How Does Violence Deter? Functional and Informational Effects of Preemptive Repression

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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 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 distinct channels interact, how they can together change the severity and effect of repression. The model illustrates how the informational and functional channels together modify the aggregate effect of observed repression, and can make it both more or less effective in deterring dissent.

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

1 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 and 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 and 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 and Conrad, 2016). Dissent and repression are strategic, both governments and their opponents choose their actions in anticipation of what they expect the other side will do. Dissidents expecting repression might refrain from mobilizing in the first place. Governments expecting dissent might repress preemptively, rather than risk facing an open challenge. Indeed, one key empirical finding from this line of inquiry is that governments repress not just to put down active challenges, but also to deter opposition from mobilizing against them in the first place (Nordås and Davenport, 2013; Danneman and Ritter, 2014; Sullivan, 2016; Ritter and Conrad, 2016; Truex, 2019; Slantchev and Matush, 2020).

Despite increased attention to strategic dynamics, mechanisms linking *preemptive* repression and dissent have received scant attention. Examining *how* repression is linked

to dissent is crucial to improve our understanding of 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 and Tarrow, 2015). Identifying and distinguishing these pathways is essential to interpret existing empirical findings correctly and to guide further research.

To examine these pathways, I develop a formal model that examines two different channels through which preemptive repression works, and can lead to successful deterrence or open conflict: a functional, direct channel, and a signaling, informational channel (Bueno De Mesquita and Tyson, 2020). The first channel—direct, functional— is often referred the literature on preemptive repression and dissent. Governments might repress preemptively because it is more efficient than fighting an open conflict. Preemptive repression tactics such as arrests, torture, and the disappearing of opponents, or similar acts of one-sided violence, decrease the capacity of regime opponents before they can mobilize and challenge the government.

The second channel—informational— is commonly ignored, or lumped together with the direct channel. The extent to which a government can employ preemptive repression provides information to its opponents about its capabilities. This information can, in turn influence their decision to challenge the regime. Governments might engage in preemptive repression to signal that they are strong enough to defeat any challengers in an open conflict (Walter, 2006).

Although these two channels might be complementary, they need not be. To demonstrate how they might interact in different strategic settings, I model a baseline case of 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. I highlight how these two channels are not simply additive or separable, even when they are complementary. Finally, I extend the model to a two-sided asymmetry setting, where the opposition's capacity is unknown the government.

In the model, an opposition group has to decide whether to mobilize against a government, which results in open conflict. Before the opposition can mobilize, the government can repress preemptively, decreasing the opposition's likelihood of victory in the conflict. Because strong governments are better at both preemptive and reactive repression, they need to repress less to deter the opposition under complete information. If the opposition's capacity is low enough, the government can simply ignore the opposition because it does not pose a credible to threat to mobilize.

The dynamic changes when government's strength is private knowledge. When their strength is private knowledge, governments use repression both for its informational and functional effect. 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, this forces strong governments to engage in increasingly higher repression to deter challengers. Consequently, uncertainty about government strength decreases or increases observed repression depending on opposition's capacity and beliefs.

Furthermore, the model demonstrates that increased cost of repression can make it more effective and vice versa. When the opposition has to infer the government's strength from the level of repression, they factor in the cost of repression. 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.

This paper 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 and Conrad, 2016; Danneman and Ritter, 2014; Nordås and Davenport, 2013), as well as formal work (De Jaegher and Hoyer, 2019; Rozenas, 2020; Dragu and Przeworski, 2019; Slantchev and 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. That is, relationship between repression and dissent are equifinal. Depending on why it is used, repression can have a different aggregate effect on dissent.

A low level of repression can be effective in deterring the opposition when used by a strong government 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 level of repression to its outcome (Ritter and Conrad, 2016). Thus, future empirical work should be more explicit and precise about the expected functional form between repression and its effects (Davenport and Armstrong, 2004; Davenport and Loyle, 2012; Jones and Lupu, 2018).

2 Repression, Preemption, and Signaling

Governments repress strategically to counter and deter opposition (deMeritt, 2016). Repression often 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 and 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 and 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.

While this line of research provides important evidence that governments repress preemptively, 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. Distinguishing these channels and examining how they operate is crucial to understanding both why states repress and the effect of repression on dissent, as the two inescapably interrelated.

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, the level of repression is a single choice with no informational content.

Similarly, more recent formal work focusing on preventive or preemptive repression typically do not feature reactive repression. De Jaegher and Hoyer (2019) focus on the interaction between the government's expected tenure length and its efforts in preemption. Dragu and 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. Finally, Dragu and Przeworski (2019) focus on moral hazard by security forces tasked with preventive repression. Thus, they do not consider the interaction of informational and functional channels that is the focus of this paper.

Slantchev and 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.

3 The Model

3.1 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.[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 and 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, they win the ensuing conflict unless the government can muster enough reactive repression. For simplicity, I assume that reactively repressing an opposition with capacity γ costs a government of type θ, $\frac{\gamma}{\theta}$. Effectively, I normalize the marginal cost of reactive repression to $\frac{1}{\theta}$. This ensures that governments always prefer to deter the opposition rather than fight an uprising, 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: $m \in \{0,1\}$. If they mobilize, they win if $\gamma - p > \theta$.

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

[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.

The utilities are:

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

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.

3.2 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.

Starting with the opposition's decision in the end. Because $c < 1$, they mobilize if their remaining capacity after a level of preemptive repression p is enough to win the upcoming conflict:

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

Given the opposition's expected decision to mobilize, to deter an opposition with capacity γ, a government of type θ has to use preemptive repression at a level $\max\{0, \gamma - \theta\} \equiv p^{\dagger}$. 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. This dynamics happens when the power balance between the opposition and the government shifts in an expected, observable manner. Consider the preemptive use of force in "mowing the grass" campaigns, such as the Israeli Defense Force (IDF) incursions into the Gaza Strip (Gibilisco, 2021). When terrorist groups' capacity increases, governments

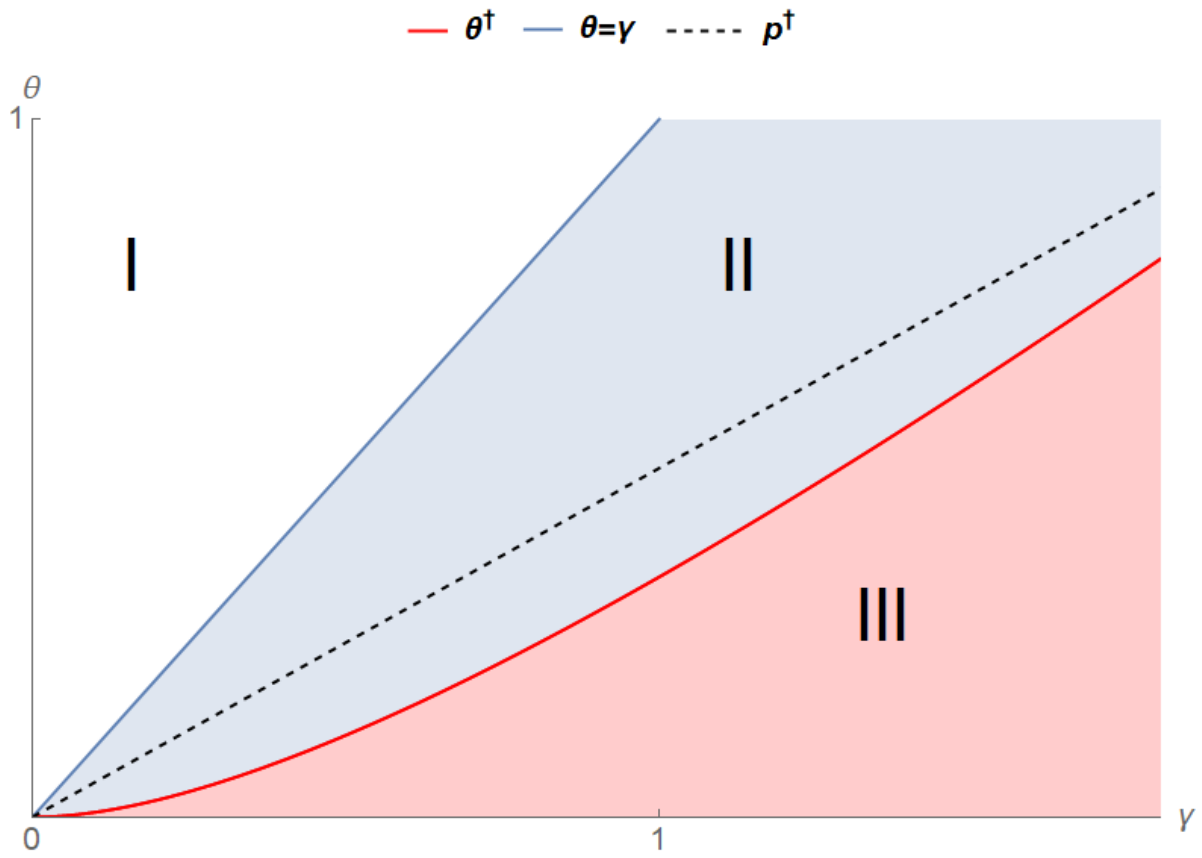

Figure 1: Equilibria ranges of the game under complete information as function of θ and γ, when $k = 0.6$

respond with preemptive force before the groups can deploy said capacity. As Gibilisco (2021) points out, this cyclical pattern can occur even when the governments do not have to signal strength. After all, the capabilities of IDF is hardly secret to Hamas after years of conflict. This dynamic, where preemption is used in even under complete information is not unique to counterterrorism.

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 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]

3.3 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 observe the government's strength, θ, they do not know whether they can win the conflict or not. After suffering a level of repression $p \geq 0$, if they mobilize, they lose against all governments with $\theta \geq \gamma - p$. But, they win against the rest: those with $\theta < \gamma - p$. Consequently, they only mobilize if:

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

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

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. To

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

see how this belief is formed, note that after observing $p \geq 0$, the opposition knows that the government must be at least sufficiently strong enough to employ it. Formally, $\theta \geq p^2 k$. Given that θ is uniformly distributed between 0 and 1, the opposition's expected probability of defeat is:

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

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

$$p = \max\{\frac{\sqrt{1 + 4(\gamma - c)k(1 - c)} - 1}{2k(1 - c)}, 0\} \equiv p^{\ddagger} \tag{4}$$

Equation 4 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 4 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 $p^{\dagger}$, decreases. Put differently, as the cost of repression increases, it becomes more effective in deterring the opposition.

Proposition 3 *As the marginal cost of preemption k increases, the level of deterrent repression, $p^{\dagger}$, decreases.* $\frac{\partial p^{\ddagger}}{\partial k} < 0$

To see the logic underpinning Proposition 4, 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.

Finally, the government must be able to employ $p^{\ddagger}$ in order to deter the opposition. Which requires:

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

$$\theta \geq \frac{1 + 2(1-c)k(\gamma - c) + \sqrt{1 + 4(1-c)k(\gamma - c)}}{2(1-c)^2 k} \equiv \theta^{\ddagger} \tag{5}$$

Taken together, Conditions 3-5 provide the equilibria of the incomplete information game where the government's strength is private knowledge. The equilibria is summarized in the Proposition 4 below:

Proposition 4 *When the government's strength is private information, there is a unique equilibrium where:*
Opposition only mobilizes if $p < p^{\ddagger}$.
Government chooses $p = p^{\ddagger}$ *and deters conflict if* $\theta \geq \theta^{\ddagger}$. *Otherwise it chooses* $p = 0$.

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. Recall from Proposition 3 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. This comparison is depicted in Figure 2 below.

The opposition's uncertainty about the government's strength does not always lead to more repression. It can also 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.

To illustrate this dynamic more clearly, consider the case when $\gamma = c$. In this parameter range, all governments pool on $p^\dagger = 0$. That is, they forego the opportunity to repress preemptively. If the opposition mobilizes, they can defeat weaker governments

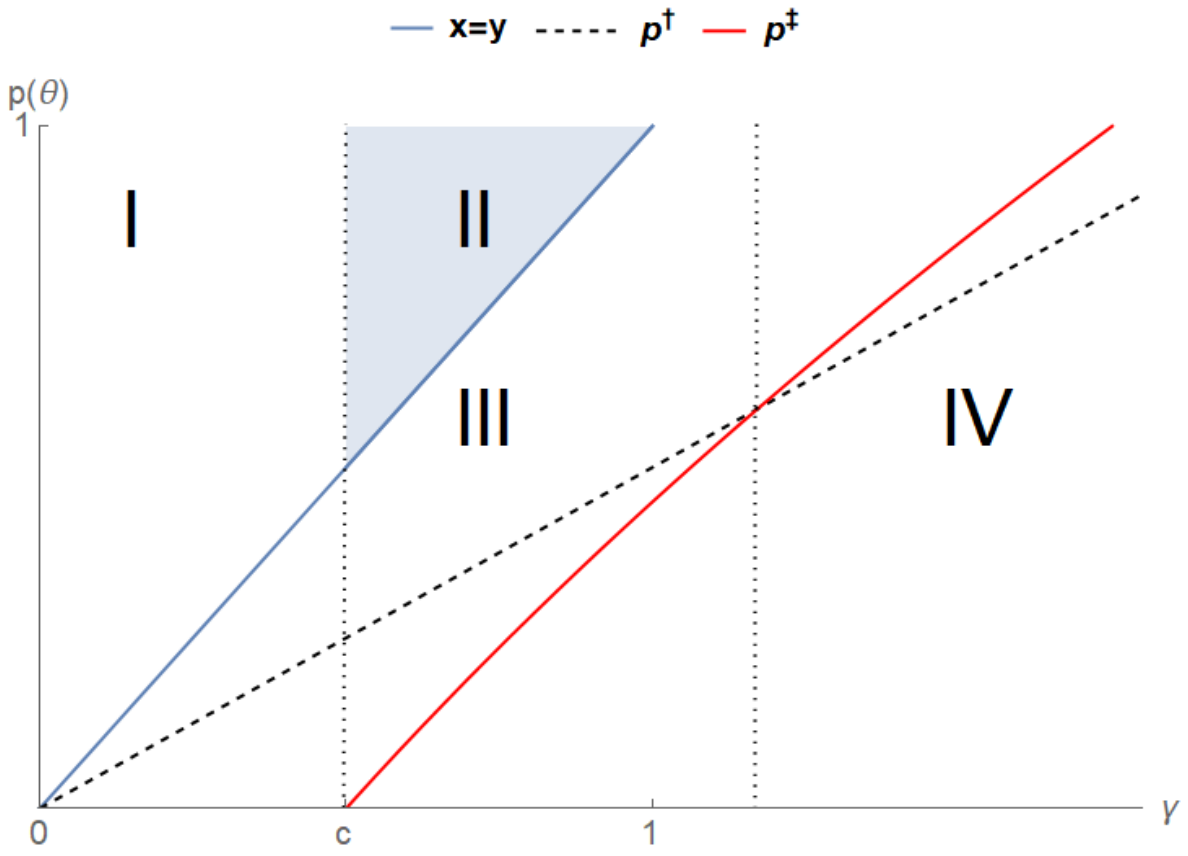

Figure 2: Equilibrium levels of deterrent repression under complete— $p^{\dagger}$— and incomplete information—$p^{\dagger}$— as a function of γ, when $c = 0.5$ and $k = 0.8$.

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 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. This the Region III in Figure 2. 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. Conse-

quently, governments use more repression than they would have under complete information to credibly demonstrate their strength and deter mobilization. This is the parameter range of Region IV in Figure 2.

Proposition 5 *Opposition's uncertainty about government strength can either decrease or increase observed preemptive repression.*

3.4 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:

$$\underbrace{Pr[E(\theta) < \gamma - p|p]}_{\text{Probability of Victory}} > c \tag{6}$$

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:

$$p^* \equiv \underset{p}{\text{argmax}}(1 - Pr[p \geq p(\gamma)])0 + Pr[p \geq p(\gamma)] - \frac{k}{\theta}p^2 \tag{7}$$

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:

$$p = \frac{\gamma}{1 + 2k} \equiv p(\gamma) \tag{8}$$

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

Proposition 6 *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 and 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 the bystanders to join the opposition, making them even stronger than before.

The mechanism at work here is in line with the arguments of Ritter and 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 (Chyzh and Labzina, 2018; Chenoweth, 2021). Despite his best efforts to repress preemptively to deter mass mobilization, which included kidnapping and torturing activists and journalists, he quickly lost power once the protesters showed up to streets in thousands. 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 (Chyzh and Labzina, 2018).

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 like Saudi Arabia and Bahrain, but not in others. The model provides a strategic explanation as to why all regimes in the region were quick to ramp up repression, despite having different repressive capabilities.

4 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 and Jones, 2014; Ritter and 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.

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.

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 and Davenport, 2013), or cyclical patterns such as focal dates (Truex, 2019) can increase the opposition's capacity to mobilize without creating uncertainty. Similarly, oil discoveries can potentially provide increased resources for the opposition, and prompt governments to increase repression to prevent challenges (Bell and Wolford, 2015; Carey et al., 2022). While 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 repression, 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 is not sufficiently strong. With regards to oil discoveries, Carey et al. (2022) find empirical evidence that this is indeed the case. Furthermore, in these cases relatively lower levels of repression can be effective at deterring dissent. This helps explain why China does not deploy its vast coercive apparatus to its full effect in 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. For example, opening up to political contestation increases the opposition's capacity to mobilize (Slantchev and Matush, 2020), but these periods are also riddled with uncertainty about the government's commitment to liberalization, or its capacity 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 and Ritter, 2013; Hollyer and 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 and 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 and 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 author-

itarian, resource-rich regimes, governments repress more (Davenport and Armstrong, 2004; Davenport, 2007a; Hill and Jones, 2014; Jones and 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 and Armstrong, 2004; Davenport, 2007a; deMeritt, 2016; Jones and 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 and 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 and Lupu, 2018), and threshold effect for "Domestic Democratic Peace" (Davenport, 2007b) are not necessarily inconsistent.

5 Conclusion

The effect of repression depends on its purpose and how it is perceived by its target. In this paper, 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 channels 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 and 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.

6 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 threshold strategy for each type of O with γ, where they mobilize only after $p^{\ddagger}$
3. A set of beliefs for O regarding the type of G after observing p.

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

Proofs of Propositions 1&2: Follow from the main text.

Proof of Proposition 3: 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 4: Follows from the main text.

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:

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

6.1 Appendix B: Contest Success Function

6.2 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:

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

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

- 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.

6.3 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.

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