Oil discoveries, civil war, and preventive state repression*

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Abstract

Anticipated shifts in power can lead to war today. When power is poised to shift towards the state, potential rebels may launch a civil war while they retain a relative advantage. We argue that a government expecting a group to rebel has an incentive to prevent that challenge by repressing the population. Empirical models using data on newly proved oil reserves show that states expecting an increase in oil wealth demonstrably increase repression in the years between discovery and access. Oil wealth can encourage repression not only by reducing its costs, but also by creating windows of opportunity that rebels hope to exploit and governments hope to close. Not only civil war but also rising expectations of rebellion are associated with a marked increase in state-directed violence against civilians.

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Governments repress civilians to cement their hold on power. Yet when we observe repression, it is difficult to separate preventive from retaliatory motives and deterrent from provoked follow-on effects. Suppose a government rounds up dissidents, shutters media outlets, or clamps down on private communication because it expects imminent rebellion. Without knowledge of the government's beliefs about the rising risk of rebellion, such repression appears provocative when followed by civil conflict—even if that repression limited the scope of war and improved the state's chances of success against the rebellion. Motive is key to understanding why and when governments repress, yet our hypothetical scenario of preventive repression is observationally equivalent to routine repression that provokes a backlash. How can we parse the motives and consequences of state repression?

Observed repression and dissent are linked by government and dissident beliefs about each other's strategies and their relative effectiveness (Pierskalla, 2010; Casper & Tyson, 2014; Ritter, 2014). Both sides can anticipate and move to limit each other's actions, which means that preventive and provocative repression can have the same observable relationship with subsequent dissent, rebellion, and civil conflict. Further, pooling preventive and responsive repression without some means of identifying them can lead to incorrect inferences over the causes and consequences of political violence (Ritter & Conrad, 2016). This is especially true of the relationship between repression and civil war, a strong but overdetermined statistical association (see Hill & Jones, 2014): repression seems to influence the onset and course of civil war, but civil war also leads to repression. The challenge is not to identify an average effect—to make a claim about which direction dominates in a sample—but to identify conditions under which states engage in repression with deterrent or preventive motives. Variation in one element of a strategic system thus

controlled, we can draw inferences about how that variation affects other elements.

One way to trace the causal arrow is to identify a clear indicator of looming rebellion that incentivizes governments to repress preventively—a measure of an exogenously increased *risk* of civil war as opposed to its outbreak. Bell & Wolford (2015) show that the discovery of new oil reserves, which are difficult to hide *and* to turn immediately into increased wealth, is associated with increased civil conflict in poor states, i.e., those in which new oil discoveries portend significant increases in the government's ability to wage war or buy off potential rebels. Oil discovery represents a shared shock to expectations of future government power, leading dissidents to rebel before an expected decline in relative strength. This exogenous shift in the political environment allows us to identify cases in which repression, should it occur, is likely to be preventive. Authorities expect the risk of rebellion to increase with oil discovery and so have incentives to repress to limit that risk, which implies that the repression is not reactive (since there is no new challenge to the government in the absence of the find). The exogenous nature of the find and its effect on expectations of rebellion suggests that while repression may often *precede* civil conflict, it need not *cause* civil conflict.

Empirical models bear out these expectations. Matching to limit the influence of potential confounders, we estimate the effect of newly-discovered oil reserves on repression. Low-capacity governments (those whose relative power can be appreciably boosted by oil discoveries) increase repressive activities in response to oil discoveries, while high-capacity governments do not. This pattern increases confidence both that repression occurs preventively and that any subsequent escalation of domestic strife to civil war was already priced into the decision to repress. Though rights are violated throughout civil conflicts, our study makes clear that governments may repress preventively, hoping to

stave off conflict or, at minimum, improve their chances of winning. When increased repression occurs prior to civil war, it need not cause the ensuing conflict.

We show that models of shifting power and commitment problems can predict war *and* conflict short of war aimed to shape the outcome of those larger conflagrations. The bargaining framework's insight can be extended to the process of bargaining via lower-level violence, yet repression and political violence scholars rarely use this framework for analysis. Further, where scholarship on national resource endowments suggests that oil leads to repression because the government depends less on the population for wealth (Ross, 2012; DeMeritt & Young, 2013), we show that oil can lead to repression *before* it produces wealth, because the expectation of wealth represents a closing window of opportunity for potential rebels inclined to challenge state power.

Repression to prevent rebellion

Repression is the set of policies and practices governments use to stop non-state persons within their jurisdiction from participating in their own governance (Goldstein, 1978; Ritter, 2014).[1] It takes the form of torture, violent policing, surveillance, curfews, restrictions on speech, and many other actions that undermine people's ability to vote, protest, or participate in society. Authorities repress across a range of political institutions, including both autocracies and democracies (Davenport, 2007b; Conrad, 2014; Conrad et al., 2017). A number of structural factors constrain some authorities to repress less than others (Cingranelli & Filippov, 2010; Conrad, 2011; Keith, 2011; Conrad & Ritter, 2019;

[1]For a broader definition that allows civilians to act as part of the repressive apparatus, see Tilly (1978). For more on repression's relationship to dissent, see Rasler (1996); Carey (2006, 2010).

Hill & Jones, 2014; Lupu, 2015), but there are also *behavioral* correlates of repression, perhaps the most prominent of which is civil war.

Civil war is consistently connected with greater repression, both during and after the fighting, compared to states that do not experience civil war. This correlation is so widely accepted that civil war appears as a standard control variable in the 'gravity model' of repression, alongside a state's GDP per capita and population (e.g., Poe & Tate, 1994; Keith et al., 2009). In their study examining a large number of covariates associated with repression, Hill & Jones (2014) find civil war to be its most powerful predictor: the variable that improved model fit and predictive power more than any other.

Why civil war is related to repression is less clear. The causal arrow points in both directions. High levels of repression are associated with more severe civil wars of longer duration, with repression and discrimination intensifying the political grievances that motivated the conflict (Gurr, 1970; Østby, 2008; Østby et al., 2009; Cederman et al., 2011; Buhaug et al., 2014). Repressing civilians can reduce societal support for the government and increase support for potential rebels. At the same time, ongoing civil conflict increases the likelihood of state repression. Governments target civilians with forced migration, violent policing, extrajudicial killing, forced conscription, sexual violence, and more during civil war (see, e.g., Kalyvas, 2006; Beber & Blattman, 2013; Cohen & Nordås, 2015; Steele, 2017).[2] Full-scale conflict creates opportunities to repress efficiently and without consequences: the consolidation of the repressive apparatus for waging war enables repression with little additional effort (Chiozza & Goemans, 2011: Ch. 4), and the general

[2]Authorities also repress when engaged in international conflict (Tilly, 1978; Poe & Tate, 1994; Escribà-Folch, 2013).

population tacitly or explicitly approves of repression when violent dissent occurs or security is threatened (Davenport, 2007b; Conrad & Moore, 2010; Conrad et al., 2017).

Parsing the relationship of the mechanisms connecting civil war and repression is difficult. Fighting rebels and repressing dissidents differ primarily in the level of violence the state uses and the organization of the targeted groups. Yet the decision-making process is similar: the government wants to retain control over policy and power, so it uses violent and non-violent tactics to put down or prevent challenges (cf. Ritter, 2014). Both repression and civil war require sovereignty over the use of force and a command structure—with attendant agency problems (Mitchell, 2009; Conrad & Moore, 2010; DeMeritt, 2015; Dragu, 2017)—and both outcomes are likely to occur in states with low economic growth, income inequality, and weak democratic institutions (Poe & Tate, 1994; Blattman & Miguel, 2010; Hill & Jones, 2014). Repression and civil war can be considered two points on a continuum of contention (Davenport et al., 2018). We, however, see them as distinct processes with similar determinants[3] that often co-occur and affect one another. Repression creates grievances that lead to war, and war can lead to repression, which intensifies grievances, and so on. The relationship between civil war and repression is overdetermined, predicted by multiple explanations that cannot be distinguished in a simple bivariate relationship.

We seek evidence of repression used to prevent civil war, which is necessarily prior to the conflict. We anatomize the relationship by identifying an exogenously increased risk of rebellion, which should spark repression to prevent civil war rather than respond to or provoke it. Civil conflict is costly, so states have an incentive to avoid it before it begins

[3]Repression is sometimes defined as one-sided violence against civilians, as distinct from an interaction with an armed rebellion. But a violent attack on protesters holding weapons would be an interaction but not be a civil war. As repression involves coercion of challenging groups, we see it as similar in nature to civil war.

(Walter, 2006). Repression is often used for the purpose of preventing challenges, undermining the will or the capacity of groups to actively impose costs on the state (Davenport, 2007b). State authorities attempt to hinder access to necessary resources (Jenkins, 1983; Weinstein, 2007), target group leaders to halt organizing processes (Davenport, 2015), or create an environment of fear that discourages individual participation (Dorff & Braithwaite, 2018). Governments repress to prevent challenges that they expect to occur, such as when there are preponderances of young persons in the population (Nordås & Davenport, 2013), when civil conflict erupts in neighboring states (Danneman & Ritter, 2014), and when groups organize collective action (Sullivan, 2016). The *anticipation* of a challenge leads states to take preventive action.

Though rebellion differs from dissent in the scope of violence and the organization of the rebel group, the process by which rebellion occurs is very similar to the mobilization process for large-scale dissent. Groups recruit individuals dissatisfied with the status quo and mobilize resources to impose consequences on the state if it does not change it (see, *inter alia*, McCarthy & Zald, 1977; Chenoweth & Stephan, 2011; Pearlman, 2011; Davenport, 2015; Larson & Lewis, 2018; Larson et al., 2019). Mobilization for rebellion is a similar process, differing mainly in the resources brought to bear (Gurr, 1970; Kuran, 1991; Lohmann, 1993, 1994; Parkinson, 2013). A short path separates mobilization of dissidents and full rebellion (Tilly, 1978). State authorities have strong incentives to repress to prevent group formation and action when they anticipate dissent, to avert rebellion.

Authorities are particularly likely to repress potential challenges when the stakes of losing power are high (Ritter, 2014; Conrad & Ritter, 2019) or when that hold on power is threatened by the group's demands or tactics (Earl et al., 2003; Escribà-Folch, 2013). Even

a peaceful challenge to a leader's position can instigate repression; repression increases prior to elections when the opposition is popular (Hafner-Burton et al., 2011; Levitsky & Way, 2010). Authorities view demands for regime change as more threatening than demands for policy change (Earl, 2003; Davenport & Eads, 2001). Civil war is especially dangerous to political survival, as it represents a purposeful attempt to seize resources or power that are critical to the government's position—sometimes, control of the state itself. As the most threatening of challenges, incumbents have an incentive to prevent rebellion before it occurs. Danneman & Ritter (2014) make a similar argument and find that governments that expect civil wars in neighboring states to touch off rebellion within their own borders will increase repression to avert it.

Anticipating rebellion

When do authorities expect rebellion? The outbreak of civil conflict is associated with factors from poverty to regime type to geography (Collier & Hoeffler, 2004; Fearon & Laitin, 2003; Blattman & Miguel, 2010; Ward et al., 2010), but these correlates are largely static or slow-moving. They miss the changing conditions that trigger conflict—the ones a government would use as cues for preventive repression. Conflict becomes more likely when players anticipate a shift in relative power that incentivizes one side to revise the current arrangement. If one side does not believe a rising power will honor today's agreement, the declining side may fight today instead (cf. Powell, 2006). This is a common mechanism in domestic conflict, where rebel groups respond to temporary shocks or impending shifts in government strength by fighting rather than allowing it time to

consolidate power (Fearon, 2004). If authorities anticipate an increase in power, they should expect the risk of rebellion to rise, tempting them to forestall or prevent it.

We require a measure of anticipated increases in government strength that can change rapidly and be known to both government and rebels. Bell & Wolford (2015) argue that *oil discoveries* represent a clear, exogenous, and commonly-known indicator of expected increases in the government's ability to defeat rebellion. Oil deposits can be a major source of wealth; oil-rich states have little need for investors, taxpayers, or development to gird the strength of the central government, making them accountable to few actors for their choices. They exhibit high military spending, dramatic economic inequality, autocracy, and repression (see, *inter alia*, Ulfelder, 2007; Basedau & Lay, 2009; Ross, 2012; DeMeritt & Young, 2013). This combination of strong national militaries and popular grievances can yield rebellion and civil war (Ross, 2004; Thies, 2010). Oil wealth sets the stage for both popular rebellion (Humphreys, 2005) and government repression (Conrad & DeMeritt, 2013). Yet realized oil wealth and dependence are slow-moving characteristics, which predict steady or latent domestic conflict rather than imminent rebellion. To disentangle the relationship between repression and civil war, we look to new oil discoveries.

When oil is discovered, states and companies publicize finds right away, but the oil is not available for a number of years, requiring infrastructure, refinement, and other processes for extraction. International companies must bargain with the government over rights, profits, and other arrangements before extraction can begin. Consequently, there is a delay between discovery and increased oil production and a further delay until increased state wealth.[4] On average, production increases one year after discovery, while national wealth

[4]Oil discovery does not require substantial pre-existing state capacity. States without energy ministries

increases two years after discovery (Bell & Wolford, 2015: 519). The delay is driven by countries that lack sufficient infrastructure to exploit large or surprising discoveries. In these states, the announcement of a discovery starts a countdown to a future date when the state will have increased resources to devote to a military effort. Dissatisfied groups are therefore motivated to rebel before the state converts the find into wealth. Assuming the existence of a dissatisfied group that could mount a rebellion,[5] there is a meaningful advantage to attack before the government has access to the new resources.

The public announcement of new oil reserves identifies conditions under which a government thinks rebellion has become more likely and may use tactics to prevent organization or effective uses of resources. The announcement opens a window for rebels to mobilize and avert future shifts in government power. But states have the advantage upon discovery. They may attempt to conceal the news to avoid demands for and conflict over the resources (Humphreys, 2005; Asal et al., 2016; Woo, 2017), but any information advantage disappears once finds are public. More importantly, governments have a *tactical* advantage over would-be rebels, needing less time to fire up a repressive apparatus than dormant insurgents do to organize a political movement. States are comprised of institutions that can be mobilized for repression relatively quickly. These include armed and organized law enforcement agencies, standing militaries, and legal contingencies that allow for the rapid tightening of state control over transportation, communication, and the use of public

or state-owned oil enterprises issue exploration leases to foreign companies. These companies will explore in very poor or dangerous states. Chevron entered southern Sudan as it was emerging from decades of war. More recently, exploration agreements between ExxonMobil and Guyana yielded major undeveloped discoveries in one of the western hemisphere's poorest countries.

[5] In every state, there are persons who prefer to change the government's status quo policies, allocations, or power. We assume that a group could, when triggered by an oil find, rally resources and mount a rebellion the state would prefer to avoid. It need not resemble civil war for it to be a challenge the government would prefer to avoid.

spaces. Contrast these advantages against the predicaments faced by would-be insurgents. The early stages of opposition organization are plagued by coordination and collective action problems (Boix & Svolik, 2013; Mosinger, 2017), the challenge of rebel recruitment (Hegghammer, 2013), and the acquisition of sufficient arms. Whereas states can turn to existing hierarchies, their opponents must build or radicalize informal social networks (Metternich et al., 2013; Parkinson, 2013; Larson et al., 2019). We expect that oil discovery could trigger sufficiently motivated governments to initiate repression well before their opponents can generate effective rebellions.

After discoveries are public, the government has incentives to ramp up repression, making rebellion harder to mount or, if launched, more difficult to win. When the expected shift in power is sufficiently large, governments have little incentive to try to buy off potential rebels with concessions (cf. Wiegand & Keels, 2019); shifting power undermines the credibility of any deal struck today, making government promises of no-repression-for-no-rebellion incredible (Bell & Wolford, 2015). Therefore, oil discoveries can help us identify the effect of anticipated rebellion on repression with fewer complications of strategic censoring (cf. Ritter & Conrad, 2016); our theory is based on commonly-known shifting power, and our data is as well. Should repression occur under these conditions, we can be more confident that it occurs in anticipation of civil conflict—that it is preventive—than if repression were to spike absent the public announcement of newly discovered oil. Such a pattern suggests conditions under which the expectation of civil war causes repression, rather than repression causing civil war.

Hypothesis 1. *The discovery of oil reserves increases the amount of repression in countries*

with relatively low government capacity to repress as compared to the state's baseline expectation of repression. High-capacity governments will exhibit no relationship between oil discoveries and repression.

We expect oil discoveries to increase the likelihood of repression only in states where the find would substantially alter the distribution of power between the government and rebels (Bell & Wolford, 2015: 521). Suppose that a substantial amount of oil is discovered. If the government's prospects of defeating the rebels are already large—say, 90%—then the effect of this discovery on relative power is limited. Dissidents do not have a sudden incentive to rebel, so the government has little need to repress preventively. But if the government's chances of defeating the rebels are lower at the time of discovery, around 50%, the same amount of oil can represent a more substantial change to its chances of victory, invoking the expectations that lead to preventive action from both rebels and governments. The government's baseline strength or capacity to repress challengers matters. However large a discovery in absolute terms, if the shift in *relative* power is small, there is in practice no temporary advantage for potential rebels to exploit. We predict an effect of oil discovery on repression in those cases where the possibility of a concession is extremely low due to the commitment problem—in weak states with large discoveries. In other cases, concessions are possible and repression is unlikely.

To the extent that repressing is sometimes successful, it should be more frequently observed than the actual outbreak of war. In some cases, repression prevents mobilization and collective action, undermining and censoring the emergence of less resolute groups before they reach their goals (Davenport, 2015; Sullivan, 2016). When groups are resolute

or well-organized, repression may fail to prevent their mobilization (Ritter & Conrad, 2016), but the government will have nonetheless improved its prospects in the war by discouraging, jailing, or killing potential rebels. Whether repression averts or provokes rebellion is beside the point. The motive behind each repressive spike is the same: improving the government's chances of staving off a potential rebellion.

Research design

Our statistical analyses estimate the effects of new oil discoveries on a country's use of preventive repression. We use matching to pre-process the data, improving the balance of our sample across treatment and control groups with respect to a number of potential confounders, and we stratify the analysis to estimate the effects of oil discovery in high- and low-capacity states. In this section, we describe our measures of key theoretical concepts and explain the research design.

Our concept of repression is precise, in that we are concerned with preventive actions. Reactive repression, though observationally similar, would be a false positive. Preventive and reactive repression differ primarily in intent and timing, and some measures better approximate this type of repression than others. Preventive actions are readily available to the government and quickly deployed to undermine a specific anticipated threat. Indicators that account for long-standing repressive policies or implied repression, such as the CIRI Human Rights Data (Cingranelli et al., 2014), the Political Terror Scales (Gibney et al., 2016), or the Latent Human Rights Protection Scores (Schnakenberg & Fariss, 2014), are

inappropriate.[6] We need a measure that captures small, rapid changes, as opposed to overall levels of repression.

We use event data from the Social, Political, and Economic Event Database (SPEED) Project's Civil Unrest Data.[7] The project codes events related to civil unrest in more than 150 countries from 1946 to the present, with human-in-the-loop coding of articles from multiple global news sources (Nardulli et al., 2015). We measure repression with annual counts of Disruptive State Acts (DSAs), which occur when government representatives, acting in their official capacity, disrupt normal governance through extraordinary or ordinary acts 'performed with malfeasance' (Cline Center for Democracy, 2010: 14). DSAs collect 42 actions, including arrests, property confiscations, curfews, and censorship measures.

We generate three versions of our repression variable. **DSA** is the number of *all* disruptive state acts in a country-year. **Coerce** is the number of *coercive events*, which include not only acts of overt violence, but also acts like confiscations and forced relocations. This subset of DSAs does not include legal changes like censorship laws, verbal threats, and abuse of powers. **Attack** counts only violent actions such as assassinations, sieges, executions, and kidnappings. Across our dataset, SPEED counts 8123 DSAs, 6757 of which are 'coercive' and 4078 are coded as 'state attacks.'[8] Nearly two-thirds of the observations have zero DSAs. Only one in five country-years registers an act severe enough

[6] This is not to say that these measures do not relate to the likelihood of rebellion, but that they represent underlying conditions that make it more or less likely in the first place. They are not measures of shifting practices in anticipation of rebellion.

[7] These data are available for download at https://clinecenter.illinois.edu/project/human-loop-event-data-projects/SPEED.

[8] **DSA** is the count of all DSAs (type 1-5), **Coerce** accounts for DSAs of type 3-5, and **Attack** is the count of DSAs coded as type 4 (Cline Center for Democracy, 2014).

to qualify. In other words, this data uses a high threshold for identifying acts of repression. We might prefer a more inclusive definition, but the known data collections of similar breadth and a lower bar for inclusion are too time-limited to have enough inferential power, given the temporal limitations of the oil data we use. We take the natural log of the disruptive event counts (after adding 1) to account for the skewness.[9]

We measure oil discoveries with data from Bell & Wolford (2015), who construct a measure based on US Energy Information Administration (EIA) annual reports on international oil and gas production. The measure begins with a country's proven oil reserves[10] in year t and subtracts the estimated reserves from year $t-1$ to calculate the size of newly discovered reserves since the prior year. They subtract the gallons produced in the prior year from this total: for the discovery to be an increase in potential capacity, there must be more reserves than the oil produced and in reserve in the prior year. They divide by oil reserves in the previous year to yield the percentage increase, which captures a find's size compared to what the state already has; a discovery may be a large shift for a country with little production but a drop in the bucket for Venezuela or Iraq. Oil discovery size is defined as (*ibid.*, 522):

$$\max\left\{0, \ln\left(\frac{\text{Reserves}_t - (\text{Reserves}_{t-1} - \text{Production}_{t-1})}{\text{Reserves}_{t-1}} + 1\right)\right\}.$$

Our treatment converts this measure into a dichotomous indicator equaling 1 if the value is positive and 0 otherwise. This improves the attainable balance in the matching process.

[9] Robustness checks using the CIRI, PTS, and IDEA data to measure repression yield consistent results with those presented here, as reported in the Supplemental Appendix.

[10] Proven oil reserves are the amount of oil that can be extracted with reasonable certainty (approaching 90% certainty).

By including even small discoveries in a '1', we bias against finding a relationship with repression, since these small finds would not trigger rebellion.

The EIA identifies discoveries when new oil fields are identified, estimates pertaining to known fields are reevaluated, or when new technology makes possible the development of long-known but previously inaccessible deposits. Each means of discovery promises to increase state wealth and the capacity to suppress rebellions. The largest discovery in the dataset occurred in Canada in 2003, where new technological advancements allowed the government to dramatically increase its estimate of how much oil could be extracted from the tar sands of northern Alberta. This was a large discovery in a major producer of oil. Large shifts can also occur when a very small player in the international oil market makes its first notable discovery. Israel's announcement of a small oil discovery in the early 1980s generated widespread international attention. The *New York Times* raised the possibility that this could dramatically change geopolitics in the region, though Israel's discovery was many thousands of times smaller than the Alberta tar sands.

Neither of these discoveries prompted repression because our hypothesis is conditional: we expect oil discoveries to increase repression *only where states are not already powerful*, so that a marginal increase in revenue would substantially alter the future distribution of power between the government and potential rebels. Because we cannot measure absolute or relative state power directly, we adopt two measures that approximate state capacity. Bell & Wolford's (2015) primary measure is logged GDP per capita, **lnGDPpc**, offers a comprehensive account of a country's wealth and level of development. Though imperfect, it adequately captures the resources a state has at its disposal and correlates strongly with other approaches (Hendrix, 2010). Many popular alternatives, including tax extraction

rates, exaggerate the power of resource-rich rentier states, which is especially problematic for a study of oil discovery. We draw our measure of GDP, recorded in 2005 USD, from the Penn World Tables (Heston et al., 2009).

Recognizing the drawbacks of this general measure of capacity, we also estimate models that measure capacity with per-solder military spending. Measures of military strength can be ill-suited for measuring power because states invest most heavily when armed conflict is imminent or ongoing, so they may capture conflict occurrence as well as state power. The evidence bears this out; countries with large (as a percentage of population) or well-funded (as a percentage of GDP) militaries tend to be poor or middle-income states in conflict-prone regions. But while states can increase military personnel or military spending, it is difficult for states to meaningfully increase both. For this reason, **Logged spending per soldier** is a more suitable measure of a state's capacity to resist an armed rebellion.[11] This variable, constructed from Correlates of War data on military size and spending (Singer et al., 1972), separates under-funded forces from those that are better equipped and prepared for war. We divide military spending by military personnel and take the natural log (after adding 1). This measure has more face validity than its constituent parts, with peaceful NATO members receiving some of the higher scores.

Combining the repression, oil discovery, and capacity data series yields a dataset that spans 148 countries from 1981-2005. Though oil discovery is plausibly exogenous to the use of repression, oil deposits—and which states discover them—are not randomly distributed. Comparing the values of the main variables between state-years with oil

[11] Our findings are robust to using measures of territorial and fiscal control from the Varieties of Democracy dataset; results are reported in the Supplemental Appendix.

discoveries with those without reveals an unbalanced pattern: the kinds of states that discover oil tend to be quite different from the kinds of states that do not. This presents difficulties for inference, since we cannot know if the discovery of oil causes repression or one of the other variables correlated with likely discovery. We use matching to pre-process the data, pairing state-years that are as alike as possible on all other dimensions of the data and differing only by whether oil is discovered in one of the paired state-year observations. Balance improvement reduces model dependence, increasing the reliability and efficiency of estimated causal effects (Ho et al., 2007; Imai et al., 2008). We report balance statistics in the Supplemental Appendix.

Since our hypothesis is conditional, we stratify the sample into 'high capacity' and 'low capacity' states, using mean values of logged spending per soldier and GDPpc as the distinguishing values.[12] We use coarsened exact matching (Iacus et al., 2009)[13] on each subset of data with a new oil discovery as the treatment, matching on a number of factors that may confound the relationship between oil discovery and reported repression events—factors that are plausibly correlated with and analytically prior to both variables. These include the presence of **Ongoing civil conflict**, which is among the strongest predictors of state repression (Hill & Jones, 2014) and may also stand in the way of finding

[12]Stratifying the sample prior to matching has several advantages. First, it allows us to analyze the conditional hypothesis without the added challenges of interpreting an interaction term. Second, doing so is the equivalent of blocking observations prior to treatment. By binning observations on the variable most likely to introduce bias by its missingness—capacity—and *then* performing coarsened exact matching, we reduce the effect of missingness on the inferences we make as to causal effects. Matching on subgroups minimizes the bias introduced from missing data that is not missing at random (Malla et al., 2017; Iacus et al., 2019; King & Nielsen, 2019). This approach allows us to improve the validity of inferences without multiple imputation, which in the case of non-randomly missing data can introduce more bias than listwise deletion (Pepinsky, 2018).

[13]Of several possible matching algorithms, coarsened exact matching yielded the greatest percent improvement in balance. It has lower risk of imbalance and bias than propensity score matching and comes close to a fully blocked treatment assignment (Iacus et al., 2019).

new oil reserves. This variable equals 1 in country-years that have ongoing conflicts according to the Uppsala Conflict Data Project's Armed Conflict Dataset (Themnér & Wallensteen, 2012). We use EIA data to control for **Lagged oil production**, which we measure per capita to approximate the importance of oil production to a country's economy. The more dependent a government is on oil production, the more willing it is to repress its citizens (DeMeritt & Young, 2013; Ross, 2012) *and* discover more oil. Finally, we include **DSAs in the previous year** to account for previous levels of repression. The appendix provides balance statistics for each strata before and after matching, including variable means for both control and treated observations and the number of observations in each sample.

Analysis

We estimate the effect of oil discoveries on three different forms of repression. The data is split into two sub-samples—state-years that are 'high capacity' (at or above the mean value) and those that are 'low capacity' (below the mean value)—and matched within these two subsets with oil discovery as the treatment. We compare high-capacity states that discovered oil to high-capacity states that did not and, separately, low-capacity states that discovered oil to low-capacity states that did not, but we do *not* directly compare high capacity states to low capacity states. This is consistent with our hypothesis, which stipulates that there should be no difference in repression among high capacity states that do and do not discover oil, but there should be a difference in repression between low-capacity states that do and do not discover oil.

Non-parametric analysis helps to identify the general causal relationship between oil discovery and repression. Table 1 reports the results of difference-of-means tests on the two strata, using **Logged spending per soldier** as the measure of state capacity. Each row reports the mean value of the respective dependent variable for the control (no discovery) and treated (discovery) groups, with a t-test reported below the means indicating whether they are statistically distinct from one another. We should see no statistically discernible difference unless the discovery of oil meaningfully affects government repression. For high-capacity state-years (the top half of Table 1), the mean number of DSAs is not statistically distinguishable by treatment status. Observed repression is not meaningfully different for states that are similar but for their presence of an oil discovery. In contrast, low-capacity state-years differ discernibly by treatment status. Regardless of how we define the dependent variable, low-capacity states that have newly discovered oil repress more than those without a discovery. Low-capacity states without a discovery exhibit a mean number of 1.45 DSAs in a given year, but those that discover oil exhibit a mean number of 1.78 DSAs.[14]

We turn to parametric analysis to control for post-treatment confounding variables. In three panel regression models with country-level fixed effects, outcome variables are the logged number of DSAs, coercive DSAs, and attack DSAs. We argue that increased repression is a direct result of discovering oil, but an observationally equivalent explanation could be that the government receives an influx of investment, aid, or money from other entities based on the promise of future wealth after discovering oil, and that

[14]This is a meaningful increase, bearing in mind the high threshold required to be included as a disruptive act in the SPEED data. Two-thirds of all observations in our dataset do not experience a DSA, and one-third of those that do have only one reported.

Table 1: Difference of means tests on strata delineated by capacity to repress

Dependent variable	Subsample mean without discovery	Subsample mean with discovery
	Above-average spending per soldier	
DSAs (ln)	0.373	0.401
	t =-0.6219, df =936.84, p-value=0.5347	
Coercive DSAs (ln)	0.197	0.219
	t =-0.586, df =910, p-value=0.558	
Attack DSAs (ln)	0.127	0.108
	t =0.658, df =837.22, p-value=0.511	
	Below-average spending per soldier	
DSAs (ln)	0.369	0.575
	t =-4.479, df =778.57, p-value=0.000	
Coercive DSAs (ln)	0.206	0.340
	t =-3.358, df =745.9, p-value=0.001	
Attack DSAs (ln)	0.132	0.195
	t =-2.111, df =797.42, p-value=0.035	

these resources—not the expectation of pre-wealth rebellion—facilitate centralization and increased repression. If this were the case, the discovery of oil would be spurious to the increase in repression; what really matters is the influx of outside funding. We include data on yearly inflows of foreign direct investment from the World Bank's World Development Indicators (2017). These data measure annual FDI inflows as a percentage of the receiving country's GDP. If oil drives foreign investment which causes the increase in repression, we would expect DSAs to be positively and significantly related to FDI inflows, and there should be no relationship between oil discoveries and DSAs. Finally, we include year fixed effects to address the time trend linking the growth in international media and changing norms around repression to higher global counts of repressive events (Fariss, 2014).

We begin with the models using GDP per capita as the measure of state capacity. Estimates for the high-capacity subsample can be found in odd columns of Table 2, and the

estimates for the low-capacity subsample are in even columns. Estimated coefficients and 95% confidence intervals are depicted in whisker plots in Figure 1.

Table 2: Matched panel OLS models using GDPpc as state capacity to repress

Dependent variable:	**Log DSAs (All)**		**Log coercive DSAs**		**Log attack DSAs**	
Capacity as GPDpc:	high	low	high	low	high	low
	1	2	3	4	5	6
Independent variables:						
Oil discovery	−0.034	0.130*	−0.015	0.115**	−0.018	0.097**
	(0.048)	(0.052)	(0.042)	(0.043)	(0.033)	(0.037)
Ongoing conflict	0.199*	0.639**	0.210**	0.560**	0.258**	0.491**
	(0.085)	(0.064)	(0.075)	(0.054)	(0.058)	(0.046)
Lagged oil production	−0.184	−1.430	−0.100	1.562	−0.125	1.205
	(0.126)	(1.472)	(0.111)	(1.228)	(0.086)	(1.050)
Lagged log DSAs	0.266**	0.284**				
	(0.031)	(0.029)				
Lagged log coercive DSAs			0.204**	0.300**		
			(0.032)	(0.028)		
Lagged log attack DSAs					0.161**	0.258**
					(0.032)	(0.029)
FDI (% of GDP)	−0.007	−0.003	−0.006	0.0004	−0.003	0.003
	(0.005)	(0.003)	(0.004)	(0.003)	(0.003)	(0.002)
Observations	1,223	1,126	1,223	1,126	1,223	1,126
R^2	0.077	0.187	0.047	0.211	0.052	0.190
Adjusted R^2	0.018	0.131	−0.015	0.157	−0.009	0.135
F-statistic (df = 5; 1148)	18.225**	67.489**	17.755**	80.629**	24.752**	73.618**

Note: †p<0.1; *p<0.05; **p<0.01. High capacity states are those with GDPpc above the full sample mean while low capacity are those below the mean. Each subsample was pre-processed with coarsened exact matching.

Consider first the estimates for high-capacity state-years. Oil discoveries are not associated with an increase in repression in high-capacity countries, regardless of which measure of repression we use. FDI is unrelated to repression in high-capacity countries. This is not enough to rule out foreign money as a potential confound (as it could have a similar differential effect to oil), but these results are inconsistent with the claim that foreign investment that may be correlated with discovery leads to state violence. Next,

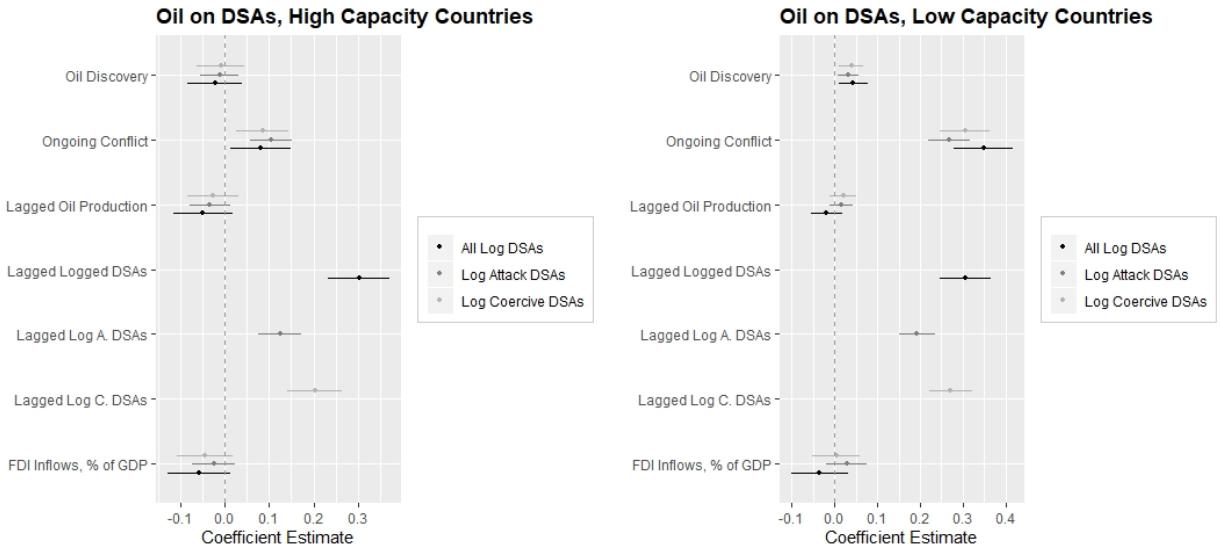

Figure 1: Whisker plots illustrating estimated effects of variables on DSAs, with 95% confidence intervals, using above and below mean logged GDPpc.

low-capacity state-years see a statistically discernible increase in repression upon discovery of oil. We can clearly see in these results that there is a difference between states that discover oil and those that do not. Oil discoveries lead to increases in all types of DSAs. Also important is the fact that, again, FDI is not discernibly related to state violence. These models show that oil discoveries and differences in capacity are what drive increases in state violence, not influxes of FDI.

One could argue that the results in Table 2 are a consequence of using GDP per capita as a measure of state capacity. To assuage these concerns, we present models using data using **Logged spending per soldier** to separate the high- and low-capacity states at the mean. We utilize the same matching procedure and again run six panel regression models with country-level fixed effects; three for high-capacity state-year (odd columns) and three for the low-capacity state-years (even columns). The results are presented in Table 3 and depicted in Figure 2.

Table 3: Matched panel OLS models using logged spending per solider as state capacity to repress

Dependent variable:	**Log DSAs (All)**		**Log coercive DSAs**		**Log attack DSAs**	
Capacity as spend/soldier:	high	low	high	low	high	low
	1	2	3	4	5	6
Independent variables:						
Oil discovery	0.001	0.192**	0.043	0.129*	−0.002	0.071†
	(0.044)	(0.057)	(0.039)	(0.050)	(0.030)	(0.042)
Ongoing conflict	0.459**	0.541**	0.442**	0.436**	0.450**	0.420**
	(0.102)	(0.063)	(0.089)	(0.056)	(0.070)	(0.047)
Lagged oil production	−0.198†	−3.037**	−0.111	−2.005**	−0.176*	−1.160†
	(0.106)	(0.827)	(0.093)	(0.731)	(0.073)	(0.614)
Lagged log DSAs	0.262**	0.258**				
	(0.032)	(0.028)				
Lagged log coercive DSAs			0.159**	0.279**		
			(0.032)	(0.028)		
Lagged log attack DSAs					0.086**	0.223**
					(0.032)	(0.029)
FDI (% of GDP)	−0.004	−0.002	−0.003	0.001	−0.001	0.004
	(0.004)	(0.004)	(0.003)	(0.004)	(0.002)	(0.003)
Observations	1,064	1,231	1,064	1,231	1,064	1,231
R^2	0.099	0.128	0.057	0.134	0.076	0.131
Adjusted R^2	0.012	0.055	−0.034	0.062	−0.013	0.058
F-statistic (df = 5; 1148)	30.663**	39.524**	25.548**	34.902**	36.092**	22.148**

Note: †p<0.1; *p<0.05; **p<0.01. High capacity states are those with logged spending per solider above the full sample mean while low capacity are those below the mean. Each subsample has been pre-processed with coarsened exact matching.

Using this alternative—arguably more precise—measure of a government's capacity to respond forcibly to popular challenges, the same conditional pattern emerges. States that already have a better-than-average capacity to respond to challenges see no statistically discernible difference in repression upon discovery of oil. Potential rebels already expect these governments to respond to challenges in full, and discovering oil does not change that expectation. In contrast, states with limited capacity to contain threats see a meaningful increase in their use of DSAs after discovering oil, whether we consider all acts, coercive ones, or violent attacks on their own. For these states, potential challengers expect a short

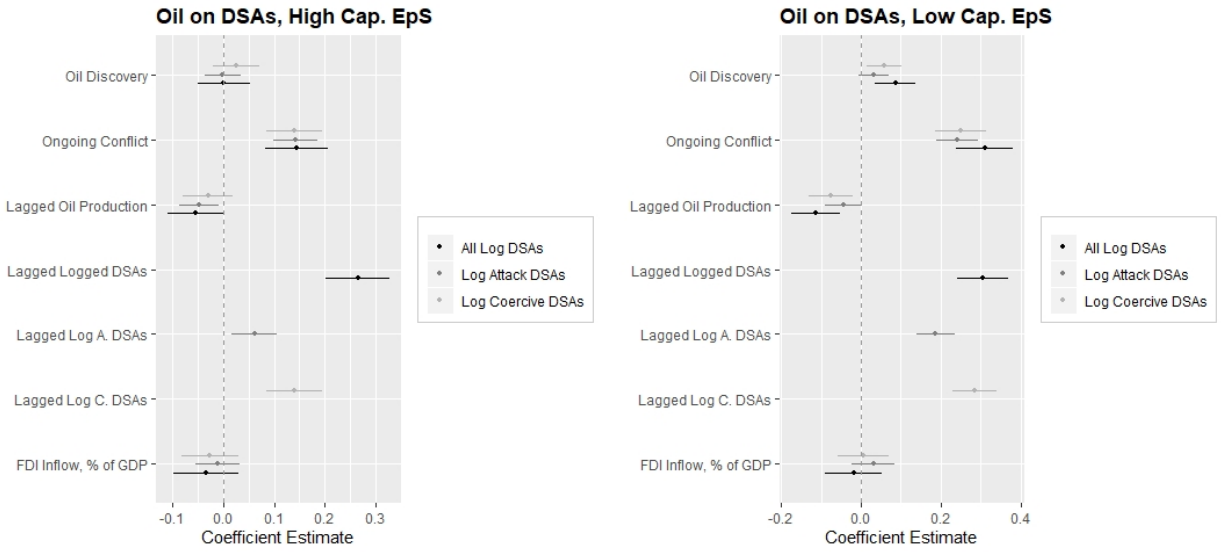

Figure 2: Whisker plots illustrating estimated effects of variables on DSAs, with 95% confidence intervals, using above and below mean logged spending per soldier.

window of advantage before the state gains more resources to put them down, and the government attempts to stave off preventive challenges with early spikes in repression.

These findings are consistent with a story that a change in expectations over a government's future power that creates an incentive for popular rebellion will predictably motivate authorities to repress preventively. This does not imply that it always works: the discovery of new oil reserves is also associated with an increase in civil war incidence (Bell & Wolford, 2015), suggesting leaders were unable to quell rebellion in the wake of discovery.[15] But the promise of new resources leads states with a changing status quo capacity for control to repress to protect that future shift.

[15]Repression has heterogenous long-term effects on state consolidation and control (Osorio et al., 2018).

Conclusion

When power threatens to shift in a government's favor, nascent rebels may initiate domestic conflict to prevent it from shifting against them. State authorities have an incentive to repress to prevent coordinated action and undermine the collective capacity to rebel. To distinguish repression used in anticipation of challenges from repression used in the state's normal environment, we examined countries that have discovered oil deposits that would alter a government's resources and capacity for waging civil war in the future. Preventive and responsive repression are observationally equivalent but different in their relationship to popular challenges, requiring a careful theoretical and empirical identification strategy to pinpoint the preventive motivation (cf. Ritter & Conrad, 2016). Oil discoveries—an environmental feature typically exogenous to domestic conflict processes—offer such an identification strategy. The delay between discovery of and access to the resources creates a common expectation that power will shift in the government's favor, incentivizing early rebellion. The anticipation of rebellion motivates authorities to repress preventively. By focusing on country-years with new finds, we isolate determinants of looming civil war, thereby better understanding the motives and processes of repression and domestic conflict.

In countries where oil discoveries are expected to shift power in the government's favor, states increase repression. Our theory suggests that this repression aims at nipping nascent rebellions in the bud. We uncover patterns in the data that support the predictions of this theory: low-capacity states that would benefit from a large discovery repress more in its wake, while high-capacity states experience no relationship between oil finds and

repression. These findings should increase our confidence that the commitment problem that eliminates mutually acceptable bargains predicts not only the onset of civil war but also costly activity short of full-scale conflict.

The theory and exogenous predictor of the risk of civil war help clarify part of the consistent but confusing relationship between repression and civil war. Repression is used in a way consistent with attempts to prevent rebellion or improve government prospects in civil war. This does not imply that repression does not also provoke civil war in some cases or follow civil war in others. Civil war may lead to an increase in repression after rebellion by a similar logic, perhaps to prevent joiners from enlisting in or supporting the rebellion. Despite these many channels, we have presented evidence consistent with the claim that states do repress ex ante to prevent, stifle, or stymie rebellion, clarifying one aspect of repression's complicated relationship to civil war.

When else might we expect governments to repress preventively? Repression is particularly common when facing populations that are prone to solving the collective action problems of dissent, such as young persons and racial or ethnic groups with grievances. Governments may expect that some policy changes will provoke certain groups or even the whole population, leading them to repress to prevent backlash. Though some of these triggers are related to government action, others may represent opportunities for identification as we have done here. Exogenous developments that may cause policy change, from the collapse of a great power patron to an impending withdrawal of foreign aid, could predict preventive repression.

Our theory and evidence are consistent with research that links oil wealth to repression, but they diverge on the timing of and reasoning behind the relationship.

Scholarship on natural resource endowments argues oil leads to more repression because states with large endowments have independent income, reducing dependence on income from taxes. In these circumstances, the government can repress the population as it likes, leading to higher repression than is feasible for more constrained states (DeMeritt & Young, 2013; Conrad & DeMeritt, 2013). In that account, oil wealth is a permissive condition that enables repression that would not occur in its absence, but it does not *prompt* specific instances of repression. Building on this earlier work, we contend that oil (or any other large resource discovery that promises a windfall for government coffers) can lead to repression even before it provides wealth, prompting violence by virtue of the announcement of its discovery.

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