const	-0.11*** (0.01)	-0.10*** (0.01)	-0.10*** (0.01)	0.26*** (0.02)	-0.25*** (0.02)	-0.23*** (0.02)
N	6003	5545	4323	2111	1925	1541
$\bar{R}^2$	0.006	0.006	0.010	0.023	0.019	0.021

Standard errors statistics in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 1: Regression Results

as reported in Table 1. Although the theoretical predictions in the sequential case are not as clear as in the simultaneous case, the results in columns (4)-(6) reveal a similar pattern. Higher rents in this case are also positively correlated with the incidence of mobilization. This preliminary result however, is not consistent with the numerical results calibrated from the model presented in the online appendix. In any case, this descriptive analysis suggests that rents from power for those who occupy positions of power may be a catalyst of mass public mobilization. One caveat of this approach is that here rents are appropriated by anyone who gets to power—it does not single out elites or members of the mass public. Nevertheless, evidence across the world (see also the examples in section 2) suggests that opposition elites are usually the ones who secure power after revolutions. Another caveat is endogeneity. There are omitted variables (e.g., strength of the regime) that may bias the reported estimates. Nonetheless, the interplay between rents and the capability to rise to

power is, in our view, an interesting and open empirical question.

## 6 Conclusion

Even though recent revolutions give the impression that a large number of ordinary citizens have spontaneously coordinated mass mobilization to oust autocratic leaders, evidence suggests that there is often a powerful force behind this coordination—an organized dissident elite group. We are interested in this situation mainly because interactions of one large and many small players are a key feature of rebellions across the world. We focus on the influence a dissident elite exerts on mass behavior. Our model provides a framework to explain why rational individuals would join a rebellion even if they expect the new regime will not make them better-off. This is a paradox that arguably fit the description of many post-revolution societies in the last decades. The dissident elite prefer regime change over the status quo because of the rents from power. Individual citizens, however, do not expect increased benefits after regime change. We study how rents from power for the dissident elite and (better) information could be potential mechanisms explaining the incidence of mobilization and regime change.

Consistent with arguments in the literature, rents from power for the dissident elite may mitigate its influence over the mass public. However, when citizens do not observe the elite's decision to mobilize, these rents may make the mass public more aggressive as well. This new result holds even when individuals are worse-off after regime changes. The paper further shows that the effect of rents from power depends on the quality of information each type of player has about the strength of the regime.

Although ours is a purely theoretical exercise, it provides some empirical prescriptions. Rents from monopolies, insider deals, expropriation or financial misconduct which are pervasive in countries with weak institutional arrangements may lure a dissident elite to mobilize. The mass public should be aware that the opposition elite's mobilization is likely to be driven



by greed rather than by a desire to constrain rent-seeking activities. An intuitive empirical test therefore would be to compare the effect of measures of rents from office on collective action, when the mobilization is led by a longstanding opposition group and when the mobilization is driven by the mass public. Although the usual empirical challenges may hinder proper identification, new datasets using social networks may make this task a fruitful one (see, e.g., Acemoglu, Hassan and Tahoun, 2014). Another empirical exercise may look for an effect of information about the strength of the regime on regime change. Rumors about the health of presidents (e.g., Fisman 2001, for the case of Suharto in Indonesia), for example, can be readily identified from sources such as Lexis-Nexis and may signal regime weakness, especially in autocratic regimes (e.g., Alvarez, Hernandez, Reyes 2016).

Further theoretical research could focus on the role played by other political actors during and after anti-regime mobilizations. An interesting avenue would be to include incumbent's response to the threat of dissident elite and mass mobilization. Although our model does not consider the incumbent responses, it motivates some conjectures. For example, our results suggest that the incumbent would seek to reduce the rents that can be captured from power. Of course, for this conjecture to hold we require the incumbent's action must not convey information about the strength of the regime. This seems to us an interesting area for further research.

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