The Authoritarian Wager:
Political Action and the Sudden Collapse of Repression

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Abstract

Authoritarian rulers tend to prevent political action but sometimes allow it even if it leads to social conflict. The collapse of preventive repression is especially puzzling when rulers have reliable security forces capable of preventing protests. We develop a game-theoretic model that explores the incentives of authoritarians to repress or permit political contestation. We show that rulers with the capacity to fully repress political action create despotic regimes, but rulers with more moderate capacity might opt to allow open contestation. The status quo bias that favors regime supporters weakens their incentive to defend it. Rulers take the authoritarian wager by abandoning preventive repression and allowing opposition that threatens the status quo. The resulting risk gives incentives to the supporters to defend the regime, increasing the rulers' chances of political survival. Even moderate changes in the structural capacity to repress might result in drastic policy reversals involving repression.

Keywords: authoritarian rule, public protests, repression, democratization

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It is not true that nobody foresaw the 1989 revolutions that toppled the communist governments in Eastern Europe. Setting aside the arguments for the inevitable collapse of communism — arguments that would submit to no time-table for the event they purported to predict, that contained large elements of wishful thinking, and that at any rate still envisioned long-haul containment right up to the fall — there are the specialists who had noted the economic stagnation, the fall in consumption, the deteriorating social conditions since the late 1970s, and who were forecasting popular upheavals and political crises by the mid 1980s.[1] As these analysts duly noted, all structural factors were pointing to an impending systemic shakeup, but even they usually assumed that the Soviet government (and its satellite regimes) would use repression to keep itself in power and maintain the integrity of the union and the bloc. After all, this was exactly what had happened in East Germany (1953), Hungary (1956), Czechoslovakia (1968), and Poland (1981). It was because of this assumption that even as late as May 1988 the intelligence services estimated only a remote to low likelihood of serious challenges to Party control in Eastern Europe over the next five years. This was the consensus among academic Sovietologists as well (Howard and Walters 2014).

The surprise was not that the system was shaking, it was that those who benefitted from it did not fight to preserve it. Why did the East European communist governments allow protests to occur despite knowing that they could only end either in massive repression or the political collapse of the ruling party? Their own past pointed to the consequences of permitting mass dissent. In Germany, Hungary, and Czechoslovakia, it took Soviet troops to quash the protests. The Chinese government had just violently cracked down on its own demonstrators in Beijing. Why not avoid all of this? In Poland, the government had introduced martial law that lasted nearly two years and severely curbed civil and political rights (with many restrictions remaining in place after martial law was lifted), but there was no large-scale violence and the regime survived another eight years. In the Soviet Union itself, effective repressive measures had stamped out the dissident movement in the 1960s and had kept the country quiet for over quarter of a century (Garcelon 2005, 46). These experiences raise two questions: why did the communist governments fail to repress the protests when they grew, and, perhaps even more importantly, *why did they allow the protests to grow in the first place?*

The Velvet Revolutions in Eastern Europe also supplied a misleading interpretation of what could have caused repression to collapse when it did. They imbued mass political action with almost mystical powers: it seemed that as long as enough people could get organized, they could take on even the most dictatorial regimes. The Middle East had many of the same problems that had plagued the Soviet bloc — the region had been mired in high unemployment, low wages, and social injus-

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1. For a sober assessment of what the Central Intelligence Agency did and did not predict, see MacEachin (1996). The declassified national intelligence estimates, including NIE 11/12-9-88, May 1988, *Soviet Policy Toward Eastern Europe Under Gorbachev*, are available in Fischer (1999).

tice for decades — and it had also always seemed "ever on the verge of explosion that never occurs" (Waterbury 1970, 61). But when the spring of 2011 came, the Velvet Revolutions proved to be unreliable analogies for what transpired there. Despite determined attempts to usher in democracy, the people could not repeat the feat of 1989. Instead, aside from Tunisia, where their efforts led to shaky democratization, the outcomes ranged from dismal to disastrous: a military coup (Egypt), a failed state (Libya), a drastic repression (Bahrain), a prolonged strife (Yemen), and a bloody civil war (Syria). One could also easily add to this list the resilient authoritarianism in some of the Soviet successor states, and the Iranian revolution-that-wasn't in 2009. People taking to the streets, in numbers never before seen, did not topple all dictators, and even when they did, all they got was another ruler of the same stripe. When they failed, they often ended up far worse than before. *What could explain such variation in the outcomes of political contestation in authoritarian regimes?*

One immediate answer is that the regimes varied in their capacity to repress: those that could, did, and those that could not, did not. This is the venerable structuralist explanation for revolutions (Skocpol 1979), this is what the modern study of social movements argues (della Porta 2008), and this is one among the reasons given for the collapse of repression in the Soviet Union (Collins 1995). In fact, the temptation to assume that the repression is automatic whenever feasible is so strong that the vast literature on political protest and rebellion almost exclusively focuses on the dissidents: Why do they rebel? When do they succeed?[2] Seldom is there even a hint that there might be reasons for an authoritarian government not to repress even though it has the capacity to do so. That it might *choose* to allow a challenge to the regime to occur.

Thinking of repression as a choice is nothing new. Explaining it as one, however, has proven difficult. Reviewing the studies of the subject, Davenport (2007, 17) observed that scholars often argue that governments resort to repression when its expected benefits (usually, retention of power) outweigh its costs. In spite of this, he then noted, we have neither good theories of why repression occurs nor systematic evaluation about its purported benefits for regime survival.

What could possess a regime to allow potential opposition to become an actual one? Our main goal in this article is to explain the collapse of preventive repression in a strategic context. This means that the essence of our answer is rather pedestrian: governments choose to relax preventive repression when doing so increases their chances of holding onto power. The hard part is figuring out how this might happen. What is the mechanism that could explain how allowing the dissidents to mobilize and challenge the regime improves its chances of survival?

We present a model of the interaction between a ruler, who can use preventive re-

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2. Gurr (1970); Muller (1972); Muller (1979); Taylor (1987); Tarrow (1993); Lichbach (1995). Some even formally take the government's response as given (Lichbach 1987).

pression to increase the costs of any political action, and political actors, who must decide whether to support the ruler, oppose the ruler, or abstain from political action altogether. We show that a *status quo bias* in favor of supporters weakens their incentive to come to the defense of the regime when it is threatened by dissidents who stand to lose unless they act. We then demonstrate how these asymmetric incentives result in different responses to that kind of repression: supporters become strictly more likely to abstain from any action as repression increases, whereas under some conditions opponents might become even more emboldened.

We find that if the government cannot repress sufficiently severely to deter all but the most extreme dissidents, then it might be strictly better off abandoning preventive repression altogether. By doing so, it puts the well-being of its supporters at significant risk, which motivates them to act to prevent the ouster of the ruler. This **authoritarian wager** is the bet the government takes that unleashing political action could work out in its favor. How this wager plays out is uncertain: if it turns out that the dissidents are not, after all, sufficiently strongly opposed to the regime to take action against it, the ruler remains in power (regime reassertion); if it turns out that the government has overestimated how supportive the citizens are of the regime, then the ruler is ousted (velvet revolution); and if there are enough committed opponents and supporters, then a costly conflict ensues and the ruler survives it with probability that depends on the regime's coercive power.

The model further shows how even a relatively modest deterioration of capacity could cause the sudden collapse of preventive repression, which could lead to anything from a reassertion of the regime's authority to regime change to civil war. Because of the risks involved, only rulers who are relatively confident in their power to prevail in the conflict choose to gamble with open political contestation. Those whose position is already shaky will prefer to keep repressing up to their capacity and take their (lower) odds of survival in a despotic regime. This might explain why reactive repression is so common once mobilized dissent occurs and why it is seldom easy to overcome it: only fairly strong regimes willfully permit the situation to escalate to the point of open protests. And this is perhaps why the aftermath of the Arab Spring was precisely what one should have expected, and why the Velvet Revolutions in Eastern Europe should be truly regarded as exceptional in the peaceful collapse of authoritarian regimes.

1   The Repression of Political Action

Why do governments repress? For the same reason they do most everything else: to stay in power.[3] Violence is not the only instrument leaders have to cling to power. Being costly and risky, it might not rank high among the ones preferred even by

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3. Tullock (1987), Duvall and Stohl (1988), Bueno de Mesquita et al. (2003), Davenport (2007), and Ritter (2014).

determined autocrats. Cultivating loyalty, dispensing patronage and maintaining clientelistic networks, coopting the opposition, sharing power, and divide-and-rule, all are in the strategic repertoire of political survival.[4] Of course, even these tactics are implemented in the shadow of power, so both their content and effects are conditioned on the ever-present threat or actuality of repression (Ritter 2014).

Thinking of repression as an instrument of governance implies that the ruler must weigh the pros and cons of such a policy, and compare them at least to the alternative of inaction. That is, it implies a choice. It might come as a surprise, then, that many studies of repression either ignore that choice or assume it.

1.1   Repression as a Choice

People can be quite aggrieved and live in a system widely perceived as unjust for a very long time without mounting any political action against it (Tarrow 1993; Portes 1995). Why do they not challenge it? The risk and cost involved in organizing such a challenge creates incentives for free-riding, which decrease the likelihood of rebellion (Taylor 1987). Dissidents face tremendous coordination problems because information is scarce and likely wrong (Kuran 1995a). They might also confront debilitating capacity constraints (Tilly 1978). There are tactics that dissidents could use to deal with some of these problems (Lichbach 1995).[5] Their chances of success, however, depend on the political system and the government's strategy of dealing with opposition (Lichbach 1994; Sharman 2003).

Thus, two strands of research — one studying the microfoundations of rebel participation, and the other focusing on group resource mobilization — converge on the point that to understand violent political action, one must analyze how the government prepares for it, and how it deals with it. Tilly (1993, 5) is emphatic: "whatever else they involve, revolutions include forcible transfers of power over states, and therefore any useful account of revolutions must concern, among other things, how states and uses of force vary in time, space and social setting."

This might appear self-evident, but it is striking to what extent research has assumed away the role of the state even, paradoxically, when it has made it the central part of the arguments. The absent state is most noticeable in the mechanisms that explain mass political action as the result of behavioral (Kuran 1991) or informational — whether it is about the regime (Lohmann 1994) or the preferences of other citizens (Kricheli, Livne, and Magaloni 2011) — cascades. In these models, people will only act if they believe enough others will join them, which means

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4. Wintrobe (1998), Verdier, Acemoglu, and Robinson (2004), Gandhi and Przeworski (2006), Svolik (2009), and Acemoglu and Robinson (2010).

5. Ginkel and Smith (1999) show how dissidents who are better informed about the power of the regime than the rest of the public could signal to the latter when it is appropriate to mobilize. Bueno de Mesquita (2010) provides a mechanism in which revolutionary vanguards use violence to coordinate the beliefs of potential protesters.

that inaction can be a self-fulfilling prophecy irrespective of the true distribution of preferences in the population. Small groups of early participants could, however, persuade more abstainers to join them, and the swelling crowd might, under certain conditions, trigger an avalanche creating a mass protest. Elaborations analyze how protest participants coordinate their efforts, and emphasize communication technologies, network linkages, and cross-border contagion (Beissinger 2007; Maves and Braithwaite 2013).

But where is the state in all of this? Why would the government not disperse the initial small protests? Would the government respond with concessions or coercion when confronted with the large protests? It is not even clear how aggregated individual grievances would cause the demise of a repressive regime while the coercive apparatus remains loyal to it. As Portes (1995) put it in reference to the abortive Russian revolution of 1905, "so long as tsarist troops were willing to fire, the autocracy was secure." The revolutionary bandwagon (Kuran 1991) might be part of the explanation of why people turn out in the streets but the outcome depends on whether the state represses (Tilly 1993). History is littered with failed revolutions, and even though their eruption was often unforeseen, their dismal wrecking was far more predictable.[6]

This, of course, is the essence of the traditional structuralist approaches to explaining revolutions: as long as the state retains its capacity to repress, dissidents have no chances of success. These political movements can only achieve anything when the state is disabled somehow by a fiscal crisis, international pressure, or military overextension (Skocpol 1979), or when its ability to coordinate a response is compromised because the elites are split on how to confront the challenge (Goldstone 1991; Lachmann 1997), or when its coercive apparatus is of dubious loyalty (Gause 2011).[7] Even though these models make the state the focus of analysis, they deny it any agency (Kiser 1995). Repression seems important but it is taken as a given — a background condition or a regime characteristic — and the analysis proceeds toward factors that determine it. But nowhere here is the government doing that determining. The implicit assumption seems to be that, barring cosmetic concessions to placate some of the malcontent, repression in authoritarian regimes is a no-brainer: if the rulers could repress, then they would. When they do not, it is because they cannot, not because they might not want to.

Why should that matter? Because regimes often retain sufficient capacity to re-

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6. One cannot simply side-step this problem by arguing that cascades provide an explanation of mass political action instead of successful revolutions. The core of the mechanism relies on strength in numbers: the more people show up, the more likely is that they will prevail, which in turn encourages more to show up (DeNardo 1985). If the correspondence between numbers and probability of success is broken, the mechanism falls apart.

7. Among the factors that are said to determine whether the military remains loyal to the regime or stands aside or even joins he dissidents, one finds their professionalization and bureaucratization (Bellin 2012), hierarchical organization (Albrecht and Ohl 2016), relationship with the opposition (Nepstad 2011), and the nature of leadership succession (Brownlee, Masoud, and Reynolds 2013).

press largely disorganized and unarmed crowds, especially if they are small as they would have to be before they trigger a cascade. In this sense, if cascades occur, they necessarily involve the deliberate permission of the government. Now, one could argue that there are structural reasons that might force a government to relax its repression, as Collins (1995) does in the case of the Soviet Union. And one could assert that it was the "removal of the Soviet threat, with Gorbachev's unwillingness to commit Soviet troops to support East European Communist governments" that precipitated their downfall (Coleman 1995). But the evidence for this is thin: the Soviet troops did fire on protesters in Lithuania when ordered to do so, the security forces in East Germany did disperse demonstrators when ordered to do so, and even in Czechoslovakia the repressive apparatus kept dissidents at bay when ordered to do so. It is by no means clear that the security forces would have disobeyed orders or lacked the capacity to quell any disturbances. Repression collapsed because the governments chose not to order them to do so.[8]

1.2   When to Repress, and Whom?

In a sense, Davenport's (2007) assessment of the state of theorizing about repression was a bit pessimistic. After all, studies of regime transitions had already explicitly incorporated elites (the state, which they control) deciding between repressing non-elites (the poor) or offering them some political or economic bargain to stave off revolution (Acemoglu and Robison 2000; Boix 2003). In some cases, repression was viewed as a blunt-force means of last resort, employed when the other instruments have failed to deliver.[9] Moore (2000) had already even modeled the choice between repression and accommodation as a function of dissident behavior. More recently, Ritter (2014) analyzed how the severity of repression affects the chances of political survival and the terms of accommodation.

For our purposes, however, all these studies share one particular assumption: they take the existence of mobilized dissent as given, and explore the trade-offs between concessions and hard-line repression (possibly followed by further escalation to revolution). They are focused on reactive repression.

Reactive repression is the regime's coercive response to mobilized dissent that challenges the status quo. This dissent can take many forms — demonstrations, protests, boycotts, strikes, and riots — all of which impose costs on the government, threaten the stability of its rule, and undermine its legitimacy. This repression aims to eliminate the direct threat, and level of force employed can range from physical intimidation, to the use of tear gas and rubber bullets, to beatings and arrests, to violent clashes with armed opponents, all the way to widespread conflict.

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8. Svolik (2012), Lee (2015) and McMahon and Slantchev (2015) study how the government can provide incentives to the military to remain loyal, which can in turn affect whether it resorts to repression. They do not study the effectiveness of repression itself.

9. Gartner and Regan (1996); Wintrobe (2007).

This repression cannot occur if the government is incapacitated because the elites or the military refuse to participate or actively oppose it. Thus, reactive repression requires that government supporters rally to the defense of the regime. Its costs are borne by the (behaviorally self-identified) opponents and, to the extent that these opponents can resist, by the regime supporters. This repression also entails risks to the government: the opponents might prevail, the elites might engineer a palace coup in an attempt to preserve their standing, the military might intervene to prevent further instability. Even when it succeeds, the government might find that its handling of the crisis has sowed doubts about its ability to govern.

Despite these costs and risks, the government seems to have a compelling incentive to respond with repression when they seek to eliminate what they perceive to be a direct behavioral threat. The empirical regularity of reactive repression in face of mobilized dissent is so robust that it has been called the "law of coercive responsiveness" (Davenport 2007, 7–8).[10]

This empirical regularity could justify the assumption of an automatic reactive repression in earlier studies but it also raises a question: if the coercive response is to be expected, then why do the dissidents challenge in the first place? Presumably, they would do so only if they manage to organize for collective action and have reasonable expectations of overcoming the inevitable repressive reaction. The incentive to challenge and even the capability to do it crucially depend on their coordination and resource capacities (Tilly 1978).

A handful of studies do add a "mobilization stage", which endows potential opponents of the regime with the choice of taking a risk by challenging the regime or playing it safe by living with the status quo (Pierskalla 2010; Shadmehr 2014). However, it is clear that the government can shape this choice and weaken the opponents' incentives to challenge through various measures designed to raise the costs of collective action and to disrupt the ability to coordinate effectively. But then we should immediately wonder: if the government could deter challenges and avoid all the unpleasantness of having to deal with organized resistance, then why not repress preventively?

Preventive repression is the bread and butter of autocratic regimes. It involves restrictions of speech, prohibitions of assembly, and controls of travel. It is expressed in the routine harassment of real or suspected dissidents, the abuse of due process and administrative regulations to punish individuals, and the occasional purges of even regime loyalists. At its extreme, it can escalate to incarceration, torture, disappearance, and extrajudicial killings. This repression aims to prevent threats to the regime from materializing by hindering collective action and coordination among active or potential dissenters, sowing fear and distrust among them, disrupting their organization, and even eliminating their leaders.[11]

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10. The threat-response model also seems to explain policing of protests in democratic regimes (Earl, Soule, and McCarthy 2003).

11. Gurr (1970, Ch. 5-6); Dallin and Breslauer (1970); Tilly (1978); Duvall and Stohl (1988);

Although its targets are sometimes identified through intense surveillance, often mere suspicion or indirect associations are sufficient. This creates a semi-lawless environment, where the agents of repression can pursue private goals, which expands the range of targets and can sometimes result in arbitrary or random victimization (Thornton 1964). This repression, with its pervasive violations of political and civil rights, with its sporadic low-level directed coercion, and with its pervasive surveillance, is part of daily life in societies under authoritarian rule. It is diffuse (can affect people irrespective of their preferences for the regime), and designed to prevent mobilized dissent. It also appears to be quite effective in deterring challenges (Osa and Corduneanu-Huci 2003; Johnston 2005). Little wonder, then, that governments have been willing to bear the costs of an extensive internal security apparatus; costs that pile up over the years, and that could easily outweigh the costs of infrequent bursts of active repression of mass action (Shelley 1996).

This suggests that in order to properly analyze the "mobilization stage", we need to introduce a "prevention stage" that gives the government the choice to deploy deterrent measures against potential opponents. One reason to examine this choice is the government's strong incentive to avoid the unpleasantness of reactive repression: uncontrolled dissent reveals serious problems, and the coercive response is indicative of the government's ineptness in solving them. The clash starkly exhibits the implosion of public order, and showcases the government's inability to maintain the domestic peace. The latter being one of the autocrats' principal claims to legitimacy, the blow to stability can be severe.

Another reason to examine this choice is theoretical: ignoring preventive repression could introduce a selection bias (Ritter and Conrad 2017). Opponents who manage to mobilize despite preventive repression might be very different from those that are deterred by it. They might be more resolute, or better resourced, or less vulnerable, each of which would make them harder to defeat, and thus more impervious to coercion (Fearon 2002). This might induce the government to negotiate or it might cause it to escalate dramatically in order to cope with the larger threat (Slantchev 2011). Resolving some of the issues could help account for the "punishment puzzle": the findings that repression sometimes quells dissent and sometimes aggravates it (Davenport 2007, 8).

One conceptual problem is that we have no good theories about how the interaction between repression and dissent affects the probability of political survival.[12] In fact, in her extensive review of the literature on repression, Earl (2011) does not even mention the possibility that increasing the probability of regime survival might be an intended effect. But such a mechanism is clearly necessary if one wishes to understand how it could be that repression often creates a backlash and seriously aggravates dissent while simultaneously enhancing the chances of regime survival

Lichbach (1995); Moore (1998); Hafner-Burton, Hyde, and Jablonski (2013); Danneman and Ritter (2014).

12. Escribá-Folch 2013; Ritter 2014.

(Francisco 2005). Since our best theoretical models focus on the reaction to mobilized dissent, our goal in this article is to redirect attention to the government's initial preventative measures. To state our puzzle succinctly,

> *Why does the ruling regime choose to relax preventive repression and potentially permit the mobilization of dissent?*

1.3   Private Truths, Public Lies, and Indiscriminate Prevention

Incorporating preventive repression into the mechanism presents some unique challenges. By definition, preventive repression is what the government does before the opponents have had the chance to act; indeed, its very purpose is to prevent them from acting. But if the dissidents have not conveniently revealed themselves to the government, then how does it know whom to target? What if its measures hurt its own supporters or prevent them from turning out?

These questions might appear obvious, but they are not. Even in sophisticated models that analyze the interaction between the government and the dissidents, it is very common to give the potential dissidents a binary choice between taking action against the regime and doing nothing. This implicitly excludes potential supporters, and so presupposes that the government can identify and target exclusively the opponents.

This might be due to normative bias: the explanations tend to assume that regimes are evil and imposed on their citizens. However, this might not be the case from the perspective of many of those citizens (Yurchak 2005). Even Kuran (1991, 31) acknowledges that "It would be an exaggeration to suggest that *all* East European supporters of communist rule were privately opposed to the status quo." The group of regime supporters would include hardened ideologues, people who benefited from the system, and people who thought any alternative would be even worse. But if we are not in a world where everyone is a secret opponent of the regime, then we must reckon with the reaction of all those who stand to lose from regime change. For regime opponents to succeed, regime supporters must fail but when citizens act strategically, estimating each others' willingness to participate in risky political action can become exceedingly difficult (Kurzman 2005, 170).[13]

It is important to realize that regime supporters are not easily identifiable *a priori* for the same reason regime opponents are impossible to know: the government has no magic way of peering into peoples' minds to uncover their true preferences. Arguments based on preference falsification tend toward explaining why it is not possible for both citizens and the government to know the extent of real discontent

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13. Chong (1991) offers a model with dissidents, supporters, and a ruling regime. It is, however, fundamentally non-strategic since actors have "propensities" to join, oppose, or respond to collective action, and although these might be related to other variables (e.g., the bandwagon rate increases with the level of supply of opponents), they are not deliberate choices.

with the regime — because people are loath to reveal it when they are afraid of reprisals (Kuran 1995b). This is doubtless correct. But so is the other side of that coin: there is no way for both citizens and the government to know the extent of real support for the regime — because everyone shouts the appropriate slogans and is vying for a preferred position in the system. One might have been surprised by the abrupt collapse of communist regimes in Eastern Europe, but probably less so than the communist rulers amid the "spectacular miscalculation of the regimes' assessments of their own popularity" (Sharman 2003, 129).

This might seem like a trivial restatement of the same problem but it is not because self-identifying as an opponent carries one set of costs and risks while self-identifying as a supporter carries another, which means that their incentives to engage in political action are different. At the very least, if the status quo prevails, as it will in the absence of decisive political action against it, the opponents lose and the supporters win. This suggests that regime supporters would find it less pressing to turn out, which could be a problem for a government that cannot identify them reliably enough to incentivize them. The government, then, has more things to worry about than who its enemies are.

The fact that the government cannot reliably distinguish regime opponents from regime supporters suggests that we need to think carefully how preventive repression is incorporated into our theoretical model.

One response is that perhaps the government does not care whom it represses. Randomness could be the essence of its strategy. The government targets indiscriminately because unpredictability makes repression more terrifying since anyone could be a victim, which in turn contributes to anxiety (Thornton 1964, 81). This atomizes society, increases everyone's suspicions of everyone else, and renders organized resistance extremely risky (Duvall and Stohl 1988, 239). Stalin's purges certainly were of this kind (Dallin and Breslauer 1970).

In general, however, governments seem to prefer to target potential dissidents and, occasionally, supporters whose loyalties are suspect. They spend such considerable resources on monitoring society that Oliver (2008) counts surveillance (along with deterrence and incapacitation) among the primary functions of repression. And yet discriminating is no easy task because the authorities cannot distinguish genuine supporters from concealed opponents who might use the cover of seemingly legitimate action to identify each other. The authorities are also often loath to legitimize independent political action because of the risk that this might inadvertently extend the principle to other, much more dangerous, actions. Moreover, there is no guarantee that citizens who learn to coordinate on an allowed action would not at a later date choose to use that capacity against the government.

One telling example of the problem of allowing even an ostensibly non-opposing political action is provided by the evolution of the environmental movement in Bulgaria during the 1980s. The avowed goal of that movement was apolitical — it sought to bring attention to the severe environmental degradation and urge govern-

ment action to reverse it. The communist government, however, was well-aware that among the many "positivists" — those who genuinely only cared about the environment — there were also "negativists" — those who wanted to use the movement to express otherwise forbidden opposition to the government (Georgieva 1992, 14). Ideally, the Party wanted to ban the movement entirely because of the inherent dangers the latter group posed, but in the context of *perestroika* and *glasnost*, it considered it necessary to allow some reform movement, especially one that focused attention away from reforming the regime itself. Compared to the people who wanted to press for human-rights, the environmental movement seemed the lesser of two evils. The government permitted the movement to stage rallies and even organize formally as *Ecoglasnost* in the spring of 1989. But its misgivings proved prophetic. The new organization provided the core of anti-government protests in October and November (especially after the authorities, in a belated attempt to handle rising discontent, beat up and arrested — in front of foreign diplomats — several of its activists), transformed itself into the political Green Party, became one of the most important members of the Union of Democratic Forces that successfully challenged the communist monopoly on power in the June 1990 elections (winning 36% of the seats in parliament to the newly re-branded socialists' 47%), and provided both the mayor for Sofia and the Prime Minister in 1991.

This is not merely an isolated anecdotal example. The Chinese government routinely deals with potentially unauthorized public anti-foreign protests. While ostensibly nationalist and not a challenge to the ruling party, these protests have had a rocky relationship with the authorities who sometimes permit them but sometimes nip them in the bud. As Weiss (2012) shows, it is precisely because they are potentially dangerous for the regime that the government can use them to signal credibly internationally by allowing them as the occasion demands. More often, however, it prevents them altogether despite cries that "Patriotism is not a crime!", very much for the reasons the Bulgarian communists worried about with the supposed environmentalists.

And thus it is that authoritarian regimes remain fearful of dissidents and suspicious of loyalists. This is why autocrats are forever curbing the freedom of assembly, as the Soviet authorities had done (Ruebner 1989), and as has been recently demonstrated by Putin in Russia (Demirjian 2014), Yanukovich in Ukraine (Englund 2014), and the military in Egypt (Kirkpatrick 2013).[14]

To account for these tactics of suppression, we extend the concept of repression to include costs that are indiscriminately imposed on any political action irrespective of its ostensible purpose. One can think of this as applying Tilly's (1978) definition of repression as "any action by another group which raises the contender's cost of collective action" to a setting where the authorities are uncertain of the identity of

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14. The right to assembly is a fundamental freedom to dissent (Inazu 2012), and sometimes comes under attack even in liberal societies, as the "Citizens' Security Law" enacted in Spain on March 26, 2015 illustrates (Osterweil 2015).

the contender or the future intentions of self-identified supporters.

In order to focus on the interaction between repression and political action, we shall abstract away from intra-elite conflicts, potential disloyalties of security forces, or possibilities for coups. Since we are interested in explaining the sudden collapse of repression as a choice, we shall bias the model a bit by assuming that repression is costless to the ruler, and that it is immediately effective. If we find that even under these conditions rulers sometimes prefer to abandon repression, our results would be more convincing.

2 The Model

A ruler faces potential political action from two citizens, $i \in \{1, 2\}$.[15] Let $t_i \in [0, 1]$ be citizen i's preference for the regime, so that her preference against it is $1 - t_i$. We shall refer to a citizen with higher values of t_i as a regime *supporter* (or being on the "right"), and a citizen with a lower value of t_i as a regime *opponent* (or being on the "left"). These labels are merely for convenience and are not meant to indicate the political orientation of the ruling regime or the opposition. Citizen i's preferences are privately known only to herself; the ruler and citizen j both believe that t_i is distributed uniformly over the range of possible values.

Before the citizens can act, the ruler implements a level of **preventive** repression, $k \in (0, 1)$, which determines how costly any political action is going to be. For now, we shall assume that the ruler can choose any k he wishes. We shall introduce capacity constraints ($k_L > 0$, possibly arbitrarily close to zero, to indicate the smallest cost the ruler can ensure, and $k_H \in (k_L, 1)$ to indicate the highest cost he can impose) after the unconstrained analysis reveals why they might matter. Since the ruler cannot reliably distinguish among supporters and opponents *ex ante*, preventive repressive measures that increase the cost of political action must be applied indiscriminately; that is, citizens must pay k if they choose to act irrespective of the content of that action, and can only avoid that cost by abstaining. These measures are observable by both citizens.

The citizens simultaneously choose whether to *support* the ruler (R), *oppose* the ruler (L), or *abstain* (A) from any political action. Our fundamental assumption is that if no citizen opposes the ruler, the ruler stays. This will turn out to be central for our results, so we label it as:

ASSUMPTION 1 (STATUS QUO BIAS). The ruler remains in power with certainty unless actively opposed.

When some citizen opposes the ruler, the outcome depends on what the other citizen

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15. We refer to an arbitrary citizen as "she" and the ruler as "he". Note that what we label as "citizens" could also refer to arbitrary politically-relevant actors (e.g., the military, the elite, labor unions, and so on.)

$$
\begin{array}{cc}
 & \qquad\qquad\qquad\qquad 2 \\
\end{array}
$$

		L	A	R
	L	$1-t_1-k, 1-t_2-k$	$1-t_1-k, 1-t_2$	$W(t_1)-k, w(t_2)-k$
1	A	$1-t_1, 1-t_2-k$	t_1, t_2	t_1, t_2-k
	R	$w(t_1)-k, W(t_2)-k$	t_1-k, t_2	t_1-k, t_2-k

FIGURE 1: The Political Action Game.

does. If she does not support him, the ruler is removed. If she does support him, **reactive** repression occurs, which results in conflict.[16]

In this conflict, the regime prevails with probability $\pi \in (0,1)$, which is common knowledge. Conflict imposes an unconditional cost, $c > 0$, and a conditional cost, $\theta > 0$, on the citizens. The unconditional one reflects the fact that engaging in conflict is costlier than taking unopposed political action. Both citizens pay it. The conditional one reflects the fact that whereas a regime cannot punish or reward citizens based on their privately known preferences, it can certainly do so on the basis of their observable behavior. Only the citizen who ends up on the losing side in the conflict pays it.[17] The expected conflict payoff to citizen i is $w(t_i) = \pi t_i + (1-\pi)(1-t_i-\theta)-c$ if she supports the ruler, and $W(t_i) = \pi(t_i-\theta)+(1-\pi)(1-t_i)-c$ if she opposes him. If even the most extreme regime supporter is unwilling to take a risk to prevent the certain victory of the opposition, then the analysis would not be very interesting. We rule out such a possibility with the following assumption.[18]

ASSUMPTION 2. If the most extreme regime supporter is certain that the other citizen will actively oppose the regime, then she prefers to engage in conflict than to abstain if the action is costless:

$$\overline{w} \equiv w(1) > 0.$$

Since $\theta > 0$, this assumption also requires that $\pi > c$. The overall game payoffs for the citizens are given in Figure 1.

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16. Reactive repression is automatic provided the regime obtains active support. This is consistent with the "law of coercive responsiveness" while simultaneously accounting for the fact that when the government might be uncertain *ex ante* whether it would be able to repress.

17. The conflict outcome is the only one that permits someone to be on the "wrong side" behaviorally. Since we assume that the regime stays unless there is unchallenged opposition, there are no supporters that end up on the "wrong side" when it falls because of such action.

18. We characterize the equilibria without assuming anything about this. The only role the restriction will play has to do with allowing the equilibrium to take different form depending on the cost of action k. Without such an assumption, no supporter ever does anything in equilibrium.

We wish to assume that the ruler only cares whether he stays in office or not irrespective of how this is achieved. To this end, we assume that the ruler pays neither the cost of conflict nor any of the costs he can impose on the citizens. Although one could argue that these assumptions are not unrealistic, we are content to note that introducing positive costs for the ruler will not alter our general results (we shall explain why), and will therefore merely clutter the analysis. Thus, the ruler simply maximizes the probability of political survival.

The solution concept is Perfect Bayesian equilibrium.

3   The Political Action Game

We now analyze the political action game played by the citizens. Since the level of repression is already set, they take all parameters as given in Figure 1. We first show that in every equilibrium citizens partition themselves behaviorally into active opponents, abstaining moderates, and active supporters. Let λ_i denote the probability with which citizen i opposes the regime, and φ_i denote the probability with which she supports it.

LEMMA 1. *Fix some* $(\lambda_{-i}, \varphi_{-i})$, *and define* $t_L(\lambda_{-i}, \varphi_{-i}) < \frac{1}{2} < t_R(\lambda_{-i})$ *such that*

$$t_L(\lambda_{-i}, \varphi_{-i}) = \frac{1}{2} - \frac{(\pi\theta + c)\varphi_{-i} + k}{2(1 - \lambda_{-i} - \pi\varphi_{-i})}$$

$$t_R(\lambda_{-i}) = \frac{1}{2} + \left(\frac{1}{2\pi}\right)\left[(1-\pi)\theta + c + \frac{k}{\lambda_{-i}}\right].$$

In every equilibrium, citizen i chooses $\lambda_i = 1$ *if* $t_i < t_L(\lambda_{-i}, \varphi_{-i})$, *chooses* $\lambda_i = \varphi_i = 0$ *if* $t_i \in [t_L(\lambda_{-i}, \varphi_{-i}), t_R(\lambda_{-i})]$, *and chooses* $\varphi_i = 1$ *if* $t_i > t_R(\lambda_{-i})$. □

To find an equilibrium, we need to partition the type space for each citizen such that type $t_L(\lambda_{-i}, \varphi_{-i})$ is indifferent between opposing and abstaining, whereas type $t_R(\lambda_{-i})$ is indifferent between supporting and abstaining, and the probabilities, $(\lambda_{-i}, \varphi_{-i})$, reflect where these types are. Lemma 1 considerably simplifies this task because it implies that $\lambda_{-i} = \Pr(t_{-i} < t_L(\lambda_i, \varphi_i)) = \max(0, t_L(\lambda_i, \varphi_i))$, and that $\varphi_{-i} = \Pr(t_j > t_R(\lambda_i)) = \max(0, 1 - t_R(\lambda_i))$. This is sufficient to establish the following important result, which further eases equilibrium analysis.

LEMMA 2. *The regime opponents are active in every equilibrium:* $t_L > 0$. □

Lemma 2 implies that the only possibilities we need to consider turn on whether someone would support the regime; that is, whether $t_R < 1$ for at least one of the citizens. Since the citizens are faced with a coordination problem and are assumed to be effectively anonymous (so cannot use pre-play communication), it is natural to restrict attention to symmetric equilibria. In particular, it is not reasonable to

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expect the citizens to coordinate expectations on precisely one of them supporting the regime with positive probability. We shall therefore require that $t_R < 1$ is either true for both citizens or for neither. We shall refer to an equilibrium where no citizen supports the ruler with positive probability as *despotic*, and to an equilibrium where someone could do so with positive probability as *anocratic*.

In a despotic equilibrium the least-committed opponent, t_L, must be indifferent between opposing the ruler and abstaining knowing that the other citizen will not support him ($\varphi_{-i} = 0$). Thus, $\lambda_i = \Pr(t_i \leq t_L(\lambda_{-i}, 0)) = t_L(\lambda_{-i}, 0)$, where the second equation follows from the uniform distribution assumption. A symmetric solution must therefore satisfy:

$$\lambda = t_L(\lambda, 0), \tag{1}$$

whose unique positive solution is:

$$\lambda_D = \frac{3 - \sqrt{1 + 8k}}{4} < \frac{1}{2}. \tag{2}$$

This defines the equilibrium probability of opposition in the despotic equilibrium. To complete the characterization, we must ensure that no supporter wants to be active: $\varphi_i = 0$. Since this will be the case if, and only if, $t_R(\lambda_{-i}) \geq 1 \Leftrightarrow k \geq \overline{w} \lambda_D$, we obtain a necessary and sufficient condition for the despotic equilibrium:

$$k \geq \overline{w} \cdot h(\overline{w}) \equiv k^* \in (0, 1/2), \tag{D}$$

where

$$h(\overline{w}) = \frac{3 + \overline{w} - \sqrt{(3 + \overline{w})^2 - 8}}{4} \in \left(1 - \sqrt{\frac{1}{2}}, \frac{1}{2}\right),$$

where we obtain the bounds by noting that $h(\overline{w})$ is decreasing and $\overline{w} \in (0, 1)$. This means that $k^* < \overline{w}/2 < 1/2$, yielding the upper bound on k^* reported in (D). We can now summarize our reasoning thus far as follows.

LEMMA 3. *In the unique* despotic *equilibrium, only the opponents of the regime are active with probability λ_D from (2), and everyone else abstains. The equilibrium exists if, and only if, $k \geq k^*$.* □

What happens when condition (D) is violated? In this case some regime supporters will have a strict incentive to become active. In a symmetric equilibrium, this means that $\lambda = \Pr(t \leq t_L(\lambda, \varphi)) = t_L(\lambda, \varphi)$ and $\varphi = \Pr(t > t_R(\lambda)) = 1 - t_R(\lambda)$ must obtain. This yields a system of two equations and two unknowns:

$$\begin{aligned} \lambda &= t_L(\lambda, \varphi) \\ \varphi &= 1 - t_R(\lambda), \end{aligned} \tag{3}$$

This system also has a unique solution, (λ_A, φ_A), with both strictly less than $1/2$ and positive if, and only if, (D) is not satisfied. This is established in the proof of the following claim.

LEMMA 4. *In the unique* anocratic *equilibrium, opponents are active with probability* λ_A, *supporters are active with probability* φ_A, *where* (λ_A, φ_A) *is the solution to* (3), *and everyone else abstains. The equilibrium exists if, and only if,* $k < k^*$. □

We can now formally state the result that follows directly from lemmata 3 and 4.

PROPOSITION 1. *The political action game with incomplete information has a unique symmetric equilibrium that takes the anocratic form when* $k < k^*$ *and the despotic form otherwise.*

□

Since it is tedious to write "equilibrium that takes the despotic (anocratic) form," we shall simply refer to despotic (anocratic) equilibria.

3.1 Status Quo Bias and the Asymmetric Effect of Repression

One might expect that indiscriminate repression should deter opponents from political action, but we now show that this is not always the case, and that the reason for this has to do with the fact that the deterrent effect of repression is dominant for regime supporters:

LEMMA 5. *Increasing repression makes regime supporters* less likely *to be active in the anocratic equilibrium.*

□

This result provides a crucial insight into the authoritarian dilemma of using indiscriminate repression to deter political action: *repressive measures deter supporters from engaging in action on behalf of the regime.* This might not be problematic for the regime if they are even more effective in deterring opponents, as is the case in the despotic equilibrium:

$$\frac{\mathrm{d}\,\lambda_{\mathrm{D}}}{\mathrm{d}\,k} = -\frac{1}{\sqrt{1 + 8k}} < 0. \tag{4}$$

In the anocratic equilibrium, on the other hand, repression weakens the incentive for political participation by supporters and opponents alike, and whereas supporters get unequivocally deterred from action, the opponents might not, as the following result shows.

LEMMA 6. *Increasing repression makes regime opponents* more likely *to be active in the anocratic equilibrium if, and only if,*

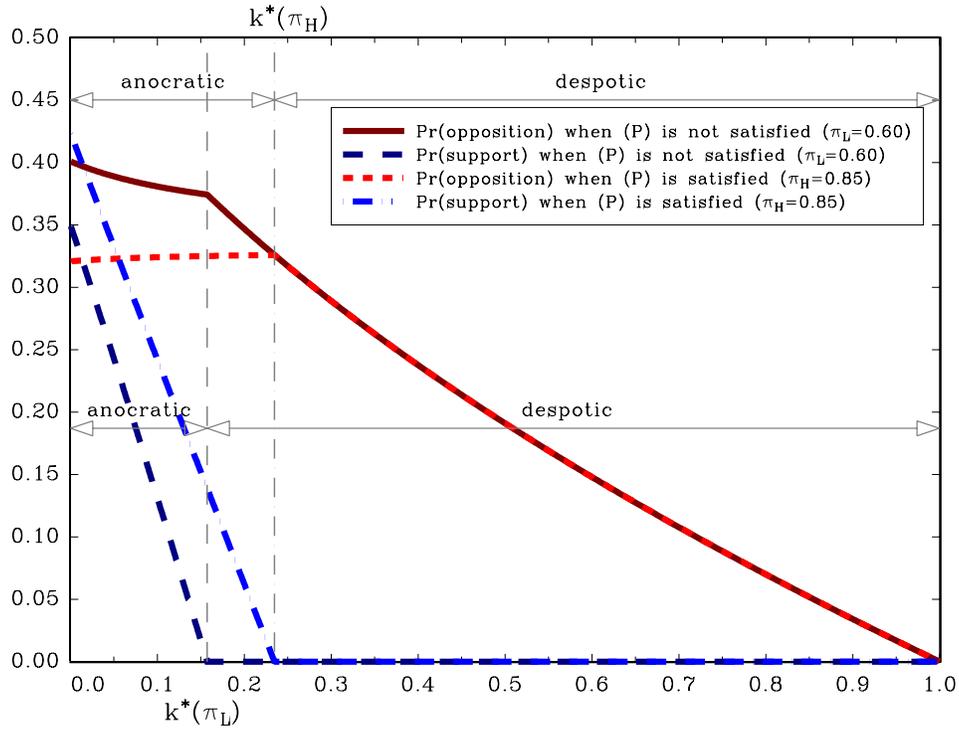$$\theta + \frac{c}{\pi} + \sqrt{1 + 8k^*} > 2 \tag{P}$$

is satisfied.

□

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FIGURE 2: Repression and Political Action.
Parameters: $c = 0.1, \theta = 0.2$ and, $\pi_L = 0.60$ (weak regime) or $\pi_H = 0.85$ (strong regime). Condition (P) is satisfied for the strong regime but not for the weak one.

This result would not be too persuasive if (P) were difficult to satisfy. It turns out, however, that it is fairly easy to do so, especially under conditions that are likely to prevail in authoritarian regimes. That is so because a *sufficient* condition for (P) to obtain is $c > (1 - \theta)\pi$, which is satisfied for many parameter configurations. Figure 2 shows graphically the two possibilities identified in lemmata 5 and 6. We can summarize the implications as follows:

RESULT 1 *Preventive repression has direct and indirect effects in the anocratic equilibrium. The direct effect is* deterrent*: it discourages regime supporters and dissidents alike from political action. The indirect effect is* catalytic*: it encourages dissidents to take political action. The status quo bias in favor of supporters gives dissidents a stronger overall incentive to act, and as a result the catalytic effect can become dominant for them.*

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3.2 The Opposing Incentives to Repress

Turning now to the ruler, recall that he maximizes his probability of political survival and consider his initial choice of repression. In the despotic equilibrium, this probability is

$$\Omega_D = (1 - \lambda_D)^2, \tag{5}$$

that is, it is the likelihood that no citizen becomes an active dissident. It is immediately obvious from Figure 2 that repression is good for survival here because it suppresses opposition, the only relevant quantity.

In the anocratic equilibrium, however, things are not so simple. The probability of survival here is

$$\Omega_A = (1 - \lambda_A)^2 + 2\lambda_A\varphi_A \times \pi, \tag{6}$$

where the first term is the probability that the ruler remains in power unopposed (analogous to the quantity in the despotic equilibrium), and the second is the probability that he survives the conflict when it occurs. One can immediately see that it increases if supporters are more likely to be active. Figure 2 suggests that repression should make the ruler worse off in this equilibrium. It would certainly do so when (P) is satisfied because then it results in higher opposition while depressing support. It seems to also do that even when (P) is not satisfied because the support is dropping much faster than opposition, so the loss of support should dominate the benefit from suppressing opposition. The following lemma shows that this is indeed the case.

LEMMA 7. *Increasing repression* increases *the probability of survival in the despotic equilibrium but* decreases *it in the anocratic equilibrium.*   □

This leads us to our second fundamental result — the ruler's repressive behavior depends on how he expects the citizens to play the political action game:

RESULT 2 *The ruler's incentives to repress preventively go in opposite directions depending on what equilibrium he expects to induce among the citizens: he wants to decrease repression in the* anocratic *region but increase it in the* despotic *region.*

If the ruler expects the anocratic equilibrium, he will always choose the lowest feasible level of repression. Conversely, if he expects the despotic equilibrium, the ruler will always choose the highest feasible level of repression. Which equilibrium he expects depends on which one he is willing to induce, which in turn depends on the maximum level of repression he is capable of implementing. To establish this, we first note that any survival probability the ruler can attain in an anocratic equilibrium can be attained in a despotic equilibrium as well:

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LEMMA 8. *For every anocratic repression, $k < k^*$, there exists a unique* despotic equivalent *repression, $\Delta(k) \in (k^*, 1)$, such that $\Omega_A(k) = \Omega_D(\Delta(k))$. The lower the anocratic repression, the higher its despotic equivalent.* □

Note the second claim of this lemma: the less repressive an anocratic ruler is, the more the equivalent despot has to repress in order to achieve the same probability of survival. Two other things follow from this result. First, anything the ruler can do for political survival (in expectation) in an anocratic equilibrium can be had with more, sometimes a lot more, repression in a despotic equilibrium. Second, the converse is not true: if the ruler can implement sufficiently high levels of repression, the survival probability in the despotic equilibrium will be strictly higher than anything he can attain in an anocratic equilibrium. We can now establish the central result of this article, which is that under certain circumstances rulers strictly prefer to abandon repression and allow political contestation even though, in principle, they could still have chosen to repress.

PROPOSITION 2 (BANG-BANG). *Let $k_L \in (0, k^*)$ denote the lowest feasible cost of political action, let $k_H \in (k_L, c)$ denote the maximum level of repression the regime is capable of. The optimal level of preventive repression takes one of these two extreme values: If $k_H > \Delta(k_L)$, then the ruler sets it to k_H and the equilibrium takes the despotic form; otherwise, the ruler sets it to k_L and the equilibrium takes the anocratic form.* □

If the ruler has sufficient capacity, he always prefers to repress any political action and induce the despotic equilibrium where he survives with high probability and no conflict occurs. If, however, his capacity is somehow constrained, he is strictly better off abandoning repression to make the authoritarian wager:

RESULT 3 *The* authoritarian wager *is the gamble a ruler takes by opening up the regime to contestation when he abandons preventive repression. When he reduces the costs of political action, the dissidents are encouraged to act, which threatens the status quo and provides an incentive to regime supporters to act in its defense. Thus, emboldening the opposition can, paradoxically, improve the ruler's chances of survival.*

To understand the incentive behind the wager, it is useful to separate the anocratic outcomes into (i) *regime reassertion:* no dissidents are active, and the ruler stays in power peacefully; (ii) *civil conflict:* both dissidents and supporters are active; and (iii) *velvet revolution:* only dissidents are active and the ruler is deposed peacefully. The most attractive outcome for the ruler is regime reassertion, and its probability depends on how repression affects dissidents. If (P) is satisfied — meaning that relaxing repression makes dissidents less likely to be active — then abandoning repression increases the chances that the ruler will reassert his power (Lemma A).

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Since the danger of a velvet revolution is minimized by abandoning repression as well (Lemma C), it is not surprising that the ruler would opt to do so under these circumstances irrespective of how this affects the risk of costly conflict.

Things are a bit more involved when (P) is not satisfied — meaning that relaxing repression makes dissidents more likely to be active. In this case abandoning repression actually minimizes the chances that the ruler will reassert his power (Lemma A) and strictly increases the risk of civil conflict (Lemma B). Neither of these outcomes is particularly attractive to the ruler. However, since the probability of a velvet revolution is increasing with repression (Lemma C), the ruler can at least ensure the lowest possible chance of the worst possible outcome for him. In other words, by opening the system up for political contestation, the ruler is substituting the uncertainty of conflict for the risk of being overthrown in a velvet revolution. That he would do so even though it hurts the chances of outright reassertion of power indicates just how crucial the behavior of his supporters is.

The opening up to political contestation cannot be merely a sop to the dissidents that tries to fob them off with cosmetic changes in an attempt to provide a façade of popular legitimacy for the ruler.[19] It cannot work that way without offering a real, albeit not very large, prospect for change. But this very prospect creates a risk for regime beneficiaries, whose privileged position now comes under threat. This causes them to rally in support of the ruler, and the effect can sometimes be so strong that it overwhelms the dissidents, making them *less likely* to act even though repression is gone (when (P) is not satisfied). But even when the opponents are more likely to act (when (P) is satisfied), the ruler still expects to come out on top in the open contest even though its outcome is uncertain. Indeed, this is why he allows it.

It is important to realize that the wager entails risks to the ruler as well. On one hand, if he has overestimated just how committed his opponents are, the gamble will pay off handsomely as it will merely reassert the ruler's authority. On the other hand, if he has overestimated how popular the regime is with the citizens, the ruler will be in for a terrible surprise when nobody turns out to defend him. This is how a velvet revolution could come to pass. Finally, if the citizens are sufficiently divided in their preferences about the regime, the wager will bring costly conflict. In that conflict, the ruler could still be deposed but the odds are that he will survive this because the only rulers who take the bet are those who are sufficiently strong to prevail in that conflict with high probability. To see this, we need to examine the relationship between the regime's power and the propensity to choose the authoritarian wager.

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19. Magaloni (2006) and Schedler (2006), among others, have made this claim with respect to autocrats holding elections.

3.3 Power and the Structural Causes of the Authoritarian Wager

Consider now two regimes that are equivalent in every respect except that one is stronger than the other in the sense that it has a higher probability of prevailing in a conflict. It should come as no surprise that the stronger regime is in a strictly better condition whenever conflict is expected with positive probability:

LEMMA 9. *Stronger regimes are as likely to survive as weaker ones in the despotic equilibrium, and more likely to do so in the anocratic equilibrium:*

$$\frac{d\,\Omega_D}{d\,\pi} = 0 \quad and \quad \frac{d\,\Omega_A}{d\,\pi} > 0.$$

□

We expected this result because more powerful regimes have stronger incentives to reduce repression when they cannot ensure the fully despotic stability. What might be surprising is the implication this has for the structural causes of repression collapse. We begin by noting that the fact that stronger regimes have strictly higher expected probabilities of survival in an anocratic equilibrium (Lemma 9) means that they have strictly higher despotic equivalences too (Lemma 10). But then Proposition 2 implies that *stronger regimes will be more sensitive to changes in repressive capacity* in the sense that a moderate degradation in that capacity can cause the ruler of a strong regime to abruptly abandon repression whereas the ruler of a weak regime would respond by scaling repression down to the new maximum capacity.

Figure 3 illustrates this. The two regimes are equivalent except that the weak one's probability of winning the conflict is π_L, and the strong one's probability is $\pi_H > \pi_L$. Consider first the case where they both have high repressive capacity, say, k_H^1. This exceeds the despotic equivalents of k_L for both regimes, so they both repress at k_H^1 and the despotic equilibrium prevails for both.

Suppose now that for some reason their capacity to repress drops to some moderate level, say $k_H^2 < k_H^1$. This is less than the repressive equivalent of k_L for the strong regime. This means that its ruler is strictly better off abandoning the despotic equilibrium and switching to low repression at k_L and taking his chances in the probable conflict in the resulting anocratic equilibrium. The moderate repressive capacity, however, still exceeds the despotic equivalent of k_L for the weak regime. This means that its ruler is strictly better off reducing repressing to the new maximum capacity and maintaining the despotic equilibrium. In other words, this structural change in capacity will cause repression to collapse suddenly in the strong regime but will only cause some moderation of the weaker regime without changing its nature.

Does this mean that stronger regimes are more susceptible to instability? Are they colossi on clay feet? It depends on how one defines instability. If one defines it as the probability of conflict, then yes, stronger regimes are more likely to experience conflict because of the switch to the anocratic equilibrium. However, their rulers
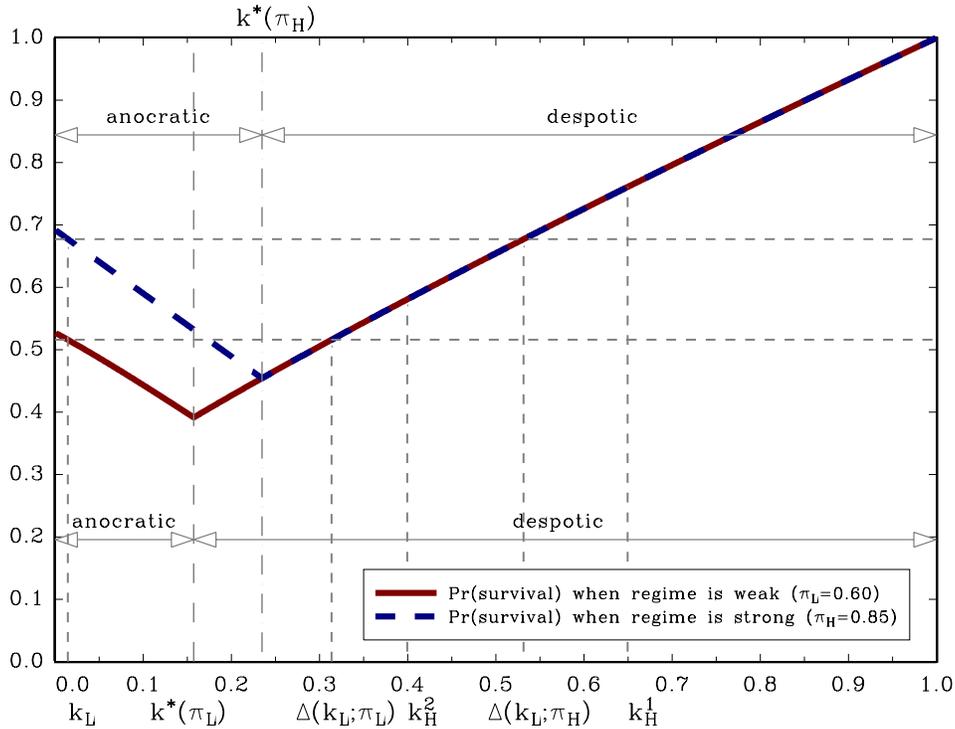
FIGURE 3: The Sudden Collapse of Repression.
Parameters: as in Figure 2. For both regimes, the least cost of political action is at $k_L = 0.015$, and the repression constraint is either at $k_H^1 = 0.65$ (high capacity) or $k_H^2 = 0.40$ (moderate capacity).

are willing to risk that conflict because they have better chances of prevailing than those of weak regimes. Thus, if one defines instability as the probability that the regime will collapse, then no, stronger regimes are not more likely to collapse.

This can be easily seen in Figure 3, where the structural reduction of repressive capacity leaves the weak regime with best survival probability of $\Omega_D(k_H^2; \pi_L) = 0.58$ in the despotic equilibrium, while the strong regime still has a survival probability of $\Omega_A(k_L; \pi_H) = 0.68$ in the anocratic equilibrium. While both regimes are worse off compared to what they could achieve when they are more capable of repression, $\Omega_D(k_H^1; \cdot) = 0.76$, the capacity constraint impact on the stronger regime is less pronounced. Far from signifying an impending fall of the regime, the sudden collapse of repression is a sign of strength.

4   Conclusion

Research on the surprises of the Velvet Revolutions of 1989 and the Arab Spring of 2011 sometimes veers between two extremes: it either ascribes a decisive role to mass political action (Kuran 1991) or explains why it is singularly unsuccessful

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(Stacher 2012). In reviewing many of these studies, Howard and Walters (2014) complain that they just do not take popular mobilization seriously, and we tend to agree: the former group neglects the repressive capacity of the regime, and the latter overemphasizes it. We do not think, however, that the resolution to these disagreements will be found on studying "why previous assessments of public quiescence in the face of widespread oppression were so dramatically wrong" (400). Instead, we argue that it is the government's response to public opposition to the regime that needs further attention, and we show that repression truly can be a double-edged sword.

The fundamental problem for an authoritarian government is that it cannot reliably assess the preferences of its citizens and gauge the extent of support and opposition to the regime. Moreover, because the absence of overt political action against an authoritarian regime simply perpetuates its rule, there is a strong status quo bias that favors regime supporters, which tends to dampen their incentive to engage in costly political action in its defense. If the regime has great repressive capacity, none of that matters: its ruler becomes a despot and represses almost any political expression save the occasional low-probability outburst of opposition. If, however, the regime labors under some constraint that limits its ability to repress sufficiently harshly, then the differential incentives do matter: the ruler can be strictly better off abandoning repression altogether and allowing open political contestation. Even though he is forced to reduce the costs to political action for both dissidents and opponents because he cannot distinguish among them, and even though this might encourage the dissidents to engage against him with higher probability, it puts the well-being of regime supporters at risk, and gives them an incentive to come to his defense. The result might be serious social conflict and instability, but the ruler's wager is that he would remain in power. Thus, authoritarian rulers abandon repression because in expectation doing so increases their probability of retaining power.

We do not mean to provide a monocausal explanation of regime collapse or mass political action, only to highlight how repression interacts with other features of authoritarian regimes (preference falsification and status quo bias) in ways that make its use as a tool of power less straightforward. Our model shows that under the right conditions all four mechanisms Tilly (2005, 224–25) posits about possible interactions between repression and mobilization can be activated. The analysis demonstrates that preventive repression often decreases the mobilization of opponents, but it can also sometimes increase it. It also shows that the expectation of mobilization could increase the incentive to repress but can also sometimes decrease it. Whereas Tilly wishes us to study the interplay of mechanisms to figure out which of the four tendencies is realized, we stress that the four mechanisms are incomplete because each assumes a different response by the relevant actor instead of deriving it as part of the mechanism. Instead of arbitrating among the four mechanisms, we should study the endogeneity of the behaviors. Somewhat ironically, we also ended up buttressing the case for structuralist explanations with a model of endogenous choice

although our contribution is to reveal a mechanism that would lead from structural factors to contested outcomes through the choices of the participants.

Some Eastern European leaders were not squeamish about unleashing the security forces on the populace in 1989, but they wanted the Soviet Union to backstop any repression under the Brezhnev Doctrine. When Gorbachev quashed all hopes of that, he effectively imposed an upper limit of what repression could accomplish in the satellites. Even though the more rash of rulers — GDR's Honecker, for instance — pressed on with repression, most realized that opening up the political field to contestation might be a better bet. They disregarded the Tiananmen Square precedent — the Chinese government, after all, had not relied on external support to do its repression — and ordered the security forces to stand down (and, in GDR's case, overruled the ruler). This is when the grim reality of communist rule was finally exposed: in most cases nobody came to defend the regime. Even the regimes' erstwhile power monopolists, the Communist parties, quickly sought to re-brand themselves following a belated realization of their massive unpopularity.

There is perhaps no better illustration of the depth of delusion than the outcome of the June elections in Poland. Just days prior, the Party's Central Committee had discussed how the West would react if the opposition failed to gain a single seat in the system that only opened 35% of the seats in Sejm (and all 100 seats in the Senate) to contestation. Instead, the opposition took all seats in the Senate and all but one of the available seats in Sejm. Nobody came to defend the government although many abstained from any political action (37% in the first round, and 75% in the second). Sovietologists might have been wrong in 1989 when they saw system continuity, but they had thought the regime would actually defend itself. It would have been a reckless forecast that predicted that Gorbachev would suddenly jettison 45 years of foreign policy for the whimsically named "Sinatra Doctrine" that left the satellite government to rule as best they could.[20]

Popular mass actions might acquire momentum and might be contagious, but it is dangerous — for the participants more so than the scholars studying them — to mistake the cause of their success to be the pressure of the masses instead of the failure of the regime to stand firm. The Hungarians did not draw the right inferences from the Polish October in 1956 and ended up with a Soviet invasion. The Bahraini misread what happened in Egypt in 2011 and ended up repressed by their own government and the Saudis. It is not enough for people to take to the streets; the regime must decide not to disperse them. Otherwise, any political gains people make will be illusory and temporary.

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20. Linz and Stepan (1996) attribute the simultaneity and success of the revolutions to the collapse of ideological confidence and will to use coercion in the USSR. Sharman (2003) also endorses this view and notes that the relevant collapse of legitimacy was among the elites, not the population that had long abandoned whatever faith it had in the ideological tenets of communism. It was this that deprived the regime from capacity to defend itself.

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A Proofs

Proof of Lemma 1. The payoffs for citizen i are:

$$U_i(L; t_i) = \varphi_{-i}(W(t_i) - k) + (1 - \varphi_{-i})(1 - t_i - k)$$
$$U(A; t_i) = \lambda_{-i}(1 - t_i) + (1 - \lambda_{-i})t_i$$
$$U(R; t_i) = \lambda_{-i}(w(t_i) - k) + (1 - \lambda_{-i})(t_i - k).$$

Any equilibrium must be in cut-point strategies:

- $t_i < t_L(\lambda_{-i}, \varphi_{-i}) \Rightarrow U(L; t_i) > U(A; t_i) > U(R; t_i)$, so play $\lambda_i = 1$;

- $t_i \in (t_L(\lambda_{-i}, \varphi_{-i}), t_R(\lambda_{-i})) \Rightarrow U(A; t_i) > U(L; t_i)$ and $U(A; t_i) > U(R; t_i)$, so play $\lambda_i = \varphi_i = 0$;

- $t_i > t_R(\lambda_{-i}) \Rightarrow U(R; t_i) > U(A; t_i) > U(L; t_i)$, so play $\varphi_i = 1$.

Type $t_L(\lambda_{-i}, \varphi_{-i})$ is indifferent between L and A, and type $t_R(\lambda_{-i})$ is indifferent between R and A. These types have measure zero, so it is immaterial which action they take. ∎

Proof of Lemma 2. Suppose that in equilibrium $\lambda_{-i} = 0 \Leftrightarrow t_L(\lambda_i, \varphi_i) \le 0$. This implies that $U(A; t_i) = t_i > t_i - k = U(R; t_i)$, which means that $\varphi_i = 0$, so

$$t_L(\lambda_i, 0) = \left(\frac{1}{2}\right)\left(1 - \frac{k}{1 - \lambda_i}\right) \le 0 \Rightarrow \lambda_i \ge 1 - k > 0.$$

Since $\lambda_i = \Pr(t_i \le t_L(0, \varphi_{-i}))$,

$$t_L(0, \varphi_{-i}) \ge 1 - k \Leftrightarrow 2k - \frac{(c + \pi\theta)\varphi_{-i} + k}{1 - \pi\varphi_{-i}} \ge 1,$$

which cannot be because $k < 1$, a contradiction. Therefore, $\lambda_{-i} = 0$ cannot occur in equilibrium. ∎

Proof of Lemma 3. Equation 1 expands to the quadratic

$$\lambda = \frac{1}{2} - \frac{k}{2(1 - \lambda)},$$

but only the smaller root is a valid probability, which yields λ_D in (2). Ensuring $\varphi = 0$ requires $t_R(\lambda_D) \ge 1 \Leftrightarrow k \ge \overline{w}\lambda_D$. Since the left-hand side is increasing in k and the right-hand side decreasing, there will be at most one unique k^*, defined in (D), for which this is satisfied with equality. ∎

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Proof of Lemma 4. Write (3) as:

$$3\lambda - 2\lambda^2 - 2\pi\lambda\varphi = 1 - k - \zeta\varphi \tag{7}$$

$$2\pi\lambda\varphi = \overline{w}\lambda - k. \tag{8}$$

where $\zeta \equiv (1 + \theta)\pi + c > \pi$. Neither variable exceeds $1/2$ at the solution. This system yields the cubic:

$$G(\lambda) = -2\lambda^3 + (3 - \overline{w})\lambda^2 - \left(1 - 2k - \frac{\overline{w}\zeta}{2\pi}\right)\lambda - \frac{k\zeta}{2\pi} = 0. \tag{9}$$

Since the coefficient of the cubic term is negative, it follows that

$$\lim_{\lambda \to -\infty} G(\lambda) = +\infty \quad \text{and} \quad \lim_{\lambda \to +\infty} G(\lambda) = -\infty.$$

Since $G(0) < 0$, these imply that (9) must have at least one root, $\lambda_1 < 0$. Because the solution must be positive and cannot exceed $1/2$, we must show the existence of a real root, $\lambda_2 \in (0, 1/2)$, for which showing that $G(1/2) > 0$ is sufficient. Suppose that $k < \overline{w}\lambda_D$, which implies that $\overline{w} > 2k$ because $\lambda_D < 1/2$. But then

$$G(1/2) = \left(\frac{1}{4}\right)\left[2k + (\overline{w} - 2k)\left(\frac{\zeta}{\pi} - 1\right)\right] > 0$$

follows because $\zeta > \pi$ implies that the bracketed term is positive whenever $\overline{w} > 2k$. Thus, if (D) fails, then $\lambda_A \in (0, 1/2)$ exists and is unique, which in turn means that $\varphi_A < 1/2$) also exists and is unique. Showing that $\varphi_A > 0$ only if (D) fails is straightforward and relegated to the online appendix. ∎

Proof of Lemma 5. Consider the anocratic equilibrium. Since both (7) and (8) must hold in equilibrium, we differentiate both their sides with respect to k:

$$\left(3 - 4\lambda_A - 2\pi\varphi_A\right) \cdot \frac{d\lambda_A}{dk} + 1 = -\left(\zeta - 2\pi\lambda_A\right) \cdot \frac{d\varphi_A}{dk} \tag{10}$$

$$-\left(\overline{w} - 2\pi\varphi_A\right) \cdot \frac{d\lambda_A}{dk} + 1 = -2\pi\lambda_A \cdot \frac{d\varphi_A}{dk} \tag{11}$$

Since $3 - 4\lambda_A - 2\pi\varphi_A > 0$ and $\zeta - 2\pi\lambda_A > 0$, (10) implies that

$$\frac{d\lambda_A}{dk} \geq 0 \Rightarrow \frac{d\varphi_A}{dk} < 0.$$

Since (8) tells us that $\overline{w} - 2\pi\varphi_A > 0$, (11) further implies that

$$\frac{d\lambda_A}{dk} \leq 0 \Rightarrow \frac{d\varphi_A}{dk} < 0,$$

we conclude that $\frac{d\varphi_A}{dk} < 0$. ∎

Proof of Lemma 6. Consider the anocratic equilibrium. We shall show that λ_A is monotonic. At the optimum,

$$\left.\frac{\mathrm{d}\,G}{\mathrm{d}\,k}\right|_{\lambda=\lambda_A} = \left.\frac{\partial G}{\partial \lambda}\right|_{\lambda=\lambda_A} \cdot \left.\frac{\mathrm{d}\,\lambda}{\mathrm{d}\,k}\right|_{\lambda=\lambda_A} + \left.\frac{\partial G}{\partial k}\right|_{\lambda=\lambda_A} = 0.$$

Since

$$\frac{\partial G}{\partial \lambda} = -6\lambda^2 + 2(3 - \overline{w})\lambda - \left(1 - 2k - \frac{\overline{w}\zeta}{2\pi}\right),$$

using the fact that (9) holds at the optimum tells us that

$$\left.\frac{\partial G}{\partial \lambda}\right|_{\lambda=\lambda_A} = (3 - \overline{w} - 4\lambda_A)\lambda_A + \frac{k\zeta}{2\pi\lambda_A} > 0,$$

where the inequality follows from $\overline{w} < \pi$ and $\lambda_A < 1/2$, which imply that $3 - \overline{w} - 4\lambda_A > 3 - \pi - 2 > 0$. Letting $f(k) = \left.\frac{\partial G}{\partial k}\right|_{\lambda=\lambda_A}$, we conclude that

$$\mathrm{sgn}\left(\left.\frac{\mathrm{d}\,\lambda}{\mathrm{d}\,k}\right|_{\lambda=\lambda_A}\right) = -\,\mathrm{sgn}\left(f(k)\right).$$

Since

$$f(k) = 2\lambda_A - \frac{\zeta}{2\pi}, \tag{12}$$

we obtain

$$\frac{\mathrm{d}\,f}{\mathrm{d}\,k} = 2 \cdot \left.\frac{\mathrm{d}\,\lambda}{\mathrm{d}\,k}\right|_{\lambda=\lambda_A} \quad\Rightarrow\quad \mathrm{sgn}\left(\frac{\mathrm{d}\,f}{\mathrm{d}\,k}\right) = -\,\mathrm{sgn}(f(k)).$$

That is, $f(k) > 0$ requires that f is decreasing, whereas $f(k) < 0$ requires that it is increasing, which implies that f cannot change sign. We conclude that f is either always positive or always negative, which implies that $\left.\frac{\mathrm{d}\,\lambda}{\mathrm{d}\,k}\right|_{\lambda=\lambda_A}$ must be monotonic as well.

We now use the fact that $\lambda_A(k^*) = \lambda_D$ and examine $f(k^*)$: since f is monotonic, the sign at $f(k^*)$ is going to tell us the sign everywhere. Now we obtain

$$f(k^*) = 2\lambda_D - \frac{\zeta}{2\pi} = \left(\frac{1}{2}\right)\left(3 - \sqrt{1 + 8k^*} - \frac{\zeta}{\pi}\right) < 0.$$

Substituting for ζ yields (P). Thus, if (P) is satisfied, $f(k) < 0$, so λ_A is increasing; otherwise, it is decreasing.[21] ∎

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21. Since $\sqrt{1 + 8k^*} > 1$, an easy sufficient condition for $f(k^*) < 0$ is that $\zeta > 2\pi$ (this can also easily be seen from (12) by observing that $\lambda_A < 1/2$).

Proof of Lemma 7. Using the definition of Ω_D from (5), we show that it is strictly increasing in repression:

$$\frac{\mathrm{d}\,\Omega_D}{\mathrm{d}\,k} = \frac{\partial\Omega_D}{\partial\lambda_D} \cdot \frac{\mathrm{d}\,\lambda_D}{\mathrm{d}\,k} = -2(1 - \lambda_D) \cdot \frac{\mathrm{d}\,\lambda_D}{\mathrm{d}\,k} > 0.$$

The survival probability in the anocratic equilibrium is given by (6). Since

$$\frac{\mathrm{d}\,\Omega_A}{\mathrm{d}\,k} = 2\left[\pi\lambda_A \cdot \frac{\mathrm{d}\,\varphi_A}{\mathrm{d}\,k} - (1 - \lambda_A - \pi\varphi_A) \cdot \frac{\mathrm{d}\,\lambda_A}{\mathrm{d}\,k}\right],$$

we need to show that

$$\pi\lambda_A \cdot \frac{\mathrm{d}\,\varphi_A}{\mathrm{d}\,k} < (1 - \lambda_A - \pi\varphi_A) \cdot \frac{\mathrm{d}\,\lambda_A}{\mathrm{d}\,k}.$$

We use (10) and (11) to obtain

$$2\pi\gamma\lambda_A \cdot \frac{\mathrm{d}\,\lambda_A}{\mathrm{d}\,k} = \zeta - 4\pi\lambda_A$$

$$2\pi\gamma\lambda_A \cdot \frac{\mathrm{d}\,\varphi_A}{\mathrm{d}\,k} = 4(\lambda_A + \pi\varphi_A) - 3 - \overline{w}$$

where

$$\gamma = 3 - 4\lambda_A - \overline{w} + \frac{(\overline{w} - 2\pi\varphi_A)\zeta}{2\pi\lambda_A} > 0. \tag{13}$$

Thus, we need to show that

$$\pi\lambda_A\left[4(\lambda_A + \pi\varphi_A) - 3 - \overline{w}\right] < (1 - \lambda_A - \pi\varphi_A)(\zeta - 4\pi\lambda_A), \tag{14}$$

which can be done with a bit of algebra. Thus, Ω_A is strictly decreasing in k in the anocratic equilibrium. ∎

Proof of Lemma 8 Proposition 1 implies that the probability of survival is continuous at k^* where $\Omega_A = \Omega_D$. By Lemma 7, the probability is V-shaped in k. The claim follows from:

$$\lim_{k\to 1}\Omega_D = 1 > 1 - \left[2(1 - \pi\varphi_A) - \lambda_A\right]\lambda_A = \Omega_A.$$

Lemma 7 also implies that $\Delta(k)$ is decreasing. ∎

Proof of Proposition 2. Lemmata 7 and 8 guarantee that $\Omega_A(k_L) > \Omega_A(k)$ for any $k \in (k_L, k^*)$ and $\Omega_A(k_L) > \Omega_D(k)$ for any $k \in [k^*, \Delta(k_L))$, and that $\Omega_D(k) > \Omega_A(k_L)$ for any $k > \Delta(k_L)$. ∎

Proof of Lemma 9. For the first claim,

$$\frac{d\,\Omega_D}{d\,\pi} = -2(1-\lambda_D)\cdot\frac{d\,\lambda_D}{d\,\pi} = 0.$$

For the second claim, differentiate (7) and (8):

$$\left(3 - 4\lambda_A - 2\pi\varphi_A\right)\cdot\frac{d\,\lambda_A}{d\,\pi} + (1+\theta-2\lambda_A)\varphi_A = -\left(\zeta - 2\pi\lambda_A\right)\cdot\frac{d\,\varphi_A}{d\,\pi} \qquad (15)$$

$$\left(\overline{w} - 2\pi\varphi_A\right)\cdot\frac{d\,\lambda_A}{d\,\pi} + (1+\theta-2\varphi_A)\lambda_A = 2\pi\lambda_A\cdot\frac{d\,\varphi_A}{d\,\pi}, \qquad (16)$$

which imply that

$$\frac{d\,\lambda_A}{d\,\pi} < 0. \qquad (17)$$

To show that

$$\frac{d\,\Omega_A}{d\,\pi} = 2\lambda_A\varphi_A - 2(1-\lambda_A-\pi\varphi_A)\cdot\frac{d\,\lambda_A}{d\,\pi} + 2\pi\lambda_A\cdot\frac{d\,\varphi_A}{d\,\pi} > 0,$$

simplify it to

$$(1+\theta)\lambda_A > \left[2(1-\lambda_A) - \overline{w}\right]\cdot\frac{d\,\lambda_A}{d\,\pi},$$

which holds because $2(1-\lambda_A) - \overline{w} > 1 - \overline{w} > \pi - \overline{w} > 0$, and so (17) implies that the right-hand side is negative. ∎

LEMMA 10. *Stronger regimes have higher despotic equivalent repression levels.* □

Proof of Lemma 10. Take any $k < k^*(\pi)$ at some π, and consider some $\hat{\pi} > \pi$. Since k^* is increasing in π, it follows that $k < k^*(\pi) < k^*(\hat{\pi})$, so k induces the anocratic equilibrium under $\hat{\pi}$ as well. Lemma 9 implies that $\Omega_A(k;\hat{\pi}) > \Omega_A(k;\pi)$. We need to show that $\Delta(k;\hat{\pi}) > \Delta(k;\pi)$.

If $\Delta(k;\pi) < k^*(\hat{\pi})$, then $\Omega_D(\Delta(\Delta(k;\pi);\hat{\pi});\hat{\pi}) = \Omega_A(\Delta(k;\pi);\hat{\pi}) > \Omega_D(k^*(\hat{\pi});\hat{\pi}) = \Omega_D(k^*(\hat{\pi});\pi) > \Omega_D(\Delta(k;\pi);\pi)$. But then $\Omega_A(k;\hat{\pi}) = \Omega_D(\Delta(k;\hat{\pi});\hat{\pi}) > \Omega_D(\Delta(\Delta(k;\pi);\hat{\pi});\hat{\pi})$, where the inequality follows from Lemma 8 because $k < \Delta(k;\pi)$, yields the result.

If $\Delta(k;\pi) > k^*(\hat{\pi})$, then the fact that $\Omega_A(k;\hat{\pi}) > \Omega_D(k^*(\hat{\pi});\hat{\pi})$ and $\Omega_D(k^*(\hat{\pi});\hat{\pi}) < \Omega_D(\Delta(k;\pi);\hat{\pi}) = \Omega_D(\Delta(k;\pi);\pi)$ implies that there exists $\widetilde{k} \in (k, \Delta(k;\pi))$ such that $\Omega_A(\widetilde{k};\hat{\pi}) = \Omega_A(k;\pi) = \Omega_D(\Delta(k;\pi);\pi) = \Omega_D(\Delta(\widetilde{k};\hat{\pi});\hat{\pi})$. That is, $\Delta(\widetilde{k};\hat{p}) = \Delta(k;\pi)$. But then Ω_A decreasing in k implies that $\Omega_A(k;\hat{\pi}) > \Omega_A(\widetilde{k};\hat{\pi})$, which, by Lemma 8, means that $\Delta(k;\hat{\pi}) > \Delta(\widetilde{k};\hat{\pi}) = \Delta(k;\pi)$, yielding the result. ∎

B Online Appendix

LEMMA A. *Increasing repression causes the probability of a* reassertion of power *to increase in the anocratic equilibrium if, and only if, condition* (P) *is not satisfied. This probability is always increasing in the despotic equilibrium.* □

Proof of Lemma A The probability of reassertion of power is just the probability of neither citizen being actively opposed, $(1 - \lambda_A)^2$ in the anocratic equilibrium, and $(1 - \lambda_D)^2$ in the despotic equilibrium. Thus, its behavior is the inverse of λ_A and λ_D, respectively. The claim follows immediately from Lemma 6 for the anocratic equilibrium, and (4) for the despotic one. ■

LEMMA B. *If* (P) *is not satisfied, the probability of a costly* civil conflict *is decreasing in repression in the anocratic equilibrium. If* (P) *is satisfied, then it is decreasing if, and only if,*

$$1 + \sqrt{3} \geq \left[3 \left(\frac{\zeta}{\pi} - 1 \right) + \sqrt{3} \right] \overline{w},$$

otherwise it is concave (increasing for low values of k, and then decreasing). In the despotic equilibrium, the probability is always zero. □

Proof of Lemma B. For civil conflict to occur, both dissidents and regime supporters have to be active, for which the probability is $2\lambda_A \varphi_A$, so:

$$\frac{d \, \text{Conflict}}{d k} = 2 \left(\varphi_A \cdot \frac{d \lambda_A}{d k} + \lambda_A \cdot \frac{d \varphi_A}{d k} \right) \gtrless 0.$$

Since $\frac{d \varphi_A}{d k} < 0$ by Lemma 5, if $\frac{d \lambda_A}{d k} \leq 0$, that is, (P) does not hold, then this derivative is negative, which establishes the first part of the claim. Suppose now that (P) obtains, so $\frac{d \lambda_A}{d k} > 0$. From the proof of Lemma 7, we can rewrite the derivative

$$(\zeta - 4\pi \lambda_A)\varphi_A + \left[4(\lambda_A + \pi \varphi_A) - 3 - \overline{w} \right] \lambda_A \gtrless 0,$$

which we can simplify to

$$\zeta \varphi_A \gtrless (3 - 4\lambda_A + \overline{w})\lambda_A.$$

Substituting (8) into (7) and simplifying yields

$$\zeta \varphi_A = 1 - 2k - (3 - 2\lambda_A - \overline{w})\lambda_A,$$

which means that we need to determine

$$1 - 2k - (3 - 2\lambda_A - \overline{w})\lambda_A \gtrless (3 - 4\lambda_A + \overline{w})\lambda_A,$$

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which simplifies to

$$\frac{1 - 2k}{6} \gtrless (1 - \lambda_A)\lambda_A.$$

Observe now that the left-hand side is decreasing in k while the right-hand side is increasing (because $\lambda_A < \frac{1}{2}$ means that it is increasing in λ_A, and λ_A is increasing in k by our supposition), we conclude that the sign can change at most once. Moreover, since

$$\lim_{k \to k^*} \frac{1 - 2k^*}{6} < \lim_{k \to k^*} (1 - \lambda_A)\lambda_A = (1 - \lambda_D)\lambda_D \Leftrightarrow 0 < 1 + 2k^*(4 - k^*),$$

it follows that for high enough k, the probability of conflict is decreasing. But this and the fact that the sign can change at most once imply that there are only two possibilities: either this probability is always decreasing or it is increasing for some $k \in (0, \hat{k})$ and decreasing for $k \in (\hat{k}, k^*)$. This probability can be strictly decreasing if, and only if,

$$\lim_{k \to 0} \frac{1 - 2k}{6} = \frac{1}{6} \leq \lim_{k \to 0} (1 - \lambda_A)\lambda_A \Leftrightarrow \lim_{k \to 0} \lambda_A \geq \frac{1 - \sqrt{1/3}}{2}.$$

Since (8) tells us that

$$\lim_{k \to 0} \varphi_A = \frac{\overline{w}}{2\pi},$$

we can use (7) to obtain the quadratic in the limit as $k \to 0$:

$$-2\lambda_A^2 + (3 - \overline{w})\lambda_A - \left(1 - \frac{\zeta\overline{w}}{2\pi}\right) = 0,$$

whose discriminant is

$$(3 - \overline{w})^2 - 8\left(1 - \frac{\zeta\overline{w}}{2\pi}\right) > 0.$$

Since the larger root exceeds $\frac{1}{2}$, the only admissible solution is

$$\lim_{k \to 0} \lambda_A = \frac{3 - \overline{w} - \sqrt{(3 - \overline{w})^2 - 8\left(1 - \frac{\zeta\overline{w}}{2\pi}\right)}}{4}$$

Thus, the necessary and sufficient condition for the probability of conflict to be decreasing is

$$3 - \overline{w} - \sqrt{(3 - \overline{w})^2 - 8\left(1 - \frac{\zeta\overline{w}}{2\pi}\right)} \geq 2\left(1 - \sqrt{1/3}\right),$$

which simplifies to the condition stated in the lemma. If this condition is not satisfied, then the probability must be concave. ∎

LEMMA C. *Repression causes the probability of a* velvet revolution *to increase in the anocratic equilibrium and decrease in the despotic equilibrium.*   □

Proof of Lemma C. The probability of a velvet revolution (only regime opponents are active with positive probability) in the anocratic equilibrium is $\lambda_A^2 + 2\lambda_A(1 - \lambda_A - \varphi_A) = 2\lambda_A - \lambda_A^2 - 2\lambda_A\varphi_A$, so we need to show that

$$\frac{d\,\text{VR}}{d\,k} = 2\left[(1 - \lambda_A - \varphi_A) \cdot \frac{d\,\lambda_A}{d\,k} - \lambda_A \cdot \frac{d\,\varphi_A}{d\,k}\right] > 0.$$

Since $\frac{d\,\varphi_A}{d\,k} < 0$ (Lemma 5), the inequality obtains whenever $\frac{d\,\lambda_A}{d\,k} \geq 0$. We now establish that it also does when $\frac{d\,\lambda_A}{d\,k} < 0$. Recall from the proof of Lemma 7 that

$$\frac{d\,\Omega_A}{d\,k} = 2\left[\pi\lambda_A \cdot \frac{d\,\varphi_A}{d\,k} - (1 - \lambda_A - \pi\varphi_A) \cdot \frac{d\,\lambda_A}{d\,k}\right] < 0.$$

But now we obtain

$$\lambda_A \cdot \frac{d\,\varphi_A}{d\,k} < \pi\lambda_A \cdot \frac{d\,\varphi_A}{d\,k} < (1 - \lambda_A - \pi\varphi_A) \cdot \frac{d\,\lambda_A}{d\,k} < (1 - \lambda_A - \varphi_A) \cdot \frac{d\,\lambda_A}{d\,k},$$

where the first inequality follows from $\frac{d\,\varphi_A}{d\,k} < 0$, the second from $\frac{d\,\Omega_A}{d\,k} < 0$ above, and the third from our supposition that $\frac{d\,\lambda_A}{d\,k} < 0$.

In the despotic equilibrium, the probability of a velvet revolution is just $\lambda_D^2 + 2\lambda_D(1 - \lambda_D)$, which means that

$$\frac{d\,\text{VR}}{d\,k} = 2(1 - \lambda_D) \cdot \frac{d\,\lambda_D}{d\,k} < 0,$$

where the inequality follows from (4).   ■

LEMMA D. *If* $\pi > \frac{1}{2}$ *then* (P) *is monotonic in* θ: *there exists* $\widetilde{\theta}$ *such that it holds if, and only if,* $\theta > \widetilde{\theta}$.   □

Proof.   Taking the derivative of the left-hand side with respect to θ yields:

$$1 + \frac{4}{\sqrt{1 + 8k^*}} \cdot \frac{d\,k^*}{d\,\theta} > 0,$$

where we establish the inequality as follows. Since

$$\frac{d\,h}{d\,\theta} = \frac{(1 - \pi)h(\overline{w})}{\sqrt{(3 + \overline{w})^2 - 8}},$$

we obtain:

$$\frac{d\,k^*}{d\,\theta} = \overline{w} \cdot \frac{d\,h}{d\,\theta} - (1 - \pi)h(\overline{w}) = (1 - \pi)h(\overline{w})\left[\frac{\overline{w}}{\sqrt{(3 + \overline{w})^2 - 8}} - 1\right] < 0,$$

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where the inequality follows from the fact that $\overline{w} < \sqrt{(3 + \overline{w})^2 - 8}$. We thus need to show that

$$4(1 - \pi)h(\overline{w})\left[1 - \frac{\overline{w}}{\sqrt{(3 + \overline{w})^2 - 8}}\right] < \sqrt{1 + 8\overline{w}\, h(\overline{w})}. \qquad (18)$$

We first show that the left-hand side is decreasing in $\overline{w}$. We can rewrite it as

$$4(1 - \pi)\left[\frac{h(\overline{w})}{\sqrt{(3 + \overline{w})^2 - 8}}\right]\left[\sqrt{(3 + \overline{w})^2 - 8} - \overline{w}\right],$$

and we note that since $h(\overline{w})$ is decreasing,

$$\frac{\mathrm{d}\,h}{\mathrm{d}\,\overline{w}} = \left(\frac{1}{4}\right)\left[1 - \frac{3 + \overline{w}}{\sqrt{(3 + \overline{w})^2 - 8}}\right] < 0,$$

the first bracketed term is decreasing. It suffices to show that so does the second bracketed term. Taking the derivative with respect to $\overline{w}$ yields

$$(1 - \pi)\left[1 - \frac{3 + \overline{w}}{\sqrt{(3 + \overline{w})^2 - 8}}\right] = 4(1 - \pi) \cdot \frac{\mathrm{d}\,h}{\mathrm{d}\,\overline{w}} < 0,$$

which holds. Since $\overline{w}\, h(\overline{w})$ is increasing, it will be sufficient to establish (18) as $\overline{w} \to 0$. But then (18) reduces to $2(1 - \pi) < 1$, which holds under the assumption that $\pi > {}^1\!/_2$. ∎