

# Judicial Independence and Government Repression in Autocracies\*

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## Abstract

Why do some autocracies empower their judiciaries to uphold human rights even though independent judiciaries can prevent the repression of opposition? We develop a theoretical framework to explain why dictatorships benefit from judiciaries that restrict the government's use of coercion, thereby addressing the contradiction between the function of independent judiciaries and their institutional origins. By granting a degree of judicial independence, the regime shapes how the public views the state's use of coercion. When the judiciary is more effective in preventing state repression, the public will have more confidence in the legitimacy of coercive acts that are not blocked by the judiciary. This shifts public opinion against the opposition in favor of the regime, reducing the public's incentive to support the opposition. Unlike propaganda and censorship that directly control the information that citizens receive, partially independent judiciaries enable autocracies to control how the public processes the informational content of coercion.

*Keywords:* Judicial Independence, Autocracy, Repression, Protest, Legitimate Coercion

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# 1 INTRODUCTION

Recent decades have witnessed a global expansion of judicial power, extending even to authoritarian regimes (Ip 2012; Moustafa 2014). Courts in some dictatorships now decide cases on an array of important topics, including human rights, ruling against the regime with some regularity. This phenomenon creates a puzzle. Why would dictators allow any degree of judicial independence in the area of human rights, which might result in more freedom for opposition figures?

In this paper, we argue that a partially independent judiciary can help make repression more effective, stabilizing the authoritarian regime. The mechanism we focus on is informational: by granting a degree of judicial independence, the regime can manipulate public opinion about the state and the opposition in favor of the state, stabilizing the regime by reducing the risk that repression leads to backlash public protests. The possibility of backlash protests arises from the public's uncertainty about the regime and the opposition: while an autocratic leader may be perceived as bad, the groups opposing him are not necessarily good. Thus, the state may use "legitimate coercion," which protects the public from dangerous interlopers, or illegitimate repression, which prevents beneficial reform and harms the public (Almond 1956; Mansbridge 2012, 2014). In this uncertain environment, the government's use of coercion against the opposition is informative about both the state and the opposition. Our key insight is that the state can shape public opinion about the legitimacy of its coercive acts by constraining its own ability use *illegitimate* repression. To do so, the state establishes a partially independent judiciary which monitors the state's use of coercion and sometimes prevents illegitimate repression when it is attempted by the state. Thus, when citizens observe a coercive act, they recognize that it was approved by the judiciary, and they infer that it is more likely to be legitimate coercion. Judicial oversight therefore gives repression additional legitimacy and bolsters public support for the regime.

The literature on judicial empowerment in authoritarian regimes has offered several explanations as to why authoritarian rulers would grant independence to courts (Moustafa 2014).<sup>1</sup> First, independent judiciaries protect property rights and enforce contracts, promoting economic development. Second, they impose restrictions on a regime's successors, ensuring that outgoing elites will not face unfettered opposition rule and will have their personal interests preserved (Ginsburg 2003; Hirschl 2004; Epperly 2013). Third, independent judges can monitor the activities of low-level officials,

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<sup>1</sup>More broadly, the literature on authoritarian institutions has primarily focused on parties and legislatures, military-civilian relationships, and power-sharing in dictatorships, providing rationales for their emergence (Acemoglu et al. 2008; Gandhi 2008; Cheibub et al. 2010; Svobik 2012, 2013; Boix and Svobik 2013; Geddes et al. 2014).

mitigating principal-agent problems between the elite and the bureaucracy (Shapiro 1981; Verner 1984; Rosberg 1995; Peerenboom 2002; Ginsburg and Moustafa 2008). None of these accounts helps us to understand why courts in authoritarian regimes protect the rights of regime opponents. Indeed, conventional approaches treat judicial constraints on repression as *unintended* byproducts of judicial independence, whose primary purpose lies elsewhere (Helmke and Rosenbluth 2009, p. 358). Thus, there is a tension between the usual accounts of the origins of judicial independence—which require the judiciary to contribute to autocratic stability—and the judiciary’s role in limiting repression. In contrast, our positive account of judicial power integrates human rights protection directly into the calculus of the dictator and shows how such protections can benefit the regime.

Our analysis begins by observing that, in any country, a multitude of opposition groups make claims on the state. Some opposition groups demand changes that will benefit the public, while others demand harmful changes that will benefit only a narrow group, leaving everyone else worse off. This is a shared feature of autocracies and democracies: just as the democratic government in America has to contend with dangerous supremacist groups like the KKK, the autocratic government in Syria has to contend with dangerous religious groups like ISIS. Surely, some autocratic regimes feature a host of opposition groups who demand free and fair elections, or freedom of press and assembly. However, another set of opposition groups demand different forms of autocratic government that may be worse for the general public than the status quo. For example, under the Pahlavi regime in Iran, nationalists demanded democracy, while the Mojahedin demanded the establishment of a government that combined Islam and Marxism to create a class-less society (Abrahamian 1982, 1989).<sup>2</sup>

The varied intentions among opposition groups coupled with difficulties in acquiring precise information, force the general public to make a difficult decision during a conflict between an opposition group and the state. In particular, when the state uses coercive force against an opposition group, should the public acquiesce, or should it join the opposition’s cause against the state? Without public support, the opposition has little chance against the state, but if the public joins the opposition, the chances of success increase dramatically. But the public’s decision involves a complicated tradeoff. Siding with the opposition risks replacing a bad regime with a much

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<sup>2</sup>Ali Shariati, an Iranian intellectual whose teachings influenced the Mojahedin and helped their recruitment, believed that a revolution’s leader must not “be tempted by Western liberalism,” and leave the revolution’s fate to “the shaky hand of democracy.” After the revolution, the leader must not establish a democracy; rather, he and those with proper ideological training should continue their “authentic revolutionary leadership” for “a few generations” until the people become ready (Shariati 1969, p. 171-177). Today, Iran is a society in which democracy is constrained by theocratic rulers.

worse one—it would be far worse for Syrians to live under ISIS than under Assad. Acquiescing to the state’s repression risks missing a chance for reforms—living under Mosaddegh, the democratic prime minister deposed by the US in 1953, would be much better than living under the Shah.

This fundamental uncertainty has largely been overlooked in the literature, which has focused on strategic uncertainty among the dissidents or the regime’s supporters (Persson and Tabellini 2009; Bueno de Mesquita 2010; Shadmehr and Bernhardt 2011; Boix and Svulik 2013; Chen and Suen 2016; Rundlett and Svulik 2016; Tyson and Smith 2018; Shadmehr 2019). Moreover, the large literature on information manipulation in autocracies has not studied the informational content of the state’s actions regarding its legitimacy (Egorov et al. 2009; Edmond 2013; Shadmehr and Bernhardt 2015; Huang et al. 2019; Barbera and Jackson 2020). Shadmehr and Boleslavsky (2019) depart from the literature by observing that, because state actors often know more than the general public about the intentions of the state and the opposition, the very use of coercive force by the state generates information about the nature of political conflict. They investigate the implications of the information content of repression and explore the role of international intervention in that interaction. They do not, however, consider the effects of domestic institutions such as judiciaries on these interactions. We use their model as our first benchmark (Benchmark 1).

In light of the public’s uncertainty about the opposition and the state, its beliefs play an essential role in its decision, and these beliefs are updated when the public observes repression. The key insight of this paper is that judicial oversight of government repression shapes the way in which the public updates its beliefs when it observes coercive acts. By restricting its own ability to repress the reform-minded opposition, the state ensures that the public views repression less negatively, increasing the likelihood that the public acquiesces to it. On one hand, judicial independence limits the state’s ability to use coercion to block reforms that it finds costly. On the other hand, when the state does use coercive force, the knowledge that this decision was approved (with positive probability) by an independent judge shifts the public’s beliefs in favor of the state, mitigating the risk of backlash protest.

Our second benchmark (Benchmark 2) analyzes a setting in which the state has full commitment power, which allows it to commit at an ex ante stage to a strategy which specifies the probability of repression for each type of opposition group. This benchmark gives the state the maximum possible freedom to determine its repression strategy, providing an upper bound on what the state can achieve. However, it seems implausible that the state can fine tune its repression policy to this extent. For example, this benchmark allows the state to commit to repress reform-minded activists

exactly 72.6% of the time they protest and to repress dangerous activists 93.2% of the time. Thus, we also consider a milder, more plausible form of commitment, generated by the establishment of a partially independent judiciary that oversees the state’s use of coercive force. Consistent with the literature on judicial independence in autocracy, we model the degree of judicial independence as the probability with which the judiciary strikes down the government’s attempt to repress legitimate opposition groups.<sup>3</sup> This type of judicial independence is weaker than full commitment: rather than specifying the probability of repression for each type of activist, judicial independence only allows the government to set an upper bound on the repression of legitimate dissent.

We provide a complete characterization of the game without commitment power (Benchmark 1), with full commitment power (Benchmark 2), and with an endogenous level of judicial independence. By comparing the equilibria in these settings, we establish three results.

First, we show that the limited form of commitment power generated by judicial independence can enable the regime to obtain the same outcomes as if it has full commitment power (Benchmark 2).<sup>4</sup> Thus, the limited form of commitment power inherent in judicial independence is more powerful than it may seem.

Second, we show that although the judiciary imposes an upper bound on the government’s repression of good activists, it may lead to an increase in the probability that the good activists are repressed in equilibrium. With judicial independence, the public holds a more-favorable view of coercion than without, making it less-likely to respond with backlash protest. This incentivizes the good type of government to carry out “legitimate coercion” more aggressively against the bad opposition, further tilting public perception in favor of the state. Thus, the adjustment in the strategy of the good government acts as a partial substitute to judicial independence. In some cases, the bad government exploits this effect to increase repression of the good opposition.

Third, we show that the regime’s decision to establish a partially independent judiciary is non-monotone in the popularity of the opposition. In contrast, the relationship between the regime’s popularity and the degree of judicial independence is monotone. As the regime’s popularity falls, the regime grants a higher degree of judicial independence. In fact, when the regime is sufficiently unpopular, it grants a high enough degree of judicial independence that the public never joins the

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<sup>3</sup>The literature highlights channels by which the judiciary protects dissidents, for example, by “refusing to prosecute people for exercising their human rights, and seeking to prosecute the police for abuses of power” (Hilbink 2012, p. 598-99). “Reform-minded judges may work to push the envelope through their judgments...in the direction of political reform” (Moustafa 2014, p. 288; Rosberg 1995, Ch. Four; Ip 2012).

<sup>4</sup>The qualification in this statement stems from the possibility of multiple equilibria, which necessitates an equilibrium selection. With the equilibrium selection we propose, the limited form of commitment power generated by judicial independence allows the state to recreate the outcome with full commitment.

protest following repression.

To show the relevance of our model, we highlight how the logic of our model is consistent with Pereira’s (2008) analysis of security courts in the military regimes of Brazil (1964-85), Chile (1973-1990), and Argentina (1976-83). While the Argentinian regime did not use security courts, both Chilean and Brazilian regimes did. In Brazil, security courts held public proceedings using civilian judges and gave defendants significant rights of defense—the acquittal rate in these courts were around 50%, a remarkably high level by any standard. Pereira argues that the courts in Brazil and Chile “helped marginalize and de-legitimate the opposition, [and] purchased some credibility for the regimes both at home and abroad” (p. 32). Indeed, these are the mechanisms that drive our results. Our model studies how and under what conditions courts can “de-legitimize the opposition,” “purchase credibility for the regimes,” and increase the longevity of the regime. As Pereira observes, “It is also plausible that the political trials in both Brazil and Chile helped consolidate and prolong authoritarian rule. It may not be a coincidence that the shortest-lived military regime of the three examined here, the Argentine, was also the one that engaged in the most extrajudicial repression” (p. 32).

From a substantive perspective, we focus on judicial independence in autocracies, but our paper also contributes to the literature on state repression and backlash protest. This literature studies the effect of democratic institutions (e.g., constraints on the executive) in reducing state repression, the effectiveness of repression in suppressing dissidents, and the potential for backlash protests instigated by repression (Poe and Tate 1994; Francisco 2004; Davenport 2007a, 2007b; Earl 2011; Siegel 2011; Aytaç and Stokes 2019). Our paper combines these branches of the literature by showing how partially independent judiciaries, which constrain the executive, interact with the informational frictions involved in backlash protests. It also shows that partially independent judiciaries can worsen human rights and repression. Repressive regimes can design judiciaries to take advantage of the public’s information deficit, so that the very features that constrain the state also enable it to control how the public perceives the state’s use of coercion, reducing the risk of backlash protest and stabilizing the regime.

In the next section, we provide more details about the government’s commitment power. We then present Benchmark 1, in which the government has no commitment power. The following section analyzes Benchmark 2, in which the bad government has full power to commit ex ante to a repression. We then develop and analyze our model of partially independent judiciaries. A Conclusion follows. Proofs are in an online appendix.

## 2 COMMITMENT POWER AND INFORMATION MANIPULATION

We now describe the nature of commitment power in our settings. Typical decision-makers in an autocracy, by definition, do not represent the preferences of the public. For example, they may want to repress all opposition and maintain the status quo. These bad types of officials design the persistent institutional structure of the country under the regime. When these typical bad types are in power, they delegate repression decisions to an institution such as a security agency. This enables the bad types to commit to a repression strategy: by selecting attributes of this agency (its composition, size, and funding), they can determine the degree to which this agency represses activists of different types. For example, by recruiting a larger fraction of officers who would be sympathetic to legitimate activists, the bad types can reduce the probability that the agency represses legitimate activists. Once the security agency's officers are selected, adjusting its composition can be very costly to the bad types. The security service fulfills important tasks besides repressing activists (e.g. identifying and defusing foreign threats, and disciplining the bureaucracy), and tampering with the security agency's attributes would interfere with these critical functions. Moreover, attempts to shuffle high-ranking officers could raise the potential for coup attempts or conflict among the elite that could seriously threaten the regime's survival.

However, sometimes good officials whose preferences are congruent with the public may manage to rise to a high rank in the regime and form a government. Khatami's presidency in Iran (1997-2005) may be an example. Our second benchmark model considers a setting in which the typical bad types can set up institutions that enable them to commit to a precise repression policy for the regime, specifying the probability that the regime represses each type of opposition. Thus, whenever a bad type is in power, this repression policy goes into effect. When good types come to power, they may effectively dismantle these features behind the scenes, or at least temporarily put the policy on hold, and make their own decisions. Our second Benchmark considers a setting in which the bad government has full commitment power, but the good government does not. When the public sees an instance of conflict between the government and the opposition, it does not know whether the government or the opposition is good or bad, but it does know the institutions of the regime and hence the repression policy that will be invoked if the *bad* government is in charge.

This level of precise commitment is the best that the typical government of an autocracy (the bad government) can achieve. Indeed, we show that if the regime optimally uses this commitment power, it can reduce the likelihood of backlash protests and raise its chances of survival. However, as we mentioned earlier, such a precise and elaborate commitment power may be in-

plausible. Remarkably, we show that the regime can obtain the same outcomes through a milder form of commitment. In particular, instead of designing intricate institutions that commit the bad government to a likelihood of repressing each type of the opposition, the regime can generate the same outcomes by designing an institution that probabilistically blocks the repression of legitimate opposition. Judiciaries can provide this milder form of commitment.

In order for the judiciary to generate commitment power, it must be credible that the government will abide by its decisions, at least to some extent. This should not be taken for granted. After all, as Hamilton points out in Federalist No. 78, the judiciary has a “natural feebleness” which places it in “continual jeopardy of being overpowered, awed, or influenced by its co-ordinate branches.” The judiciary has neither the power of the purse nor the sword, “neither force nor will, but merely judgment.”

Despite the judiciary’s apparent weakness, the literature has identified a number of channels through which violations of judicial rulings can be costly for the state. For example, Hilbink (2012, 598-9) discusses how Spanish judges and prosecutors in the early 1970s made public stands on and off the bench, “refusing to prosecute people for exercising their human rights and seeking to prosecute the police for abuses of power.” They clandestinely published documents, “denouncing the government’s many affronts to legal principles and to the professional integrity of the judiciary” at significant personal risk. In this case, the judiciary not only exercised its own discretion to protect activists against the wishes of the state, but it also imposed costs on the regime by publicizing its abuse of power. As this example demonstrates, by appointing a fraction of the judiciary who is sympathetic to legitimate activists, the bad government can control the chance that some of its future attempts to repress legitimate activists will be publicized, making them too costly to pursue.<sup>5</sup>

Ignoring judicial rulings in the context of coercion and human rights undermines the judiciary’s credibility more broadly, which is costly to the regime if the credible functioning of the judiciary in other contexts benefits the regime. For example, “the Egyptian Supreme Constitutional Court leveraged the important role that it played in the regime’s economic reform program to simultaneously push for a modest expansion of political rights” (Moustafa 2014, p. 288)—see also Rosberg (1995) and Ip (2012). Generally, like any organization that performs multiple, intertwined tasks, disrupting the routine functioning of the judiciary in one area of the law can spill over to other areas and reduce the benefits that they provide. Thus, interfering in the functioning of the judiciary in the area of coercion and human rights may reduce its effectiveness in the economic arena as well,

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<sup>5</sup>In the context of our model, if the judiciary “blows the whistle” on the government’s repression attempt, then citizens will infer that the activists are good and the government is bad. The citizens will therefore support the opposition.



imposing large costs on the regime. If one perceives the regime as a sufficiently patient player engaging in long interaction with the population, then similar logic applies, even if the judiciary is only active in the area of human rights. By ignoring the judiciary’s unfavorable ruling today, the government undermines the judiciary’s credibility in the future. Because maintaining the judiciary’s future credibility is valuable to the government today, the cost of ignoring the judiciary will be very large if the government is sufficiently patient.<sup>6</sup>

More broadly, the role of the judiciary as a commitment device is implicit in prevailing theories of judicial independence, regardless of the particular channels that they emphasize, including economic development, imposing restrictions on a regime’s successors, or monitoring the bureaucracy (Shapiro 1981; Verner 1984; Peerenboom 2002; Ginsburg 2003; Ginsburg and Moustafa 2008; Hirschl 2004; Epperly 2013). For example, the argument that an independent judiciary enforces contracts and promotes economic growth relies on the idea that if the judiciary rules against the regime in a contract dispute, ignoring that ruling will impose sufficient direct costs on the regime to induce it to comply. Similar logic appears in the literature on institutions more broadly. For example, in Acemoglu and Robinson (2001, 2006) and Boix (2003), where “democratization” (as opposed to redistribution without democratization) commits the elite to redistribute wealth by imposing a direct cost if it reverses course. Similarly, our partially independent judiciary commits the regime to restrict its repression of legitimate dissidents by imposing a direct cost on the regime.

From a methodological perspective, our analysis treats commitment power in a novel way. Unlike the political delegation literature in which the uninformed principal commits to restrict the informed agent’s decisions (Alonso and Matouschek 2008; Callander and Krehbiel 2014), in our model it is the informed agent—the bad government—who commits ex-ante to restrict *his own* subsequent choices. Moreover, our application requires that the typical state actors in the autocratic regime (i.e., the bad government) set up the institutional structure of the regime, which provide the basis of commitment power. This implies that only the bad government can commit, generating multiple equilibria. To remedy this, we develop a refinement similar to Selten’s trembling hand refinement (Fudenberg and Tirole 2000, p. 351-6)—in the Online Appendix we analyze the setting in which good and the bad government types can commit. That the informed agent (the government) also has a private conflict of interest, and that only one of the agent types can commit are among the new features of our analysis.

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<sup>6</sup>It should not be taken for granted that in the absence of a judiciary, reputation effects alone will be enough to induce the bad government to limit repression of the good opposition. This would be the case, for example, if the type of the opposition is observed by the public at the end of each period. However, if only the government’s actions are observed, then a “bad reputation” effect could arise, as in Ely and Valimaki (2003).

### 3 BENCHMARK MODEL 1: NO COMMITMENT

As a benchmark, we consider the model of Shadmehr and Boleslavsky (2019). There are two strategic players, a government and a public. There is also a non-strategic player, an opposition group who protests, demanding a set of social changes. The opposition has two types: a “good” opposition (type  $g$ ) demands reforms that would benefit the public. A “bad” opposition (type  $b$ ) demands reforms that would harm the public. The government has two types also, “good” ( $G$ ) or “bad” ( $B$ ). A good government prefers good reforms over the status quo and prefers the status quo over bad reforms. The bad government prefers good reforms to bad reforms, but prefers the status quo over all types of reform. Both government types derive a payoff from staying in power. The government observes the opposition’s type, but the public does not observe the types of the government or the opposition. There is a common prior that the government is bad with probability  $p \in (0, 1)$ , and the opposition is bad with probability  $q \in (0, 1)$ .

The game proceeds as follows. First, nature chooses the types of the government and the opposition. The government observes the opposition’s type, and then decides whether to concede to the opposition or repress him. If the government concedes, the game ends. If it represses, the public decides whether to protest. When the public protests, the government is replaced by the opposition, who implements its preferred reform. Otherwise no reform is implemented and the government remains in office. Payoffs are realized at the end of the game.

The public’s payoff under the status quo is normalized to zero. If a good reform is implemented, the public’s payoff rises to  $b > 0$ . If a bad reform is implemented, the public’s payoff falls  $-b < 0$ . Thus, protesting has a downside: joining a *bad* opposition’s protest is worse for the public than supporting the government. The government’s payoff depends on whether or not it retains office, the terminal policy, and its type. If a government is toppled, then its payoff is normalized to zero. If the government remains in office without implementing any reforms, its payoff is 1. If the good government retains office by conceding to the good opposition’s demands, its terminal payoff is  $1 + \delta_g$ ; if it concedes to a bad opposition, its payoff is  $1 - \delta_b$ , where  $0 < \delta_i$  and  $\delta_b < 1$ . In contrast, if the bad government concedes to the good opposition, its payoff is  $1 - \alpha_g$ ; if it concedes to the bad opposition, its payoff is  $1 - \alpha_b$ , where  $0 < \alpha_g < \alpha_b < 1$ . We focus on the case where  $\delta_b < \alpha_g$ , so that the bad government’s incentives to repress the good opposition is larger than the good government’s incentives to repress the bad opposition. This captures the bad government’s strong incentives to maintain the status quo.

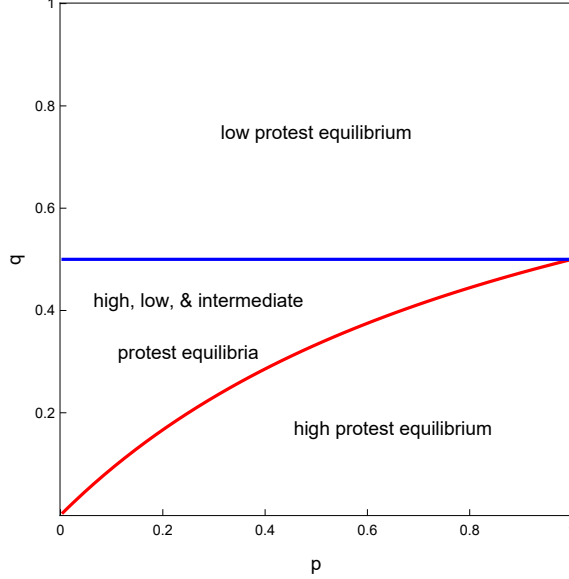


Figure 1: Equilibrium without Institutional Restrictions (Benchmark 1). The curve is  $q(p) = \frac{p}{1+p}$ . Proposition 1 describes the equilibrium.

**Strategies and Equilibrium.** The government's strategy is a quadruple,  $(\rho_g^G, \rho_b^G, \rho_g^B, \rho_b^B) \in [0, 1]^4$ , where  $\rho_j^i$  is the probability with which the type  $i \in \{G, B\}$  government represses the type  $j \in \{g, b\}$  opposition. The public's strategy is a probability,  $\pi \in [0, 1]$ , representing the probability of joining the protest following repression. The equilibrium concept is Perfect Bayesian subject to  $D1$  refinement (Fudenberg and Tirole 2000, p. 452).

**Analysis.** Shadmehr and Boleslavsky (2019) characterize the equilibria of this model. We present their equilibrium characterization here. Figure 1 demonstrates.

**Proposition 1 (Shadmehr & Boleslavsky 2019)** *In equilibrium,  $\rho_g^G = 0$  and  $\rho_b^B = 1$ . Further,*

- **Low Protest:** *If  $q > 1/2$ , there is a unique equilibrium with  $\rho_b^G = 1$ ,  $\rho_g^B = 1$ , and  $\pi = 0$ .*
- **High Protest:** *If  $q < \frac{p}{1+p}$ , there is a unique equilibrium with  $\rho_b^G = 0$ ,  $\rho_g^B = \frac{q}{1-q}$ , and  $\pi = \alpha_g$ .*
- **Intermediate Protest:** *If  $\frac{p}{1+p} \leq q \leq 1/2$ , both the above equilibria exist. In addition, there is an equilibrium with  $\rho_b^G = \frac{p}{1-p} \frac{1-2q}{q}$ ,  $\rho_g^B = 1$ , and  $\pi = \delta_b$ .*

When the opposition is sufficiently likely to be bad, the public does not want to support the opposition, and hence the government can repress without the worry of backlash protest. This constitutes the Low Protest Equilibrium. In contrast, when the opposition is sufficiently likely to be good, the public is so inclined to protest that the possibility of backlash protest completely

deters the good government from repressing the bad opposition and even somewhat deters the more repression-oriented bad government from repressing the good opposition. This constitutes the High Protest Equilibrium. The Intermediate Protest equilibrium is the middle ground between these two, where the public is likely enough to protest that it deters the good government, but not the bad government.

## 4 BENCHMARK MODEL 2: FULL COMMITMENT

In the previous benchmark, the government can not ex ante commit itself to a repression policy, e.g., it can not restrain itself from repressing good opposition. In this section, we analyze a game in which the bad government commits to a repression strategy prior to the game of Benchmark 1. The bad government moves first, choosing a strategy  $(r_b, r_g)$ , where  $r_i$  is the probability with which it will repress the type  $i$  opposition,  $i \in \{b, g\}$ . This choice is observable to all players. The rest of the game is identical to Benchmark 1. Next, nature moves, deciding what type of government will be in power. With probability  $p$  a bad government will be in power. With the remaining probability  $1-p$  a good government will be in power. Next, the opposition protests. The opposition is bad with probability  $q$  and good with probability  $1-q$ . The public knows these probabilities, but it does not observe the types of the government or the opposition. Then, the government responds to the opposition's protest. If the government is bad, it represses the type  $i$  opposition with the probability  $r_i$  that was chosen earlier. If the government is good, it chooses the probability  $\rho_i^G$  with which it represses the type  $i$  opposition. If the government concedes to the opposition, the game ends. If the government represses the opposition, the public decides whether or not to join the opposition's protest. If the public does not join the protest, the government remains in power. If the public does join the protest, the government is replaced and the opposition's reforms are implemented.<sup>7</sup>

**Analysis.** The extensive form of this game has a continuum of subgames, each of which follows a particular choice of  $(r_b, r_g)$  by the bad government. Because the bad government has already committed to  $(r_b, r_g)$ , the good government and the public are the strategic players in these subgames. The incentives of the good government and the public are similar to the Benchmark 1, except that, with commitment, they observe the bad government's strategy. Therefore, the public's best response is a mapping from the bad government's *observed* strategy  $(r_b, r_g)$  and the good government's *anticipated* strategy  $\rho_b^G$  into a protest probability.<sup>8</sup>

<sup>7</sup>In the Online Appendix, we analyze the case where both the good and the bad government can commit to a repression strategy.

<sup>8</sup>As before,  $\rho_g^G = 0$  in equilibrium because the good government prefers good reforms to the status quo.

**Lemma 1** *Given the strategy of the bad government  $(r_b, r_g)$  and the strategy of the good government  $\rho_b^G$ , the public's best response is:*

$$\pi(r_b, r_g; \rho_b^G) = \begin{cases} 1 & \text{if } F(r_b, r_g) > K\rho_b^G \\ [0, 1] & \text{if } F(r_b, r_g) = K\rho_b^G \\ 0 & \text{if } F(r_b, r_g) < K\rho_b^G \end{cases}$$

where  $F(r_b, r_g) \equiv ((1 - q)r_g - qr_b)b$  and  $K \equiv \frac{1-p}{p}qb$ .

Function  $F(r_b, r_g)$  is the net expected payoff from protesting versus not protesting against a bad government. With probability  $qr_b$ , the bad government has repressed a bad opposition group, and protesting reduces the public's payoff by  $b$ . With probability  $(1 - q)r_g$ , the bad government has repressed a good opposition group, and protesting raises the public's payoff by  $b$ . When  $F(r_b, r_g) > K$ , the public has a dominant strategy to always protest in the subgame, and hence the good government will never repress in the unique equilibrium of the subgame. Similarly, when  $F(r_b, r_g) < 0$ , the public has a dominant strategy to never protest and the good government always represses the bad opposition. In contrast, when  $0 \leq F(r_b, r_g) \leq K$  the public's best response depends on the good government's strategy, generating the potential for multiple equilibria.

Lemma 2 in the Online Appendix shows that when  $0 < F(r_b, r_g) < K$ , the subgame has three equilibria: in one the public does not protest, in another the public always protests, and in the third the public protests with probability  $\delta_b$ . This creates the possibility that the public and the good government switch from one equilibrium to another following each  $(r_b, r_g)$ . We impose the natural restriction that, for any  $(r_b, r_g)$  such that  $0 < F(r_b, r_g) < K$ , only one of the three equilibria is played in the subgame. In the text, we focus on the interesting case in which the protest probability is  $\delta_b$  whenever  $F(r_b, r_g) \in (0, K)$ .<sup>9</sup> Thus, depending on the bad government's strategy, the public's equilibrium protest probability takes one of the three values of 0,  $\delta_b$ , or 1. As the bad government represses the good opposition more, the likelihood that the protest spreads (weakly) increases as  $F(r_b, r_g)$  moves from  $F < 0$ , where the public never protests, to  $F \in (0, K)$ , where it sometimes protests, to  $F > K$ , where the public always protests. Therefore, the bad government has a tradeoff between repressing the good opposition with a higher probability and facing a higher probability of protest by the public.

The bad government's ability to commit to a strategy creates another complication. When  $F(r_b, r_g) = K$ , a continuum of equilibria are possible in the subgame: any  $\pi \in [0, \delta_b]$  with  $\rho_b^G = 1$

<sup>9</sup>Propositions 5 and 6 in the Online Appendix analyze the cases in which the protest probability is zero and one whenever  $F(r_b, r_g) \in (0, K)$ , establishing that no protest takes place in equilibrium.

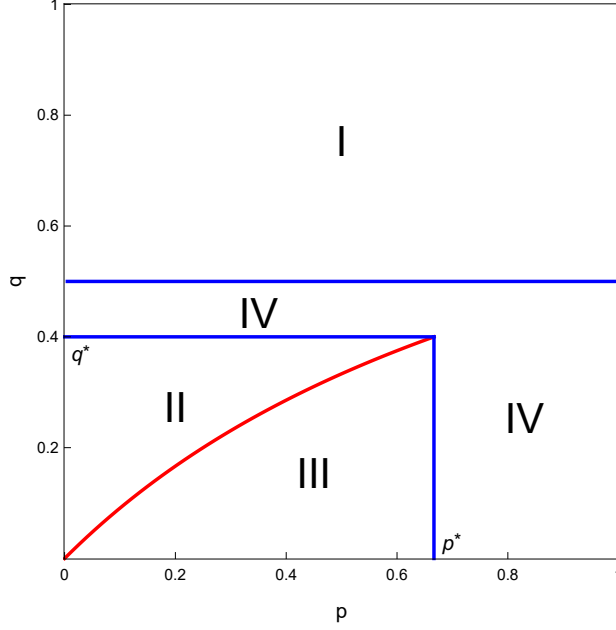


Figure 2: Equilibrium with Full Commitment. The red curve is  $q(p) = \frac{p}{1+p}$ . Proposition 2 describes the equilibrium.

can be part of the equilibrium—Lemma 2 in Online Appendix. Without commitment, these equilibria only arise in knife-edge cases. With commitment, however, the bad government may select a strategy with  $F(r_b, r_g) = K$ . Therefore, a refinement is needed to limit the set of possible equilibria. Using a similar logic to the trembling hand refinement, we show that the subgame with  $\pi = \delta_b$  is uniquely selected when  $F(r_b, r_g) = K$ . In particular, we introduce stochastic shocks to the bad government’s strategy, showing that as the support of the distribution of shocks vanishes, the equilibrium converges to one in which  $\pi = \delta_b$  (see Theorem 1 in the Online Appendix). Given these equilibrium selections, Proposition 2 formally describes the equilibrium, and Figure 2 illustrates the four equilibrium regions that arise.

**Proposition 2** *Suppose the bad government can commit to a strategy  $(r_b, r_g)$ . In equilibrium,*

1. *If  $\frac{1}{2} < q$ , then the strategies are identical to the Low Protest equilibrium (region I).*
2. *If  $\frac{p}{1+p} < q < q^*$ , strategies are identical to the Intermediate Protest equilibrium (region II).*
3. *If  $q < \frac{p}{1+p}$  and  $p < p^*$ , then  $r_b = \rho_b^G = 1$ ,  $r_g = \frac{q}{1-q} \frac{1}{p}$ , and  $\pi = \delta_b$  (region III).*
4. *Otherwise,  $r_b = \rho_b^G = 1$ ,  $r_g = \frac{q}{1-q}$ , and  $\pi = 0$  (region IV).*

Moreover,  $q^* = \frac{1}{2}(1 - \frac{\delta_b}{\alpha_g})$  and  $p^* = \frac{\alpha_g - \delta_b}{\alpha_g + \delta_b}$ .

By repressing the bad opposition more, the bad government gains directly from saving the concession costs, and indirectly from making the public update less negatively about the government and more negatively about the opposition. Therefore, the bad government always represses the bad opposition. However, when choosing how much to repress the good opposition, the bad government faces a tradeoff between the probabilities of repression and protest: as the discussion of Lemma 1 shows, increasing  $r_g$  can increase the protest probability from zero to  $\delta_b$ , or from  $\delta_b$  to 1. Clearly, the bad government does not repress so much that the public always protests following repression. But it may trade off a lower probability of protest for a higher probability of repression. That is, the bad government's choice, *in equilibrium*, boils down to choosing between *two* thresholds of repressing the good opposition. Let  $r_g = r_1$  be the low threshold and  $r_2$  be the high one. The bad government can choose  $r_1$  and eliminate the public's protest ( $\pi = 0$ ), or it can choose  $r_2 > r_1$  and risk the public's protest following repression with probability  $\delta_b$ .

When  $q > 1/2$ , the likelihood of a bad opposition is sufficiently high that even if the bad government always represses, the public never protests.<sup>10</sup> When  $\frac{p}{1+p} < q < 1/2$ , if the bad government always represses, then the public protests with probability  $\delta_b$ . Thus, the bad government has two potentially optimal choices: (1) repress both types of opposition with probability one ( $r_2 = 1$ ) and face the public's protest with probability  $\delta_b$ , or (2) limit the repression of the good opposition to  $r_1 = \frac{q}{1-q} < 1$ , ensuring that the public does not protest. When the opposition is relatively likely to be good ( $q < q^* = (1/2)(1 - \frac{\delta_b}{\alpha_g})$ ), repressing the good opposition with a higher probability is more valuable to the bad government, and it chooses the first option (region II). Otherwise,  $q^* < q < 1/2$ , and it chooses the second option (in region IV).

In contrast, when  $q < \frac{p}{1+p}$ , the likelihood of a bad opposition is small enough that if the government were to always repress, the public would protest with probability one. Therefore, the bad government's equilibrium choices boil down to two:<sup>11</sup> (1) If it represses the good opposition with a smaller probability,  $r_1 = \frac{q}{1-q}$ , then the public does not protest in equilibrium. (2) If it represses the good opposition with a larger probability  $r_2 = \frac{q}{1-q} \frac{1}{p}$ , then the public protests with probability  $\delta_b$ . As  $p$  increases, the public believes that the government is more likely to be bad. As a result, it becomes more inclined to join the opposition's protest, limiting the government's ability to repress the good opposition:  $r_2(p)$  is decreasing in  $p$ . Therefore, when  $p$  is large (region IV), the government chooses

<sup>10</sup>The thresholds  $q = 1/2$  and  $q = \frac{p}{1+p}$  determine the value of  $F(1, 1, q)$ , where we have made the dependency of  $F$  on  $q$  explicit. When  $q > 1/2$ ,  $F(1, 1, q) < 0$ , and hence the bad government who chooses  $r_g = 1$  faces  $\pi = 0$ . When  $\frac{p}{1+p} < q < 1/2$ ,  $F(1, 1, q) \in (0, K)$ , and hence the bad government who chooses  $r_g = 1$  faces  $\pi = \delta_b$ . When  $q < \frac{p}{1+p}$ ,  $F(1, 1, q) > K$ , and hence the bad government who chooses  $r_g = 1$  faces  $\pi = 1$ .

<sup>11</sup>These choices correspond to  $F(1, r_1) = 0$  and  $F(1, r_2) = K$ .

option (1) in which the public does not protest. When  $p$  is smaller (region III),  $r_2(p)$  is sufficiently large that the gain from raising the repression probability from  $r_1$  to  $r_2(p)$  offsets the corresponding increase in the protest probability from 0 to  $\delta_b$ , and hence the government chooses option (2).

These outcomes are the best that a bad government can achieve with commitment power. Before we explore the effects of full commitment, we present our model of partially independent judiciaries. We show that the bad governments can achieve the same outcomes with the more limited form of commitment that they can get with a partially independent judiciary, which sometimes blocks the repression of good opposition groups. Thus, the results obtained under full commitment in this section (Benchmark 2) can be obtained with a partially independent judiciary.

## 5 A MODEL OF PARTIALLY INDEPENDENT JUDICIARY

We conceptualize the essence of judicial independence in the area of human rights as the judiciary's ability to block the government's attempt at repressing legitimate opposition. The degree of judicial independence is captured by the extent to which the judiciary succeeds in blocking such government's attempts. Thus, we model the degree of judicial independence as a probability,  $C \in [0, 1]$ , with which the judiciary blocks a government's attempt to repress a good opposition group. We develop a model to study whether and when autocratic regimes choose a positive degree of judicial independence.

We now describe the model. First, the bad government decides a degree of judicial independence  $C \in [0, 1]$ . The subgame that follows is similar to our Benchmark 1. Nature moves, putting a bad government in power with probability  $p \in (0, 1)$ , and putting a good government in power with the remaining probability  $1 - p$ . Nature also determines the opposition's type, which will be bad with probability  $q \in (0, 1)$ , and good with the remaining probability  $1 - q$ . The government knows its own type and the opposition's type, but the public does not know either type. Next, the government in power chooses whether to repress the opposition or concede to it. If the government concedes, the game ends. If the government attempts to repress the opposition and is not blocked by the judiciary, the public observes repression and decides whether to protest. However, the government's attempt to repress a good opposition is blocked by the judiciary with probability  $C$ , in which case the government is forced to concede to the opposition and the game ends. The public knows the presence and the function of the judiciary, but does not observe whether a judiciary has attempted to block the government's repression. That is, when the public observes repression, it does not know whether the judiciary has attempted to block that the government's repression and



failed, or the judiciary has not attempted to block the government.

Proposition 3 shows that if the bad government commits to a level of judicial independence, subject to an equilibrium selection that we describe in the Online Appendix, equilibrium outcomes are equivalent to the ones that arise if it commits to a repression strategy. That is, the game in which the bad government commits to a level of judicial independence  $C$  is outcome-equivalent to the game in Benchmark 2, in which the bad government can fully commit to a repression strategy  $(r_b, r_g)$ .

**Proposition 3** *Partially independent judiciaries can generate the same outcome as when the regime can fully commit to a precise repression strategy (Benchmark 2).*

To see the key intuition, note that in regions III and IV of Figure 2 (the two cases where the bad government's commitment power is relevant), the bad government supports an equilibrium with a low likelihood of protest by committing to repress the good opposition with probability  $r_g < 1$ . However, given the low likelihood of protest ( $\pi < \alpha_g$ ), if the bad government's commitment power were removed, then the bad government would like to deviate by repressing the good opposition with probability one; absent other restrictions on the government's strategy, this would upset the equilibrium. Now, suppose that when the bad government's commitment power is removed, an independent judiciary is simultaneously introduced, which blocks the government's attempt to repress a good opposition with probability  $C = 1 - r_g$ . The bad government still *tries* to repress the good opposition with probability one, but it only succeeds with probability  $r_g$ . Therefore, the likelihood that the good opposition is repressed is identical to the equilibrium with precise commitment, the public's beliefs are unchanged, and the strategies of the public and good government continue to be best responses. Thus, the equilibrium that arises when the bad government commits to its strategy can be recreated by selecting a particular level of judicial independence.

To make this argument precise, one must also select the equilibrium in a consistent manner in both settings—recall that both settings feature multiple equilibria in the subgame that follows the bad government's choice. We describe this equilibrium selection in the Online Appendix. With this equilibrium selection, the equilibrium of the game in which the bad government commits to a repression strategy and the equilibrium of the game in which the bad government chooses the level of judicial independence are outcome-equivalent. That is, the probability that each type of government *successfully* represses each type of opposition and the probability that the public joins the protest are identical in both.

Proposition 3 allows to use our characterization in Benchmark 2 to study the origins and func-

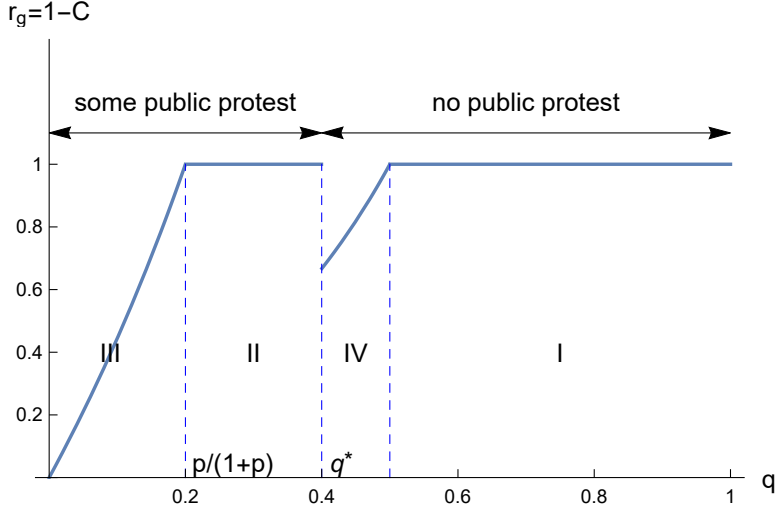


Figure 3: The bad government’s equilibrium likelihood of repressing the good opposition as a function of the prior likelihood  $q$  that the opposition is bad—for a given  $p < p^*$ . A higher level of repression  $r_g$  corresponds to a lower level of judicial independence:  $C = 1 - r_g$ .

tioning of judicial independence. Corollary 1 demonstrates the sharp effect of designing a partially independent judiciary in preventing the spread of protest.

**Corollary 1** *In equilibrium, the public does not protest upon repression if and only if the probability that the government is bad or the probability that the opposition is bad is sufficiently large. There exists  $(p^*, q^*) \in (0, 1)^2$  such that  $\pi = 0$  in equilibrium if and only if  $q > q^*$  or  $p > p^*$ .*

Proposition 2 and Figure 2 show that the bad government uses a partially independent judiciary to limit its own repression in regions III and IV. To understand the effects of this endogenous restriction, we analyze how the government’s equilibrium behavior varies with  $q$ , focusing on the interesting case when  $p < p^*$ . Figure 3 illustrates. An increases in  $q$  has two conflicting effects: (1) it reduces the bad government’s ex-ante incentives to repress the good opposition because the opposition is less likely to be good, and (2) it reduces the public’s incentives to protest following repression because it would be (i) less likely that a good opposition is repressed, and (ii) more likely that the public would be supporting a bad opposition.<sup>12</sup>

Recall that the bad government’s equilibrium choices are effectively between a low likelihood  $r_1$  of repressing the good opposition (high judicial independence,  $C_1 = 1 - r_1$ ) and a high likelihood  $r_2$  of repressing the good opposition (low judicial independence,  $C_2 = 1 - r_2$ ). When  $q$  increases, both

<sup>12</sup>Although (i) and (ii) seem to be the flip sides of the same coin, the public incurs the associated costs of (ii) *only* if it protests with a positive probability.

$r_1$  and  $r_2$  rise (until  $r_2$  reaches 1), but  $r_2$  rises faster so that  $r_2 - r_1$  also increases. The reason that  $r_2$  rises faster is that when  $r_g = r_1$ , the public does not protest ( $\pi = 0$ ), and hence the reduction in the likelihood that protest can lead to bad reforms (i.e., effect (ii)) is irrelevant. In contrast, when  $r_g = r_2$ , the public protests with probability  $\pi = \delta_b$ , and hence both (i) and (ii) contribute to reducing incentives to protest, and hence to raise  $r_2$ .

When  $q$  is small (region III), so that the good opposition is relatively likely, both  $(r_2 - r_1)$  and the ex-ante value of repressing the good opposition are sufficiently large that it is worth it for the bad government to risk protest and choose the high repression threshold, i.e., low level of judicial independence. As  $q$  increases, as long as  $r_2 < 1$ ,  $r_2 - r_1$  rises in region III until  $r_2$  reaches 1 at the boundary of region II,  $q = \frac{p}{1+p}$ . Now, because  $r_2 = 1$  and cannot rise any further, increases in  $q$  reduce  $r_2 - r_1$  until the bad government's gains of raising repression from  $r_1$  to  $r_2 = 1$  become so small that it is not worth to raise the likelihood of the public's protest from 0 to  $\delta_b$ . This happens at the boundary  $q = q^*$  of region IV, where the bad government switches from the higher threshold to the low threshold  $r_1(q)$  (i.e., from low to high level of judicial independence  $C_1(q) = 1 - r_1(q)$ ). From this point on, increases in  $q$  keep raising  $r_1(q)$  until  $r_1 = 1$  at the boundary  $q = 1/2$  of region I. As Figure 3 shows, when  $p < p^*$ , both the bad government's likelihood of repression and whether or not it ex-ante limits repression are non-monotone in  $q$ . The bad government limits its repression when  $q$  is low (region III) or high (IV), but not when it is intermediate (region II) or very high (region I). The bad government established a partially independent judiciary when  $q$  is low (region III) or high (IV), but not when it is intermediate (region II) or very high (region I).

**Corollary 2** *When  $p < p^*$ , the bad government's likelihood of repressing the good opposition is non-monotone in the prior likelihood  $q$  that the opposition is bad. Equivalently, when  $p < p^*$ , the degree of judicial independence  $C$  is non-monotone in the prior likelihood  $q$  that the opposition is bad. In contrast, the degree of judicial independence  $C$  is increasing in the prior likelihood  $p$  that the government is bad.*

One may think that when a regime limits its own repression by establishing a partially independent judiciary, it must repress the good opposition *less often* in order to gain by manipulating the public's equilibrium beliefs, so that they protest less following repression. However, this argument does not take into account that sometimes good governments are in charge in autocratic regimes, and even though they may not be able to change the fundamental institutions of the regime, they do respond to the existing institutions such as partially independent judiciary. Knowing that the bad

government cannot successfully repress the good opposition beyond a certain level due to the judiciary, the public updates less negatively about the government and more negatively about the opposition following repression, and hence it is less inclined to protest. This raises the good government's incentive to repress the bad opposition, which, in turn, further reduces the public's incentive to protest, and so on. It is this effect that allows the bad government, in region III, to repress *more* than what it would do absent the judiciary, and yet to face a lower probability of the public's protest.<sup>13</sup>

**Corollary 3** *When  $q < q_1(p)$  and  $p < p^*$ , the bad government represses the good opposition more often in the presence of a partially independent judiciary.*

Given the low likelihood that the public protests following repression, absent the judiciary, the bad government would raise repression and always repress the good opposition, thereby upsetting the equilibrium. The judiciary benefits the bad government by enabling it to support the equilibrium in which the good government always represses the bad opposition; the bad government leverages this by raising the repression of the good opposition. Similar strategic considerations arise in region IV. There, the bad government represses as much as it would do in the High Protest equilibrium absent the judiciary (in Benchmark 1), but eliminates the public's protest all together. To summarize, the bad government exploits its commitment power afforded to him by a partially independent judiciary in two distinct ways: in region III, it *raises* repression, and yet *lowers* the likelihood of the public's protest; and in region IV, it maintains the same level of repression (as in the High Protest equilibrium of Benchmark 1 without the judiciary), but eliminates the risk of the public's protest.

By creating an independent judiciary that limits repression of the good opposition, the bad government manipulates public opinion in its favor, reducing the public's incentive to protest. Consequently, the good government is more inclined to repress the bad opposition, further reinforcing the favorable shift in the public's beliefs. These effects reduce the endogenous cost of repression for the state, resulting in a lower likelihood of protest and a higher likelihood of repression in equilibrium. In particular in region III of Figure 2, the bad government introduces a judiciary with a relatively low degree of independence, reducing the equilibrium level of protest from  $\pi = \alpha_g$  (in the absence of judiciary) to  $\pi = \delta_b$  and increasing the likelihood with which it *successfully* represses the good opposition (see Corollary 8). In region IV, the bad government introduces a judiciary with

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<sup>13</sup>From Propositions 1, when  $q < \frac{p}{1+p}$ , including region III, the bad government represses with probability  $\rho_g^B = \frac{q}{1-q}$  which is *less* than the level of repression  $r_g = \frac{q}{1-q} \frac{1}{p}$  when there is a judiciary. Notably, absent the judiciary, the good government does not repress in equilibrium; in contrast, with the judiciary, the good government always represses the bad opposition.

a higher degree of independence, supporting an equilibrium in which the good government always represses the bad opposition and the public never protests.<sup>14</sup>

## 6 CONCLUSION

Imprisonment, torture, killing, and disappearances are the staple of dictatorships. Yet, while some autocracies completely subdue their judiciary, others exhibit a degree of judicial independence as judges strike down government attempts to repress dissidents. This degree of judicial independence varies across countries. As discussed in the Introduction, in the Brazilian military regime, (security) courts struck down many government attempts to repress dissidents, but in Argentina, courts did little to protect dissidents (Pereira 2008). The degree of judicial independence can also vary over time. In Egypt, for example, Sadat came to power after Nasser’s assassination by Islamists, at a time of deep unpopularity of the regime. Consistent with our analysis, judicial independence increased under Sadat. Even in the sphere of security, judges did not act as obedient agents of the executive. They continued to acquiesce to the repression of the Muslim Brotherhood, but protected other groups with more regularity. The Supreme Constitutional Court, created in 1979, began to rule against the government regularly, in some years striking down more laws than it upheld (Brown 2012).

Why do some dictatorships allow judicial independence, even though this independence enables judges to constrain the government’s ability to repress dissidents? We suggest that by granting the courts the authority to constrain repression, the authoritarian regime manipulates public opinion about the merits of repression in its favor, thereby reducing backlash public protests and increasing the regime’s stability. Our logic has two building blocks: an underlying mechanism and its implementation. The underlying mechanism is informational. By committing to repress legitimate dissidents less, authoritarian regimes shift public opinion against dissidents and in their own favor. When a government is less likely to repress legitimate dissidents, the public becomes more likely to believe that an act of coercion by the state is a “legitimate coercion” (Almond 1956; Mansbridge 2012, 2014). But how can the regime commit to restrain its repression of legitimate dissidents to implement this mechanism? The implementation of this informational mechanism is institutional: By establishing a partially independent judiciary the regime commits to constrain its own repression.

Our argument paints partially independent judiciaries as instruments of social control in the

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<sup>14</sup>In some cases, the bad government prefers not to establish an independent judiciary that constrains repression; this happens when the opposition is very unpopular (region I) or when both opposition and government are popular but the government is relatively more popular than the opposition (region II).

spirit of Foucault: their effectiveness lies in manipulating how the people process the information content of repression (Foucault 1981). Unlike censorship or propaganda that directly affect the *information* available to the public, judicial independence affects the way that information is *processed* by the general public in indirect and subtle ways—which the judges themselves may not intend. Judges who sometimes have the authority to tie the state’s hand can indirectly enable regimes to control how the public views acts of coercion, promoting the interests of the state (Fuller 1975).

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# Online Appendix: Proofs and Extensions

## A PROOFS

We provide the proofs and extensions for a more general payoff structure of the game. In particular, under the status quo, the public's payoff is 0 if the government is good, and  $-\beta \leq 0$  if the government is bad. If a good reform is implemented, the public's payoff rises to  $\beta_g > 0$ . If a bad reform is implemented the public's payoff falls to  $-\beta_b < 0$ , with  $-\beta_b < -\beta$ . The public's payoffs in the text is a special case of this generalized payoffs, where  $\beta = 0$  and  $\beta_g = \beta_b = b$ .

We omit the proof of Proposition 1 because it corresponds to Proposition 2 in Shadmehr and Boleslavsky (2019) and its proof appears in that paper. Here, we provide the proofs for Lemma 1, Proposition 2 and Proposition 3 of this paper. We also present and prove a theorem regarding equilibrium selection. We omit the proofs of Corollaries 1-3 because they follow immediately from Propositions 2 and 3.

### A.1 LEMMA 1

**Lemma 1** *Given the strategy of the bad government  $(r_b, r_g)$  and the strategy of the good government  $\rho_b^G$ , the public's best response is:*

$$\pi(r_b, r_g; \rho_b^G) = \begin{cases} 1 & \text{if } F(r_b, r_g) > K\rho_b^G \\ [0, 1] & \text{if } F(r_b, r_g) = K\rho_b^G \\ 0 & \text{if } F(r_b, r_g) < K\rho_b^G \end{cases}$$

where  $F(r_b, r_g) \equiv (1 - q)(\beta_g + \beta)r_g - q(\beta_b - \beta)r_b$  and  $K \equiv \frac{1-p}{p}q\beta_b$ .

**Proof of Lemma 1.** Let  $p'$  be the public's posterior probability that the government is bad, and let  $q'$  be the public's posterior probability that the opposition is bad. The public's best response is:

$$(1) \quad \pi = \begin{cases} 1 & \text{if } \beta_g(1 - q') - \beta_b q' > -\beta p' \\ [0, 1] & \text{if } \beta_g(1 - q') - \beta_b q' = -\beta p' \\ 0 & \text{if } \beta_g(1 - q') - \beta_b q' < -\beta p', \end{cases}$$

where the public's updated beliefs  $p'$  and  $q'$  depend on the government's strategy in equilibrium.

Moreover, recall that a good government never represses a good opposition,  $\rho_g^G = 0$ . Thus,

Bayes rule implies:

$$(2) \quad p' = \frac{p[qr_b + (1-q)r_g]}{p[qr_b + (1-q)r_g] + (1-p)q\rho_b^G} \quad q' = \frac{q[(1-p)\rho_b^G + pr_b]}{q[(1-p)\rho_b^G + pr_b] + p(1-q)r_b}.$$

Substituting from the public's posterior belief, equation (2), into equation (1) gives the result. ■

## A.2 PROPOSITION 2

**Proposition 2** *Suppose the bad government can commit to a strategy  $(r_b, r_g)$ . There exist an increasing curve,  $q_1(p) = \frac{(\beta+\beta_g)p}{\beta_b+\beta_g p}$ , and three constants,  $q_2 = \frac{\beta+\beta_g}{\beta_b+\beta_g}$ ,  $q^* = q_2(1 - \frac{\delta_b}{\alpha_g})$ , and  $p^* = \frac{\beta_b(\alpha_g - \delta_b)}{\beta_b\alpha_g + \delta_b\beta_g}$ , with  $0 < q_1(p), q^* < q_2 < 1$ , such that, in equilibrium:*

1. *If  $q_2 < q$ , then the strategies are identical to the Low Protest equilibrium (region I).*
2. *If  $q_1(p) < q < q^*$ , strategies are identical to the Intermediate Protest equilibrium (region II).*
3. *If  $q < q_1(p)$  and  $p < p^*$ , then  $r_b = \rho_b^G = 1$ ,  $r_g = \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta + \beta_g)}$ , and  $\pi = \delta_b$  (region III).*
4. *Otherwise,  $r_b = \rho_b^G = 1$ ,  $r_g = \frac{q}{1-q} \frac{\beta_b - \beta}{\beta + \beta_g}$ , and  $\pi = 0$  (region IV).*

First, we present four Lemmas, which we will use to prove Proposition 2.

**Lemma 2** *Fix the bad government's strategy  $(r_b, r_g)$ . The following characterizes the equilibria of the subgame:*

1. *If  $F(r_b, r_g) < 0$ , then the unique equilibrium of the subgame has  $\pi = 0$  and  $\rho_b^G = 1$ .*
2. *If  $F(r_b, r_g) > K$ , then the unique equilibrium of the subgame has  $\pi = 1$  and  $\rho_b^G = 0$ .*
3. *If  $0 < F(r_b, r_g) < K$ , then the equilibria described in (1) and (2) both exist. In addition, there is an equilibrium of the subgame in which  $\pi = \delta_b$  and  $\rho_b^G = pF(r_b, r_g)/((1-p)q\beta_b)$ .*
4. *If  $F(r_b, r_g) = 0$ , then the equilibrium described in (1) exists. In addition, a continuum of equilibria exist in which  $\pi \in [\delta_b, 1]$  and  $\rho_b^G = 0$ .*
5. *If  $F(r_b, r_g) = K$ , then the equilibrium described in (2) exists. In addition, a continuum of equilibria exist in which  $\pi \in [0, \delta_b]$  and  $\rho_b^G = 1$ .*

**Proof.** A government's expected payoff from repression is  $1 - \pi$ . However, if the government concedes, its payoff depends on both its type and the opposition's type. Because the good government

prefers a good reform to the status quo ( $\delta_g > 0$ ), it always concedes to the good opposition,  $\rho_g^G = 0$ . Moreover, recall that the good government's payoff from conceding to a bad opposition is  $1 - \delta_b$ . Thus, the best response of the good government is:

$$(3) \quad \rho_b^G = \begin{cases} 1 & ; \pi < \delta_b \\ [0, 1] & ; \pi = \delta_b \\ 0 & ; \pi > \delta_b. \end{cases}$$

(1) If  $(r_b, r_g)$  is such that  $F(r_b, r_g) < 0$ , then  $F(r_b, r_g) < K\rho_b^G$  for any  $\rho_b^G \in [0, 1]$ . Hence, in the subgame  $\pi = 0$  for any  $\rho_b^G \in [0, 1]$ . Because  $\pi = 0$ , equation (3) requires that  $\rho_b^G = 1$ .

(2) If  $(r_b, r_g)$  is such that  $F(r_b, r_g) > K$ , then  $F(r_b, r_g) > K\rho_b^G$  for any  $\rho_b^G \in [0, 1]$ . Hence, in the subgame  $\pi = 1$  for any  $\rho_b^G \in [0, 1]$ . Because  $\pi = 1$ , equation (3) requires that  $\rho_b^G = 0$ .

(3) Suppose  $(r_b, r_g)$  is such that  $F(r_b, r_g) \in (0, K)$ . If  $\rho_b^G = 1$ , then  $\pi = 0$  from Lemma 1; conversely,  $\rho_b^G = 1$  is consistent with equation (3) when  $\pi = 0$ . If  $\rho_b^G = 0$ , then  $\pi = 1$  from Lemma 1; conversely,  $\rho_b^G = 0$  is consistent with equation (3) when  $\pi = 1$ . If  $\rho_b^G \in (0, 1)$ , then equation (3) implies that  $\pi = \delta_b$ ; conversely, Lemma 1 implies that if  $\rho_b^G = F(r_b, r_g)/K \in (0, 1)$ , then  $\pi = \delta_b$  is a best response.

(4) Suppose  $(r_b, r_g)$  is such that  $F(r_b, r_g) = 0$ . If  $\rho_b^G \in (0, 1]$ , then  $\pi = 0$  from Lemma 1; conversely, when  $\pi = 0$ , equation (3) implies that  $\rho_b^G = 1$ . If  $\rho_b^G = 0$ , then Lemma 1 implies that  $\pi = [0, 1]$ ; conversely, equation (3) implies that  $\rho_b^G = 0$  is a best response if and only if  $\pi \in [\delta_b, 1]$ .

(5) Suppose  $(r_b, r_g)$  is such that  $F(r_b, r_g) = K$ . If  $\rho_b^G \in [0, 1)$ , then  $\pi = 1$  from Lemma 1; conversely, when  $\pi = 1$ , equation (3) implies that  $\rho_b^G = 0$ . If  $\rho_b^G = 1$ , then Lemma 1 implies that  $\pi = [0, 1]$ ; conversely, equation (3) implies that  $\rho_b^G = 1$  is a best response if and only if  $\pi \in [0, \delta_b]$ . ■

**Lemma 3** *If  $q > q_2$ , then there is a unique equilibrium in which  $r_b = r_g = \rho_b^G = 1$  and  $\pi = 0$ .*

**Proof.** If  $q > q_2$ , then  $F(1, 1) < 0$ , which implies  $\pi = 0$  from Lemma 2. Thus,  $\rho_b^G = 1$ . The bad government's payoff is  $B(1, 1, 0) = 1$  which is strictly larger than  $B(r_b, r_g, \pi)$  for any  $(r_b, r_g) \neq (1, 1)$ .

■

**Equilibrium Selection.** Next, we impose the equilibrium selection ES1, and make the observa-

tion ES2:

**ES1.** If  $F(r_b, r_g) = K$ , then in the equilibrium of the subgame we have  $\pi = \delta_b$  and  $\rho_b^G = 1$ .

**ES2.** If  $F(r_b, r_g) = 0$ , then in the equilibrium of the subgame we have  $\pi = 0$  and  $\rho_b^G = 1$ .

ES1 is an equilibrium selection that is justified using a refinement similar to trembling hand in Theorem 1. ES2 is justified in Lemma 6.

**Lemma 4** 1. If  $q < q_2$ , then  $R_0 \equiv (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})$  is the unique strategy that maximizes the bad government's expected payoff among all  $(r_b, r_g)$  for which  $F(r_b, r_g) \leq 0$ , and the associated payoff is  $B_0 \equiv 1 - \alpha_g(1 - q/q_2)$ .

2. If  $q_1(p) \leq q < q_2$ , then  $R_1 \equiv (1, 1)$  is the unique strategy that maximizes the bad government's expected payoff among all  $(r_b, r_g)$  for which  $0 < F(r_b, r_g) \leq K$ , and the associated payoff is  $B_1 \equiv 1 - \delta_b$ .

3. If  $q < q_1(p)$ , then  $R_2 \equiv (1, \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta_g + \beta)})$  is the unique strategy that maximizes the bad government's expected payoff among  $(r_b, r_g)$  for which  $0 < F(r_b, r_g) \leq K$ , and the associated payoff is:

$$B_2 \equiv 1 - \alpha_g \left(1 - \frac{q}{q_2}\right) + \frac{q(\beta_b(\alpha_g - \delta_b) - p(\beta_b\alpha_g + \delta_b\beta_g))}{p(\beta + \beta_g)}.$$

**Proof.** Let  $B(r_b, r_g, \pi)$  be the bad government's payoff, if it remains in power, from  $(r_b, r_g)$  that induces protest probability  $\pi$  in the equilibrium of the subgame:

$$(4) \quad B(r_b, r_g, \pi) = q [r_b(1 - \pi) + (1 - r_b)(1 - \alpha_b)] + (1 - q) [r_g(1 - \pi) + (1 - r_g)(1 - \alpha_g)],$$

so that the bad government's ex-ante payoff is  $pB(r_b, r_g, \pi)$ .

1. If  $F(r_b, r_g) \leq 0$  and  $q < q_2$ , then  $\pi = 0$  in the equilibrium of the subgame. From (4), the payoff of such a strategy is:

$$B(r_b, r_g, 0) = q(r_b + (1 - r_b)(1 - \alpha_b)) + (1 - q)(r_g + (1 - r_g)(1 - \alpha_g)).$$

Thus, the government's problem becomes:

$$\max_{(r_b, r_g) \in [0, 1]^2} B(r_b, r_g, 0) \quad \text{s.t.} \quad F(r_b, r_g) \leq 0.$$

$B(r_b, r_g, 0)$  is increasing in both  $r_b$  and  $r_g$ . Because  $F(r_b, r_g)$  is decreasing in  $r_b$ , we must have  $r_b = 1$  at the optimum. Because  $q < q_2$ ,  $F(1, 1) > 0$ , and hence  $r_b = r_g = 1$  is not feasible. Because

$F(r_b, r_g)$  is increasing in  $r_g$ , we must have  $F(1, r_g) = 0$  at the optimum  $r_g$ . Finally,  $F(1, r_g) = 0$  implies  $r_g = \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}$ .  $B_0$  is derived from substituting  $(r_b, r_g) = (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})$  into  $B(r_b, r_g, 0)$ .

If  $0 < F(r_b, r_g) \leq K$ , then  $\pi = \delta_b$  in the equilibrium of the subgame. From (4), the bad government's payoff from any such strategy is:

$$B(r_b, r_g, \delta_b) = q [r_b(1 - \delta_b) + (1 - r_b)(1 - \alpha_b)] + (1 - q) [r_g(1 - \delta_b) + (1 - r_g)(1 - \alpha_g)].$$

Thus, the government's problem in parts 2 and 3 becomes:

$$\max_{(r_b, r_g) \in [0, 1]^2} B(r_b, r_g, \delta_b) \quad s.t. \quad 0 < F(r_b, r_g) \leq K.$$

Because  $\delta_b < \alpha_g < \alpha_b$ ,  $B(r_b, r_g, \delta_b)$  is increasing in both  $r_b$  and  $r_g$ .

2. If  $q_1(p) \leq q < q_2$ , then  $0 < F(1, 1) \leq K$ , and hence,  $r_b = r_g = 1$  is feasible. Because  $B(r_b, r_g, \delta_b)$  is increasing in  $r_b$  and  $r_g$ ,  $r_b = r_g = 1$  is the bad government's optimal choice.  $B_1$  is derived by substituting  $(r_b, r_g) = (1, 1)$  into  $B(r_b, r_g, \delta_b)$ .

3. When  $q < q_1(p)$ ,  $F(1, 1) > K$ , and hence the constraint  $F(r_b, r_g) = K$  binds. Because  $F$  is decreasing in  $r_b$ , we must have  $r_b = 1$  at the optimum. Then, the optimal  $r_g$  is derived from  $F(r_b = 1, r_g) = K$ . ■

**Lemma 5** *In equilibrium, the payoff of selecting any  $(r_b, r_g)$  such that  $F(r_b, r_g) > K$  is smaller than  $B_0$ .*

**Proof.** If  $F(r_b, r_g) > K$ , then  $\pi = 1$ , and hence  $B(r_b, r_g, 1) = q(1 - r_b)(1 - \alpha_b) + (1 - q)(1 - r_g)(1 - \alpha_g)$ . The bad government can benefit by deviating to  $(r_b, r_g) = (0, 0)$ , so that  $F(r_b, r_g) = 0$ , and its expected payoff becomes  $B(0, 0, 0) = q(1 - \alpha_b) + (1 - q)(1 - \alpha_g) > B(r_b, r_g, 1)$ . Because  $F(0, 0) = 0$ , but  $R_0 \neq (0, 0)$  is optimal among  $F(r_b, r_g) \leq 0$  it must be that  $B(0, 0, 0) < B_0$ . Summarizing, If  $F(r_b, r_g) > K$ , then  $B(r_b, r_g, 1) < B(0, 0, 0) < B_0$ . ■

**Proof of Proposition 2.** Lemma 3 establishes part 1. Thus, we focus on  $q < q_2$  in the rest of the proof.

Suppose  $q_1(p) < q < q_2$ . If  $B_0 > B_1$ , then Lemma 4 implies that  $R_0$  dominates any strategy for which  $F(r_b, r_g) \leq K$ , and Lemma 5 implies that  $R_0$  dominates any strategy for which  $F(r_b, r_g) > K$ . Hence, if  $B_0 > B_1$ , then  $R_0 = (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})$  dominates all  $(r_b, r_g) \in [0, 1]^2$ , and it is the bad government's equilibrium choice. If  $B_1 > B_0$ , then Lemma 4 implies that  $R_1$  dominates

any strategy for which  $F(r_b, r_g) \leq K$ . Because  $B_1 > B_0$ , Lemma 5 implies that  $R_1$  dominates any strategy for which  $F(r_b, r_g) > K$ . Hence, if  $B_1 > B_0$  then  $R_1 = (1, 1)$  dominates all  $(r_b, r_g) \in [0, 1]^2$ , and it is the bad government's equilibrium choice. Using  $B_0$  and  $B_1$  from Lemma 4,

$$B_1 > B_0 \text{ if and only if } q < q^* \equiv q_2 \left(1 - \frac{\delta_b}{\alpha_g}\right).$$

Thus, if  $q_1(p) < q < q^*$ , in equilibrium,  $(r_b, r_g) = (1, 1)$ ,  $\rho_b^G = \frac{F(1,1)}{K} \in (0, 1)$ , and  $\pi = \delta_b$ . If  $q^* < q < q_2$ , in equilibrium,  $(r_b, r_g) = (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})$ ,  $\rho_b^G = 1$ , and  $\pi = 0$ .

Suppose  $q < q_1(p)$ . If  $B_0 > B_2$ , then Lemma 4 implies that  $R_0$  dominates any strategy for which  $F(r_b, r_g) \leq K$ , and Lemma 5 implies that  $R_0$  dominates any strategy for which  $F(r_b, r_g) > K$ . Hence, if  $B_0 > B_2$ , then  $R_0 = (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})$  dominates all  $(r_b, r_g) \in [0, 1]^2$ , and it is the bad government's equilibrium choice. If  $B_2 > B_0$ , then Lemma 4 implies that  $R_2$  dominates any strategy for which  $F(r_b, r_g) \leq K$ . Because  $B_2 > B_0$ , Lemma 5 implies that  $R_2$  dominates any strategy for which  $F(r_b, r_g) > K$ . Hence, if  $B_2 > B_0$  then  $R_2 = (1, \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta_g + \beta)})$  dominates all  $(r_b, r_g) \in [0, 1]^2$ , and it is the bad government's equilibrium choice. Using  $B_0$  and  $B_2$  from Lemma 4,

$$B_2 > B_0 \text{ if and only if } p < p^* \equiv \frac{\beta_b(\alpha_g - \delta_b)}{\beta_b\alpha_g + \delta_b\beta_g}.$$

Thus, if  $p < p^*$  and  $q < q_1(p)$ , in equilibrium,  $(r_b, r_g) = (1, \frac{p}{1-p} \frac{\beta_b - p\beta}{p(\beta_g + \beta)})$ ,  $\rho_b^G = 1$ , and  $\pi = \delta_b$ . If  $q < q_1(p)$  and  $p > p^*$ , in equilibrium,  $(r_b, r_g) = (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})$ ,  $\rho_b^G = 1$ , and  $\pi = 0$ . ■

### A.2.1 Equilibrium Selection

In this section, we present two results which justify our equilibrium selections.

**ES1.** From Lemma 2 point 5, when  $F(r_b, r_g) = K$ , a continuum of equilibria are possible in the subgame: any  $\pi \in [0, \delta_b]$  can be part of the equilibrium of the subgame. In the text, we focus on the equilibrium of the subgame in which  $\pi = \delta_b$ . Here, we show that whenever the bad government's equilibrium strategy  $(r_b, r_g)$  has  $F(r_b, r_g) = K$ , the subgame with  $\pi = \delta_b$  is uniquely selected by a simple refinement. In particular, we introduce stochastic shocks to the bad government's strategy, showing that as the support of the distribution of shocks vanishes, the equilibrium with the shocks converges to the one in which  $\pi = \delta_b$ .

Suppose that when the bad government commits to a strategy  $(r_b, r_g)$ , the probability with which the type  $i$  opposition is actually repressed is a random variable  $R(r_i) \equiv \max\{\min\{r_i + \nu_i, 1\}, 0\}$ , where  $\nu_i$ 's are iid continuous random variables with support  $[-\epsilon, \epsilon]$ . Let  $\hat{r}_i$  be the realiza-

tion of the random variable  $R(r_i)$ . Let function  $\pi^*(\hat{r}_b, \hat{r}_g)$  represent the protest probability in the equilibrium of the subgame following  $(\hat{r}_b, \hat{r}_g)$ :

$$\pi^*(\hat{r}_b, \hat{r}_g) = \begin{cases} 1 & \text{if } F(\hat{r}_b, \hat{r}_g) > K \\ \delta_b & \text{if } 0 < F(\hat{r}_b, \hat{r}_g) < K \\ 0 & \text{if } F(\hat{r}_b, \hat{r}_g) < 0 \end{cases}$$

From Lemma 2, if  $F(\hat{r}_b, \hat{r}_g) > K$ , then  $\pi^*(\hat{r}_b, \hat{r}_g) = 1$ , and if  $F(\hat{r}_b, \hat{r}_g) < 0$ , then  $\pi^*(\hat{r}_b, \hat{r}_g) = 0$ . In Proposition 2, we focus on the case in which  $0 < F(\hat{r}_b, \hat{r}_g) < K$  implies  $\pi = \delta_b$ , one of the three options that follows from Lemma 2 (the others are considered in Propositions 5, 6). Because  $\nu_i$ s are independent and have no mass points, for any choice of the bad government  $(r_b, r_g)$ , the probability that the realizations are such that  $F(\hat{r}_b, \hat{r}_g) = K$  or  $F(\hat{r}_b, \hat{r}_g) = 0$  is zero.

For a given  $\epsilon$ , the bad government's problem is:

$$\max_{(r_b, r_g)} E[ B(R(r_b), R(r_g), \pi^*(R(r_b), R(r_g))) ],$$

where the expectation is over  $(\nu_b, \nu_g)$ . Let  $(r_b^*(\epsilon), r_g^*(\epsilon))$  be the maximand(s) and  $B^*(\epsilon)$  be the maximum value. From Proposition 2, when  $q < q_1(p)$  and  $p < \frac{\beta_b(\alpha_g - \delta_b)}{\beta_b\alpha_g + \delta_b\beta_g}$ , absent trembles, the bad government's equilibrium choice is  $(r_b^*, r_g^*) \equiv (1, \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta + \beta_g)})$ , yielding the bad government's payoff  $B^* \equiv B(r_b^*, r_g^*, \delta_b)$ . This is the only instance in which the bad government's equilibrium choice is such that  $F(r_b, r_g) = K$ .

**Theorem 1** *Suppose  $q < q_1(p)$  and  $p < \frac{\beta_b(\alpha_g - \delta_b)}{\beta_b\alpha_g + \delta_b\beta_g}$ , so that the bad government's choice in the absence of stochastic shocks is  $(r_b^*, r_g^*)$ . As the support of the distribution of the shocks shrinks to zero:*

1. *The bad government's payoff converges to its payoff in the absence of shocks:  $\lim_{\epsilon \rightarrow 0} B^*(\epsilon) = B^*$*
2. *The protest probability converges to  $\delta_b$ :  $\lim_{\epsilon \rightarrow 0} \Pr\{\pi^*(R(r_b^*(\epsilon)), R(r_g^*(\epsilon))) = \delta_b\} = 1$ .*
3. *The bad government's strategy converges to  $(r_b^*, r_g^*)$ :  $\lim_{\epsilon \rightarrow 0} r_i^*(\epsilon) = r_i^*$  for  $i \in \{b, g\}$ .*

**Proof.** (1) Because  $(r_b^*, r_g^*)$  is optimal for the bad government in the absence of trembles,  $B^* > B(\hat{r}_b, \hat{r}_g, \pi^*(\hat{r}_b, \hat{r}_g))$  for all possible realizations  $(\hat{r}_b, \hat{r}_g) \neq (r_b^*, r_g^*)$ , and hence

$$(5) \quad B^* > B^*(\epsilon).$$



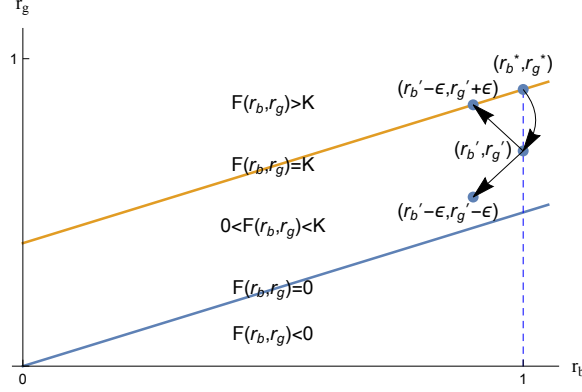


Figure 4: The nature of the deviation from  $(r_b^*, r_g^*)$  to  $(r_b', r_g')$ .

Recall that  $(r_b^*, r_g^*) = (1, \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta + \beta_g)})$ , and consider an alternative strategy for the bad government:

$$(r_b', r_g') \equiv (r_b^*, r_g^* - \epsilon(1 + \frac{q}{1-q} \frac{\beta_b - \beta}{\beta + \beta_g})),$$

so that  $F(r_b' - \epsilon, r_g' + \epsilon) = K$  (see Figure 4). For sufficiently small  $\epsilon$ , the monotonicity properties of  $F$  imply:

$$0 < F(1, r_g' - \epsilon) < F(R(r_b'), R(r_g')) < F(r_b' - \epsilon, r_g' + \epsilon) = K.$$

That is, if the bad government chooses  $(r_b', r_g')$ , then for any realization of shocks  $0 < F(R(r_b'), R(r_g')) < K$ , and hence  $\Pr\{\pi^*(R(r_b'), R(r_g')) = \delta_b\} = 1$ . Thus, the government's expected payoff from  $(r_b', r_g')$  is  $E[B(R(r_b'), R(r_g'), \delta_b)]$ . Let  $k \equiv 2 + \frac{q}{1-q} \frac{\beta_b - \beta}{\beta + \beta_g}$ , so that  $B(r_b^* - \epsilon, r_g^* - k\epsilon, \delta_b) = B(r_b' - \epsilon, r_g' - \epsilon, \delta_b)$ . Then,

$$B(r_b^* - \epsilon, r_g^* - k\epsilon, \delta_b) = B(r_b' - \epsilon, r_g' - \epsilon, \delta_b) < E[B(R_b(r_b'), R_g(r_g'), \delta_b)] \leq B^*(\epsilon) < B^*.$$

The first inequality follows from monotonicity properties of  $B$ , the second inequality follows from optimality of  $B^*(\epsilon)$ , and the third is (5). From continuity of  $B$ ,  $\lim_{\epsilon \rightarrow 0} B(r_b^* - \epsilon, r_g^* - k\epsilon, \delta_b) = B^*$ , and hence  $\lim_{\epsilon \rightarrow 0} B^*(\epsilon) = B^*$ .

(2) For simplicity, denote random variable  $R(r_i^*(\epsilon))$  by  $R_i^*$ . When the bad government chooses  $(r_b^*(\epsilon), r_g^*(\epsilon))$  its payoff is:

$$\begin{aligned} B^*(\epsilon) &= \Pr\{\pi^*(R_b^*, R_g^*) = 1\}E[B(R_b^*, R_g^*, 1)|\pi^*(R_b^*, R_g^*) = 1] \\ &\quad + \Pr\{\pi^*(R_b^*, R_g^*) = \delta_b\}E[B(R_b^*, R_g^*, \delta_b)|\pi^*(R_b^*, R_g^*) = \delta_b] \\ (6) \quad &\quad + \Pr\{\pi^*(R_b^*, R_g^*) = 0\}E[B(R_b^*, R_g^*, 0)|\pi^*(R_b^*, R_g^*) = 0]. \end{aligned}$$

If  $\pi^*(\hat{r}_b, \hat{r}_g) = 1$ , then  $B(\hat{r}_b, \hat{r}_g, 1) < B(0, 0, 1)$ ; If  $\pi^*(\hat{r}_b, \hat{r}_g) = \delta_b$ , then  $B(\hat{r}_b, \hat{r}_g, \delta_b) < B(r_b^*, r_g^*, \delta_b) =$

$B^*$ ; If  $\pi^*(\hat{r}_b, \hat{r}_g) = 0$ , then  $B(\hat{r}_b, \hat{r}_g, 0) < B(1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}, 0) < B^*$ . Substituting these into (6) yields:

$$B^*(\epsilon) < \Pr\{\pi^*(R_b^*, R_g^*) = 1\}B(0, 0, 1) + \Pr\{\pi^*(R_b^*, R_g^*) = \delta_b\}B^* + \Pr\{\pi^*(R_b^*, R_g^*) = 0\}B(1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}, 0).$$

Rearranging the right hand side yields:

$$B^*(\epsilon) < B^* - \Pr\{\pi^*(R_b^*, R_g^*) = 1\}(B^* - B(0, 0, 1)) - \Pr\{\pi^*(R_b^*, R_g^*) = 0\}(B^* - B(1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}, 0)).$$

Taking the limit of both sides yields:

$$\lim_{\epsilon \rightarrow 0} B(\epsilon) \leq B^* - (B^* - B(0, 0, 1)) \lim_{\epsilon \rightarrow 0} \Pr\{\pi^*(R_b^*, R_g^*) = 1\} - \lim_{\epsilon \rightarrow 0} \Pr\{\pi^*(R_b^*, R_g^*) = 0\}(B^* - B(1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}, 0)).$$

From part (1),  $\lim_{\epsilon \rightarrow 0} B(\epsilon) = B^*$ . Because  $B(0, 0, 1) < B^*$  and  $B(1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}) < B^*$ , we must have:

$$\lim_{\epsilon \rightarrow 0} \Pr\{\pi^*(R_b^*, R_g^*) = 1\} = 0 \quad \lim_{\epsilon \rightarrow 0} \Pr\{\pi^*(R_b^*, R_g^*) = 0\} = 0.$$

From part (1),  $\lim_{\epsilon \rightarrow 0} B^*(\epsilon) = B^*$ . From part (2),  $\lim_{\epsilon \rightarrow 0} \Pr\{\pi^*(R_b^*, R_g^*) = \delta_b\} = 1$ . Thus, (6) implies  $\lim_{\epsilon \rightarrow 0} E[B(R_b^*, R_g^*, \delta_b) | \pi^*(R_b^*, R_g^*) = \delta_b] = B^*$ . By continuity,  $\lim_{\epsilon \rightarrow 0} r_i^*(\epsilon) = r_i^*$ . ■

**ES2** is justified by the following lemma.

**Lemma 6** *Suppose that (1)  $q_2(1 - \delta_b/\alpha_g) < q < q_2$ , so that  $B_0 > B_1$ , or (2)  $q < q_1(p)$  and  $p > p^*$ , so that  $B_0 > B_2$ . Moreover, suppose ES2 is violated, so that in the subgame following the bad government's choice of  $(r_b, r_g)$  for which  $F(r_b, r_g) = 0$  the protest probability is  $\pi > 0$ . Under these conditions no equilibrium exists.*

**Proof.** Consider the bad government's maximization problem over the region where  $F(r_b, r_g) \leq 0$ :

$$(7) \quad \max_{(r_b, r_g) \in [0, 1]^2} B(r_b, r_g, \pi(r_b, r_g)) \quad \text{subject to} \quad F(r_b, r_g) \leq 0, \quad \text{and} \quad \pi(r_b, r_g) = \pi \text{ if } F(r_b, r_g) = 0.$$

Lemma 4 implies that if  $\pi = 0$ , then the solution is  $R_0$ , generating payoff  $B_0$ . However, if  $\pi > 0$ , choosing  $R_0$  does not deliver payoff  $B_0$ , because the bad government's payoff function is decreasing in the protest probability and  $\pi > 0$  at  $R_0$ . Thus, the government's payoff cannot exceed  $B_0$ . Consider the choice of  $(r'_b, r'_g) = (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta} - \epsilon)$  for small  $\epsilon$ . Because  $F(1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}) = 0$  and  $F$  is increasing in  $r_g$ ,  $F(r'_b, r'_g) < 0$ . Hence, following the bad government's choice of  $(r'_b, r'_g)$ , the protest probability is zero. Therefore, the bad government's expected payoff of this choice is  $B(r'_b, r'_g, 0) = B_0 - \epsilon\alpha_g(1 - q)$ . Therefore, as  $\epsilon$  approaches zero, the bad government's payoff

approaches  $B_0$ , but no strategy delivers payoff  $B_0$ .

From Lemma 5,  $B_0$  is larger than the payoff of any  $(r_b, r_g)$  for which  $F(r_b, r_g) > K$ . Moreover, Proposition 2 implies that, under conditions (1) or (2),  $B_0$  is larger than the payoff of any  $(r_b, r_g)$  for which  $0 < F(r_b, r_g) \leq K$ . We showed a sequence of strategies with  $F(r_b, r_g) < 0$  delivers a payoff that approaches  $B_0$ . Hence, optimization (7) has no solution, and no equilibrium exists. ■

### A.3 PROPOSITION 3

**Proposition 3** *Partially independent judiciaries can generate the same outcome as when the regime can fully commit to a precise repression strategy (Benchmark 2).*

**Terminology.** To ease the exposition, we introduce the following terminology. We refer to the game in which the bad government can commit to a repression strategy  $(r_b, r_g)$  as *the game with precise commitment*. The game in which the government’s attempt to repress the good opposition is blocked with an exogenous probability is called *the game with exogenous  $C$* . We refer to the game in which the bad government can ex ante choose this probability as *the game with endogenous  $C$* . With this terminology, Proposition 3 concerns the equilibria of the game with endogenous  $C$ . The equilibria of the game with precise commitment are presented in Proposition 2 and the equilibria of the game with exogenous  $C$  are presented in Shadmehr and Boleslavsky (2019, Proposition 3). An equilibrium of the game with precise commitment is *outcome-equivalent* to an equilibrium of the game with exogenous  $C$  or an equilibrium of the game with endogenous  $C$  if the probability that each type of government successfully represses each type of opposition, and the probability that the public protests following repression are identical.

#### A.3.1 Equilibrium Selection

The subgame following the bad government’s choice of  $C$  is identical to the game with exogenous  $C$ , and the equilibria of this subgame correspond to the equilibria of the game characterized in Proposition 3 of Shadmehr and Boleslavsky (2019). We adapt and present their proposition here:

**Proposition 4 (Shadmehr and Boleslavsky 2019)** *Suppose that the government’s attempt to repress a good opposition is blocked with an exogenous probability  $C \in (0, 1)$ . In equilibrium,  $\rho_g^G = 0$  and  $\rho_b^B = 1$ . For a given  $C$ , there exists an increasing function  $g(p) = \frac{(1-C)(1+p)}{1+(1-C)p} \in (0, 1)$  such that:*

- *High Protest Equilibrium with Exogenous  $C$ : If  $q < g(p)q_1(p)$ , then a unique equilibrium exists in which  $\rho_b^G = 0$ ,  $\rho_g^B = \frac{\beta_b - \beta}{\beta_g + \beta} \frac{q}{1-q} \frac{1}{1-C}$ , and  $\pi = \alpha_g$ .*

- *Low Protest Equilibrium with Exogenous C*: If  $q > g(1)q_2$ , then a unique equilibrium exists in which  $\rho_b^G = 1$ ,  $\rho_g^B = 1$ , and  $\pi = 0$ .
- *Intermediate Protest Equilibrium with Exogenous C*: If  $g(p)q_1(p) \leq q \leq g(1)q_2$ , then, in addition to the above two equilibria, there exists an equilibrium in which:

$$\rho_b^G = \frac{p}{1-p} \left( \frac{(\beta + \beta_g) - (\beta_b + \beta_g)q}{\beta_b q} - \frac{1-q}{q} \frac{\beta + \beta_g}{\beta_b} C \right), \rho_g^B = 1, \text{ and } \pi = \delta_b.$$

For  $q \in [q_1(p)g(p), q_2g(1)]$ , multiple equilibria exist in the subgame. We consider the following selection in these cases: if  $q = q_2g(1)$ , then we select the *low protest equilibrium with exogenous C*, and if  $q \in [q_1(p)g(p), q_2g(1))$ , then we select the *intermediate protest equilibrium with exogenous C*. This equilibrium selection is consistent with the equilibrium selection in Benchmark 2 in the following sense. In Benchmark 2, equilibrium multiplicity arises when the bad government's choice of  $(r_b, r_g)$  satisfies  $F(r_b, r_g) \in [0, K]$ , and we select the equilibrium with  $\pi = \delta_b$  when  $F(r_b, r_g) \in (0, K]$ , and the equilibrium with  $\pi = 0$  when  $F(r_b, r_g) = 0$ . When multiple equilibria arise in the subgame following the government's choice of judicial independence, one of those equilibria features  $\pi = \alpha_g$ . This equilibrium is inconsistent with our preceding selection in which  $\pi = \delta_b$  or  $\pi = 0$ , and hence we do not select it. In the other equilibria, the bad opposition is repressed with probability 1, and the good opposition is repressed successfully with probability  $1 - C$ . Thus, we select the equilibrium with  $\pi = 0$  whenever  $F(1, 1 - C) = 0$  and the equilibrium with  $\pi = \delta_b$  whenever  $F(1, 1 - C) \in (0, K]$ .

### A.3.2 Proof

**Lemma 7** *Fix a choice of C in the game with endogenous C. There exists an  $(r_b, r_g)$  such that the bad government's payoff of selecting  $(r_b, r_g)$  in the game with precise commitment is weakly greater than the bad government's payoff of selecting C in the game with endogenous C.*

**Proof.** We divide the proof into three cases:  $q \in (0, q_1(p)g(p))$ ,  $q \in [q_1(p)g(p), q_2g(1))$ , and  $q \in [q_2g(1), 1)$ , where we recognize that  $g(p)$  depends on  $C$ .

*Case I.* Suppose  $C$  is such that  $q < q_1(p)g(p)$ , that is,

$$q < q_1(p) \left( 1 - C \frac{\beta_b - p\beta}{\beta_b - p\beta + (1-C)p(\beta + \beta_g)} \right) \Leftrightarrow C < 1 - \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta + \beta_g)}.$$

Following this choice of  $C$ , from Proposition 4, the *high protest equilibrium with exogenous C* is the unique equilibrium of the subgame, and it generates an expected payoff of  $\hat{B}(C) = 1 - \alpha_g$ . Suppose

that in the game with precise commitment, the bad government chooses  $(r_b, r_g) = (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})$ , so that  $F(r_b, r_g) = 0$ . Then, in the subgame following  $(r_b, r_g) = (1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})$ , we have  $\pi = 0$ . Hence, from equation (4), the bad government's expected payoff is  $B(1, \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}, 0) = q + (1 - q) [\frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta} + (1 - \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta})(1 - \alpha_g)] = 1 - \alpha_g + \frac{q}{q_2} \alpha_g > \hat{B}(C)$ .

*Case II.* Suppose  $C$  is such that  $q_1(p)g(p) \leq q < q_2g(1)$ , that is,

$$q_1(p) \left( 1 - C \frac{\beta_b - p\beta}{\beta_b - p\beta + (1 - C)p(\beta + \beta_g)} \right) \leq q < q_2 \left( 1 - C \frac{\beta_b - \beta}{\beta_b - \beta + (1 - C)(\beta + \beta_g)} \right) \Leftrightarrow$$

$$1 - \frac{q}{1 - q} \frac{\beta_b - p\beta}{p(\beta + \beta_g)} \leq C < 1 - \frac{q}{1 - q} \frac{\beta_b - \beta}{\beta_g + \beta}.$$

Following this choice of  $C$ , from Proposition 4, the *intermediate protest equilibrium with exogenous*  $C$  is selected in the subgame, and it generates an expected payoff of  $\hat{B}(C) = q(1 - \delta_b) + (1 - q) [(1 - C)(1 - \delta_b) + C(1 - \alpha_g)]$ . Suppose that in the game with precise commitment, the bad government chooses  $(r_b, r_g) = (1, 1 - C)$ . To determine which equilibrium arises in the subgame following this choice, we calculate  $F(1, 1 - C) = (1 - q)(\beta_g + \beta)(1 - C) - q(\beta_b - \beta)$ . Note that

$$F(1, 1 - C) > (1 - q)(\beta_g + \beta) \frac{q}{1 - q} \frac{\beta_b - \beta}{\beta_g + \beta} - q(\beta_b - \beta) = 0,$$

$$F(1, 1 - C) \leq (1 - q)(\beta_g + \beta) \frac{q}{1 - q} \frac{\beta_b - p\beta}{p(\beta_g + \beta)} - q(\beta_b - \beta) = \frac{1 - p}{p} q \beta_b = K,$$

where the last equality follows from the definition of  $K$  in Lemma 1. Hence,  $\pi = \delta_b$  in the subgame following the choice of  $(r_b, r_g) = (1, 1 - C)$ , and hence, from equation (4), the bad government's payoff is  $B(1, 1 - C, \delta_b) = q(1 - \delta_b) + (1 - q) [(1 - C)(1 - \delta_b) + C(1 - \alpha_g)] = \hat{B}(C)$ .

*Case III.* Suppose  $C$  is such that  $q \geq q_2g(1)$ , that is,

$$q \geq q_2 \left( 1 - C \frac{\beta_b - \beta}{\beta_b - \beta + (1 - C)(\beta + \beta_g)} \right) \Leftrightarrow C \geq 1 - \frac{q}{1 - q} \frac{\beta_b - \beta}{\beta_g + \beta}.$$

Following this choice of  $C$ , from Proposition 4, the *low protest equilibrium with exogenous*  $C$  is the unique equilibrium of the subgame,<sup>15</sup> and generates an expected payoff of  $\hat{B}(C) = q + (1 - q)(1 - C)$ . Suppose that in the game with precise commitment, the bad government chooses  $(r_b, r_g) = (1, 1 - C)$ . To determine which equilibrium arises in the subgame following this choice, we calculate  $F(1, 1 - C) = (1 - q)(\beta_g + \beta)(1 - C) - q(\beta_b - \beta)$ . Note that

$$F(1, 1 - C) \leq (1 - q)(\beta_g + \beta) \frac{q}{1 - q} \frac{\beta_b - \beta}{\beta_g + \beta} - q(\beta_b - \beta) = 0,$$

<sup>15</sup>If  $q = q_2g(1)$ , this equilibrium is selected by our equilibrium selection described above.

and hence,  $\pi = 0$  in the subgame following  $(r_b, r_g) = (1, 1 - C)$ . Thus, from equation (4), the bad government's payoff is  $B(1, 1 - C, 0) = q + (1 - q)(1 - C) = \hat{B}(C)$ . ■

**Lemma 8** *Fix a pair of priors  $(p, q)$ . Let  $(r_b, r_g)$  be the equilibrium strategy of the bad government in the game with precise commitment. In the game with endogenous  $C$ , suppose the bad government chooses  $C = 1 - r_g$ . Then, the equilibrium of the subgame following this choice of  $C$  is outcome-equivalent to the equilibrium of game with precise commitment.*

**Proof.** Proposition 2 characterizes the equilibrium choices of  $(r_b, r_g)$ . First, consider case 1 of Proposition 2, where  $(r_b, r_g) = (1, 1)$  in equilibrium. Let  $C = 0$ . Then, both in the equilibrium of the game with endogenous  $C$  and in the equilibrium of the game with precise commitment, the good opposition is always successfully repressed by the bad government, the bad opposition is always repressed by both types of the government, and the public never protests.

Second, consider case 2 in Proposition 2, which corresponds to  $q_1(p) < q < q^* < q_2$ . Let  $C = 1 - r_g = 0$ , and observe that,  $C = 0$  implies  $g(p) = 1$ , so that  $[q_1(p)g(p), q_2g(1)] = [q_1(p), q_2]$ . Given our equilibrium selection, when  $q \in [q_1(p)g(p), q_2g(1)] = [q_1(p), q_2]$ , the *intermediate protest equilibrium with exogenous  $C$*  (from Proposition 3) is selected. For  $C = 0$ , this equilibrium is identical to the *intermediate protest equilibrium* (from Proposition 1) that obtains in the game with precise commitment.

Third, consider case 3 in Proposition 2, where  $r_b = 1$  and  $r_g = \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta_g + \beta)}$  in equilibrium. Let

$$(8) \quad C = 1 - \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta_g + \beta)}.$$

Observe that this choice of  $C$  implies  $q = q_1(p)g(p)$ . Given our equilibrium selection, with a  $C$  such that  $q = q_1(p)g(p)$ , the equilibrium of the subgame is the *intermediate protest equilibrium with exogenous  $C$*  in which  $\pi = \delta_b$ ,  $\rho_g^B = 1$ ,  $\rho_b^B = 1$ ,  $\rho_g^G = 0$ , and

$$(9) \quad \rho_b^G = \frac{p}{1-p} \left( \frac{(\beta + \beta_g) - (\beta_b + \beta_g)q}{\beta_b q} - \frac{1-q}{q} \frac{\beta + \beta_g}{\beta_b} C \right).$$

Substituting from equation (8) to (9) yields  $\rho_b^G = 1$ . Moreover, in the game with endogenous  $C$ , the probability that repression against the good opposition succeeds is  $\rho_g^B \times (1 - C) = \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta_g + \beta)}$ , which is the same as the equilibrium level of  $r_g$  in the game with precise commitment. Thus, these equilibria are outcome-equivalent.

Fourth, consider case 4 in Proposition 2, where  $r_b = 1$  and  $r_g = \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}$  in equilibrium. Let

$C = 1 - \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}$ . Observe that this choice of  $C$  implies  $q = q_2g(1)$ . Given our equilibrium selection, with a  $C$  such that  $q = q_2g(1)$ , the equilibrium of the subgame is the *low protest equilibrium with exogenous  $C$*  in which  $\rho_g^G = 0$ ,  $\rho_b^G = \rho_g^B = \rho_b^B = 1$  and  $\pi = 0$ . In this equilibrium,  $\rho_g^B = 1$ , and hence the probability that repression against the good opposition succeeds is  $\rho_g^B \times (1 - C) = r_g$ . Hence, this equilibrium is outcome-equivalent to equilibrium of the game with precise commitment.

■

**Lemma 9** *The equilibrium of the game with endogenous  $C$  is generically unique.*

**Proof.** In the game with endogenous  $C$ , the bad government's payoff of selecting  $C$  is

$$\hat{B}(C) = q(1 - \pi(C)) + (1 - q) [(1 - C)\rho_g^B(C)(1 - \pi) + (1 - (1 - C)\rho_g^B(C))(1 - \alpha_g)],$$

where  $\pi(C)$  and  $\rho_g^B(C)$  depend on the equilibrium of the subgame following the choice of  $C$ .

Consider  $q \in (0, q_1(p))$ . First, note that

$$q \geq q_2g(1) \Leftrightarrow C \geq C_H \equiv 1 - \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta}, \quad \text{and} \quad C_H \in (0, 1).$$

Second, note that

$$q \geq q_1(p)g(p) \Leftrightarrow C \geq C_L \equiv 1 - \frac{q}{1-q} \frac{\beta_b - p\beta}{p(\beta_g + \beta)}, \quad \text{and} \quad C_L \in (0, C_H).$$

It follows that (1) for  $C < C_L$ , the *high protest equilibrium with exogenous  $C$*  is unique in the subgame following the bad government's initial choice, generating  $\pi(C) = \alpha_g$  and  $\rho_g^B(C) = \frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta} \frac{1}{1-C}$ , (2) for  $C_L \leq C < C_H$ , the *intermediate protest equilibrium with exogenous  $C$*  is selected in the subgame following the bad government's initial choice, generating  $\pi(C) = \delta_b$  and  $\rho_g^B(C) = 1$ , and (3) for  $C \geq C_H$ , *low protest equilibrium with exogenous  $C$*  is selected, generating  $\pi(C) = 0$  and  $\rho_g^B(C) = 1$ . Hence, for  $C < C_L$ , the bad government's payoff is  $\hat{B}(C) = 1 - \alpha_g$ , which does not depend on  $C$ . At  $C = C_L$ , the protest probability  $\pi(C)$  jumps down from  $\alpha_g$  to  $\delta_b$ , and it is  $\delta_b$  for all  $C \in [C_L, C_H)$ ; similarly,  $\rho_g^B(C)$  jumps up from  $\frac{q}{1-q} \frac{\beta_b - \beta}{\beta_g + \beta} \frac{1}{1-C}$  to 1, and it is 1 for  $C \geq C_L$ . Hence,  $\hat{B}(C)$  has an upward jump discontinuity at  $C = C_L$  at which it is right continuous, and for  $C \in [C_L, C_H)$ ,  $\hat{B}(C)$  is a decreasing linear function of  $C$ . At  $C = C_H$ , the protest probability  $\pi(C)$  jumps down from  $\delta_b$  to 0, and it is 0 for all  $C \geq C_H$ . Hence,  $\hat{B}(C)$  has an upward jump discontinuity at  $C = C_H$  at which it is right continuous, and for  $C \geq C_H$ ,  $\hat{B}(C)$  is a decreasing linear function of  $C$ . Hence, only  $C = 0$ ,  $C = C_L$ , or  $C = C_H$  could be optimal. Next, note that  $\hat{B}(0)$  does not depend on  $q$ , and  $\hat{B}(C_H)$  are both linear functions of  $q$  with different slopes, and

hence each of the following equations holds for no more than a single value of  $q$ :  $\hat{B}(0) = \hat{B}(C_H)$ ,  $\hat{B}(0) = \hat{B}(C_L)$ , or  $\hat{B}(C_L) = \hat{B}(C_H)$ . Hence, outside of knife-edge cases, the equilibrium value of  $C$  is unique. The remaining cases,  $q > q_2$  and  $q \in (q_1(p), q_2)$ , are analogous and simpler. ■

**Proof of Proposition 3.** Lemma 7 implies that the bad government's equilibrium payoff in the game with precise commitment is an upper bound for its equilibrium payoff in the game with endogenous  $C$ . Lemma 8 shows that for each  $(p, q)$ , the bad government can always select a  $C$  to achieve this upper bound. Thus, such a  $C$  must be an optimal choice. Moreover, Lemma 8 also shows that when the bad government selects this optimal  $C$ , the equilibrium of the game is outcome-equivalent to the equilibrium of the game with precise commitment. Finally, Lemma 9 show that the optimal  $C$  is unique. ■



## B EXTENSION: OTHER CASES WITH COMMITMENT

Because the subgame that follows a choice of  $(r_b, r_g)$  has multiple equilibria when  $F(r_b, r_g) \in (0, K)$ , the equilibrium of the full game depends on which of the three possible equilibria is anticipated in the subgame. In Proposition 2 we focus on the equilibrium with  $\pi = \delta_b$ . In the following two propositions, we characterize the equilibrium when  $\pi = 0$  and  $\pi = 1$ . In both cases, the public does no protest in equilibrium.

**Proposition 5** *Suppose that when  $F(r_b, r_g) \in (0, K)$ , the equilibrium of the subgame has  $\pi = 0$ . In equilibrium, the public never protests upon observing repression, the good government and the bad government always repress the bad opposition, and (1) if  $q > q_1(p)$ , then the bad government also always represses the good opposition, but (2) if  $q < q_1(p)$ , it represses the good opposition with a positive probability less than one.*

**Proof.** Lemma 3 establishes part 1 for  $q > q_2 > q_1(p)$ . If  $q_1(p) < q < q_2$ , then  $F(1, 1) \in (0, K)$ . Hence, with  $r_b = r_g = 1$ ,  $\pi = 0$  in the equilibrium of the subgame. The monotonicity of  $B(r_b, r_g, \pi)$  implies that  $r_b = r_g = 1$  must be the bad government's equilibrium choice.

Suppose that  $q < q_1(p)$ . First, we show that if  $F(r_b, r_g) = K$  in equilibrium, then we must have  $\pi = 0$  in the equilibrium of the subgame. Suppose not, i.e.,  $\pi > 0$ . Because  $F(r_b, r_g) = K > 0$ , we have  $r_g > 0$ , and hence  $r_g$  can be reduced. If the bad government slightly decrease  $r_g$  by  $\epsilon$ , then  $0 < F(r_b, r_g - \epsilon) < K$ , hence  $\pi = 0$  in the equilibrium of the subgame, and hence the bad government gains by such a deviation:  $B(r_b, r_g - \epsilon, 0) - B(r_b, r_g, \pi) = \pi((1 - q)r_g + qr_b) - \epsilon\alpha_g(1 - q) > 0$  for sufficiently small  $\epsilon$ .

In addition, any combination of  $(r_b, r_g)$  for which  $F(r_b, r_g) > K$  is dominated by  $r_b = r_g = 0$ , and cannot be the bad government's equilibrium choice. If  $F(r_b, r_g) > K$ , then  $\pi = 1$ , and hence  $B(r_b, r_g, 1) = q(1 - r_b)(1 - \alpha_b) + (1 - q)(1 - r_g)(1 - \alpha_g)$ . The bad government can benefit by deviating to  $(r_b, r_g) = (0, 0)$ , so that  $F(r_b, r_g) = 0$ , and its expected payoff becomes  $B(0, 0, 0) = q(1 - \alpha_b) + (1 - q)(1 - \alpha_g) > B(r_b, r_g, 1)$ .

Therefore, the bad government's equilibrium choice solves the following maximization problem:

$$\max_{(r_b, r_g) \in [0, 1]^2} B(r_b, r_g, 0) \quad \text{s.t.} \quad F(r_b, r_g) \leq K.$$

$B$  is increasing in  $r_b$  and  $r_g$ , and  $F$  is increasing in  $r_g$  and decreasing in  $r_b$ . Thus, at the optimum  $r_b = 1$  and  $r_g$  satisfies  $F(1, r_g) = K$ . ■

**Proposition 6** *Suppose that when  $0 < F(r_b, r_g) \leq K$ , the equilibrium of the subgame has  $\pi = 1$ . In equilibrium, the public never protests upon observing repression, the good government and the bad government always repress the bad opposition, and (1) if  $q > q_2$ , then the bad government also always represses the good opposition, but (2) if  $q < q_2$ , it represses the good opposition with a positive probability less than one.*

**Proof.** Lemma 3 establishes part 1. We focus on  $q < q_2$ . There is no equilibrium in which  $F(r_b, r_g) > 0$  because if  $F(r_b, r_g) > 0$ , then  $\pi = 1$ , and  $B(r_b, r_g, 1) < B(0, 0, 0)$ . Next, suppose that if  $F(r_b, r_g) = 0$ , then  $\pi = 0$  in the equilibrium of the subgame. Therefore, the bad government's equilibrium choice becomes:

$$\max_{(r_b, r_g) \in [0, 1]^2} B(r_b, r_g, 0) \text{ s.t. } F(r_b, r_g) \leq 0.$$

$B$  is increasing in  $r_b$  and  $r_g$ , and  $F$  is increasing in  $r_g$  and decreasing in  $r_b$ . Thus, at the optimum,  $r_b = 1$  and  $r_g$  satisfies  $F(1, r_g) = K$ .

Finally, we show that no equilibrium exists if  $\pi > 0$  in the subgame that follows the bad government's strategy  $(r_b, r_g)$  such that  $F(r_b, r_g) = 0$ . Because  $F(r_b, r_g) = 0$ , we have either  $r_b > 0$  and  $r_g > 0$  or  $r_b = r_g = 0$ . If  $r_g > 0$ , then  $r_g$  can be reduced. If the bad government slightly decrease  $r_g$  by  $\epsilon$ , then  $F(r_b, r_g - \epsilon) < 0$ , hence  $\pi = 0$  in the equilibrium of the subgame, and hence the bad government gains by such a deviation. Similarly, if  $r_b = r_g = 0$ , then  $r_b$  can be increased. If the bad government slightly increases  $r_b$  by  $\epsilon$ , then  $F(r_b + \epsilon, r_g - \epsilon) < 0$ , hence  $\pi = 0$  in the equilibrium of the subgame, and hence the bad government gains by such a deviation. ■

## C EXTENSION: COMMITMENT BY BOTH THE GOOD AND THE BAD GOVERNMENT

Suppose that before the nature selects which government type will be in charge and before government types observe the opposition's type, both the good and the bad type of government simultaneously commit to their repression strategies  $(r_b^B, r_g^B)$  and  $(r_b^G, r_g^G)$ , where  $r_i^J$  is the probability with which the type  $J$  government commits to repress the type  $i$  opposition. The public observes both repression strategies. Then, a government type gains control of the state, but the public does not observe which government type has gained control. As in the previous sections, the bad government gains control with probability  $p$  and the good government gains control with probability  $1 - p$ . The government type in power observes the opposition's type, and represses or concedes according to its strategy. If the government in power concedes, then the game ends. If the government in power represses, then the public observes repression and decides whether to protest. Consider equilibria in which governments do not randomize their choice of repression probability (I think it can be proved that this is without loss of generality).

Let  $U_B(r_b^B, r_g^B, \pi)$  be the bad faction's payoff from  $(r_b^B, r_g^B)$ , anticipating that the public protests with probability  $\pi$ , and let  $U_G(r_b^G, r_g^G, \pi)$  be the good faction's payoff:

$$\begin{aligned} U_B(r_b^B, r_g^B, \pi) &= p \left( q [r_b^B(1 - \pi) + (1 - r_b^B)(1 - \alpha_b)] + (1 - q) [r_g^B(1 - \pi) + (1 - r_g^B)(1 - \alpha_g)] \right), \\ U_G(r_b^G, r_g^G, \pi) &= (1 - p) \left( q [r_b^G(1 - \pi) + (1 - r_b^G)(1 - \delta_b)] + (1 - q) [r_g^G(1 - \pi) + (1 - r_g^G)(1 + \delta_g)] \right). \end{aligned}$$

**Lemma 10** *Given the strategy of the bad government  $(r_b^B, r_g^B)$  and the strategy of the good government  $(r_b^G, r_g^G)$ , the public's best response is:*

$$\pi = \begin{cases} 1 & \text{if } F_B(r_b^B, r_g^B) > F_G(r_b^G, r_g^G) \\ [0, 1] & \text{if } F_B(r_b^B, r_g^B) = F_G(r_b^G, r_g^G) \\ 0 & \text{if } F_B(r_b^B, r_g^B) < F_G(r_b^G, r_g^G) \end{cases}$$

where  $F_B(r_b^B, r_g^B) \equiv (1 - q)(\beta_g + \beta)r_g^B - q(\beta_b - \beta)r_b^B$  and  $F_G(r_b^G, r_g^G) \equiv K(r_b^G - \frac{(1-q)\beta_g}{q\beta_b}r_g^G)$ , with  $K \equiv \frac{1-p}{p}q\beta_b$ .

**Proof.** Given the strategies of the good and bad government, the public's posterior belief is:

$$p' = \frac{p[qr_b^B + (1-q)r_g^B]}{p[qr_b^B + (1-q)\rho_g^B] + (1-p)(qr_b^G + (1-q)r_g^G)},$$

$$q' = \frac{q[(1-p)r_b^G + pr_b^B]}{q[(1-p)\rho_b^G + pr_b^B] + (1-q)[pr_g^G + (1-p)r_g^B]}.$$

Substituting the public's posterior belief into equation (1) gives the result. ■

**Lemma 11** *Any strategy for the good government  $(r_b^G, r_g^G)$  such that  $r_g^G > 0$  is strictly dominated by  $(r_b^G, 0)$ .*

**Proof.** Let the protest probability following  $(r_b^G, r_g^G)$  be  $\pi$ , and the protest probability following  $(r_b^G, 0)$  be  $\pi'$ . Because  $F_G(r_b^G, r_g^G)$  is decreasing in  $r_g^G$ , it follows that  $\pi' \leq \pi$ . Hence,  $U_G(r_b^G, r_g^G, \pi) - U_G(r_b^G, 0, \pi') = (1-p)[q(\pi - \pi') + (1-q)(\pi + \delta_b)] > 0$ . ■

Because all strategies for the good government with  $r_g^G > 0$  are strictly dominated, we delete them from the game. The public's best response can be represented in the following simpler form.

$$\pi = \begin{cases} 1 & \text{if } F(r_b^B, r_g^B) > Kr_b^G \\ [0, 1] & \text{if } F(r_b^B, r_g^B) = Kr_b^G \\ 0 & \text{if } F(r_b^B, r_g^B) < Kr_b^G \end{cases}$$

where we have omitted the subscript  $B$  on function  $F_B(r_b^B, r_g^B)$  to simplify notation.

**Lemma 12** (1) *A repression strategy  $(r_b^B, r_g^B)$  satisfying  $F(r_b^B, r_g^B) > Kr_b^G$  gives the bad government a strictly smaller payoff than  $(r_b^B, r_g^B) = (0, 0)$ . (2) *For the bad government a repression strategy  $(r_b^B, r_g^B)$  satisfying  $F(r_b^B, r_g^B) > K$  is strictly dominated by  $(r_b^B, r_g^B) = (0, 0)$ .**

**Proof.**

(1) If  $F(r_b^B, r_g^B) > Kr_b^G$ , then  $\pi = 1$ . Furthermore,  $F(r_b^B, r_g^B) > Kr_b^G$  implies that  $F(r_b^B, r_g^B) \geq 0$ , and hence  $r_g^B > 0$ . Hence, the bad faction's payoff of selecting such  $(r_b^B, r_g^B)$  is  $U_B(r_b^B, r_g^B, 1) = p(q(1 - r_b^B)(1 - \alpha_b) + (1 - q)(1 - r_g^B)(1 - \alpha_g))$ . Hence,  $r_g^B > 0$  implies that  $U_B(r_b^B, r_g^B, 1) < p(q(1 - \alpha_b) + (1 - q)(1 - \alpha_g))$ . Observing that  $p(q(1 - \alpha_b) + (1 - q)(1 - \alpha_g))$  is the payoff of selecting  $(r_b^B, r_g^B) = (0, 0)$  completes the proof.

(2)  $F(r_b^B, r_g^B) > K \Rightarrow F(r_b^B, r_g^B) > Kr_b^G$  for any  $r_b^G \in [0, 1]$ . From (1), any such strategy is strictly dominated by  $(r_b^B, r_g^B) = (0, 0)$ . ■

Because repression strategies  $(r_b^B, r_g^B)$  satisfying  $F(r_b^B, r_g^B) > K$  are strictly dominated, we delete them from the game.

Let  $\theta(r_b^B, r_g^B, r_b^G)$  represent the public's protest probability for government strategies  $(r_b^B, r_g^B, r_b^G)$  satisfying  $F(r_b^B, r_g^B) = Kr_b^G$ .

**Lemma 13** (*Good government's best responses*)

1. The good government's best response to  $(r_b^B, r_g^B)$  such that  $F(r_b^B, r_g^B) < K$  is  $r_b^G = 1$ .
2. The good government's best response to  $(r_b^B, r_g^B)$  such that  $F(r_b^B, r_g^B) = K$  is

$$r_b^G = \begin{cases} 1 & \text{if } \theta(r_b^B, r_g^B, 1) < \delta_b \\ 0 \text{ or } 1 & \text{if } \theta(r_b^B, r_g^B, 1) = \delta_b \\ 0 & \text{if } \theta(r_b^B, r_g^B, 1) > \delta_b \end{cases}$$

**Proof.** (1) Suppose  $F(r_b^B, r_g^B) < K$ . If  $r_b^G > \frac{F(r_b^B, r_g^B)}{K}$ , then  $\pi = 0$ . Among  $r_b^G > \frac{F(r_b^B, r_g^B)}{K}$  the best choice is  $r_b^G = 1$ , yielding payoff  $U_G(1, 0)$ . Because  $U_G(1, 0) > U_G(r_b^G, \pi)$  for all possible  $(r_b^G, \pi) \neq (1, 0)$ , the good government's best response is  $r_b^G = 1$ .

(2) Suppose  $F(r_b^B, r_g^B) = K$ . If  $r_b^G < 1$ , then  $\pi = 1$ . Among  $r_b^G < 1$ , the best choice is  $r_b^G = 0$ , yielding payoff  $U_G(0, 1)$ . If  $r_b^G = 1$ , then  $\pi = \theta'' \equiv \theta(r_b^B, r_g^B, 1)$ , yielding payoff  $U_G(1, \theta'')$ . Because  $U_G(1, \theta'') - U_G(0, 1) = (1 - p)q(\delta_b - \theta'')$ , the result follows. ■

**Lemma 14** *An equilibrium in which  $r_b^G = 0$  does not exist.*

**Proof.** Suppose that such an equilibrium exists. Lemma 12 part (2) implies that any  $(r_b^B, r_g^B)$  such that  $F(r_b^B, r_g^B) > 0$  is worse for the bad government than  $(r_b^B, r_g^B) = (0, 0)$ , and it therefore cannot be the bad government's best response. Hence, it must be that the bad government's equilibrium strategy satisfies  $F(r_b^B, r_g^B) \leq 0$ , but Lemma 13 implies that the best response to such  $(r_b^B, r_g^B)$  is  $r_b^G = 1$ . ■

**Lemma 15** (*Bad government's best response*). For  $q < q_1(p)$ , let  $\hat{r}_1$  be such that  $F(1, \hat{r}_1) = K$ .

1. If  $q > q_1(p)$ , then the bad government's best response to  $r_b^G = 1$  is  $(r_b^B, r_g^B) = (1, 1)$ .
2. If  $q < q_1(p)$  and  $\theta(1, \hat{r}_g, 1) = 0$ , then the bad government's best response to  $r_b^G = 1$  is  $(r_b^B, r_g^B) = (1, \hat{r}_g)$ .

3. If  $q < q_1(p)$  and  $\theta(1, \hat{r}_g, 1) > 0$ , then the bad government's best response to  $r_b^G = 1$  does not exist.

**Proof.** (1) If  $q > q_1(p)$ , then  $F(1, 1) < K$ . Hence, if the bad government selects  $(r_b^B, r_g^B) = (1, 1)$ , then the public's best response is  $\pi = 0$ . The bad government's payoff  $U_B(1, 1, 0) > U_B(r_b^B, r_g^B, \pi)$  for all  $(r_b^B, r_g^B, \pi) \neq (1, 1, 0)$ , and hence it is the bad government's best response.

(2) By definition,  $F(1, \hat{r}_g) = K$ . Because  $\theta(1, \hat{r}_g, 1) = 0$  the bad government's payoff of choosing  $(r_b^B, r_g^B) = (1, \hat{r}_g)$  is  $U_B(1, \hat{r}_g, 0)$ . Suppose that the bad government chooses  $(r_b^B, r_g^B)$  such that  $F(r_b^B, r_g^B) < K$ . Following such a choice  $\pi = 0$ , yielding payoff  $U_B(r_b^B, r_g^B, 0)$ . Furthermore,  $F(1, \hat{r}_g) - F(r_b^B, r_g^B) = (1-q)(\beta_g + \beta)(\hat{r}_g - r_g^B) - (1-r_b^B)q(\beta_b - \beta) > 0$ . Because  $r_b^B \leq 1$ , it follows that  $r_g^B < \hat{r}_g$ . Hence,  $U_B(1, \hat{r}_g, 0) - U_B(r_b^B, r_g^B, 0) = p(q\alpha_b(1 - r_b^B) + \alpha_g(\hat{r}_g - r_g^B)(1 - q)) > 0$ , and hence,  $(1, \hat{r}_g)$  dominates any such choice. Next, suppose that the bad government chooses  $(r_b^B, r_g^B) \neq (1, \hat{r}_g)$  such that  $F(r_b^B, r_g^B) = K$ . Following such a choice  $\pi = \theta(r_b^B, r_g^B, 1)$ , yielding payoff  $U_B(r_b^B, r_g^B, \theta)$ . Furthermore,  $F(1, \hat{r}_g) - F(r_b^B, r_g^B) = (1 - q)(\beta_g + \beta)(\hat{r}_g - r_g^B) - (1 - r_b^B)q(\beta_b - \beta) = 0$ . Because  $r_b^B < 1$ , it follows that  $r_g^B < \hat{r}_g$ . Hence,  $U_B(1, \hat{r}_g, 0) - U_B(r_b^B, r_g^B, \theta) = p(q(\alpha_b(1 - r_b^B) + \theta r_b^B) + \alpha_g((\hat{r}_g - r_g^B) + r_g^B \theta)(1 - q)) > 0$ , and hence,  $(1, \hat{r}_g)$  dominates any such choice.

(3) Consider a strategy  $(r_b^B, r_g^B)$  satisfying  $F(r_b^B, r_g^B) < K$ . Following any such strategy the public does not protest, and hence, any such strategy delivers payoff  $U_B(r_b^B, r_g^B, 0)$ . If  $r_b^B < 1$ , then increasing  $r_b^B$  by  $\epsilon$ , allows the bad government to maintain  $\pi = 0$  and increases its payoff to  $U_B(r_b^B + \epsilon, r_g^B, 0)$ . If  $r_b^B = 1$ , then  $r_g^B < \hat{r}_g$ , and hence, increasing  $r_g^B$  by  $\epsilon$  allows the bad government to maintain  $\pi = 0$  and increases its payoff to  $U_B(1, r_g^B + \epsilon, 0)$ . Consider a strategy  $(r_b^B, r_g^B)$  satisfying  $F(r_b^B, r_g^B) = K$  with  $r_b^B < 1$ . Following such a strategy the public protests with probability  $\theta(r_b^B, r_g^B, 1)$ , yielding payoff  $U_B(r_b^B, r_g^B, \theta)$ . Increasing  $r_b^B$  by sufficiently small  $\epsilon$  ensures that  $\pi = 0$ , yielding a payoff of  $U_B(1, r_g^B + \epsilon, 0) > U_B(r_b^B, r_g^B, \theta)$ . If  $(r_b^B, r_g^B) = (1, \hat{r}_g)$ , then the public protests with probability  $\theta(1, \hat{r}_g, 1)$ , yielding payoff  $U_B(1, \hat{r}_g, \theta)$ . Suppose that bad government selects  $(r_b^B, r_g^B) = (1, \hat{r}_g - \epsilon)$ . Because  $F(1, \hat{r}_g - \epsilon) < K$ , following this choice  $\pi = 0$ , yielding payoff  $U_B(1, \hat{r}_g - \epsilon, 0)$ . For  $\epsilon$  sufficiently small  $U_B(1, \hat{r}_g - \epsilon, 0) > U_B(1, \hat{r}_g, \theta)$ . ■

**Proposition 7** *Suppose that the good and bad faction simultaneously commit to their repression strategies.*

1. If  $q > q_1(p)$ , then in the unique equilibrium  $(r_b^G, r_g^G) = (1, 0)$ ,  $(r_b^B, r_g^B) = (1, 1)$ , and  $\pi = 0$
2. If  $q < q_1(p)$ , then in the unique equilibrium  $(r_b^G, r_g^G) = (1, 0)$ ,  $(r_b^B, r_g^B) = (1, \hat{r}_g)$ , and  $\pi = 0$ .

**Proof.** From Lemma 11,  $r_g^G = 0$ . Lemma 13 implies that the good government's best response can only be either  $r_b^G = 0$  or  $r_b^G = 1$ , and Lemma 14 rules out the possibility that the good government selects  $r_b^G = 0$  in equilibrium. Hence,  $r_b^G = 1$ .

(1) From Lemma 15, the bad government's unique best response to  $r_b^G = 1$  is  $(r_b^B, r_g^B) = (1, 1)$ . If  $q > q_1(p)$ , then  $F(1, 1) < K$ , and hence Lemma 13 and Lemma 11 imply that the good government's unique best response to  $(r_b^B, r_g^B) = (1, 1)$  is  $r_b^G = 1$ .

(2) From Lemma 15, if  $\theta(1, \hat{r}_g, 1) > 0$ , then the bad government's best response does not exist. Hence, an equilibrium must have  $\theta(1, \hat{r}_g, 1) = 0$ . Hence, from Lemma 14 the bad government's unique best response to  $r_b^G = 1$  is  $(r_b^B, r_g^B) = (1, \hat{r}_g)$ . Because  $F(1, \hat{r}_g) = K$  and  $\theta(1, \hat{r}_g, 1) = 0$ , the good government's best response to  $(r_b^B, r_g^B) = (1, \hat{r}_g)$  is  $r_b^G = 1$ . ■