REPRESSION, POLITICAL THREATS, AND SURVIVAL UNDER AUTOCRACY

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Abstract. Along with the mobilization of political support, repression is one of the two basic instruments dictators use to stay in power. Yet, there is no systematic investigation analyzing the role of repression. Does repression help dictators retain power? This paper fills this gap by addressing the simultaneous relationship between survival and repression using two-stage estimation methods. The results reveal that repression increases the likelihood of dictators' survival; and that an increased probability of exit is associated with increases in repression levels. This paper also analyzes different types of authoritarian leader exit and repression. Political terror only reduces the likelihood of non-violent and regular exits. Instead, restrictions on civil liberties are effective in deterring both types of threats. Similarly, it is only non-violent threats which trigger significant increases in political terror, while the risk of a violent/irregular ouster leads to increases in restrictions on civil liberties.

Keywords: Repression, Survival, Authoritarian Rulers, Threat Perception, Simultaneity.

The brutal repression of Assad's regime in Syria has so far unable to completely crush the wave of anti-regime protests initiated in the context of the so-called Arab Spring. The death toll has continued to grow as cities such as Daraa and Hama have been kept under siege for days. More than 2,000 people have died since the start of the uprising in February 2011. The army has indiscriminately opened fire against civilians but protests have continued to spread to other major cities.

In September 2007 the footage of the crackdown of pro-democratic protests led by Buddhist monks in Burma shown by media around the world brought again international attention to the brutality of that country's military junta. Repression soon escalated, causing more than one hundred deaths, hundreds of arrestments, and people sent to prison after unfair trials.

In Kenya, Moi's regime reacted almost immediately to donors' pressure and allowed the legalization of opposition parties. Multi-party elections were held on December 1992. During the months prior to the election, ethnic violence and political terror spread (Barkan, 1993). Violence instigated by the ruling party (the Kenya African National Union) was carried out by irregular militias, in particular, the "Kalenjin warriors." Attacks concentrated in the Rift Valley but soon spread to other areas "in an effort to disenfranchise pro-opposition ethnic blocs there, too" (Roessler 2005, 214). Moi and the KANU won the presidential and legislative elections, respectively (Barkan 1993). Elections represented a clear, visible, and predictable threat to the ruling elite's hegemony. It was the anticipation of a potential loss of power that fueled the violent repressive waves directed against opposition members, and the regime managed to retain power.

As made evident above, dictators use repression seeking to increase their chances of retaining power. At the same time, political threats to authoritarian rulers can prompt state coercion. Repression often thought to be the main instrument autocrats use to retain power. Yet there is little systematic evidence which demonstrates that repression helps autocrats survive. In this article I address the simultaneous relationship between authoritarian survival and repression. I explore whether the likelihood of being deposed leads the dictator to increase repression. But also, I analyze whether repression reduces political risks and helps making the ruler more secure in office by reducing the likelihood of a leadership transition. The empirical analysis employs data on authoritarian leaders which codes not only whether they exit power but also the way in which they leave power. I combine information on leader survival with data on two

types of repression: restrictions and political terror. The results indicate that an increased probability of exit increases repression levels; and that repression helps dictators survive in power. From this starting point, I also examine different types of political threats to understand how repression affects the likelihood of violent and non-violent exits from power, and vice versa.

The rest of the article is organized as follows. The next section discusses the strategies dictators use to remain in office. In turn I briefly review the literature on repression and regime types. The next section presents the theoretical framework and the main hypotheses. In the third section, I present the main variables of interest and discuss the estimation method. The next section reports the results. The final section summarizes the main findings and suggests avenues for further research.

Instruments of Power under Dictatorship

Dictatorships are generally characterized by their use of repression. Early studies of dictatorships focused on totalitarianism, highlighting the instruments of control and domination (Friedrich and Brzezinski 1961; Arendt 1962). The difference in the intensity of repression pervades the traditional distinction between totalitarian and authoritarian regimes developed by Linz (2000).

Authoritarian rulers' primary goal is to retain power. To do so they rely on two basic instruments for survival: loyalty/support and repression (Wintrobe 1998; Desai et al. 2009). Retaining the political support of some groups (winning coalition) is as essential to an autocrat as coping with public dissent, opposition groups, and potential challengers. Yet, we have a much better understanding of the ways in which dictators mobilize support and the consequences of this support for authoritarian survival, than the use of repression.

To mobilize and retain support, dictators have two instruments: patronage and policy concessions. In Bueno de Mesquita et al.'s (2003) framework, dictatorships have smaller support coalitions relative to democracies and so they rely on private goods to buy the support of core members of their coalition. Such patronage goods consist of access to graft, bribes, and privileges, which in turn may provide incentives for the ruler to implement highly interventionist economic policies aimed at extracting rents. Market regulations, the protection of key industries, a closed economy, the use of state enterprises, and the manipulation of prices and the foreign exchange rate constitute the

basic repertoire autocrats use to extract rents and reward loyal supporters (Bates 1981). Private goods distribution is easier in the presence of non-tax revenue from natural resource wealth: commodities such as oil or diamonds, or even the flow of external windfalls such unconditional foreign aid (Bueno de Mesquita and Smith 2009).

Existing empirical evidence suggests that patronage is an effective strategy for authoritarian survival, although researchers typically use alternative indicators as proxies for patronage networks. Arriola (2009) uses cabinet appointments as a direct measure of patronage and finds that cabinet expansion lowers the likelihood of a ruler being deposed. As for rent availability, Morrison (2009) shows that non-tax revenue decreases the likelihood of authoritarian regime breakdown. Oil availability is probably the most well established source of rents and shown to be a regime and leader stabilizing factor (Smith 2004; Ulfelder 2007; Omgba 2009). Concerning aid, Kono and Montinola (2009) and Licht (2010) show that it helps autocrats survive in power in the long run.

Political institutions are another well studied instrument for mobilizing authoritarian regime support. Party organizations and legislatures, it is argued, are created to offer formal arenas for elite bargaining, enhance career prospects and influence, and to channel the demands of significant social groups (Smith 2005; Brownlee 2007; Magaloni 2008; Magaloni and Kricheli 2010). This is the logic explaining the longer durability of party-based regimes (Geddes 1999; Smith 2005; Magaloni 2008).[1] Dictators use party organizations to enhance credible power-sharing agreements by delegating to the party the capacity to select and appoint power positions, which in turn help neutralize threats from regime insiders (Magaloni 2008). Similarly, Gandhi and Przeworski (2006) contend that dictators use institutions because policy concessions require an institutional setting to provide them with credibility and so placate political threats. Indeed, Gandhi and Przeworski (2007) show that authoritarian institutions, operationalized as legislatures with multiple parties, are related to longer leader tenures.

Repression and Regimes

[1] See also Brownlee (2007), Gandhi (2008), Svolik (2009), and Magaloni and Kricheli (2010).

While the recent literature on authoritarian has reached a broad consensus that rents and political institutions help dictators stay in power by mobilizing support, there is little or none comparative empirical evidence to date that repression can prolong authoritarian rule. Indeed, Davenport points out that "one explanation for state repression is that authorities use it to stay in power, but the literature contains not one systematic investigation of this proposition" (2007a, 17). Indeed, measures of repression have been almost completely neglected in empirical analyses of leader survival.[2]

Repression is the "behavior that is applied by governments in an effort to bring about political quiescence and facilitate the continuity of the regime through some form of restriction or violation of political and civil liberties" (Davenport 2000, 6). Concretely, repression "deals with applications of state power that violate First Amendment-type rights, due process in the enforcement and adjudication of law, and personal integrity or security" (Davenport 2007a, 2). Through these actions governments impose or threaten individuals groups with sanctions aimed at keeping them under control and suppressing dissent.

Repression is, as said, one of the two basic instruments of authoritarian survival, and so its use is more extensive under such regimes than under democracies. Relying on smaller power coalitions, dictators exclude a big part of the population from decision-making, so force generally substitutes legitimacy to obtain popular acquiescence with regime decisions. The mechanisms to channel citizens' demands are extremely limited and so is their responsiveness to their grievances. Regimes also determine the institutional constraints and legal limits to the use of force, both being low or inexistent under dictatorship. Further, repression is more costly to elected governments and that democracy offers more mechanisms for channelling demands and expressing citizens' views. Accordingly, and not surprisingly, it is found that repression levels are systematically lower under democratic systems (Poe and Tate 1994; Davenport 1999; Poe et al. 1999; Davenport and Armstrong 2004; Davenport 2004; Davenport 2007b). Yet, some authors have identified the presence of threshold effect according to which democracy does not start having a negative effect on repression until democracy scores reach a given level (Davenport and Armstrong 2004; Bueno de Mesquita et al. 2005). Further research has proceeded to disaggregate the dimensions or components of

[2] To my knowledge, Bueno de Mesquita and Smith's (2010) study is the only one in considering repression (measured using the CIRI index) as a control in their models explaining leader survival in a global sample including both democracies and autocracies. In their model, repression does not affect leader survival.

democratic regimes included in the *Polity2* index. Bueno de Mesquita et al. (2005) find that party competition is the most important dimension, whereas Davenport (2004) examines the impact of constraints on the executive on state coercion.

Other scholars argue that the relationship between regime type and coercion is curvilinear, stating that there is "more murder in the middle" (Fein 1995). According to this view, more human rights violations are actually observed among hybrid or mixed regimes (also called anocracies, electoral authoritarian regimes, etc.) (Regan and Henderson 2002). These regimes consist principally of nondemocratic polities liberalized to the extent that they allow the formation of opposition parties and electoral competition (Diamond 2002). So in a regular manner, these dictators put themselves at risk by holding elections, during which handful of strategies, such as violence and intimidation among others, are put in practice in order to ensure the incumbent's victory (Schedler 2002).

Quite surprisingly, though, the variation that may exist across authoritarian regimes has received much less attention. There is some evidence indicating a higher inclination towards the use of coercion by military regimes (Poe and Tate 1994). Yet, to my knowledge, the only study addressing it systematically is the one by Davenport (2007c). Using Geddes' (1999) regime classification, he finds that single-party regimes violate personal integrity less than the other autocracies, while military regimes put fewer restrictions on civil rights.

Survival and Coercion

The literature examining the dissent-repression relationship has generated numerous insights but is far from being conclusive. Two problems can be identified. First, the relation between both variables has two sides that have been studied separately, but they are fully interconnected. In other words, the relationship is simultaneous, so while the presence of threats influences repression levels, at the same time repressiveness also impacts the levels of dissent or political threat existing. In this paper, I deal with simultaneity in the empirical model in order to fully ascertain if these two variables affect each other and how. Specifically, I do so by analyzing the relationship between the probability of dictators' survival and repression.

Secondly, as noted above, there is still little consensus on how repression affects political dissent and violence and vice versa. The impact of repression on dissent has

been found to be positive, negative, as well as having an inverted-U shape (Gurr 1970; Hibbs 1973; Lichbach 1987; Muller and Weede 1990; Gupta et al. 1993; Rasler 1996; Moore 1998). Hence, repression might not be equally effective when used to deter different sorts of political threat. Concerning the impact of threats on repression, there are also different and even diverging findings (Davenport 1995; Regan and Henderson 2002; Mason 2004; Carey 2010). The scholarly debate is far from reaching any agreement as it often fails to realize that there are different types of repression, and that these repression types might be used in response to different types of threats.

Repression is often treated as a homogeneous type of state behavior. Yet as stressed by Davenport (2004), state coercion has two basic components: violent repression in the form of violations of personal integrity and less (or non-) violent activities consisting of the restriction of individuals' civil liberties. Both forms of repression attempt to deal with political threats stemming from citizens, challengers from within the elite, and opposition groups. However, there are important differences in the way they do so. Restrictions attempt to limit the coordination, mobilization and dissent capacity of actors and individuals by explicitly prohibiting a given set of behaviors and activities and constraining others. Alternatively, violating personal integrity aim at eliminating those individuals or groups who the regime suspects have surpassed those limits or are likely to do so, by killing or imprisoning them. Hence, one question automatically follows: which type of coercion is more effective in securing the autocrat? What type of repression do autocrats use in response to threats?

On the other hand, one should also distinguish among different types of political threats specifically affecting dictators. Indeed, dictators can exit power in a variety of ways. In deciding the appropriate response, regimes consider the different dimensions or attributes of distinct types of threat (Davenport 1995; Carey 2010). Some are violent, like coups, assassinations, civil wars or revolutions; while others are essentially non-violent, like resignations, elections, step downs, and elite turnover from within the party or the military. According to Svolik and Akcinaroglu (2007) data on authoritarian rulers and their modes of exit, during the period 1945-2002, most of the leader changes under dictatorship were non-violent. Specifically, 113 (33.3 percent) were violent according to their criteria,[3] while 226 (66.6 percent) were non-violent.[4] According to Goemans et

[3] The leader exit is considered violent if "the exit of the leader occurred as a result of coup, revolt, civil war or foreign intervention and the action involved the death of at least one person." See: Svolik, Milan

al.'s (2009) *Archigos* data, between 1946 and 2004, 226 dictators (53 percent) left power through regular means, whereas 201 (47 percent) experienced an irregular exit.[5] [6] Again, a question rapidly follows: Are different types of repression equally effective against each type of political risk? Do these distinct types of threats generate the same reaction from the government in terms of repression?

The two next subsections discuss some theoretical arguments tackling the questions above and offer some hypotheses. Both sides of the simultaneous relationship between repression and political threat are dealt with separately.

From Repression to Survival

Dictators want to stay in power, losing it involves not being able to enjoy its privileges and rents but also it may carry nasty consequences, like having to exile, being punished, or even killed (Goemans 2008). They use loyalty and repression to do so. Dictators use repression because they estimate that its expected benefits exceed the costs. The basic expected benefit of repression is to increase the likelihood of staying in power. So we use a direct measure of threat, namely the risk of losing power. Crushing protests and facing plotters is only useful as long as it extends the ruler's tenure. Hence, repression effectiveness should be directly evaluated in relation to this outcome, political survival.

Repression may help autocrats counter perceived threats to their power by imprisoning and torturing opposition members, by eliminating political challengers, by crushing anti-regime protests, and by limiting their organizational capacity. However, this −often taken for granted− effectiveness has not been empirically established, so I test whether this benefit exists and attempt to quantify it. In doing so, however, we need to take into account the distinctions highlighted above between repression types and types of threats.

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and Seden Akcinaroglu (2008). "Government Change in Authoritarian Regimes Codebook." Available at: https://netfiles.uiuc.edu/msvolik/www/research/Codebook,%20final.pdf.

[4] Exits due to term limits, natural death or ill health, and foreign interventions are excluded from these figures and so right-censored and coded 0.

[5] *Regular exits* are those which occur "according to the prevailing rules, provisions, conventions, and norms of the country," while "a loss of office is considered irregular when the leader was removed in contravention of explicit rules and established conventions. Most irregular removals from office are the result of the threat or use of force as exemplified in coups, (popular) revolts, and assassinations (more on this below) and occur at the hands of domestic opponents" (Goemans et al. 2009, 273).

[6] Both distinctions capture a similar dimension but are not equal, as a ruler exit may be irregular but not necessarily violent.

Both types of repression can reduce the risk of losing office, but through different mechanisms. Violent repression entails physical abuses, torture, imprisonment, killing, and disappearances. It is thus characterized by the intensity of the sanctions inflicted, which may insulate autocrats in two ways. First, it may defuse challenging activities because it augments their associated costs and so prevent threats from occurring. Second, it can directly eliminate the source of threat by killing, imprisoning or making (those identified as) political rivals and opposition leaders "disappear."

On the other hand, through the use of restrictions citizens are molded and potentially challenging behaviors prevented, and collective action is hindered. Essentially it constitutes a proactive strategy seeking to thwart collective action by banning organizations, and restricting or eliminating the freedoms of assembly and association. This is relevant because dictatorships generally are devoid of regularized mechanisms for leader replacement or they are very limited and restrictive. Under such circumstances, collective action becomes one of the key elements in making a replacement possible, like via coup or a mass rebellion.

Hence, compared to restrictions, political terror is a more reactive strategy because it entails harsh sanctions against those challenging the ruler position and, therefore, those already having collective action capacity and those identified as being a member of an opposition group or potential rivals from within the elite. Furthermore, the associated costs to each form of repression are substantially different, especially, with regards to legitimacy. A violent strategy of repression may further decrease the political legitimacy of the ruler and create resentment among citizens. Restricting rights is less likely to have this side effect (Davenport 2004).

In light of these arguments, I expect restrictions on civil liberties are expected to be more effective in securing the ruler in power than political terror.

This proposition above needs further elaboration once we also distinguish between types of political threats, as repression types may differ in their impact on each type of threat: violent/irregular and non-violent/regular. Violent repression may produce different outcomes (Pierskalla 2010), and so it is unclear how effective repression will be in deterring violent or irregular ousters. On the one hand, violent repression may be used to crush dissent making it too costly and risky for potential participants. Some authors argue that if repression is high enough, violent opposition might be deterred (Muller 1985). Gupta et al.'s (1993) find that repression deters violent protest activities

at low and high levels in nondemocracies. Lyall (2009) reports evidence that indiscriminate state violence tends to suppress insurgent attacks.

On the other hand, violent repression may have pernicious consequences since it may bring about a violent escalation, the radicalization of positions, and so unleash a violent response from some groups and even potentially provoke a coup. Indeed, Galetovic and Sanhueza (2000) show that popular unrest significantly increases the likelihood of a coup in autocracies. Iqbal and Zorn (2006) find that weaker and more repressive leaders are more likely to be assassinated. Concerning unrest, Opp and Ruehl (1990) suggest that repression may lead to micro-mobilization processes leading to further protest activities. Goodwin (2001) argues that revolutions are more likely in weak, patrimonial, and very repressive states. Further, some argue that when non-violent actions are repressed, protesters may turn to violent activities (Lichbach 1987; Moore 1998). For instance, Nicolae Ceauşescu was eventually overthrown and executed by the military in December 1989 after the revolt escalated from Timişoara to other major cities in Romania after Ceauşescu ordered the security forces to open fire against the masses. In Iran, on Black Friday, in September 1978, the regime security forces killed hundreds of anti-Shah protesters in Tehran. After a short decrease in opposition activity, public dissent and strikes quickly resumed and escalated. The mobilizations that took place in December gathered hundreds of thousands of people calling for the Shah's rule to end. In January 1979, the Shah left the country. In sum, and in view of the arguments above, the effect of political terror on the likelihood of a violent or irregular exit remains indeterminate.

Conversely, restrictions may be effective in making violent/irregular exits more unlikely by hindering the collective action necessary to carry them out. The main causes of violent/irregular exits are revolts −including civil wars− and coups. Both require collective action problems to be overcome, especially the former which requires a higher number of participants. Civil rights, like those of assembly, freedom of expression and association, among others, are essential for any organized movement or action to emerge. In Bueno de Mesquita and Smith's (2009, 2010) terms, civil rights constitute essential 'coordination goods' necessary for collective action to take place in the first place, as they "determine the ability of citizens to coordinate and organize" (2010, 938). I thus expect an increase in civil liberties restrictions to be highly effective in reducing the likelihood of a violent or irregular ouster.

Concerning regular/non-violent exits, government restrictions on civil rights can thwart the ability of some particular actors to coordinate and mobilize in the short-run. For example, in the event of elections, incumbent dictators can ban opposition parties, and disenfranchise likely opposition voters. Strikes and anti-regime demonstrations are the most effective form of contentious collective action in accelerating authoritarian regime breakdown (Ulfelder 2005). Civil rights restrictions can also help preventing the occurrence of anti-regime demonstrations or strikes by, again, hindering collective coordination. Autocrats may use terror by sending the security forces to crush protesters, arrest, torture, or kill the leaders, and ban organizations. Yet, most commonly, the threat of a regular/non-violent exit originates from within the regime elite, especially regular exits like stepping downs or resignations. Members of the support coalition are less affected by restrictions on civil rights. To deal with them, since they have a higher capacity of collective action (Frantz 2007), dictators can purge the party ranks (in case an official party exists), the public administration, or the military to eliminate challengers. So did Stalin when launching the Great Purge in the second half of the 1930s which first affected the top senior leaders of the Communist Party and other ranks. Mobutu sent various of his top government officials and party personel to prison.

Hence, both restrictions and terror may be useful in neutralizing threats leading to a non-violent or regular ruler exits, but, following the arguments above, I expect violent repression to be more effective.

At risk of redundancy, Table 1 summarizes the hypothesized effects of the two types of repression on the two types of threats to dictators. Political terror is expected to be effective in preventing non-violent or regular exits, but its impact on violent/irregular ones is indeterminate. As for restrictions on civil rights, I expect them to be effective in deterring violent/irregular exits. Each quadrant is numbered to identidy the corresponding hypotheses.

[Table 1]

From Survival to Repression

Leaders' perception of political risks plays a crucial role in deciding how much repression to use. Simply put, if a dictator perceives he is completely secure in office, he has no incentive to raise repression levels. The "Law of Coercive Responsiveness" suggests that when a challenge is perceived, governments respond with repression

(Regan and Henderson 2002; Davenport 2007a). The greatest political threat to autocrats is to be removed from office. Consequently, I expect that in general the higher the likelihood of an autocrat losing power −and so the higher the level of threat perceived− the higher the levels of both types repression will be.

A second issue concerns how the ruler's perception of the different types of threat he may be subject to may affect his decision to repress. The repression reaction is conditional on the threat being perceived by the regime elites and the relative relevance (or danger) attributed to it. Do all types of threats generate similar increases in repression if any? What type of repression do dictators use to deal with each type of threat?

The literature is clear at this particular respect: more violent protest forms tend to trigger a harsher repressive response from the government (Davenport 1995; Poe et al. 2000; Regan and Henderson 2002; Franklin 2009; Carey 2010). According to Carey (2010), two reasons explain this pattern. First, such actions are considered more threatening. In particular, for a dictator, an irregular or violent exit is more threatening as it usually entails some nasty post-exit fate (Goemans 2008). Second, violent actions generate uncertainty and undermine the government capacity to provide citizens with security. According to these postulates, activities that may end up leading to a violent or irregular exit should lead to increases in the use of violent repression (terror).

Nonetheless, if the arguments about escalation are correct and the dictator anticipates that further repression can actually bring about more conflict and ease the mobilization of other social groups, no further violent repression should be observed in response to such events increasing the risk of violent or irregular exits. Indeed, Ginkel and Smith find that "dissident activity is more likely to be effective in motivating rebellious action under highly repressive conditions" (1999, 292). They also confirm Kuran's proposition that "regimes collapse suddenly with little warning or protracted conflict" (Ginkel and Smith 1999, 292).

In sum the higher risk of a violent or irregular exit has an indeterminate effect on violent repression. The empirical analysis will shed light on which of the two mechanisms prevails (if any).

Furthermore, if the logic depicted in the previous section holds, dictators should restrict civil rights in those contexts in which a threat that requires coordination and collective action is perceived. Should a ruler anticipates that using violent repression may actually bring about an escalation and thus worsen his prospects of retaining

power, the threat of a violent exit will be dealt with less violent repression, namely, restrictions on civil rights.

With regard to non-violent and regular exits, we also follow the logic depicted in the previous section. Frantz (2007) argues that "elites in military and single-party regimes are bound together by an institution, the military and the party respectively, that unites them. This makes coordination among members of the coalition less difficult" (2007, 8).[7] Given that it is members of the regime support coalition who led most regular/non-violent exits, in coping with the risk of being removed through such manner, dictators may be more willing to use terror to get rid of challengers, as restrictions on rights may have proven ineffective as groups may be already organized and solved collective action problems (Haber 2006). Tombalbaye, Chad's dictator in the 1960s and early 1970s, arrested important members of his official party, the Chadian Progressive Party, fearing they were planning to oust him.

The same is true in the event of elections (see the introduction), where political terror is used to intimidate potential opposition voter and kill candidates. A more extensive use of terror should be thus observed when the risk of a regular/non-violent exit is higher.

Restrictions on civil rights may also be useful against some forms (not all) of non-violent threats; in particular, against those involving collective action such as demonstrations and strikes.

I thus expect that the threat of a regular/non-violent exit will lead to significant increases in the levels of political terror but to just cause moderate increases in restrictions on civil rights. The risk of a violent/irregular exit will likely be met with increased restrictions on civil rights. Table 2 summarizes the hypotheses with each quadrant numbered to identify them.

[Table 2]

Data

To test the hypotheses, I use data on authoritarian leaders' exit and modes of exit from Svolik and Akcinaroglu (2007) and from Goemans et al.'s (2009) *Archigos* dataset. First, the variable *Autocrat Exit* is coded 1 if the incumbent ruler is replaced

[7] See also Haber (2006).

that year, and 0 if the dictator remains in power in a given year. Leaders who died in power from natural causes, who left office due to ill health, who were deposed by foreign forces, or who left due to term limits are right-censored and coded 0.[8] Second, to test hypotheses 3, 4, and 5 I disaggregate the variable *Autocrat Exit* by establishing whether the ruler was replaced through violent or non-violent means, according to Svolik and Akcinaroglu's (2007) classification, or through regular or irregular means as coded in Goemans et al.'s (2009) *Archigos*. I construct a binary variable for each of these exit types, coded 1 if a leader loses power in that particular way in a given year, 0 otherwise. The resulting variables are: *Violent Exit*, *Non-violent Exit*, *Regular Exit*, and *Irregular Exit*. Svolik and Akcinaroglu (2007) data are available from 1945-2002, while *Archigos* up to 2004.

To capture its varieties, the data on repression come from different sources. To measure violent repression, first, I use the Political Terror Scale (PTS) (Gibney and Dalton 1996; Wood and Gibney 2010). PTS cover the period 1976-2008. The PTS gauges state terror on a scale ranging from 1 to 5, where 5 indicates the highest level of terror.[9] State terror is defined as:

> "Violations of physical or personal integrity rights carried out by a state (or its agents). This category of human rights violations…includes abuses such as extrajudicial killing, torture or similar physical abuse, disappearances, and political imprisonment." (Wood and Gibney 2010, 369).

Second, I test models using Cingranelli and Richards' Physical Integrity Rights Index (Cingranelli and Richards 1999). The CIRI gauges the presence of state violations of a particular set of human rights in a 9-point scale available from 1981 to 2009. CIRI

[8] Right-censoring term limits is a relevant innovation. For example, Mexican presidents were substituted routinely every six years and their constitutional term expired. Coding each of these exits as a 1 would be misleading and overinflate instability levels under Mexican single-party system.

[9] Each level of terror indicates the following: "Level 1: Countries . . . under a secure rule of law, people are not imprisoned for their views, and torture is rare or exceptional. . . . Political murders are extremely rare . . . . Level 2: There is a limited amount of imprisonment for nonviolent political activity. However, a few persons are affected; torture and beating are exceptional. . . . Political murder is rare . . . . Level 3: There is extensive political imprisonment . . . . Execution or other political murders and brutality may be common. Unlimited detention, with or without trial, for political views is accepted . . . . Level 4: The practices of Level 3 are expanded to larger numbers. Murders, disappearances, and torture are part of life . . . . In spite of its generality, on this level terror affects primarily those who interest themselves in politics or ideas. Level 5: The terrors of Level 4 have been extended to the whole population . . . . The leaders of these societies place no limits on the means or thoroughness with which they pursue personal or ideological goals." See Wood and Gibney (2010, 373) and also http://www.politicalterrorscale.org/.

is "an additive index constructed from the Torture, Extrajudicial Killing, Political Imprisonment, and Disappearance indicators. It ranges from 0 (no government respect for these four rights) to 8 (full government respect for these four rights)."[10] To ease the interpretation of the results I have inverted the index, so now 8 stands for the highest repression level. [11]

Finally, as discussed above, I also consider a second form of repressive behavior, namely, restrictions on individual rights. To capture this concept, I use the Freedom House civil liberties index, which measures freedom of expression and belief, associational and organizational rights, rule of law, and personal autonomy and individual rights.[12] Data are available from 1972. The rating ranges from 1 to 7, where a 7 score indicates the highest level of restrictions or least free observations.

All three repression measures have been transformed into a 0-1 scale in order to ease the interpretation and the comparison of the coefficients.

Two sets of control variables are used for each of the simultaneous equations. In the ruler survival models, I include the following controls. First, a series of dummy variables distinguishing the type of authoritarian regime: military, party, and personalist with monarchies regimes as the excluded category (Geddes 1999; Geddes, Wright, and Frantz 2011). Frantz (2007) argues that rulers in party-based and military regimes are more likely to lose power because under these regimes there are institutions (the party and the military) that facilitate the coordination of internal challengers. In consequence, leaders in single-party and military regimes are more likely to lose power. Regime type also matters for the mode of exit. Personalist rulers tend to be overthrown by violent or irregular means because typically there is no institutionalized or regular way of replacing the leader in these regimes.

Second, I control for variables capturing the availability of rents. Oil rents are measured using Ross's (2008) data, which are calculated "by taking the total value of each country's annual oil and natural gas production, and subtracting the country-specific extraction costs, including the cost of capital" (2008, 111). Foreign aid is considered too by including a two-year moving average of the log of foreign aid per

[10] See Cingranelli, David L. and David L. Richards. 2008. "Short Variable Descriptions for Indicators in the CINGRANELLI AND RICHARDS (CIRI) HUMAN RIGHTS DATASET," Version 12.07.08. Available at: http://ciri.binghamton.edu/documentation/ciri_variables_short_descriptions.pdf

[11] See Wood and Gibney (2010) for a comparison of PTS and CIRI indexes.

[12] Available at: http://www.freedomhouse.org/template.cfm?page=351&ana_page=363&year=2010. See Stohl et al. (1986) and Bollen (1986) for a discussion.

capita.[13] I also consider the impact of past instability as it may affect the current likelihood of a coup. So, a variable indicating the number of past coups (both attempted and successful), *Past Coups*, is included.[14]

Other controls, typically considered in authoritarian duration models, are: the ethnic fractionalization index; the percentage of urban population; the log of the country's total population; *Log(GDP per capita)* is the log of the GDP per capita, and *Growth* is a two-year moving average of the rate of growth of per capita income.[15] As for contextual variables, a Cold War dummy is included, which is coded one for all years between 1946 and 1990; and one measure to capture diffusion effects (Gleditsch and Ward 2006), *NeighborPolity*, which consists of the averaged *Polity2* score of countries with capitol cities within 2000 km of the target country.

Finally, to control for time dependence in the duration models, cubic polynomial transformations of the duration of the leader-spell up to time *t* are included (see Carter and Signorino 2010).[16]

Concerning the models where repression is the dependent variable, the controls capture factors that may influence the rulers' loyalty levels, which in turn may affect repression. First, I include the dummies indicating the type of authoritarian regime (monarchy, personalist, single-party, and military with monarchy as the excluded category), because some regimes are more repressive than others (Davenport 2007c).

The existing literature has found that higher repression is found in countries with lower per capita incomes, larger populations, and undergoing violent conflicts, namely, civil and interstate wars (Poe and Tate 1994; Poe et al. 1999; Davenport and Armstrong 2004). I include all these variables as controls, and also a two-year average of the rate of economic growth.

A dummy for the Cold War period controls for the pressure for further respect for human rights after the policy of tolerance and support towards some allied dictatorships was over. Yet, also recall, that the end of the Cold War and the withdraw of superpower support may mean that dictators rely more heavily on repression than when they received substantial military and financial aid from the superpowers.

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[13] Data on aid are from World Bank's *World Development Indicators* (henceforth WDI).
[14] Data are from Powell and Thyne (2011).
[15] Data on ethnic diversity are from Fearon (2003); data on urban population are from WDI; data on total population, income per capita and growth are from Maddison (2006).
[16] For space reasons, the coefficients of the polynomials are not reported in the tables below.

Also consistent with previous research (Poe and Tate 1994; Poe et al. 1999; Davenport 2004), I control for the presence of armed conflict with two variables, one which indicates the number of civil wars or interstate wars in which the country is involved.[17] Both conflict variables are lagged one year. Finally, as economic integration has been found to decrease state repressiveness (Hafner-Burton 2005a, 2005b), this study controls for two measures of the degree of interconnectness and linkage to other countries, particularly to the West: a two-year moving average of per capita aid (logged) from WDI, and, a measure of trade openness (exports plus imports as a percentage of GDP), from WDI too.

To control for autocorrelation, I include a series of binary indicators of a country's level of repression in the previous year.

Methodology

The dictator's decision to repress is influenced by his expectation of surviving in power. At the same time, dictators use repression to increase the odds of retaining office. Causality thus goes in both ways. To address this simultaneity issue, I estimate a series of simultaneous equations: In one equation, the likelihood of *Autocrat Exit* is the dependent variable, while in the other, the dependent variable is *Repression*. In the first equation, repression enters as one of the independent variables, since it is used to secure the dictator's position. In the second equation, the likelihood of being losing power is one of the explanatory factors because, as suggested by the "law of coercive responsiveness," dictators increase repression if they perceive their position is in danger. The structural equations are the following:

$$\Pr(AutocratExit) = \delta_1 \text{Repression} + \beta_1 X + \varepsilon_1 \qquad (1)$$

$$\text{Repression} = \delta_2 \Pr(AutocratExit) + \beta_2 Z + \varepsilon_2 \qquad (2)$$

Where δ_1 and δ_2 are the coefficients of interest; while X and Z are the set of control variables, described above, that may affect each of the two dependent variables. This system of equations has to be estimated using a two-stage model. In the first stage, the

[17] The data on intrastate and interstate conflict are compiled from PRIO's (Peace Research Institute Oslo) Armed Conflict Dataset. See Gleditsch et al. (2002).

equations below are estimated using all the covariates, *X* and *Z*, in (1) and (2), that is, those specific to that variable and those in the outcome equation, to get appropriate instruments for Pr(*AutocratExit*) and *Repression*.

$$\Pr(AutocratExit) = \alpha_1 X + \alpha_2 Z + u_1 \qquad (3)$$

$$\text{Repression} = \alpha_3 X + \alpha_4 Z + u_2 \qquad (4)$$

The fitted values obtained from (3) and (4) are used as instruments on the right hand side of the second stage equations (1) and (2) to get unbiased estimates of δ_1 and δ_2.

The same procedure is used for the models aimed at testing hypotheses 3-5. In this second set of models, the dependent variable in (1) (and, so, the main independent one in (2)) is, as described above, either Pr(*ViolentExit*), Pr(*Non-violentExit*), Pr(*RegularExit*), and Pr(*IrregularExit*).

The systems of equations are estimated using two different methods. First, we use Keshk's (2003) CDSIMEQ method (2SPLS) to estimate two-stage models for simultaneous equations in which one of the endogenous variables is continuous (repression in this case) and the other endogenous variable is dichotomous (ruler's exit in this case). So, in the second stage, the repression equation is estimated using OLS, and the non-linear survival model using probit.

There may some concern as to whether repression variables can be treated as continuous and OLS be used. Hence, I also estimate a set of two-stage models in which equations (1) and (3) are estimated with a probit, and equations (2) and (4) with an ordered probit. The instruments generated by these two estimation methods, OLS and ordered probit, correlate almost perfectly, 0.998, so both estimation methods can be expected to yield consistently similar results.

Results: Sticks and Survival

Table 3 reports the second-stage results of models that test the general contention that repression lengthens leaders' duration in power.[18] For these survival models the dependent variable is *AutocratExit*, which does not distinguish the mode of

[18] I do not report the first stage results for space reasons, but they are available from the author.

exit, but just indicates if in a given year a dictator exits power. Recall that term limits, natural deaths (or ill health) and foreign interventions are right-censored.

[Table 3]

In light of the results, we can assert that repression does work. The coefficients of all three repression variables are negative, and the ones for the PTS and Freedom Houses' civil liberties are statistically significant, while CIRI's is not, probably due to the smaller number of observations available for this measure. To facilitate the interpretation of these results, Figure 1 portrays the impact of each repression measure on the predicted likelihood of dictators' exit, according to the results in columns 4-6 of Table 3.[19] Repression, in all its forms, is effective. The impact of PTS and CIRI measures is nearly identical. Yet the most effective form of repression appears to be to increase tighten restrictions on civil liberties, as expected. When the civil liberties instrument goes from its minimum value to its maximum, according to model 6, the probability of being ousted experiments a total decrease of 0.1216. The marginal effect is -0.0107.[20] Further, if the instruments for PTS and Freedom House's civil liberties index are both included in the same model, only the latter is significant (and very strongly); while the instrument for the PTS, although negative, is not.

[Figure 1]

The rest of the variables perform generally as expected: rulers of military regimes are more likely to lose power than rulers of other regime types. Past instability in the form of coups and the more democratic the neighbor countries are, the higher the likelihood that a dictator will be replaced in a given year. The higher the per capita income, the more secure a dictator is in office. The availability of oil rents yields mixed results, while foreign aid is found to have a positive effect on instability, although it is only significant in models 1 and 4. The index of ethnic fractionalization has a negative impact on the likelihood of exit, although it is only significant in model 6. One explanation is that diversity may hinder the between-group coordination that ousting a dictator requires.

In turn, I explore the other side of the simultaneous relationship, that is, the impact of political instability on repression. The second stage results are showed in Table 4. Models in columns 1-3 are estimated using Keshk's (2003) *cdsimeq* and so

[19] The rest of the variables are held constant at their sample means.
[20] The marginal effect of the CIRI measure is just -0.0079, and its associated total decrease in the risk of exit is -0.055. As for PTS, its marginal effect is -0.0095, and its total impact, when it goes from its minimum to its maximum sample value, is -0.075.

with OLS, while the second-stage models 4-6 are estimated using ordered probit.[21] In all except for one of the repression indicators, restrictions, the impact of the likelihood of losing power on repression is strong, positive, and significant. A higher risk of exit does increases civil liberties restrictions but not significantly.

[Table 4]

The relationship between survival and repression is illustrated in Figure 2, using the results in column 4 of Table 4, in which the PTS is the dependent variable. Specifically, the figure shows the probabilities of the PTS being 5, 4, or 3 as the instrumented risk variable varies. In particular, the probability of PTS scoring 3 or 4 basically doubles. The increase in the probability of observing the maximum levels of terror is much smaller.

[Figure 2]

The other covariates are correctly signed. Greater population sizes and a higher percentage of this population living in urban areas are related to higher levels of violent repression. Urban concentration and industrialization may make collective action more likely. Internal violent conflict causes major increases in political terror. Interstate conflicts are only significantly related to increases in political terror. Development levels or growth do not appear to matter much under dictatorship. Aid is generally related to lower violent repression levels. Trade openness reduces significantly repression as measured by the PTS. Also in models 1 and 4, terror levels are found to be lower on average during the Cold War period. The explanatory variables do not perform as well in the models predicting civil liberties scores. In this case the best predictor is the regime type. Single-party and, especially, military regimes impose fewer restrictions on such rights than the other autocracies. Foreign aid is also significant in model 6 for civil liberties restrictions.

Disaggregating Exit Modes

In this second part of the empirical analysis, I disaggregate the modes through which a dictator can be replaced in order to test the hypotheses summarized in Tables 1 and 2. The goal is to analyze what type of repression works and against what type of

[21] The coefficients of the binary indicators of the lagged dependent variable are not reported.

threat, and second, to discern what type of threat causes the higher increases in each form of repression.

Table 5 reports the second-stage results using probit in which now the dependent variables distinguish between violent and non-violent exits, and regular and irregular ways of replacing rulers, as described above.[22] Again, the relationship between the variables of interest is presented in Figures 3.a to 3.d. The results are very consistent across estimation methods and the different dependent variables used.[23] Two clear and important insights can be identified.

[Table 5]

First, the use of increased political terror is not effective in preventing violent or irregular exits (models 1 and 3). Actually, the effect is positive although small and not significant (see Figure 3.a and 3.b). Therefore, no clear escalation or backfire effect of violent repression is found. In contrast, confirming hypothesis 1, restrictions on civil liberties are effective in making such types of ruler exit much less likely, as also shown in Figures 3.a and 3.b.

Second, both types of repression, terror and restrictions, significantly decrease the risks of a dictator being replaced through non-violent or regular means, which confirms hypotheses 2 and 4. Yet, in this case, using political terror is slightly more effective than using restrictions on civil liberties. Maximum levels of political terror reduce the likelihood of a regular or non-violent exit to almost zero (see Figures 3.c and 3.d).

[Figure 3]

In sum, these results indicate that the patterns identified in Table 3 are due to different underlying relationships. The negative impact of PTS on the likelihood of leaving exit is driven by its effectiveness in deterring non-violent or regular threats. Terror does not prevent violent/irregular ousters. Restrictions on civil liberties are effective as an instrument to prevent both types of threat.

The next, and final, step consists of exploring the other side of the simultaneous relationship. I explore if different types of threat trigger a different repressive reaction by the regime. I also explore the form repression takes to test whether different threats

[22] In this second empirical part I do not use the CIRI measure because it is measuring the same dimension or type of repression than PTS, but PTS covers a longer time period.
[23] Due to space reasons, I do not report the results from the models using *cdsimeq*'s 2SPLS.

are confronted using different repressive tools. The second-stage models, estimated using ordered probit, are reported in Table 6.

[Table 6]

If we first look at the results in columns 1 and 3, in which Svolik and Akcinaroglu's (2007) variable distinguishing between violent and non-violent exits is used, one clear stylized fact can be derived, namely, that political terror is basically increased when the likelihood of a non-violent exit augments, while restrictions on civil liberties are tightened in order to cope with potential violent threats. Figure 4 illustrates these patterns.

[Figure 4]

Using the *Archigos* dataset distinction yields extremely similar patterns. Consistent with the findings just outlined for the case of violent exits, political terror is increased if the threat of a regular exit is bigger, and civil liberties restrictions significantly increase if the threat of an irregular exit is present. Violent repression does not significantly augment in case the likelihood of an irregular replacement increases. The risk of a non-violent exit leads only to small and not significant increases in civil rights restrictions. The evidence thus clearly supports hypotheses 6, 7, and (to some extent) 8. No clear pattern can be observed concerning the impact of the risk of violent/irregular exits on violent repression, and the coefficients are not significant. It tends to increase in response to irregular threats, though not significantly.

Concluding Remarks

State coercion is, jointly with the creation and maintenance of a certain level of support, a basic instrument of power for autocrats. Repression may benefit a dictator by neutralizing challenges and thus decreasing the likelihood of losing power. To date, there was no systematic evidence that this is true across a broad range of authoritarian regimes.

After addressing the simultaneous relationship between repression and risk of losing power, this article comes to a clear, albeit sad, conclusion: repression does work. It significantly reduces the likelihood that a dictator will be replaced in a given year. At the same time, I show that dictators respond to a higher perceived likelihood of losing office by raising their levels of coercion.

In the second part of the paper, both the strategies of repression as well as the types of threats dictators face have been disaggregated. I find that political terror decreases the likelihood of a non-violent or regular exit but not that of a violent exit; while restrictions on civil liberties help prevent both types of leader exit. Second, while violent repression is mainly used as a response to non-violent/regular threats, dictators restrict civil liberties when the risk of a violent or irregular exit rises.

What are the main implications of these findings? International pressure should concentrate on promoting civil liberties, as they guarantee that some level of political opposition will be able to organize and so demand further political openings as the cases of Tunisia and Egypt highlight. Political terror could not stop the uprising once it had started. Recall that restrictions on such rights have been shown to be more effective than terror in preventing ruler replacements and, especially, violent or irregular exits. The baseline probability of losing power when restrictions are at its lowest is much higher than that corresponding to the lowest terror levels (see Figure 1). Most democratizations occur in regimes that have already partially liberalized (Hadenius and Teorell 2007). And this threat perception leads, according to our results, to more violent repression. That would be the second step in the international strategy, as the extent of this type of repression is more difficult to demonstrate and, so, to monitor its extent. A given level of civil liberties within the country may help gather such information, mobilize international and local human rights NGOs and engage in international shaming campaigns and diplomatic pressures.

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TABLES

Table 1. The expected impact of repression on survival

	Type of threat	
Repressive measures	Violent/ irregular	Non-violent/ regular
Restrictions	(1) Effective	(2) Effective
Terror	(3) Indeterminate	(4) Effective

Table 2. The expected impact of threats on repression

	Type of repression	
Type of threat	Political terror	Restrictions
Violent/ irregular	(5) Indeterminate	(6) Increase
Non-violent/ regular	(7) Increase	(8) Moderate increase

Table 3. The effect of repression on the likelihood of dictators' exit

	Dependent variable = Pr(*AutocratExit*)					
	cdsimeq	cdsimeq	cdsimeq	2S-probit	2S-probit	2S-probit
Independent vars.	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.395	-0.710	2.06	-0.556	-0.795	1.61
	(1.43)	(1.65)	(1.30)	(1.49)	(1.73)	(1.27)
Repression *PTS*	-0.733*			-0.105*		
	(0.380)			(0.054)		
Repression *CIRI*		-0.683			-0.106	
		(0.455)			(0.075)	
Repression *FH*-civil			-1.22***			-0.105***
			(0.332)			(0.027)
Personalist	0.390	0.141	0.048	0.398	0.139	0.058
	(0.347)	(0.372)	(0.271)	(0.366)	(0.408)	(0.262)
Single-party	0.489	0.350	0.234	0.492	0.346	0.247
	(0.323)	(0.339)	(0.240)	(0.336)	(0.368)	(0.243)
Military	1.10***	0.809**	0.657**	1.10***	0.805**	0.665**
	(0.350)	(0.377)	(0.268)	(0.365)	(0.410)	(0.271)
Oil rents	-0.039	-0.059	0.031	-0.040	-0.059	0.032
	(0.034)	(0.045)	(0.030)	(0.030)	(0.039)	(0.029)
Log foreign $aid_{t-1, t-2}$	0.134*	0.124	0.011	0.133*	0.125	0.006
	(0.075)	(0.090)	(0.062)	(0.069)	(0.080)	(0.065)
Past coups (total)	0.039***	0.038***	0.024**	0.039***	0.039**	0.024**
	(0.013)	(0.015)	(0.012)	(0.013)	(0.016)	(0.012)
Population (log)	0.091	0.111	0.008	0.096	0.112	0.005
	(0.063)	(0.077)	(0.051)	(0.061)	(0.077)	(0.049)
Urban pop (%)	0.006	0.005	0.0005	0.006	0.005	0.0003
	(0.006)	(0.007)	(0.005)	(0.005)	(0.006)	(0.005)
Ethnic diversity	-0.241	-0.279	-0.315	-0.247	-0.281	-0.323*
	(0.234)	(0.284)	(0.211)	(0.227)	(0.302)	(0.198)
Log GDP per capita	-0.341*	-0.285	-0.442***	-0.348**	-0.284	-0.442***
	(0.163)	(0.186)	(0.146)	(0.161)	(0.185)	(0.141)
Growth $_{t-1, t-2}$	-1.65	-0.959	-1.33	-1.65*	-0.952	-1.32
	(1.13)	(1.43)	(1.03)	(0.999)	(1.39)	(1.01)
Neighbors Polity	0.049**	0.049**	0.029	0.050***	0.05**	0.029*
	(0.020)	(0.024)	(0.018)	(0.019)	(0.025)	(0.016)
Cold War	0.072	0.024	0.165	0.071	0.027	0.165
	(0.148)	(0.167)	(0.137)	(0.152)	(0.173)	(0.135)
Log-likelihood	-306.76	-213.74	-354.86	-306.62	-213.79	-354.64
Observations	1430	1156	1621	1430	1156	1621

Note: Second-stage results. For regime types, "monarchy" is the base category. In the probit models, errors are clustered on leader. *** p<0.001, ** p<0.05, * p<0.10.

Table 4. The role of threats: The impact of rulers' exit likelihood on repression

Repression measure	*PTS*	*CIRI*	*FH*	*PTS*	*CIRI*	*FH*
	cdsimeq	cdsimeq	cdsimeq	2S-probit	2S-probit	2S-probit
Independent vars.	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.224**	0.109	0.258***			
	(0.103)	(0.115)	(0.052)			
Pr(*Autocrat Exit*)	0.046***	0.028*	0.014	0.369***	0.230**	0.132
	(0.016)	(0.015)	(0.014)	(0.102)	(0.097)	(0.150)
Personalist	0.022	0.028	-0.011	0.206	0.163	-0.117
	(0.023)	(0.022)	(0.010)	(0.138)	(0.130)	(0.120)
Single-party	0.008	0.018	-0.021**	0.069	0.089	-0.244**
	(0.021)	(0.021)	(0.010)	(0.125)	(0.123)	(0.113)
Military	-0.010	-0.003	-0.045***	-0.077	-0.079	-0.501***
	(0.031)	(0.030)	(0.015)	(0.199)	(0.182)	(0.176)
Population (log)	0.012**	0.021***	0.001	0.106***	0.144***	0.012
	(0.005)	(0.005)	(0.002)	(0.034)	(0.035)	(0.031)
Urban pop (%)	0.0008*	0.0009*	-0.0002	0.006**	0.006**	-0.003
	(0.0004)	(0.0004)	(0.0002)	(0.002)	(0.002)	(0.002)
Log GDP per capita	-0.010	-0.016	0.003	-0.090	-0.117	0.029
	(0.011)	(0.012)	(0.007)	(0.079)	(0.075)	(0.084)
Growth $_{t-1, t-2}$	0.039	-0.113	0.004	0.301	-0.725	0.124
	(0.093)	(0.103)	(0.049)	(0.611)	(0.618)	(0.603)
Intrastate conflicts $_{t-1}$	0.032***	0.036***	0.005	0.226***	0.209***	0.068
	(0.007)	(0.008)	(0.003)	(0.049)	(0.055)	(0.048)
Interstate conflicts $_{t-1}$	0.039*	0.023	-0.012	0.283**	0.158	-0.147
	(0.020)	(0.023)	(0.011)	(0.141)	(0.136)	(0.137)
Log foreign aid$_{t-1, t-2}$	-0.010*	-0.002	-0.004	-0.084**	-0.019	-0.053*
	(0.006)	(0.006)	(0.002)	(0.037)	(0.035)	(0.031)
Trade (% GDP)	-0.0003**	-0.0002	0.00004	-0.002***	-0.001*	0.0004
	(0.0001)	(0.0001)	(0.00008)	(0.001)	(0.001)	(0.001)
Cold War	-0.029***	-0.002	0.003	-0.229***	0.002	0.046
	(0.010)	(0.011)	(0.005)	(0.070)	(0.070)	(0.067)
F	167.69	84.11	322.39			
Log-likelihood				-1264.20	-1882.73	-1313.16
Observations	1430	1156	1621	1430	1156	1621

Note: Second-stage results. For regime types, "monarchy" is the base category. *** p<0.001, ** p<0.05, * p<0.10.

Table 5. The effect of repression on the likelihood of different types of ruler exit

	Violent	Violent	Irregular	Irregular	Non-violent	Non-violent	Regular	Regular
Independent vars.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	-4.65**	-1.48	-1.20	0.471	0.572	2.58**	-3.89***	-1.96
	(2.26)	(1.86)	(1.78)	(1.43)	(1.53)	(1.30)	(1.51)	(1.54)
Repression *PTS*	0.084		0.004		-0.194***		-0.115*	
	(0.088)		(0.058)		(0.060)		(0.063)	
Repression *FH*-civil		-0.059*		-0.080***		-0.106***		-0.094**
		(0.035)		(0.026)		(0.034)		(0.039)
Personalist	0.839*	-0.099	0.786*	0.274	0.282		-0.398	-0.494
	(0.510)	(0.330)	(0.469)	(0.317)	(0.433)		(0.362)	(0.333)
Single-party	0.270	-0.319	0.586	0.179	0.695*	0.509***	-0.055	-0.053
	(0.480)	(0.303)	(0.440)	(0.291)	(0.397)	(0.159)	(0.313)	(0.285)
Military	0.944*	-0.008	1.09**	0.612*	1.23***	0.870***	0.640*	0.324
	(0.512)	(0.337)	(0.475)	(0.326)	(0.434)	(0.172)	(0.361)	(0.316)
Oil rents	-0.056	0.057	-0.029	0.039	-0.027	0.018	-0.097***	-0.057
	(0.074)	(0.050)	(0.039)	(0.034)	(0.030)	(0.032)	(0.031)	(0.037)
Log foreign $aid_{t-1, t-2}$	0.209	0.037	0.106	0.040	0.114	0.014	0.073	-0.009
	(0.130)	(0.090)	(0.084)	(0.069)	(0.074)	(0.077)	(0.066)	(0.066)
Past coups (total)	-0.026	-0.008	0.017	0.005	0.056***	0.037***	0.036**	0.034***
	(0.023)	(0.019)	(0.014)	(0.013)	(0.014)	(0.012)	(0.014)	(0.013)
Population (log)	0.213**	0.176**	-0.028	-0.019	0.041	-0.091*	0.179***	0.106*
	(0.094)	(0.074)	(0.071)	(0.048)	(0.068)	(0.054)	(0.064)	(0.060)
Urban pop (%)	-0.008	-0.008	-0.001	-0.003	0.012*	0.005	0.007	0.004
	(0.012)	(0.008)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)
Ethnic diversity	0.152	-0.123	-0.123	-0.229	-0.413	-0.358	0.190	0.087
	(0.378)	(0.295)	(0.286)	(0.230)	(0.268)	(0.245)	(0.297)	(0.285)
Log GDP per capita	-0.090	-0.306	-0.162	-0.311*	-0.446***	-0.506***	0.067	-0.042
	(0.267)	(0.214)	(0.199)	(0.170)	(0.172)	(0.147)	(0.177)	(0.171)
Growth $_{t-1, t-2}$	-1.18	-2.03	-0.485	-1.14	-1.20	-0.506	-2.08*	-1.02
	(1.54)	(1.70)	(1.15)	(1.16)	(1.06)	(0.985)	(1.09)	(1.18)
Neighbors Polity	0.067*	0.023	0.017	0.008	0.047**	0.030*	0.034*	0.032
	(0.035)	(0.031)	(0.024)	(0.021)	(0.021)	(0.018)	(0.020)	(0.020)
Cold War	0.408	0.270	0.400**	0.455**	-0.103	0.032	-0.533***	-0.455***
	(0.265)	(0.219)	(0.199)	(0.180)	(0.167)	(0.153)	(0.181)	(0.176)
Log-pseudolikelihood	-119.19	-148.11	-212.56	-262.60	-225.87	-254.94	-210.34	-213.62
Observations	1430	1621	1561	1749	1430	1621	1561	1749

Note: Second-stage results. For regime types, "monarchy" is the base category. Errors are clustered on leader.
*** p<0.001, ** p<0.05, * p<0.10.

Table 6. Types of political threat to dictators and repression levels

Repression measure:	*PTS*	*PTS*	*FH-civil*	*FH-civil*
Independent vars.	(1)	(2)	(3)	(4)
Pr(*Non-violent Exit*)	0.324***		0.062	
	(0.087)		(0.119)	
Pr(*Violent Exit*)	-0.003		0.298**	
	(0.089)		(0.149)	
Pr(*Regular Exit*)		0.212**		-0.148
		(0.086)		(0.092)
Pr(*Irregular Exit*)		0.194		0.373*
		(0.125)		(0.195)
Personalist	0.244*	0.203	-0.313	-0.211*
	(0.145)	(0.156)	(0.549)	(0.125)
Single-party	0.015	0.100	-0.404	-0.225**
	(0.132)	(0.128)	(0.585)	(0.110)
Military	-0.102	-0.084	-0.674	-0.536***
	(0.205)	(0.208)	(0.668)	(0.193)
Population (log)	0.141***	0.097***	-0.037	0.036
	(0.042)	(0.034)	(0.042)	(0.032)
Urban pop (%)	0.006**	0.007***	-0.001	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Log GDP per capita	-0.113	-0.159**	0.076	0.040
	(0.081)	(0.077)	(0.090)	(0.077)
Growth $_{t-1, t-2}$	0.132	0.326	0.448	0.123
	(0.606)	(0.599)	(0.626)	(0.605)
Intrastate conflicts	0.238***	0.244***	0.052	0.081*
	(0.049)	(0.048)	(0.049)	(0.048)
Interstate conflicts	0.361**	0.404***	-0.232	-0.314**
	(0.141)	(0.149)	(0.145)	(0.159)
Log foreign aid$_{t-1, t-2}$	-0.060	-0.073**	-0.070**	-0.079**
	(0.041)	(0.035)	(0.032)	(0.031)
Trade (% GDP)	-0.002**	-0.002***	0.0001	0.0009
	(0.001)	(0.0009)	(0.001)	(0.0009)
Cold War	-0.195***	-0.239**	0.005	-0.179
	(0.073)	(0.099)	(0.072)	(0.118)
Log-likelihood	-1263.64	-1358.32	-1311.51	-1376.83
Observations	1430	1561	1621	1749

Note: Second-stage results. For regime types, "monarchy" is the base category. *** p<0.001, ** p<0.05, * p<0.10.

FIGURES

Figure 1. Predicted probabilities of exit and repression types

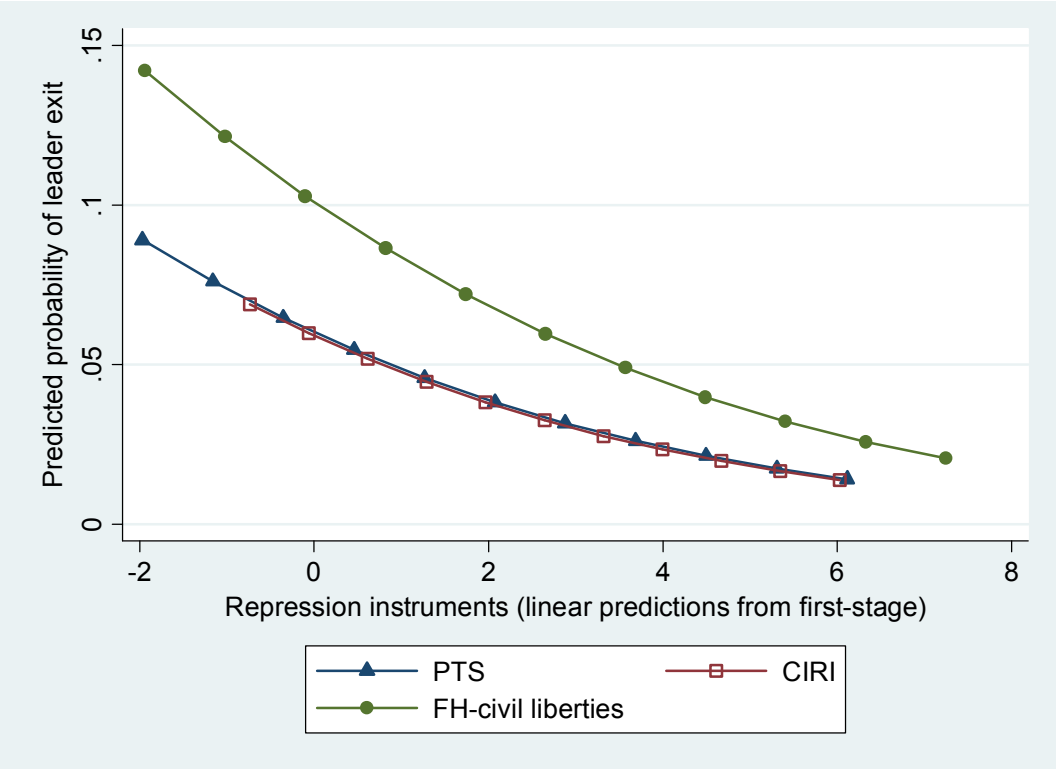

Figure 2. The impact of dictators' exit probability on repression levels using PTS

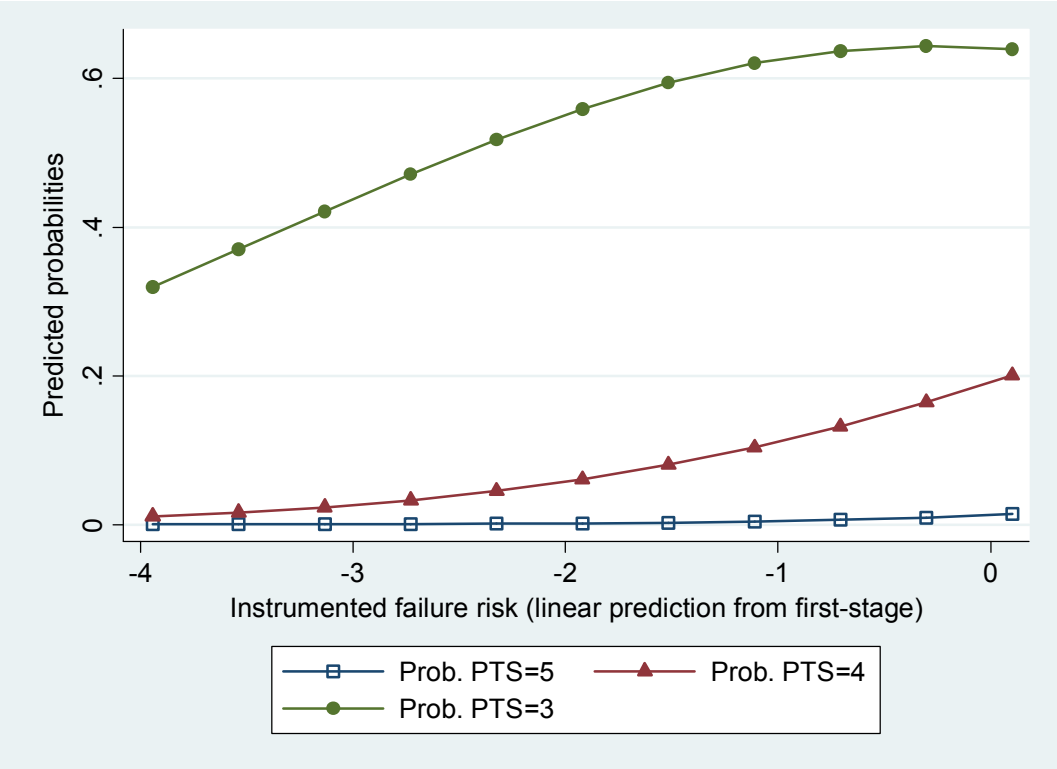

Figure 3. Repression and types of exit: Predicted probabilities

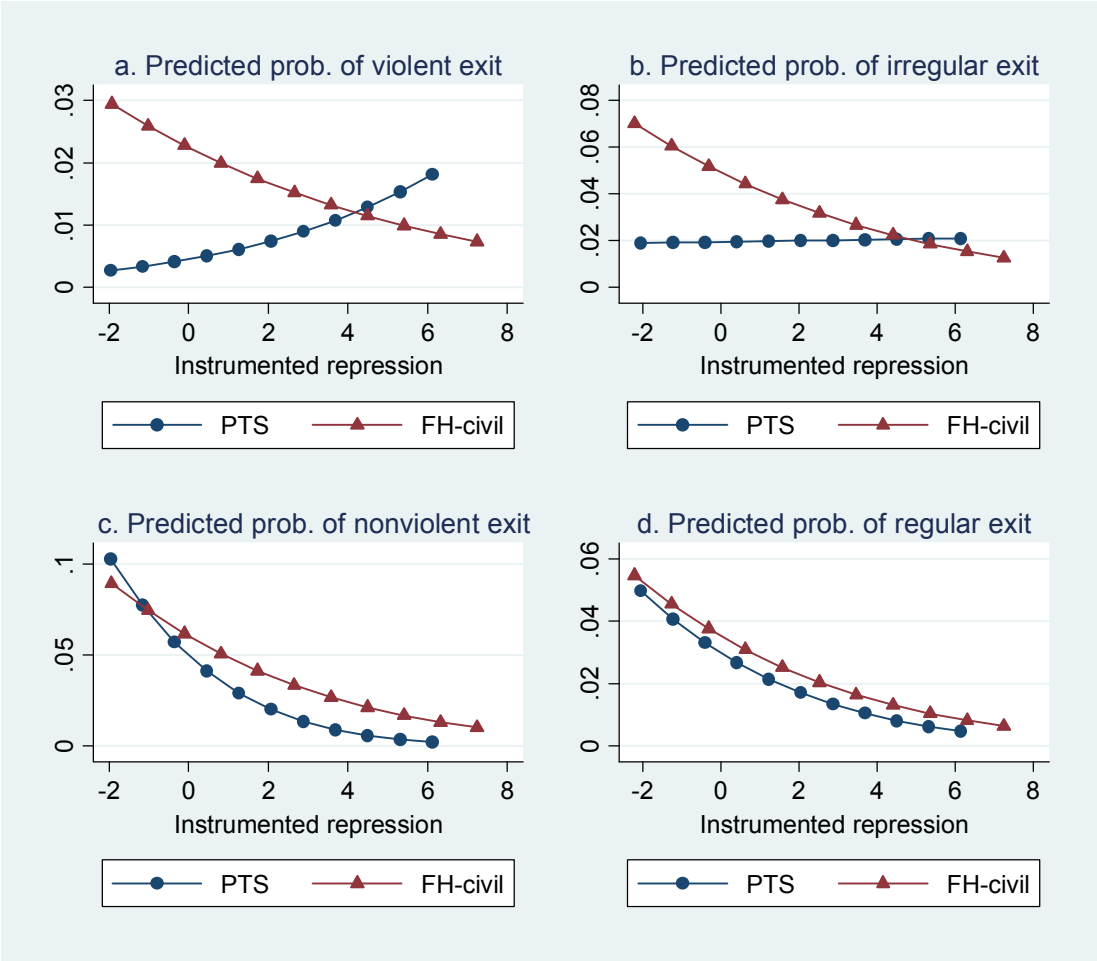

Figure 4. Violent and non-violent threats and political repression: Predicted probabilities