How does violence deter? Functional and informational effects of preemptive repression

Dogus Aktan

Department of Political Science, Rice University

Abstract

Research on the relationship between repression and dissent has mostly ignored the mechanisms through which repression affects dissent. I distinguish two distinct channels through which repression can deter dissidents. First, preemptive repression works through a functional channel by directly reducing the opposition's capabilities. Second, the severity of preemptive repression provides information to its target about the strength of government.I use a formal model to demonstrate how these two channels interact, leading to strategic behavior that has not been discussed in previous work. In particular, I show that the functional and informational channels are not necessarily complementary. The model demonstrates that uncertainty about government resolve can both increase or decrease observed repression. It also shows that repression can become more effective in deterring dissent when it is more costly and vice versa. Taken together, these results provide a theoretical explanation for the inconsistent empirical findings on the effect of repression on dissent and offer a framework for future research.

Keywords: repression, dissent, conflict, repression–dissent nexus, game theory

Corresponding author: Dogus Aktan

Department of Political Science, Rice University

da105@rice.edu

Introduction

How does repression affect dissent? The scholarly consensus is that governments repress to stave off political challenges, and keep their hold on power (Carey, 2006; Davenport, 1995, 2007a; Earl et al., 2003; Earl, 2011; Nordås & Davenport, 2013). The claim that repression is a response to dissent is so fundamental that it is regarded as the 'Law of Coercive Responsiveness' (Davenport, 2007a). However, despite the ubiquity of repression as a response to dissent, empirical findings on its effect on dissent are much more inconclusive. As Carey (2006) points out, there is some evidence to support 'almost every possible relationship between protest and repression'. The ambiguity of the effect of repression, along with its ubiquity, has come to be referred to as the 'puzzle of persistent repression' (Davenport, 2007a; Davenport & Loyle, 2012; DeMeritt, 2016). Why do authorities keep using costly repression despite its at best uncertain—and at worst counterproductive— effects on dissent?

Recent work has made significant progress towards understanding the effect of repression on dissent by moving away from decision-theoric models, and focusing instead on the strategic interaction between governments and dissidents (Moore, 2000; Pierskalla, 2010; Ritter, 2014; Ritter & Conrad, 2016). Dissent and repression are strategic, both governments and their opponents choose their actions in anticipation of the other's behavior. Dissidents expecting repression refrain from mobilizing in the first place. Governments anticipating dissent repress preemptively to deter the masses from mobilizing against them in the first place (Nordås & Davenport, 2013; Danneman & Ritter, 2014; Sullivan, 2016; Ritter & Conrad, 2016; Truex, 2019; Slantchev & Matush, 2020).

I build upon this insight by focusing on mechanisms linking *preemptive* repression and dissent. I develop a formal model that examines two different channels through which preemptive repression works, and can lead to successful deterrence or open conflict. The first is the functional, direct channel (Bueno De Mesquita & Tyson, 2020). Preemptive repression

directly reduces the capacity of regime opponents before they can mobilize and challenge the government through tactics such as arrests, torture, or similar acts of one-sided violence. The second is the signaling, informational channel. The extent to which a government can repress preemptively provides information about its capabilities or resolve to the opponents. This information, in turn, influences their decision to challenge the regime (Walter, 2006).

Although these two channels might be complementary, they need not be. The model demonstrates that uncertainty about the government's strength or resolve can either decrease or increase observed repression. When the opposition lacks information about the government's cost to repress, they have to infer it from the level of preemptive repression they observe. This gives rise to interesting signaling behaviors. Weaker governments get the opportunity to deter the opposition either by repressing at lower levels than they would have to under complete information, or not repressing at all. As the opposition's capacity increases, governments need to repress at higher levels in order to deter the opposition. Because they cannot rely on their strength to deter the opposition, stronger governments engage in increasingly higher repression to deter challengers.

The model also shows that increased cost of repression can make it more effective at deterring dissent and vice versa. As the cost of repression decreases, weaker governments can repress at higher levels. This means that even after suffering same deterioration of their capacity, the opposition expects a higher likelihood of victory if they mobilize. Thus, governments are forced to repress at higher levels in order to prevent mobilization. Similarly, increased costs of repression make it more effective at deterring dissent.

I start with a baseline model with complete information, where preemptive repression works purely through the direct, functional channel. I then introduce uncertainty about the government's strength to demonstrate how the informational channel interacts with the functional channel. Finally, I extend the model to a two-sided asymmetry setting, where the opposition's capacity is unknown the government. The extension provides an explanation to

why governments acting rationally often resort to preemptive repression that proves to be ineffective in deterring mass mobilizations.

Examining *how* repression is linked to dissent is crucial to improve our understanding of the repression-dissent nexus. It helps us better understand the intended goal of repression, and its seemingly inconsistent effects on dissent. Repression can succeed or fail to prevent dissent through different pathways. In some cases, repression only diminishes the opposition's resources to mobilize (Tyson, 2018). In others, repression can succeed by convincing the opposition that more and harsher repression is forthcoming should they mount an open challenge (Tilly, 1978; Lichbach, 1987; Walter, 2006; Tilly & Tarrow, 2015).

This article makes two contributions to the literature on repression and dissent. It clearly distinguishes between preemptive and responsive repression by modeling these as distinct choices, with different goals and effects. This distinction has been brought up in recent empirical (Ritter & Conrad, 2016; Danneman & Ritter, 2014; Nordås & Davenport, 2013), as well as formal work (De Jaegher & Hoyer, 2019; Rozenas, 2020; Dragu & Przeworski, 2019; Slantchev & Matush, 2020) but different forms of repression have been analyzed separately. Modeling these choices together helps reveal how the informational role of preemptive repression interacts with its functional role.

The analysis presented here also highlights some of the challenges facing observational empirical work in the study of repression and dissent. Besides highlighting the different likelihood and severity of repression, it argues the data generating process can be different even when the observed level of repression and outcome—deterrence or conflict—are similar. Depending on why it is used, repression can have a different aggregate effect on dissent.

Low levels of repression can be effective in deterring the opposition when used by strong governments under complete information. Yet, the same level of repression will have a different effect under asymmetric information when it also has an informational effect.

Scholars of repression and dissent should focus not just on endogeneity, but also different mechanisms linking the level of repression to its outcome (Ritter & Conrad, 2016). Thus, future empirical work should be more explicit and precise about the expected functional form between repression and its effects (Davenport & Armstrong, 2004; Davenport & Loyle, 2012; Jones & Lupu, 2018).

Repression, preemption, and signaling

Governments repress strategically to deter and counter opposition (DeMeritt, 2016). Repression typically takes the form of First-Amendment-type rights violations such as political arrests, torture, or restriction of movement and expression in an effort to inhibit the capacity to mobilize against the state (Tilly, 1978; Davenport, 2007a; Ritter, 2014).

One important direction in the study of the repression-dissent nexus in recent research has been to factor in that governments being rational, forward-looking actors, will repress preemptively to prevent challenges from materializing. Nordås & Davenport (2013) find that governments experiencing 'youth bulges' become more repressive, even when controlling for the levels of actual protests. Because young populations are more likely to challenge authority and participate in rebellion —a fact known to governments as well— governments that face rising populations of young adults increase their repressive activity to preempt challenges. Similarly, Danneman & Ritter (2014) point out that governments repress preemptively when their geographic neighborhood is experiencing civil conflict. Because civil conflicts tend to spread—which is, again, a phenomenon recognized by state authorities— governments use preemptive repression to deter challenges at home.

This line of research provides important evidence that governments repress preemptively, but it does not examine whether or how preemptive repression works. For example, preemptive repression viewed against the backdrop of a relatively slow-moving trend such as

youth bulges might simply be a functional response as the governments target opposition's potentially increased recruitment pool. However, in a setting where neighboring governments are forced to face the opposition in open civil conflicts—such as the Arab Spring—they might resort to preemption both for functional and signaling purposes. On one hand, preemptive repression might be necessary to decrease the capacity of domestic opposition as it gains access to cross-border flows of recruits, arms, and other resources (Salehyan, 2007). On the other hand, governments might also resort to repression for informational purposes. Authorities can also use preemptive repression to signal to the opposition that they are more capable in facing challengers than their neighboring states, thus deterring their citizens from rebellion.

Like the aforementioned empirical work, formal literature on repression-dissent has either not distinguished between different channels of repression's effect, or treated them in isolation. Pierskalla (2010) examines a setup in which a government is facing an opposition that can potentially threaten the regime. In his model, similar to the model presented below, governments differ in their capacity, or resolve, to employ repression, which cannot be directly observed by the opposition. One of Pierskalla's key arguments is that strong governments repress protesters to signal their resolve, while weak governments accommodate, fearing escalation to open conflict by the opposition. In his model, repression primarily has a signaling purpose, because it has no effect on the likelihood of government victory in open conflict, and thus should not happen under complete information. The model presented here not only incorporates the direct, functional effect of repression, but also distinguishes between preemptive, and reactive repression. Furthermore, it relaxes the simplifying assumption that repression is binary, and yields insight into the probability and severity of repression and its effect on the likelihood of dissent.

In contrast, Ritter (2014) presents a bargaining model between opposition and government domestic conflict contexts, where both accommodation and conflict influence the likelihood of the political survival of the government. She demonstrates that while

strong leaders are less likely to be challenged, they will face higher levels of dissent and thus, respond with more severe repression when challenges do arise. As executive security decreases, challenges become more common and are met with less severity. While linking the likelihood of observed challenges to severity of repression, this model only considers a complete information setting where repression is not employed until bargaining breaks down and conflict starts. Consequently, it only considers reactive repression with no informational content.

More recent formal work focusing on preventive or preemptive repression typically do not feature reactive repression. De Jaegher & Hoyer (2019) focus on the interaction between the government's expected tenure length and its preemption efforts. They argue that only government's with sufficiently long expected tenure and successfully adopt successful preemption strategies. Dragu & Lupu (2021) examine the effect of information and communication technologies on the severity and success of preventive repression. Rozenas (2020) analyzes a situation, where a government facing potential dissent from two different groups chooses a repression policy preventively. In this model, the key dynamic is how government can undermine collective action by discriminating against one group through more repression. Finally, Dragu & Przeworski (2019) focus on moral hazard by security forces tasked with preventive repression and whether they will put the resources allocated to regime's survival. Thus, they do not consider the interaction of informational and functional channels that is the focus of this article.

Slantchev & Matush (2020) consider both preventive and reactive repression, but in their model preventive repression has no informational content: it increases the cost of mobilization, but the government's preventive capacity is independent of its reactive capacity. Consequently, repression does not provide information about the strength of the government, which is the focus of my model.

In order to keep the focus on the relationship between the different effects of preemp-

tive repression on dissent, the model presented here focuses only on the very first interaction between the government and the dissidents in the onset of conflict. It highlights a particular mechanism that previous research has not addressed, rather than capture all determinants of repression-dissent nexus or details of particular empirical cases. Thus it should be taken as a complement to existing work that focuses on other dynamics within the repression-dissent nexus. For example, recent work has highlighted how repression can be followed by dissent through backlash mobilization (Aytaç et al., 2018; Demirel-Pegg & Rasler, 2021; Shadmehr & Boleslavsky, 2022): repression leads to further dissent by mobilizing otherwise passive bystanders. Others focus on the effect of different forms of repression such as targeted arrests, indiscriminate violence against protesters, or the use of more institutional coercion such as courts (Koopmans, 1997; Earl, 2011; Demirel-Pegg & Rasler, 2021). The formal theory presented does not necessarily contradict these arguments but rather provides a distinct dynamic that can also provide framework to interpret these empirical findings.

The Model

Setup

I analyze a setting with two actors: a government (G, it), and an opposition (O, they). The government has a value of 1 for holding office. Similarly, the opposition's value for overthrowing the government is 1.

The government's privately known type θ determines its effectiveness in preemptive and reactive repression. θ is drawn from a uniform distribution $[0, 1]$.[1] I refer to θ as the government's strength throughout. It captures the government's ability to repress, which can stem from various material and immaterial factors such as willingness to stay in power, loyalty

[1]The uniform distribution does not drive any of the results presented, but makes the exposition simpler.

or training of security forces, and technological or material resources.[2] The government acts first, choosing a level of preemptive repression $p \geq 0$ at a cost $\frac{p^2 k}{\theta}$, where $0 < k < 1$.[3] If used, preemptive repression acts as a 'first strike' (Beard & Strayhorn, 2018), and reduces opposition capacity γ by p. Consequently, the remaining capacity of the opposition is $\gamma - p$.

After observing p, but not the government's type, the opposition decides whether to mobilize to challenge the government $m \in \{0, 1\}$ at a cost $c \in (0, 1)$. If the opposition mobilizes, conflict ensues. For simplicity, I assume that the government wins the conflict if its strength is higher than the remaining capacity of the opposition: $\theta > \gamma - p$. The government pays a cost of $\frac{\gamma - p}{\theta}$ for reactively repressing the opposition if it is successful, and loses the office otherwise. This ensures that governments always prefer to deter the opposition rather than fight an uprising regardless of opposition capacity, but has otherwise no bearing on the results presented. The substantive results presented would remain the same if the outcome of conflict was decided probabilistically via a contest success function.[4]

To sum up, the sequence of the game is:

1. Nature chooses θ from a uniform distribution $\in [0, 1]$. θ is revealed to G.
2. G chooses $p \geq 0$ at a cost $\frac{p^2 k}{\theta}$.
3. O chooses to mobilize at a cost $c \in (0, 1)$ or not: $m \in \{0, 1\}$.
4. The outcome of conflict is decided and payoffs allocated.

The utilities are:

$$U_G = 1 - \frac{kp^2}{\theta} - m(I_{(\gamma - p > \theta)}(-1) - (1 - I_{(\gamma - p > \theta)})(\frac{\gamma - p}{\theta}))$$

$$U_O = m(I_{(\gamma - p > \theta)} - c)$$

[2] All results would be preserved if the government's type determined the value it places on office

[3] The convex cost function is only necessary for the interior solution in the to the two-sided asymmetry extension. All other results would remain substantively unchanged if a linear cost function was used instead.

[4] See Appendix B.

where $I \in \{0, 1\}$ is the indicator variable for $\gamma - p > \theta$. The solution concept is Subgame Perfect Equilibrium in the baseline model with complete information, and Perfect Bayesian Equilibrium otherwise. Full definition and proofs are in the appendix, when they do not follow from the main text.

Complete Information: Purely Function Preemption

I begin with the complete information analysis. The complete information case illustrates how both actors would behave if repression had no informational content. This provides a baseline for comparison for the incomplete information case. It also helps builds intuition for the incomplete information case. In addition, as I argue in more detail below, it captures the dynamics of preemptive repression in certain empirical cases. Put differently, the complete information case provides a better explanation of some empirical cases and should be considered as an alternative, rather than simply a baseline to the asymmetric information case.

Under complete information, the opposition mobilizes if their remaining capacity after a level of preemption p is enough to win the upcoming conflict:

$$\gamma - p > \theta \tag{1}$$

Rearranging gives us the minimum level of preemptive repression that a government of type θ needs to deter an opposition with capacity γ:

$$p^{\dagger} \equiv \max\{0, \gamma - \theta\}$$

This points to an important result: Strong governments are more effective at preemptive repression, but they also need less of it under complete information. If the government's capacity is sufficiently high, $\theta \geq \gamma$, it can deter the opposition with no preemption. The opposition knows they will be subdued by reactive mobilization if they mobilize, so they do

not challenge the government. Similarly, if a government has to repress preemptively, $\gamma > \theta$, the stronger it is, the less it will need to repress preemptively to deter the opposition.

Proposition 1 *The level of preemptive repression is required to deter mobilization, $p^\dagger$, decreases as the government's strength, θ, increases: $\frac{\partial p^\dagger}{\partial \theta} < 0$.*

Finally, the government must be able repress at a level $p^\dagger$, which requires:

$$1 - \frac{(p^\dagger)^2 k}{\theta} \geq 0$$

$$\theta \geq \frac{2\gamma k - \sqrt{4\gamma k + 1} + 1}{2k} \equiv \theta^\dagger \tag{2}$$

Conditions 1 and 2 together provide the equilibria of the baseline model, which is summarized in the Proposition below.

Proposition 2 *When the government's strength is common knowledge, there is a unique equilibrium where:*
Opposition only mobilizes if $p < p^\dagger$.
Government chooses $p = p^\dagger$ and deters conflict if $\theta \geq \theta^\dagger$. Otherwise, it chooses $p = 0$.

Proposition 2 is depicted in the Figure 1 below. In Region I, the government deters mobilization without resorting to preemptive repression. Below this region, the government has to preemptively repress at level $p^\dagger$ to stay in power. In Region II, the government represses and prevents mobilization. In Region III, the government is too weak to muster enough repression to deter the opposition.

The complete information setting explains the use of preemptive repression under relative certainty. For example, Truex (2019) finds that the Chinese Communist Party (CCP) increases the use preemptive repression in dates corresponding to 'focal events', such as the anniversary of Tiananmen Square Massacre. Focal dates increase the capacity of opposition groups by making it easier to organize. Expecting this, the government increases

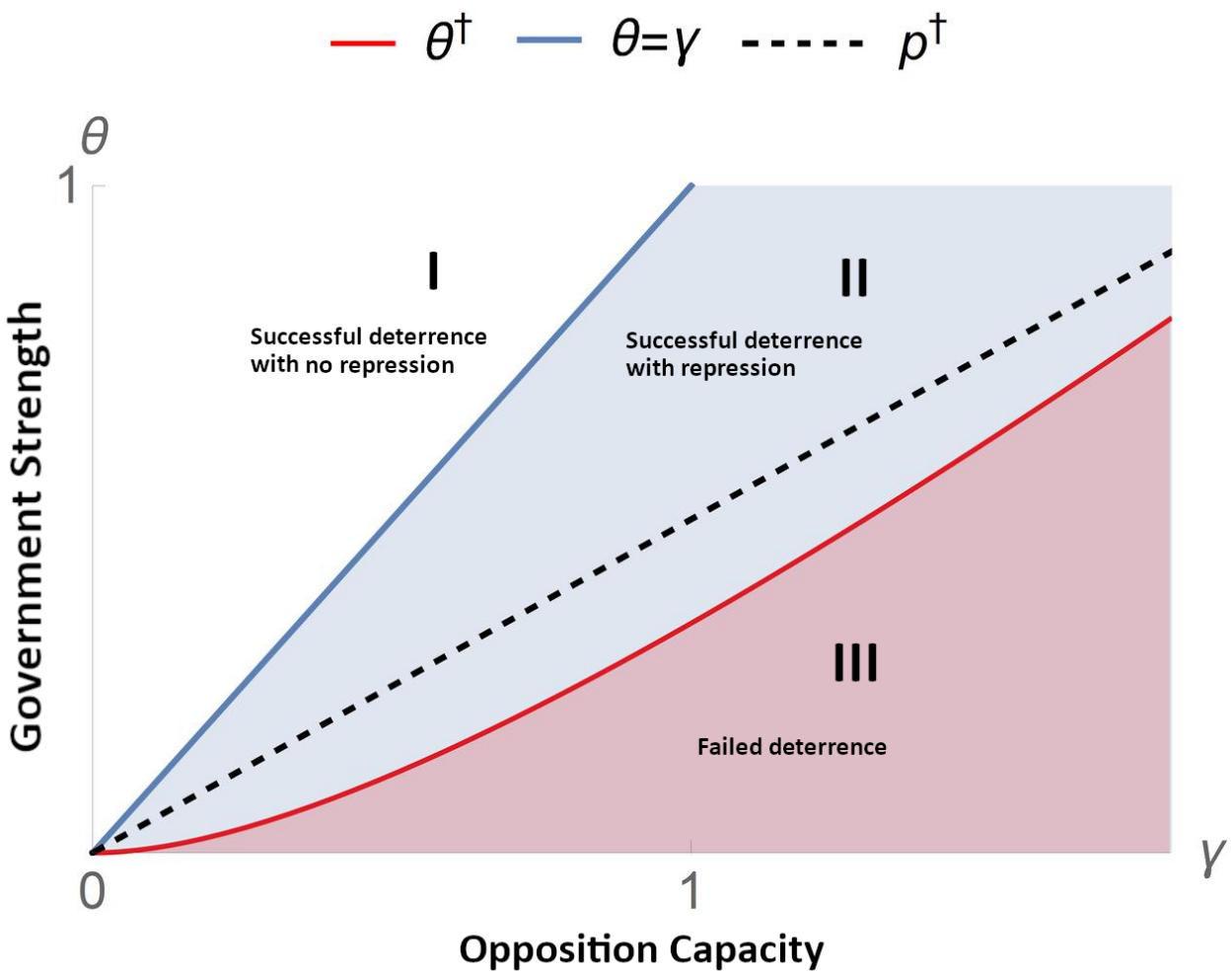

Figure 1: Equilibria ranges of the game under complete information as function of Government Type, θ, and Opposition Capacity, γ, when $k = 0.6$

repression preemptively before these dates to avoid public mobilization. Furthermore, CCP uses a 'catch and release' strategy, detaining potential dissidents for short periods of time without formal charges or overt public displays of force. As Proposition 2 points out, when its strength is known by the opposition, a government with a vast coercive apparatus requires lesser levels of preemptive repression. This regular, cyclical pattern of low level preemption is a stark contrast to other instances of CCP's use of coercion, such as the harsh, public and unapologetic targeting of Uighurs or the crack down against the Falun Gong movement (Lorentzen, 2014, 2017). Indeed, the extensive crackdown on Falun Gong movement provided

a clear, lasting message to potential protesters in China by providing a clear demonstration of strength.[5]

Preemption with Asymmetric Information

Having examined the model where preemptive repression is only used for the purpose of reducing opposition capacity, I now turn to the asymmetric information setting, where θ is only observed by the government. When the government has private knowledge about its strength, it has the opportunity, and the incentive to signal or bluff using preemptive repression.

If the opposition mobilizes to challenge the government, the results are the same as in the complete information case. However, because they cannot directly observe the government's strength, θ, they do not know whether they can win the conflict or not. Their decision to mobilize depends on their belief after observing p. After suffering a level of repression $p \geq 0$, they lose against all governments with $\theta \geq \gamma - p$ if they mobilize.

$$\underbrace{Pr[\theta < \gamma - p|p]}_{\text{Probability of Victory}}(1-c) + \underbrace{Pr[\theta \geq \gamma - p|p]}_{\text{Probability of Defeat}}(-c) > 0$$

$$Pr[\theta < \gamma - p|p] > c \tag{3}$$

The right side of Condition 3 is simply the opposition's cost of mobilization. The left side of Condition 3 is the opposition's expected chance of victory after observing p.

Expecting the opposition's response, the chooses a level of preemptive repression. While preemption is preferable to an open conflict and defeat, it is costly. Thus, the government has no reason to repress any more than necessary. In some cases, the necessary repression can be low or even zero. Suppose all governments pool on not repression at all, the opposition gains no additional information and thus acts on their prior. If their capacity

[5]Note that Truex (2019)'s data starts in 1998, one year before the widespread crackdown on Falun Gong.

is low enough, the fear of facing a stronger government will have pacifying effect even after observing no repression. Formally:

$$Pr[\theta < \gamma | p = 0] \leq c$$
$$\gamma \leq c \tag{4}$$

This is the Region I in Figure 2 below. For the government, this is an ideal situation because it gains the benefit of holding onto power without paying the cost of repression. Consequently, no type of government has any incentive to deviate. This is especially good news for weaker governments who would be forced to employ high levels of repression or lose power in the complete information setting.

Proposition 3 *When the government's strength is private information,*
There is a pooling equilibrium if $\gamma \leq c$*:*
All governments pool on $p = 0$*.*
The Opposition does not mobilize $m = 0$*.*

When the opposition is stronger, pooling stops being effective as it would lead to the opposition mobilizing. In this case, the government has to weigh the cost of sufficient repression and the benefit of holding onto power. Let $p^{\ddagger}$ be the minimum level of repression that deters the opposition such that $Pr[\theta < \gamma - p^{\ddagger} | p^{\ddagger}] = c$.

For a government with type θ repression at a level $p^{\ddagger}$ is only worth using if it can deter mobilization at an acceptable cost.

$$1 - \frac{k}{\theta}(p^{\ddagger})^2 \geq 0$$
$$(p^{\ddagger})^2 k \leq \theta \equiv \theta^{\ddagger} \tag{5}$$

Given the government's incentives in repressing, the opposition updates their belief. After observing a level of repression $p^{\ddagger}$, the opposition knows that the government must be at least

sufficiently strong enough to employ it: $\theta \geq (p^{\ddagger})^2 k$. Given that θ is uniformly distributed between 0 and 1, the opposition's expected probability of defeat is:

$$Pr[\theta \geq \gamma - p^{\ddagger} | \theta \geq \theta^{\ddagger}] = \frac{1 - (\gamma - p^{\ddagger})}{1 - (p^{\ddagger})^2 k}$$

Rearranging gives us the level of preemptive repression that will deter an opposition with capacity $\gamma > c$, and cost of mobilization c.

$$p = \frac{\sqrt{1 + 4(\gamma - c)k(1 - c)} - 1}{2k(1 - c)} \equiv p^{\ddagger} \tag{6}$$

Plugging in $p^{\ddagger}$ into Equation 5 gives us $\theta^{\ddagger}$: the weakest government that will choose $p^{\ddagger}$ and deter the opposition, rather than choose $p = 0$ and lose power.

$$1 - \frac{k}{\theta^{\ddagger}}(p^{\ddagger})^2 = 0$$

$$\theta^{\ddagger} \equiv \frac{1 + 2(1 - c)k(\gamma - c) + \sqrt{1 + 4(1 - c)k(\gamma - c)}}{2(1 - c)^2 k} \tag{7}$$

As any government with $\theta \geq \theta^{\dagger}$, prefers successful preemption to open conflict ($0 < k < 1$), they have no profitable deviation to any $p < p^{\ddagger}$. Because preemption is costly, a government has no incentive to repress more than $p^{\ddagger}$. Similarly, the government has no incentive to repress if it is unable to deter mobilization and hold on to power: $0 - p^{\ddagger}\frac{k}{\theta} < 0$.

Taken together, Conditions 5-7 provide the other equilibrium of the incomplete information game where the government's strength is private knowledge. This equilibrium is summarized in the Proposition 4 below and is depicted in Regions II and III in Figure 2:

Proposition 4 *When the government's strength is private information, there is an equilibrium if $\gamma > c$:*

Opposition only mobilizes if $p < p^{\ddagger}$.

All governments with $\theta \geq \theta^{\ddagger}$ choose $p = p^{\ddagger}$ and deter conflict.

All governments with $\theta < \theta^{\dagger}$ choose $p = 0$ and lose power.

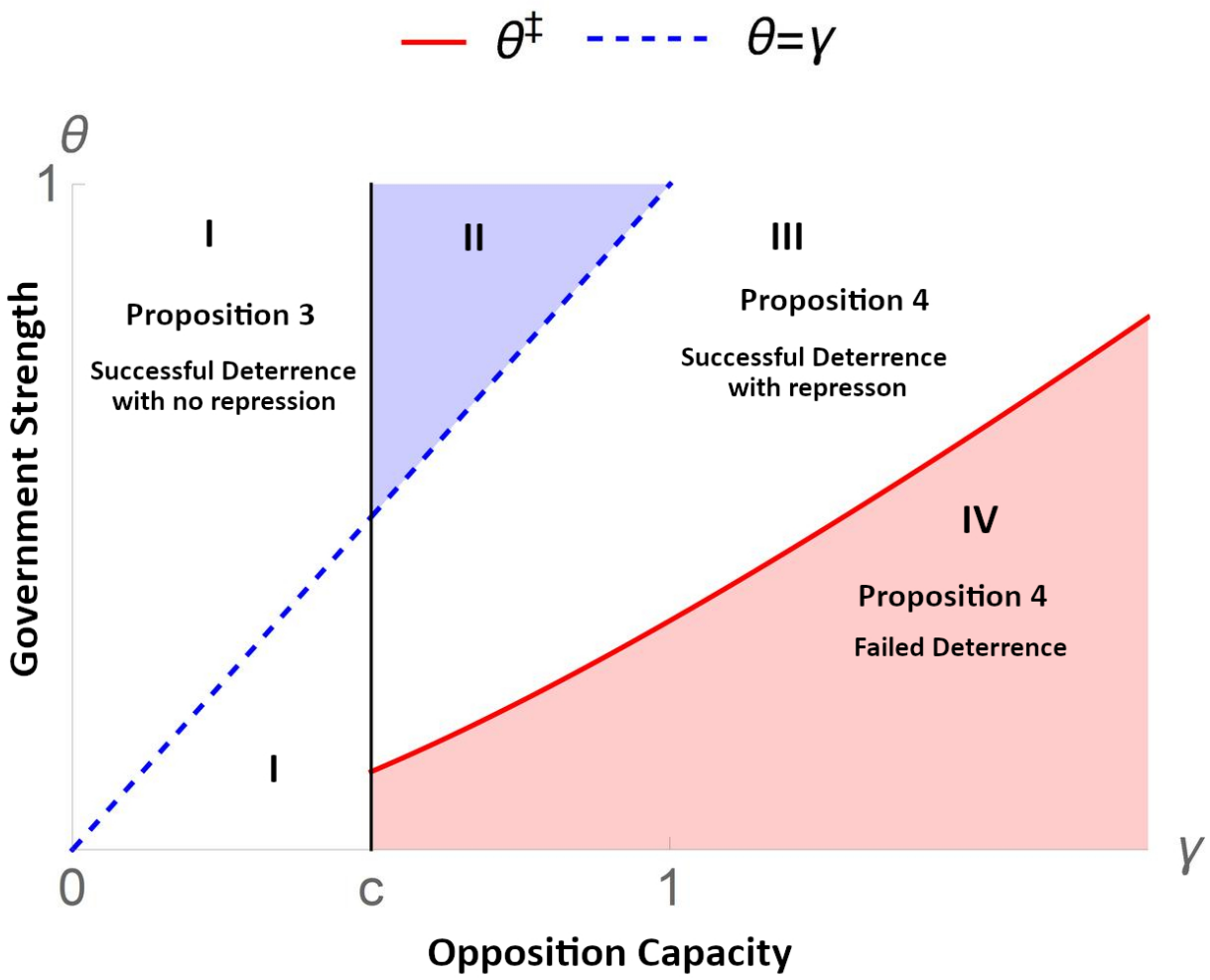

Figure 2: Equilibria ranges when the government's strength is private information; when $c = 0.5$ and $k = 0.8$.

Having explored the equilibria when both functional and informational elements of repression are at play, we can examine the implications of the model more closely. Equation 6 points to an intuitive result that the complete information setting also has: as the opposition's capacity increases, the level of preemptive repression required to deter them also increases. However, Equation 6 also includes a counterintuitive result that the complete information setting does not feature. As the marginal cost of preemption, k, increases, the level repression required to deter the opposition, $p^{\ddagger}$, decreases. Put differently, as the cost of repression increases, it becomes more effective in deterring the opposition.

Proposition 5 *As the marginal cost of preemption k increases, the level of deterrent repression, $p^{\ddagger}$, decreases.* $\frac{\partial p^{\ddagger}}{\partial k} < 0$

To see the logic underpinning Proposition 5, recall how the opposition updates their belief about the government's strength after observing repression. The higher the observed repression is, the stronger the government must be in order to deploy it. As the marginal cost of repression goes up, the opposition changes their estimation of government strength accordingly. When the costs are high, the opposition correctly infers that the government must be a stronger type to be able to use the same level of repression. Similarly, when the cost of repression is low, the opposition expects higher levels of repression from weaker governments, and becomes more willing to mobilize after suffering any level of repression.

Importantly, this change in the effectiveness of repression occurs even when the functional effect of repression remains constant. Repression still deteriorates opposition capacity at the same level regardless of its costs. However, because the level of repression also provides information about the government's capabilities, the aggregate effect of a given level of repression changes. This dynamic is depicted in the Figures 3 and 4 below. When repression is costlier, the opposition is deterred with *less* repression precisely because only stronger governments are able to employ it.

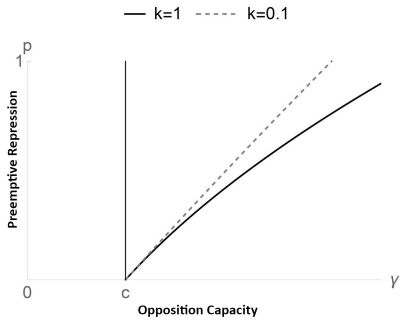

Figure 3: Level of deterrent preemptive repression $p^{\ddagger}$ necessary

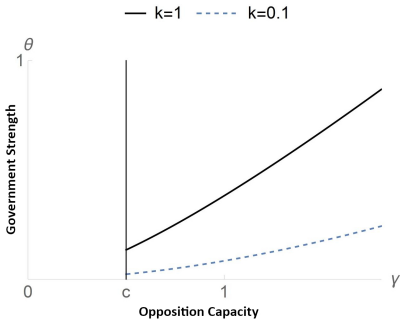

Figure 4: Minimum strength of governments that can employ $p^{\ddagger}$, $\theta^{\ddagger}$

Recall from Proposition 5 that when governments have to signal strength through

repression, the effectiveness of any given level of repression depends on its cost. Knowing this, governments adjust their level of repression accordingly as best they can. If cost of repression is low, governments use higher levels repression to deter the opposition. This might seem obvious. After all, one would expect governments to use more repression when it is cheaper.

However, the logic presented here is quite different. Governments do not simply use more repression because they can, but because they have to. Similarly, when the costs of repression are higher, governments can signal their strength with relatively lower levels of repression. Under incomplete information, repression's effect and thus, its equilibrium level do not only depend on its cost. They also depend on what the opposition can infer from observing the government paying the said cost.

Furthermore, uncertainty about the government's strength changes the level of repression in another way. Recall from the complete information setting that stronger governments need less preemption to deter the opposition's mobilization (Proposition 1). If the government is sufficiently strong, they can even forego repression, knowing the opposition will not mobilize. However, this dynamic disappears when the government's strength is unknown to the opposition. Because they cannot observe the government's strength, the opposition has to condition their decision to mobilize on what they can infer from government's use of repression. This creates new dynamics that can either decrease or increase the level of preemptive repression.

The opposition's uncertainty about the government's strength can have a pacifying effect on the opposition. If the opposition's capacity is low enough, they can be deterred with low, or even no preemptive repression. The logic is as follows: after observing any level of preemption, the opposition evaluates their chances of victory should they mobilize. The weaker they are, the more likely they are to meet a strong government that can defeat them in conflict. This means that even when repression was low, the opposition becomes more

hesitant to mobilize for fear of facing a strong government. This creates an opportunity for weaker governments to bluff strength by using less repression than they would need to under complete information.

The pooling equilibrium described in Proposition 3 demonstrates this dynamic most clearly. In this parameter range, all governments pool on $p^{\ddagger} = 0$. That is, they forego the opportunity to repress preemptively. If the opposition mobilizes, they can defeat weaker governments that needed to repress preemptively. That is, those with $\theta < \gamma$. However, they will lose to stronger governments. Thus, their likelihood of victory is $Pr(\theta < \gamma) = \gamma$. Because this equals their cost of mobilization, they do not mobilize. Consequently, uncertainty proves to be especially valuable for weaker governments that would have to repress at higher levels under complete information. This is the Region I in Figure 2.

Research on repression and dissent have argued that governments can often induce cooperation and obedience through the threat of violence rather than its application (Davenport, 2007a; Ritter, 2014; Chenoweth, 2021). Of course, in many cases the opposition does not have information about the strength of their government. Provided they are sufficiently pessimistic about their prospects in conflict, the government can hide its weakness by refraining from repression. Even though the opposition could take advantage of the window of opportunity, their expectation that the government is likely to be too strong to defeat leads them to refrain from mobilization.

As the opposition's capacity increases, signaling—or bluffing— strength through not repressing preemptively stops being effective. This the equilibrium described in Proposition 4 and depicted in Regions III and IV of Figure 2. This means that the strongest governments—those with $\theta \geq \gamma > c$— have to use repression, which they would have avoided under complete information. In this parameter range, the government uses repression primarily for its informational effect: they do not need to diminish the opposition's capacity to hold on to power. However, because preemption is preferable to fighting an uprising, they

use just enough repression to deter the opposition. This the blue shaded Region II in Figure 2.

While uncertainty forces the strongest governments to preemptively repress, their presence still creates hesitancy for the opposition. This proves beneficial for weaker governments, who now can use less repression compared to the complete information case. The dynamic at play is the same as the zero preemption case described above. Of course, in this parameter range the aggregate effect of uncertainty is ambiguous. While strong governments have to repress preemptively, weaker governments repress less than they would have to under complete information.

Uncertainty forces governments to use to more preemption as the opposition's gets higher, leading to higher levels of observed repression than the complete information case. That is, $p^{\dagger} < p^{\ddagger}$. One part of this dynamic is simply the functional effect of repression: similar to the complete information case, opposition with higher capacity requires more repression to deter. The other part is the informational effect. In this parameter range, the script from previous ranges flips. The presence of weaker governments makes the opposition bolder. Because the opposition expects a higher chance of victory even after suffering a relatively high level of repression, governments increase their efforts in expectation. Consequently, governments use more repression than they would have under complete information to credibly demonstrate their strength and deter mobilization.

Proposition 6 *Opposition's uncertainty about government strength can either decrease or increase observed preemptive repression.*

Two-Sided Asymmetry

I now consider extend to model to have two sided asymmetry, where the government lacks information about the opposition's capacity γ. Suppose now that γ is drawn from a uniform

distribution with range $[0, \bar{\gamma}]$. Analogous to the one-sided asymmetry case, an opposition with capacity γ mobilizes after suffering a level repression $p \geq 0$ if:

$$\underbrace{Pr[E(\theta) < \gamma - p|p]}_{\text{Probability of Victory}} > c \tag{8}$$

In equilibrium, an opposition with type γ uses a threshold strategy, mobilizing only if $p < p(\gamma)$, where $p(\gamma)$ is increasing in γ.

Expecting the opposition's strategy, but unaware of the threshold $p(\gamma)$, the government balances the cost of repression, and the benefit of deterrence and staying in power. Formally:

$$p^* \equiv \underset{p}{\text{argmax}}(1 - Pr[p \geq p(\gamma)])0 + Pr[p \geq p(\gamma)] - \frac{k}{\theta}p^2 \tag{9}$$

So that $p^* = \frac{\theta}{2k}$. The government's level of repression perfectly reveals its type to the opposition. After observing a level of repression p, the opposition can perfectly estimate the government's strength and thus their likelihood of victory: $E[\theta|p] = 2pk$. Accordingly, the opposition is indifferent between mobilizing or not when:

$$p = \frac{\gamma}{1 + 2k} \equiv p(\gamma) \tag{10}$$

Combining these results we get the equilibria of the game with two-sided asymmetry, summarized in Proposition 6 below:

Proposition 7 *When the government's strength and the opposition's capacity are private information, there is a unique equilibrium where:*
A government of type θ represses at a level $p^* = \frac{\theta}{2k}$.
An opposition with capacity γ mobilizes if $p < p(\gamma)$.

The two-sided asymmetry extension features the same key insight with the single-sided case. In updating their belief about the strength of the government, the opposition factors the cost of repression. Formally, $p(\gamma)$ is decreasing in k. As the cost of repression decreases, the opposition expects weaker governments to repress higher levels. Consequently,

the effectiveness of a given level of repression in preventing mobilization decreases. Even when repression's functional effect—reduction in opposition capacity— remains the same, the aggregate effect is reduced.

Furthermore, two-sided asymmetry captures the repression-escalation dynamic that precede many major uprisings. Governments repress preemptively best they can, hoping they will deter the opposition. When their repressive efforts prove sufficient, repression is observed but not mobilization (Ritter & Conrad, 2016). In other cases, both repression and mobilization is observed. Note that, this mechanism is different from the 'backlash hypothesis' (Francisco, 1995; Aytaç et al., 2018) which is often invoked to explain the positive association between repression and subsequent dissent. According to this hypothesis, repression fails when it motivates otherwise neutral bystanders to join the opposition, making the opposition even stronger than before.

The mechanism at work here is in line with the arguments of Ritter & Conrad (2016) highlighting selection effects: governments repress preemptively in expectation of dissent. Consequently, conditional on observing preemptive repression, the opposition groups that mobilize will be systematically more resolved than those who do not.

For example, leading up to the 2013-2014 campaign that led to the removal of former Ukranian President Yanukovich, activists were targeted by pro-government militias and plainclothes police. The regime esorted to tactics such as arrests, kidnapping and torturing activists and journalists but fell quickly once the masses took the streets (Chyzh & Labzina, 2018; Chenoweth, 2021). Preemptive repression in this case, while certainly cruel, was not sufficiently severe or consistent enough to deter mass mobilization (Popova, 2014). The model presented here gives a theoretically consistent explanation for why governments would use low or moderate levels of repression even when they lack the resolve or strength to follow it up or escalate. Rather than treating Yanukovic's use of repression as a simple blunder, we should see it as an ex-ante rational effort to to preempt mass protests.

A similar process played out in the Arab Spring, where the quick fall of Tunisia's Ben Ali led to other authoritarian leaders ramp up repression in their own countries to prevent challenges at home (Bellin, 2012). The model explains why authoritarians were quick to ramp up repression even when they ended up failing to nip the protests in the bud. Both the authoritarian and their opponents generally lacked informational and organizational structures such as well organized political parties or civil society organizations. As a result, they operated under great uncertainty (Svolik, 2012; Weyland, 2012; Bellin, 2012). This uncertainty lead to a quick rise in repression, which proved effective in deterring uprisings for regimes such as Saudi Arabia. In others, such as Syria and Bahrain, the large increase in repression failed to deter the masses, leading to civil war in the former, and harsh reactive repression with foreign help in the latter. While the interactions subsequent to mobilization are outside the scope of the the model, it nevertheless provides a strategic explanation as to why all regimes in the region were quick to ramp up repression, despite having different repressive capabilities. It also explains why repression had different varying outcomes.

Empirical Implications

The model can be employed to make better theoretical sense of empirical findings on the study of repression and dissent. As previous research highlighted, one reason for the lack of robust evidence in the relationship between repression and dissent is endogeneity arising through strategic interaction: governments repress in expectation of dissent (Pierskalla, 2010; Ritter, 2014; Hill & Jones, 2014; Ritter & Conrad, 2016). Failing to account for the endogenous process that leads to repression has lead to support for 'almost every possible relationship between protest and repression (Carey, 2006).' Yet endogeneity is not the only challenge to the study of repression and dissent. Repression is used under different contexts and has different effects depending on its intended purpose.

When their strength is well-known to the opposition, strong governments need less

preemptive repression to deter challenges (Proposition 1). When governments need to signal their strength through repression, it can lead to more or less repression depending on the context (Proposition 5). Put differently, the same level of observed repression can have a different effect depending on the purpose it was used. Overlooking distinct dynamics that lead to repression is one potential reason why previous research has found inconsistent effects. Nevertheless, the predictions of the model are in line with several empirical findings.

For example, slow moving population trends such as youth bulges (Nordås & Davenport, 2013), or cyclical patterns such as focal dates (Truex, 2019) can increase the opposition's capacity to mobilize by increasing their recruitment pool or by reducing coordination problems. Similarly, exogenous changes to resources such as oil discoveries can make opposition groups in the region more eager to mobilize because the value of success higher. Or, the prospective power shift in the government's favor makes mobilization more attractive now than it will be in the future (Bell & Wolford, 2015; Carey et al., 2022). These phenomena potentially shift the balance of power between the opposition and the government, they do not by themselves create uncertainty about the government's strength.

In these cases, we would expect repression to be used for purely functional effect. Thus, the model expects these shifts should only lead to significant increases in repression where the governments are not sufficiently strong. With regards to oil discoveries, Carey et al. (2022) find empirical evidence that this is indeed the case: oil discoveries only lead to increased repression in weaker states. Furthermore, relatively lower levels of repression can be effective at deterring dissent when signaling strength is not a concern. This helps explain why China does not deploy its vast coercive apparatus to its full effect on focal dates (Truex, 2019), in contrast to their crackdown on Falun Gong (Lorentzen, 2017).

Other phenomena, most notably democratization (Crescenzi, 1999; Pierskalla, 2010) or fall of similar, neighboring regimes (Bellin, 2012; Weyland, 2012, 2014) both shift the balance of power and create uncertainty. Opening up to political contestation, for example

by allowing opposition parties, increases the opposition's capacity to mobilize (Vreeland, 2008; Slantchev & Matush, 2020). These periods are also riddled with uncertainty for the opposition, as they do not know whether it is the hard-liners or soft-liners in control of the regime, and thus its true commitment to liberalization and willingness to repress. In these cases, dynamics leading to preemptive repression and, thus its effect, will be different.

When repression is used to signal strength—when it has an informational effect—its the aggregate effect changes with its cost. Repression becomes more effective in signaling strength when it is costlier (Proposition 3). For example, authoritarian regimes that signed the United Nations Convention Against Torture (CAT), do engage in less torture than those who did not (Conrad & Ritter, 2013; Hollyer & Rosendorff, 2011). Signing CAT increases the cost of repression for signatory regimes by opening possibilities for litigation. As the model predicts, this increase in costs makes repression more effective against the opposition when they are uncertain about the government's strength. Hollyer & Rosendorff (2011) find that authoritarian signatories to CAT do indeed repress less, but they also enjoy longer tenures and face fewer protests. The opposition adjusts their expectation to the increased cost of repression, and infer that the government is not any weaker even after they suffer less repression. Conrad & Ritter (2013) find a similar result, strong governments—those with higher expected tenures—, are more likely to sign CAT and reduce repression afterwards.

The opposite is also true. When the cost of repression is low, as it is for authoritarian, resource-rich regimes, governments repress more (Davenport & Armstrong, 2004; Davenport, 2007a; Hill & Jones, 2014; Jones & Lupu, 2018). While the relationship is well-established, the existing explanations are choice theoric in nature. It is doubtful that governments repress more, simply because they can. It is more plausible that they respond to the expected behavior of the opposition, ramping up repression to maintain deterrence.

This is not to suggest that increases in the cost of repression, whether through democratization or international human rights treaties, are bound to be ineffective. As

the model demonstrates, increasing the cost of repression makes it more effective precisely because only stronger governments are able to employ it. This means that the functional relationship between cost of repression—such as democracy— and observed repression can be both linear and have a threshold effect (Davenport & Armstrong, 2004; Davenport, 2007a; DeMeritt, 2016; Jones & Lupu, 2018). Modest increases in the cost of repression can make it more effective, allowing governments to keep deterring the opposition with lower levels. As the costs mount up, governments can suddenly find repression too costly, and be forced to switch to alternative strategies (Slantchev & Matush, 2020).

Put differently, under uncertainty, increased costs of repression can steadily decrease human rights violations while still allowing the government to deter challenges. However, preemptive repression can suddenly collapse if the costs reach beyond a certain point ($\theta < \theta^{\dagger}$). Consequently, empirical evidence for steady, linear effect of democratization on repression (Jones & Lupu, 2018), and threshold effect for 'Domestic Democratic Peace' (Davenport, 2007b) are not necessarily inconsistent.

An important path forward for future empirical work is to distinguish, and specify different data-generating processes that lead to changes in preemptive repression. Repression can be a result of uncertainty, either the opposition's or the government's, but need not be. As the model presented here highlights, the challenge for empirical work is not just endogeneity but also specifying the correct functional form for the expected relationship between observed repression and dissent. While it is intuitive to expect lower probability of mobilization after more repression, the relationship can be less straightforward.

One way to tackle this empirical challenge is to look for conditions that approximate 'ideal experiments' as proposed by Bueno De Mesquita & Tyson (2020). A necessary condition required for this approach is for repression to have no informational content so that the direct of repression effect can be estimated more accurately (Bueno De Mesquita & Tyson, 2020). This is quite the challenge for observational, or even quasi-experimental research that

seeks to identify the effect of repression. However, it is not necessarily impossible. For example, repression during periods of regularized contentious politics (Lorentzen, 2013; Truex, 2019) within long standing regimes during focal dates is less likely to have informational content. In these cases repression rarely provides new information to its targets.

For example, many authoritarian regimes routinely increase repression preemptively during focal dates through tactics like barricades, curfews, detainments or internet blackouts as a way to respond to decreased coordination problem for protesters. In these cases, repression becomes regularized and is expected by the opposition. Thus, it typically has no informational content. Similarly, institutions such as political parties can provide information about the government to the opposition, reducing the necessity of signaling strength through violence (Svolik, 2012). Focusing on identifying the effect of repression in these similar cases, rather than comparing the effects in different settings where other dynamics are at play is likely a fruitful path forward for future empirical work.

Conclusion

The effect of repression depends on its purpose and how it is perceived by its target. In this article, I have suggested two distinct channels through which repression, used preemptively, can help governments deter challenges. These channels have either been lumped together, or studied separately. However, to understand the relationship between repression on dissent, they need to be studied together in a way that focuses on their interaction. When asymmetric information about the strength of governments is a factor, the expected relationship between preemptive repression and dissent becomes much less straightforward.

Repression affects dissent through two distinct channels: reducing opposition capacity before it can mobilize, or by convincing the opposition that the government is strong enough to put down any challenges. As the model presented here demonstrates, these chan-

nels are not always complementary and can interact in different ways. Governments can show strength by not repressing at all, or repress at higher levels to credibly signal their strength.

Finally, the challenges of inference from observational data in the study of repression and dissent might be beyond the presence of endogeneity and censoring. Governments expecting dissent will repress preemptively, but the severity and the effect of repression will inevitably depend on its function. Repression used during periods of relative certainty for its direct function, is likely to have different effect than when its used under asymmetric information. Consequently, even though researchers might observe the same severity of repression, they will not necessarily observe the same effect (Bueno De Mesquita & Tyson, 2020). Even when the observed effect on dissent, or likelihood of conflict show similar relationships, researchers should be wary of making causal arguments when not accounting for different mechanisms at play.

Replication data Mathematica notebook documenting the detailed solutions for Propositions 1 and 2 are available online.

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Biographical statement

Dogus Aktan

PhD in International Studies from University of Denver Josef Korbel School, 2022

Lecturer at Rice University, July 2024

Appendix A

The **Perfect Bayesian Equilibrium** (PBE) specifies:

1. A level of $p \geq 0$ for each type of G with $\theta \in [0, 1]$.
2. A set of beliefs for O regarding the type of G after observing p : $E(\theta|p)$.
3. A choice to mobilize for O $m = \{0, 1\}$ given their beliefs after observing p.

and actions are sequentially rational strategy given beliefs, and beliefs are consistent with strategies and are updated via Bayes rule whenever possible.

Proofs of Propositions 1& 2: Follow from the main text, where the solution for $\theta^{\dagger}$ is:

$$\begin{aligned} 1 - \frac{(p^{\dagger})^2 k}{\theta} &\geq 0 \\ \frac{-\gamma^2 k + \theta + 2\gamma k\theta - k\theta^2}{\theta} &= 0 \\ -\gamma^2 k + \theta(2\gamma k + 1) - k\theta^2 &= 0 \\ \left(\theta - \frac{2\gamma k + 1}{2k}\right)^2 &= \frac{(2\gamma k + 1)^2}{4k^2} - \gamma^2 \end{aligned}$$

Taking the Square Root with $\theta \leq 1$

$$\begin{aligned} \theta - \frac{2\gamma k + 1}{2k} &= -\sqrt{\frac{(2\gamma k + 1)^2}{4k^2} - \gamma^2} \\ \theta &\geq \frac{2\gamma k - \sqrt{4\gamma k + 1} + 1}{2k} \equiv \theta^{\dagger} \end{aligned}$$

Click here to see the solution on WolframAlpha

Proof of Proposition 3: Follows from the main text and that given a uniform distribution $Pr[\theta < \gamma] = \gamma$

Proof of Proposition 4: Follows from the main text.

Proof of Proposition 5: As marginal cost of preemption, k, increases, the denominator in equation 4 decreases. Holding p fixed, the remaining capacity of the opposition is $\gamma - p$. As k increases, $1 - p^2k$ decreases, which means expected probability of victory goes down.

Proof of Proposition 5: Follows from the main text.

Proof of Proposition 6: First order condition is $1 - \frac{k}{\theta}2p = 0$. So that $p^* = \frac{\theta}{2k}$. Second order condition satisfied: $-\frac{2k}{\theta} < 0$. Going back to O's decision: After observing p $E[\theta|p] = 2pk$. Which O means, mobilizes if:

$$\begin{aligned} \gamma - p &> 2pk \\ \gamma &> 2pk + p \\ p &= \frac{\gamma}{1 + 2k} \equiv p(\gamma) \end{aligned}$$

Appendix B: Contest Success Function

Complete Information

- Contest success function where O wins with a probability $\frac{\gamma-p}{\gamma-p+\theta}$.
- Conflict costs $1 > w > 0$ for G and $1 > c > 0$ for O. Assume w is sufficiently high so that G always prefers to preempt rather than fight an open conflict.
- For the O to mobilize after p it must be that:

$$\frac{\gamma - p}{\gamma - p + \theta} - c > 0$$

$$p \geq \frac{\gamma - c(\theta + \gamma)}{1 - c} \equiv p^{\dagger}$$

- No need for any $p > p^{\dagger}$. Similarly, government must be able to repress at a level $p^{\dagger}$. The lower solution to quadratic: $1 - kp^2 \geq 0$ gives us the $\theta^{\dagger}$ as in the main text.

Incomplete Information

- Conflicts happens same as the complete information case.
- After observing $p \geq 0$ the updated belief of O with regards to θ is the same as in the main text. Which means O is indifferent between mobilizing and not when is:

$$\frac{\gamma - p}{\gamma - p + \int_{1-p^2k}^{1} \theta d\theta} = c$$

  where rearranging and solving for p gives the unique $p^{\ddagger}$ as in the main text.
- Similarly, The lower solution to quadratic: $1 - k(p^{\ddagger})^2 \geq 0$ gives us the $\theta^{\dagger}$ as in the main text.