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Beyond Divide and Rule: Weak Dictators, Natural Resources and Civil Conflict*

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Abstract

We propose a model where weak rulers have incentives to let ethnically divided countries plunge in civil war. Allowing inter-group fighting reduces production - and hence the tax base - but enables the ruler to devote more resources to increasing the tax rate. This mechanism is increasingly salient with larger amounts of natural resources, especially if these are unequally distributed across ethnic groups. We validate the theoretical predictions using cross-country data, and show that our empirical results are robust to controlling for the usual determinants of civil war incidence, and to using various proxies for the ruler's relative weakness and for the presence of natural resources.

Keywords: Dictatorship; Civil War; Natural Resources; Ethnic Groups; Inequality
JEL: D74, Q34, H2

"While Two Dispute, the Third Enjoys". Popular Italian proverb.

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1 Introduction

In many countries around the world, autocrats impose highly extractive policies on their population and yet manage to remain in power for long periods of time. Surprisingly, such practices have also been observed in countries plagued by internal civil strife in spite of the potential threat these conflicts constitute to the government's stability (Reno 1998). The weakly institutionalized environment characterizing these societies implies that instruments available to balance the power of the ruling elites are limited and highly dysfunctional: legislators and influential interest groups who all play a key role in the regime's stability are typically co-opted by the ruling elite (Acemoglu et al. 2010, Egorov and Sonin 2011, Gilli and Yi 2015, Montagnes and Wolton 2016, Auriol and Platteau 2017). Such regimes have been studied by scholars who emphasize the web of personal ties and targeted transfers which guarantee the stability of the elites (Bates 1981, Jackson and Rosberg 1984).

Acemoglu et al. (2004) explore a strategy - which they call *Divide-and-Rule* - adopted by rulers who seek to implement more profitable kleptocratic policies by weakening the opposition. They propose a model whereby the ruler can be overthrown only if a sufficiently large opposition is mobilized. The ruler prevents this collective action by providing selective incentives, thereby making it impossible for a successful challenging coalition to emerge.

Padro i Miquel (2007) considers an alternative strategy of regime survival implemented by rent-extracting autocrats in ethnically divided societies. The proposed mechanism rests on what the author terms *The Politics of Fear*. "[T]he fear to fall under an equally inefficient and venal ruler that favors another group is sufficient to discipline supporters" (Padro i Miquel 2007: 1260). In other words, by dampening the livelihood of the other ethnic groups, the ruler obtains support from his own group and still manages to extract rents from them. The co-ethnics' obedience is rooted in the fear of receiving a worse treatment under the potential rule of a leader from a different ethnic background.

A distinct, more extreme mechanism of regime survival, not yet highlighted in the political economy literature, arises if rulers deliberately refrain from letting civil strife among ethnically divided groups escalate, in order to extract more from them Following this basic idea, in this paper we propose a model whereby an autocrat rules over an ethnically divided society. The ethnic groups, each controlling part of the country's natural resources, may decide to initiate a civil conflict to appropriate a larger share of the resources. The ruler owns some state resources and faces a trade-off regarding the allocation of these resources between military power that shields natural resources from civil conflict, and the improvement of the taxing bureaucracy. We characterize the equilibrium conditions under which it is in the interest of the ruler to let a conflict escalate among ethnic groups within the boundaries of his country. In view of maximizing his tax proceeds, the ruler may prioritize investing in his taxing bureaucracy which increases the taxing capacity. The cost of a higher tax rate is that as the conflict escalates, ethnic groups allocate increasingly more productive resources to fighting, thus reducing the ruler's tax base.

Our simple model delivers two predictions. First, we show that resource-rich countries with weak rulers experience more intense civil war. This finding echoes the literature demonstrating that resources constitute a curse in the presence of weak institutions (e.g. Mehlum et al. 2006). The mechanism underlying our result differs, however: when the ruler's income is mainly derived from taxing natural resources, the cost of inter-ethnic violence is lower since violence affects especially labor production. In turn, the potential gains under conflict are large since the ruler improves his taxing capacity, while experiencing relatively minor tax base losses.[1] Second, civil conflict is more likely if resources are

[1]In a somehow related finding, Aguirre (2016) demonstrates that weak institutions may emerge at equilibrium when local rulers in a multi-district territory refrain from improving peace-promoting political institutions because of the low likelihood of conflict being targeted against their own district.

distributed unequally among ethnic groups. In the presence of higher inequality, the disadvantaged part of the population has higher incentives to fight for a more equal redistribution of the wealth.

An extensive literature identifies several channels tying natural resources to conflict. First, natural resources fuel the 'rapacity' channel whereby interest groups are more keen on violently appropriating these (Collier and Hoeffler 1998, Ross 2006, 2015, Lei and Michaels 2014). Second, more resources may soften the government's budget constraint, thereby increasing state capacity and the associated capacity to tame potential opponents (Fearon and Laitin 2003, Bazzi and Blattman 2014). While Boschini et al. (2007) and Besley and Persson (2011) show the direct relationship between institutional weaknesses and/or low state capacity, and conflict, a more disaggregated look at the data reveals that resources may fuel local conflict irrespective of institutional quality (Berman et al. 2017). Lastly, the strategic incentives of all parties vying for the control of wealth are affected by the amount of available resources. In resource-rich polities more groups attempt violently appropriating the natural wealth, eventually reducing the aggregate cooptation cost to maintain peace (Bjorvatn and Naghavi 2011). Alternatively, in such contexts rulers may increasingly seek the support of counter-elites while stepping up repression of the population at large, again resulting in lower levels of conflict (Bove et al. 2017). With respect to this literature we propose an additional channel linking natural resources to conflict, namely that in resource-rich societies, an autocratic ruler may find an internal conflict an acceptable cost to bear in terms of foregone tax base, in order to maximize the tax rate.

The incentives for a ruler to exploit the ethnic divide of a society have already been addressed in the literature (Snyder and Ballentine 1996, Fearon and Laitin 2000, Verwimp 2003, Glaeser 2005). Similarly, the salience of ethnic divisions in triggering civil conflicts has been extensively investigated and has generated mixed support (Montalvo and Reynal-

Querol 2005, Hodler 2006, Esteban et al. 2012a, 2012b, Jha 2013, Mitra and Ray 2014, Anderton and Carter 2015). Some scholars have underlined the importance of correctly measuring ethnic diversity and have shown the salience of horizontal inequalities, i.e. inequalities that coincide with identity-based cleavages, in explaining civil conflict (Buhaug et al. 2008, Østby 2008, Cederman et al. 2011). Although our implementation of ethnic inequality closely follows the concept of horizontal inequality, existing studies explain ethnic conflicts by exploring only the incentives of the parties directly involved in the dispute (Caselli and Coleman II 2013, Esteban and Ray 2008, 2011, Esteban et al. 2015). Instead, we emphasize a mechanism that highlights the incentives of an autocratic ruler above and beyond his ethnic identity. Indeed, the private interests of a rent seeking autocrat are not necessarily aligned with those of his ethnic base. Considering the ruler as a separate agent is an abstraction that helps us explore the proposed mechanism theoretically.

We provide robust cross-country empirical evidence which is consistent with our main theoretical predictions. In particular, using data over the period 1988-1999 on conflict incidence, the presence of oil and diamond fields, the type of political system and the presence of distinct ethnic groups, we show that the likelihood of autocratic and ethnically-divided countries experiencing civil war is higher when weak rulers govern states endowed with natural resources. Bearing in mind that our theoretical predictions relate to the intensity of conflict, the empirics confirm our theory to the extent that events are coded as civil war occurrences above a threshold level of conflict intensity. Moreover, using GIS methods to identify the share of resources under the control of each ethnic group within a country, we also show that the risk of a civil war is further exacerbated when resources are unequally distributed across ethnic groups. These findings are robust to controlling for the variables identified by the recent literature on civil war as the most robust correlates of conflict, as well as to the inclusion of continent and year fixed effects.

The rest of the paper is organized as follows. We develop the theoretical model in section 2 and present the empirical analysis in section 3. Section 4 concludes.

2 The Model

2.1 The setup

We consider a country populated by k ethnic groups described by a set $K = \{1, 2, \ldots k\}$ and a ruler G. Each group $i \in K$ is composed of n agents who control the natural resources located on their own territory. Accordingly, under peace group i owns a share σ_i of the country's total resources R, with $\sum_{i \in K} \sigma_i = 1$. The ownership of natural resources, however, can be modified through conflict. Each ethnic group decides on the manpower to allocate to the fighting activity, f_i, given that every individual is endowed with one unit of time. The non-fighting time, $n - f_i$, is used in the production of consumables given a linear production technology. We further assume that $n > R/k$ in order to focus the analysis on the interior solution of the problem where the mechanism we identify is salient.

The ruler decides on the allocation of state resources, normalized to 1, between military power (a), which is used to protect natural resources from illicit appropriation, and the creation of an efficient taxing bureaucracy $(1 - a)$.[2] More specifically, the tax rate $\tau(a)$ is maximized if all resources are devoted to that goal, i.e. $a = 0$.[3] In that instance all the leader's resources are used to maximize taxation's efficacy. We further assume that $\tau(a)' < 0$, $\tau(a)'' < 0$, and $\tau(1) = 0$. By deploying part of the state apparatus around

[2]The literature models state capacity as the capacity of the state to extract revenues from the population, in turn allowing for the development of a stronger security apparatus (e.g. Besley and Persson 2011). This complementarity between taxation and military power fits well a dynamic analysis of the development of states. Our short run analysis whereby a trade-off between these two types of investments necessarily arises, can be seen as better characterizing rapacious regimes facing uncertainty regarding their survival.

[3]We adopt the short notation $\tau(a)$ instead of $\tau(1 - a)$ throughout the model, so that $\underset{a}{\operatorname{argmax}} \tau(a) = 0$.

the resource-rich areas, an investment a in military power safeguards a share $\gamma\lambda(a)$ of the natural resources, which will remain uncontested should a civil conflict break out, with γ capturing the military efficiency (strength) of the ruler. We assume $\lambda(a)' > 0$, $\lambda(a)'' < 0$, and $\lambda(0)' \to \infty$.

If group i decides to allocate manpower to fighting, $f_i > 0$, this force can be used to loot the resources of the other ethnic groups, in which case we have a conflict.[4] We consider a simple Tullock contest success function to describe the conflict technology. Accordingly, for a vector $\mathbf{f}$ of manpower devoted to fighting, the likelihood that group i is victorious is given by $\frac{f_i}{\sum_{j\in K} f_j}$, provided $\sum_j f_j > 0$, and $1/K$ otherwise.

Given the above description of the agents' actions, we now turn to the associated payoffs. Ethnic group i's payoff under conflict is given by:

$$U_i^C = (1-\tau(a))\left(\frac{f_i}{\sum_{j\in K} f_j}(1-\gamma\lambda(a))R + \gamma\lambda(a)\sigma_i R + n - f_i\right) \tag{1}$$

While under peace, its payoff is given by:

$$U_i^P = (1-\tau(a))\,(\sigma_i R + n - f_i) \tag{2}$$

And the ruler's utility under the two respective scenarios equals:

$$U_G^C = \tau(a)\sum_{i\in K}\left(\frac{f_i}{\sum_{j\in K} f_j}(1-\gamma\lambda(a))R + \gamma\lambda(a)\sigma_i R + n - f_i\right) \tag{3}$$

And,

$$U_G^P = \tau(a)\sum_{i=1}^{K}(\sigma_i R + n - f_i) \tag{4}$$

Timing:

[4]We shall be referring to 'conflict' throughout the analysis, irrespectively of whether it is a low intensity or high intensity one.

The timing of the game is as follows:

1. The ruler decides the allocation of state resources between *taxing bureaucracy* and *military power* by choosing a.

2. The K groups simultaneously decide whether or not to initiate conflict, with conflict resulting if any group initiates it.

3. The K groups simultaneously decide the manpower to allocate to fighting activities. Production and taxation occurs and payoffs are distributed.[5]

We solve the game backwardly by looking at Subgame Perfect Equilibria.

2.2 Analysis

Stage 3

If group i expects conflict to be the outcome of the game, it maximizes (1) with respect to f_i, which yields the following first-order condition defining the optimal conflict effort in equilibrium:

$$\frac{\partial U_i^C}{\partial f_i} = (1-\tau(a))\left(\frac{\left(\sum_{j\in K} f_j - f_i\right)}{\left(\sum_{j\in K} f_j\right)^2}(1-\gamma\lambda(a))R - 1\right) = 0 \tag{5}$$

Notice that the problem's second-order condition below is satisfied whenever expression (5) holds:

$$-(1-\tau(a))\frac{2(\sum_{j\neq i} f_j - f_i)}{\left(\sum_{j\in K} f_j\right)^3}(1-\gamma\lambda(a))R < 0 \tag{6}$$

Eventually implying that there exists a unique f_i maximizing U_i^C.

[5]Our timing implicitly captures the virtual impossibility for a group to totally surprise another by arming secretly. As some information is very likely to reveal intentions, and given the time required to prepare for fighting, it is reasonable to assume a non-simultaneous timing. This timing has also been adopted among others by Beviá and Corchón (2010), and Corchón and Yildizparlak (2013).

Combining Condition (5) with the first order condition of any other player $j \in K$, we deduce that $f_i = f_j, \forall i, j \in K$. Consequently, the optimal manpower to allocate to conflict for any group i is given by:[6]

$$f_i^C = \frac{k-1}{k^2}(1 - \gamma\lambda(a))R \tag{7}$$

The utility of group i under conflict therefore equals:

$$U_i^{C*} = (1 - \tau(a))\left(\frac{(1 - \gamma\lambda(a))R}{k^2} + \gamma\lambda(a)\sigma_i R + n\right) \tag{8}$$

If group i expects peace to be the outcome, it sets $f_i^P = 0$, and its utility equals:

$$U_i^{P*} = (1 - \tau(a))(\sigma_i R + n) \tag{9}$$

Stage 2

In stage 2, any group i compares its peace payoff to the payoff from conflict, and accordingly decides to opt for conflict whenever the following inequality is verified:

$$U_i^{C*} = (1 - \tau(a))\left(\frac{(1 - \gamma\lambda(a))R}{k^2} + \gamma\lambda(a)\sigma_i R + n\right) > (1 - \tau(a))(\sigma_i R + n) = U_i^{P*}$$

$$\Leftrightarrow \sigma_i < \frac{1}{k^2}$$

Accordingly conflict ensues if:

$$\min\{\sigma_1, \sigma_2 \ldots, \sigma_K\} < \frac{1}{k^2} \tag{10}$$

Stage 1

[6]Notice that we have assumed that $n > R/k$, a sufficient condition for obtaining interior solutions. For $n \leq \frac{k-1}{k^2}(1 - \gamma\lambda(a))R \leq \frac{R}{k}$, the ethnic groups would devote all their resources, n, to the civil war, and the equilibrium conflict effort would then remain unaffected by marginal changes in resources or government strength.

In stage 1, if condition (10) is verified, the leader's optimization problem is given by:

$$\max_a \left\{ \tau(a) \left(\frac{(1-\gamma\lambda(a))R}{k} + \gamma\lambda(a)R + kn \right) \right\} \tag{11}$$

The associated first-order condition when omitting the a arguments in the derived functions for presentation reasons reads as:

$$\frac{\partial U_G^C}{\partial a} = \tau^{'} \left(\frac{(1-\gamma\lambda(a))R}{k} + \gamma\lambda(a)R + kn \right) + \tau(a)\gamma\lambda^{'} \left(1 - \frac{1}{k}\right) R = 0 \tag{12}$$

To show that this problem admits a solution, we verify that the second-order condition is satisfied:

$$\frac{\partial^2 U_G^C}{\partial a^2} = \left(\tau^{''} \left(\frac{1-\gamma\lambda(a)}{k} R + \gamma\lambda(a)R + kn \right) + 2\tau^{'}\gamma\lambda^{'} \left(1 - 1/k\right) R + \tau(a)\gamma\lambda^{''}(1 - 1/k)R \right) < 0 \tag{13}$$

With the sign of this expression following from the assumptions on functions $\tau(a)$ and $\lambda(a)$. Given the nature of the problem, this condition is also sufficient to deduce that the game admits a unique interior solution that we denote by a^*.

If condition (10) is violated, then $a^* = 0$ and the leader maximizes the tax rate.

Notice that in choosing the optimal allocation of resources, the ruler is considering the effects on the aggregate tax revenue. Increasing the investment in military strength induces a lower diversion of otherwise productive labor into fighting by the ethnic groups, thereby increasing the tax base. This, however, comes at the cost of a less efficient taxing bureaucracy, modeled as a lower tax rate. Depending on the values of the various parameters, the ruler may therefore find it optimal to accept a high intensity conflict to maximize his tax revenue.

3 Comparative statics results

Having shown that the game admits a unique equilibrium, we now investigate how the optimal allocation of resources by the ruler varies with respect to two key parameters of the model, namely the military strength of the ruler as measured by γ, and the level of resources R.

3.1 Military strength

To see the effect of the military strength on a^*, we denote $\partial U_G^C/\partial a$ as expressed in (12) by $\Psi(a)$ and then apply the implicit function theorem to obtain:

$$\frac{\partial a}{\partial \gamma} = -\frac{\frac{\partial \Psi}{\partial \gamma}}{\frac{\partial \Psi}{\partial a}}$$

Substituting the different components, we obtain:

$$\frac{\partial a}{\partial \gamma} = \frac{\frac{\tau^{'}(R/k-kn)}{\gamma}}{\frac{\partial^2 U_G^C}{\partial a^2}} > 0 \tag{14}$$

With the sign following from the fact that the denominator is the second-order derivative of the ruler's original problem, which has been shown to be negative.

Hence, weaker rulers will devote relatively less resources to the protection of natural resources. The intuition behind this is relatively straightforward. The ruler needs to choose the optimal mix between investments in military strength, which increases the tax base, and investments in the taxing bureaucracy, which increases the tax rate. A *reduction* in γ, by decreasing the marginal return of investing in military strength, commands a reallocation of resources to the taxing bureaucracy. This in turn leads to a higher intensity conflict in the country, as shown by analyzing the derivative of (7) with respect to γ:

$$\frac{\partial f^*}{\partial \gamma} = -\frac{k-1}{k^2}\left(\lambda(a) + \gamma\lambda(a)'\frac{\partial a}{\partial \gamma}\right) < 0 \tag{15}$$

To sign (15) notice that the first term of the bracketed expression is positive, and it captures the direct effect of the ruler's military strength on conflict effort: when resources are better protected, the pie at stake from the ethnic groups' perspective is smaller, thus inducing them to devote less effort to fighting at equilibrium.

The second term captures the effect of the strategic reaction of the ruler to a stronger military power. Combining the result in (14) with the fact that $\lambda(a)' > 0$, we deduce that this term is also positive.

3.2 Natural resources

To see the effect of natural resources on the optimal allocation of state resources, a^*, we again apply the implicit function theorem on (12) to obtain:

$$\frac{\partial a}{\partial R} = \frac{\tau' kn/R}{\frac{\partial^2 U_G^C}{\partial a^2}} > 0 \tag{16}$$

With the positive sign following from the fact that the denominator is again the second-order derivative of the ruler's original problem, which is negative, and the numerator is negative since $\tau' < 0$. Hence, in natural resource-rich countries rulers will devote relatively more resources to shielding them from conflict. As in the previous section, we are interested in the overall effect of the ruler's decision on conflict intensity. Accordingly we can study the sign of the derivative of (7) with respect to R:

$$\frac{\partial f^*}{\partial R} = \frac{k-1}{k^2}\left(\underbrace{(1-\gamma\lambda(a))}_{+} - \underbrace{\gamma\lambda(a)^{'} R\frac{\partial a}{\partial R}}_{+}\right)$$

This expression is composed of two terms having opposite effects on the equilibrium conflict effort of ethnic groups. The first (positive) term captures the ethnic groups' enhanced incentives to fight over a larger pie. The second - mitigating - effect, captures the effect of the ruler's strategic re-allocation of resources in the presence of more natural resources. The sign of the second expression is positive because both $\lambda(a)^{'}$ and $\partial a/\partial R$ are positive, as shown above. Since the net effect of higher R on the equilibrium fighting effort of the ethnic groups depends on the relative concavity of the various functions considered, without further assumptions we are unable to draw clearer predictions.

3.3 Regime strength and natural resources

So far we have shown that weak rulers tend to protect less natural resources and that this leads to more conflict. Given the nature of the mechanism presented, it is interesting to analyze how the allocation of resources in response to the ruler's strength depends on the country's natural resource endowment. Formally, we therefore study the sign of the following cross-derivative:

$$\frac{\partial^2 a}{\partial R \partial \gamma} = -\tau^{'}\frac{kn}{R}\frac{\left[(1-1/k)\, R(\lambda\tau^{''} + 2\tau^{'}\lambda^{'} + \lambda\tau^{''})\right]}{\left(\frac{\partial^2 U_G^C}{\partial a^2}\right)^2} < 0 \tag{17}$$

To sign the above expression notice that the denominator is positive and, since $\tau^{'} < 0$ the first multiplicative term is also positive. Within the squared bracket, the first bracketed term is positive, and the three terms in the last bracket are all negative.

Once more, we also replicate the analysis on conflict intensity. Accordingly, we can study the sign of the cross-derivative of (7) with respect to γ and R:

$$\frac{\partial^2 f^*}{\partial R \partial \gamma} = -\frac{k-1}{k^2}\left[\lambda(a) + \lambda^{'} R\frac{\partial a}{\partial R} + \gamma\left(\lambda^{'} R\frac{\partial a}{\partial \gamma} + \lambda^{''} R\frac{\partial a}{\partial R}\frac{\partial a}{\partial \gamma} + \lambda^{'} R\frac{\partial^2 a}{\partial R \partial \gamma}\right)\right] < 0 \tag{18}$$

The squared bracketed term is composed of 5 terms. The first two terms are positive (see condition (16) for the second term). To sign the next three terms we thus proceed in steps.

Combining the third and fourth terms we show that their sum is necessarily positive if the following inequality is verified:

$$\lambda^{'} + \lambda^{''}\frac{\partial \alpha}{\partial R} > 0$$

Replacing for $\frac{\partial \alpha}{\partial R}$, we obtain:

$$\lambda^{'} + \lambda^{''}\frac{\tau^{'} kn}{\frac{\partial^2 U_G^C}{\partial a^2}} > 0$$

$$\Leftrightarrow \lambda^{'}\frac{\partial^2 U_G^C}{\partial a^2} < -\lambda^{''}\tau^{'} kn \tag{19}$$

Using the definition of Ψ in (12), we obtain:

$$\lambda^{'} = -\tau^{'}\frac{\left[(1-\gamma\lambda(a))\frac{R}{k} + \gamma\lambda(a)R + kn\right]}{\tau(a)\gamma R\,(1-1/k)}$$

And substituting this expression in (19) yields:

$$-\tau^{'}\frac{\left[(1-\gamma\lambda(a))\frac{R}{k} + \gamma\lambda(a)R + kn\right]}{\tau(a)\gamma R\,(1-1/k)}\frac{\partial^2 U_G^C}{\partial a^2} < -\lambda^{''}\tau^{'} kn \tag{20}$$

$$\Leftrightarrow \left[(1-\gamma\lambda(a))\frac{R}{k} + \gamma\lambda(a)R + kn\right]\frac{\partial^2 U_G^C}{\partial a^2} < \lambda^{''} kn\tau(a)\gamma R(1-1/k) \tag{21}$$

Notice that all terms of $\frac{\partial^2 U_G^C}{\partial a^2}$ as defined in equation (13) are negative. Therefore, to establish (21) it is sufficient to show that:

$$\left[(1-\gamma\lambda(a))\frac{R}{k}+\gamma\lambda(a)R+kn\right]\tau(a)\gamma\lambda^{''}(1-1/k)R < \lambda^{''}kn\tau(a)\gamma R(1-1/k)$$

Simplifying the above expression yields:

$$(1-\gamma\lambda(a))\frac{R}{k}+\gamma\lambda(a)R > 0$$

which is always true.

Lastly, we combine the second and fifth terms, we show that:

$$\frac{\partial a}{\partial R}+\gamma(a)\frac{\partial^2 a}{\partial R\partial\gamma} > 0$$

This inequality reads as:

$$\frac{\tau' kn/R}{\frac{\partial^2 U_G^C}{\partial a^2}}-\gamma\tau^{'}\frac{kn}{R}\frac{\left[(1-1/k)\,R(\lambda\tau^{''}+2\tau^{'}\lambda^{'}+\lambda\tau^{''})\right]}{\left(\frac{\partial^2 U_G^C}{\partial a^2}\right)^2} > 0$$

A few algebraic manipulations, after substituting $\frac{\partial^2 U_G^C}{\partial a^2}$ as defined in equation (13), simplifies the condition to:

$$\tau^{''}\left(\frac{R}{k}+kn\right) < 0$$

which is always true.

The negative sign of the two cross-derivatives considered in this section suggests that: (i) the reallocation of resources to military power in response to a increase of the ruler's strength is decreasing in natural resources; (ii) the decrease in conflict due to such reallocation of resources to military power is also decreasing in natural resources.

Hence, the peace-enhancing effect of stronger rulers, as described in the previous section, is decreasing in the abundance of natural resources. To grasp the intuition behind this result, we can refer once more to the tax base *vs* tax rate mechanism. In natural resource-poor countries, stronger rulers will be particularly concerned about the escalation of a conflict, as labor production represents an important share of the tax base, and therefore will tend to invest substantially in military power in response to increases in their strength. The same increases in strength, however, will lead to a lower reallocation of resources to military power in natural resource-rich countries, as the loss in tax base due to the diversion of labor into fighting activities during conflict will be more than compensated by the larger tax rate imposed on the large pool of natural resources.

3.4 The role of inequality

We next explore the role of inequality, i.e. whether and how the initial distribution of natural resources across ethnic groups influences the ruler's policy decisions. An inspection of condition (10) reveals that higher inequality in initial resource endowments increases the occurrence of civil conflicts.

The intuition of this result is fairly straightforward: under conflict all ethnic groups obtain an equal share of the national resources; on the other hand, under peace, the ethnic groups' utility is monotonically increasing in their resources endowment. Accordingly, there is a threshold level of resource endowment making a specific ethnic group indifferent between peace and conflict, and below which that ethnic group strictly prefers conflict. It thus follows that the less well endowed groups will be the ones with the higher incentives to initiate a conflict. Increasing inequality while keeping the total amount of resources constant, implies that some ethnic groups will become poorer in terms of resource endowments, thus implying that the likelihood of conflict cannot decrease, while it will strictly increase if the poorest group sees its endowment decrease.

It is worth at this stage to attract the reader's attention on a modeling assumption influencing our findings in general, and the results in connection to inequality more specifically. In our model manpower is the sole input in the conflict function, ruling out by assumption the possibility of "money and bodies" jointly determining the conflict outcome as in Esteban and Ray (2001). Relaxing this assumption would likely give an advantage to the wealthier ethnic group, possibly mitigating the aggressiveness of the less-well endowed group.

We can now summarize the main findings of the model. We have shown that it may be in the interest of a weak autocratic ruler to let violence escalate in ethnically divided countries. Such conflicts imply a partial loss of the ruler's tax base since otherwise productive labor gets diverted towards fighting. By reallocating some of the resources to the creation of a more efficient taxing bureaucracy, on the other hand, the ruler can impose higher tax rates which more than compensate the loss in terms of tax base. Our comparative statics predict that internal conflict is more likely to escalate: (i) in resource-abundant countries ruled by weak leaders (as predicted by condition (18)), and (ii) in societies where natural resources are distributed less equally.

The next section confronts these predictions to cross-country longitudinal data on civil wars in recent history.

4 Empirical evidence

The previous section highlights novel political economy mechanisms mediating respectively the relationship between regimes' strength and civil war and that between natural resources and civil war. While these correlations in the context of weak institutions are not new in the empirical literature, the model's predictions regarding the interaction between the relative weakness of the autocrat and the availability of resources has not been explored empirically.[7] On the other hand, the model's second prediction regarding horizontal inequality and conflict has already been explored in the literature (e.g. Cederman et al. 2011). In this section we focus our attention on the empirical evidence concerning these two predictions.

We can test these predictions empirically (i) by looking at the effect on the probability of armed conflict occurrence of the interaction between natural resources and some proxy of the ruler's weakness/strength in the subsample of autocratic and ethnically divided countries, and (ii) by running the same regression in the subsample of countries where resources are unequally distributed in the territories under the control of different ethnic groups. Two noteworthy points ought to be emphasized at this stage. First, part of our theoretical predictions relate to the intensity of conflict while the empirics focus on the occurrence of civil wars. The latter is a fair approximation of the former, however, to the extent that events are coded as civil war occurrences above a threshold level of conflict intensity. Second, our empirical exercise is guided by the predictions of our model, and we are not claiming any perfect identification or causal interpretation in the empirical exercise, beyond what the theoretical model suggests.

[7] One exception is Humphreys (2005, Table 3), who was the first to look at the interaction term of regime stability and resource abundance. However, there are several differences between the two approaches, driven by the difference in the underlying theoretical framework. First, guided by the model presented in section 3, our regressions focus on the subsample of ethnically divided autocracies. Second, we show that results are stronger in places where resources are more unequally distributed.

4.1 Data and sample

The dependent variable is a dummy that describes whether an internal armed conflict took place in country i and year t. The source is the Uppsala/PRIO conflict dataset, available from the Uppsala Conflict Data Program (UCDP, Gleditsch et al. 2001). Armed conflicts are defined by the UCDP as armed disputes within the boundaries of a conflict that involves the government and result in at least 25 battle-deaths per year. In this sense, as long as the government gets involved at any time during the course of the conflict, armed conflicts include violent disputes between factions of the same state. Thus, this definition encompasses the types of disputes that are highlighted in our theoretical model.[8]

Moreover, because our story is one on the incentives of autocratic rulers, the analysis is conducted on the subsample of countries that are relatively more autocratic, and thus have a Polity IV score less than 0 (Marshall and Jaggers 2002). We explore, however, the robustness of our results to variations in this - arguably arbitrary - cutoff.

In line with our model, which highlights that the perverse incentives of the autocratic ruler are salient in ethnically divided societies, our sample of country-years gets further reduced when we filter out the countries that are ethnically homogeneous. We do so using the dataset of geo-referenced ethnic groups (GREG) of Weidmann et al. (2010). The remaining sample of 'ethnically divided' countries is then composed by nations that have at least two distinct ethnic groups in their territory.

When testing the prediction that higher inequality in initial resource endowments increases the occurrence of civil conflicts we further reduce the sample to focus on the countries in which natural resources are unequally distributed among the ethnic groups located within their territory. To do this we combine the GREG dataset with the geo-referenced

[8] In the Appendix we show the robustness of our results to an alternative measure of conflict equal to 2 for country years with more than 1000 conflict-related casualties, to 1 for country years with conflict-related casualties between 25 and 1000, and 0 otherwise.

data from Lujala et al. (2007) that provides the geospatial coordinates of each one of the main oil wells within each country.[9,10] Using GIS methods, we compute for every country an index of "oil-wells concentration by ethnic group" that measures the extent to which all the available wells are under the dominance of many or few ethnic groups. Dominance in this case is defined as the oil well being located in a region that lies within the spatial boundaries of a group's geographical territory. More specifically, our measure for any country c is:

$$Inequality_c = 1 - \sum_{i \in c} \frac{\eta_i^2}{N_c}$$

where η_i is the proportion of wells located in the territory dominated by group i in country c and N_c the number of ethnic groups in that country.

Notice that, since GREG ethnographic regions can be either homogenous (featuring only one ethnic group) or heterogeneous (inhabited by two or more ethnic groups), the index varies between 0 and 1. More specifically, it takes the value of 0 if *all* ethnic groups have access to *all* wells (i.e. all wells are located in regions inhabited by all the country's ethnic groups), and it approaches 1 if only one group has access to all wells and the number of ethnic groups increases. Accordingly, the index equals 0 for ethnically homogenous countries like Saudi Arabia, Qatar, or Kuwait, and it reaches its maximum for ethnically very diverse countries like Nigeria and Sudan (both featuring an index=0.99), in which oil wells are concentrated in the ethnic homeland of few groups only.

To test the prediction that relates the initial resource inequality and the likelihood of conflict we focus on the countries in the top quartile of the resource-inequality index and show the results on the rest of the sample for reference.

We use two main alternative proxies for the presence of natural resources. The first is

[9]The petroleum dataset is hosted by the Centre for the Study of Civil War (CSCW) at the Peace Research Institute Olso (PRIO).

[10]We thank Marie-Anne Valfort for this suggestion.

the lagged per capita amount of proven oil *reserves* (in billions of barrels) in each country/year, and the second the per capita yearly *production* of both oil and diamonds. Both measures are gathered from the replication data of Humphreys (2005).[11] Our (inverse) proxy of the ruler's weakness is the GDP share of each country's military expenditure recorded by the Stockholm International Peace Research Institute (SIPRI).

We control for the variables identified by the related cross-country literature as the most robust correlates of civil war, namely population, per capita GDP and its rate of growth, the proportion of mountainous terrain, how open countries are to international markets, and we add continent dummies. The descriptive statistics of all the variables used in the empirical models are reported in Table 1. Due to data availability our sample covers the period 1988-1999.[12]

4.2 Empirical strategy

Our empirical strategy examines how the interaction between the resource abundance and our (inverse) proxy for weakness of the dictator affects the probability that armed conflict takes place in a given country and time. For this purpose we estimate:

$$\begin{aligned} Y_{i,r,t} &= \phi_0 + \phi_1 MilExp_{i,r,t} + \phi_2 ResourceIntensity_{i,r,t} + \phi_3 (MilExp \times ResourceIntensity)_{i,r,t} \\ &\quad + \phi_4 X_{i,r,t} + \sum \gamma_r + \delta_t + \epsilon_{i,r,t} \end{aligned} \tag{22}$$

where $Y_{i,r,t}$ is a dummy that equals one if armed conflict took place in country i in region (continent) r and year t; $MilExp_{i,r,t}$ is the share of military expenditures to GDP (an inverse proxy of the ruler's weakness); $ResourceIntensity_{i,r,t}$ is either the per capita production of

[11] In some robustness checks we also use a dummy that equals one if country i in region r produces either oil or diamonds at time t as an alternative proxy for natural resources.

[12] SIPRI's data on Military expenditures starts in 1988 and Humphreys' (2005) data on resources production and oil reserves is available up to 1999.

oil and diamonds or the per capita oil reserves in country i of region r at time t; $X_{i,r,t}$ is a vector of country-specific controls; γ_r are continent fixed effects; δ_t is a year fixed effect and $\epsilon_{i,r,t}$ is the error term.

The coefficient of interest is ϕ_3, which captures the effect on the incidence of armed conflict of the interaction between the quantity of resources produced (or held as reserves) and the strength of the dictator. This coefficient is used to test the main prediction of the model, namely that conflict intensity is expected to be higher in resource-abundant countries, ruled by weak leaders.

4.3 Results

4.3.1 Main results

We estimate equation (22) with a linear probability model.[13] Table 2 reports the benchmark results of the prediction that the interaction between the relative weakness (strength) of the autocrat and the availability of resources should be positively (negatively) correlated with the probability that conflict takes place. We focus on ϕ_3, the coefficient of interest. However we also report ϕ_1 and ϕ_2, the effects of the non-interacted proxies of regime strength and resources abundance.[14]

We use the per capita amount of oil reserves to proxy for resource abundance in Panel A and the per capita production of both oil and diamonds as an alternative proxy in Panel B. In both cases, Column 1 includes no controls, and the subsequent columns include controls additively. Column 2 includes the country's population size (in logs), per capita GDP (also in logs), and the growth rate of the economy. Column 3 further includes the roughness of

[13]Angrist and Pischke (2008) argue that OLS consistently estimates the linear conditional expectation function and minimizes mean-squared error and, for binary outcomes, recommend linear probability models over limited dependent variable models like Probit or Logit. However, all our results are robust to fitting a Probit model.

[14]Standard errors reported in all tables are robust to heteroskedasticity.

the terrain and a measure of economic openness. Column 4 adds to the previous sets of controls continent fixed effects that capture continent-specific time-invariant heterogeneity, and column 5 adds year fixed effects that flexibly control for year-specific shocks common across all countries in our sample. Lastly, in Column 6 we include country rather than continent fixed effects.

Because we are using an inverse proxy of ruler's weakness (the GDP share of military expenditure) the negative sign of the estimated coefficient of the interaction term (ϕ_3) supports the model's prediction. This is true across columns and for both measures of resource abundance, and the magnitude and significance are very stable. The exception is the last column (6), that introduces country fixed effects. In this case the coefficient of interest remains negative but becomes statistically not significant. This suggests that the results are mostly coming from the variation across countries rather than within, which is not inconsistent with our theory.[15]

Next, using a new dataset of Cederman et al. (2009), in Table 3 we re-estimate our benchmark specification looking specifically at the incidence of conflicts regarded as ethnic. There, we use the most demanding empirical specifications with continent and year fixed effects, for both the oil reserves resource proxy (columns 1 and 2) and the oil and diamonds productions proxy (columns 3 and 4). The main message in this case is the same: the probability that an ethnically divided autocracy experiences (ethnic) civil conflict is larger when the autocrat is weak and the country has natural resources.

We finally test the second prediction of the model, namely that the effect of the interplay between resource abundance and regime weakness on internal conflict is exacerbated where natural resources are unequally distributed among ethnic groups. To this end, in Panel A of Table 4 we restrict the sample to observations in the top quartile of our resource

[15] Note also that most countries are either resource producers or not. Moreover, most countries in our sample do not feature a change in the dependent variable during the period considered. Thus most of the variation in our dataset comes from the heterogeneity across countries rather than within.

inequality measure, and show that the coefficients of the interacted terms in the most demanding specifications are not only negative (and in three out of four cases significant), but also larger in magnitude (with one exception) than those of the equivalent specifications (columns 4 and 5, Panels A and B) of the baseline Table 2. Panel B reports the results of a similar exercise when focusing on the rest of the sample, namely countries with relatively low levels of resource inequality. In line with the predictions of our model, the interaction term is never significant (and very small in magnitude).[16] This suggests that the probability that an ethnically divided autocracy experiences conflict when the autocrat is weak and the country has natural resources that are concentrated in the hands of relatively few ethnic groups is larger than when resources are more evenly distributed. Thus, Table 4 provides supportive evidence for our theoretical results that resource inequality exacerbates the incentives of weakened dictators in resource-rich, ethnically divided countries to allow the outburst of civil strife.

4.3.2 Robustness

The results in the previous section rely on the assumption that our measure of ruler's strength is exogenous to the existence of a conflict in the country. However, even though the share of military expenditures to GDP constitutes a direct measure of the ruler's power, its changes over time may be influenced by ongoing violence. If this is the case, it would raise some endogeneity concerns. We propose two alternative strategies to at least partially address these concerns. First, we substitute the share of military expenditures to GDP by its first lag, which is less likely to respond to contemporaneous violence. The results, reported in Table 5, are barely affected.

Second, in Table 6 we replace *military expenditures* by a time dummy that takes value

[16]Table A2 in the Appendix reports the results of replicating the estimations in Table 4 while looking specifically at the incidence of conflicts regarded as ethnic. The results are qualitatively identical.

one starting in 1990. The rationale for using this variable is that it picks up the time variation provided by the end of the Cold War, an event which has been widely identified as a negative shock to regimes that received aid from either the US or the Soviet Bloc (Reno 1997, 1998, Ndulu and O′Connell 1999, Berthelémy and Tichit 2004, Boschini and Olofsgard 2007, Fleck and Kilby 2010). While this is a rather reduced-form proxy of regime weakness as it does not vary at the country level, it does capture the variation we highlight in the model, and it addresses the potential endogeneity of military expenditures.[17]

Table 6 also shows that our results are likely not driven by the relatively short sample period supporting our benchmark estimation. While continuous resource abundance measures such as those of Humphreys (2005), and direct measures of the leader's weakness/strength such as military expenditure are not available for a larger period, using the post Cold War dummy in combination with an alternative proxy for natural resources (a dummy that equals one if country i in region r produces either oil or diamonds at time t) does allow us to extend considerably the time frame of the analysis. In this case, the estimated coefficient associated with the interaction term is positive and significant at the 1% level.[18] This is consistent with the baseline results of Table 2, as in this case the post Cold War dummy does capture the weakness of the ruler rather than his/her strength. Overall these two tests help reduce endogeneity concerns.[19]

Finally, recall that the results reported in Table 2 come from estimating equation (22) on a sample that is restricted to the cases that our theory studies, namely autocratic countries

[17]Notice that not relying on SIPRI's military expenditures data allows us to substantially extend the analysis to the period 1960-1999.

[18]Again, with the exception of the last column, where country fixed effects are included. See footnote 15 for a discussion.

[19]In the Appendix we perform an additional set of ordered probit estimations, in which we adopt an alternative measure of conflict equal to 2 for country years with more than 1000 conflict-related casualties, to 1 for country years with conflict-related casualties between 25 and 1000, and to 0 otherwise. We report in Table A1 only the coefficients of the interaction terms, with each row representing a different regression result. The results remain broadly unaffected (with the exception of the model using military expenditure and resource production, which becomes non significant).

that are ethnically divided. Indeed, as explained in section 4.1, we focus on the sub-sample of observations that have a Polity IV score less than 0 in the −10 to 10 regime-type spectrum. While by doing this we follow a common definition of autocracy, our interaction of interest is however robust to changes in the 0 threshold. This is summarized in Table 7 which reports the point estimate of ϕ_3 across sub-samples of countries identified by different definitions of autocracy according to the Polity IV score. The six first columns refer to countries with Polity IV scores that range from the benchmark score (Polity IV < 0) all the way to Polity IV < -5 (a very strict definition of autocracy). Column 7 defines autocracies as having a Polity IV score < 6, following a very conservative definition of democracies.[20] Each row reports the point estimates of the interaction of interest using the proxies of resource abundance, and the different measure of ruler's strength adopted in the above analysis. Importantly, all these estimates come from the most demanding specification of the benchmark regression, that includes all the controls, continent dummies and year fixed effects.[21] In most cases the interaction of interest is negative and significant in spite of the reduction in sample size when using more extreme definitions of autocracy. This implies that the estimated coefficient of interest is very robust to the definition of autocracy that one may choose.

5 Conclusions

The observation that some weak autocrats ruling over ethnically divided societies seem to have avoided intervening to control the escalation of violent conflict in their countries (if not favored such escalation altogether) is puzzling and, to the best of our knowledge, no explanation has been offered in the social science literature. We propose a theoretical

[20]We thank an anonymous referee for suggesting this test.

[21]Country fixed-effects are not included for the reasons explained in footnote 15.

framework that, by emphasizing the private incentives of autocrats in natural resource-rich and ethnically divided societies, provides a rational explanation for such behavior.

In our model, a rent maximizing ruler allocates state resources between a taxing bureaucracy and a military force which shields natural resources, thereby reducing the incentives of ethnic groups to illegally appropriate them through a civil conflict. Civil conflict undermines the tax base by disrupting production but also allows the ruler to set higher tax rates. We show that weaker rulers in resource-rich countries are more likely to allow for such escalation of civil strife. When the primary source of revenue comes from taxing natural resources, the disruption that conflict provokes on the economy's production is contained, and therefore more than compensated by the increase in the tax rate.

We complement the theoretical model by backing its predictions with empirical evidence on a subsample of ethnically divided, autocratic countries over the period 1960-1999. Overall, we find strong support in the data for our theory. The significant empirical association between the incidence of civil war and the interaction of natural resources with the weakness of the ruler is consistent with our theory. We have shown that this association is robust to controlling for the relevant correlates of civil war identified in the cross-country empirical literature and that it survives the inclusion of continent dummies effects as well as year fixed-effects. The incidence of internal strife is higher in ethnically divided countries ruled by weak dictators and richly endowed in natural resources. We also find suggestive evidence that this effect is larger in places with more unequal distribution of natural resources among ethnic groups.

Our paper contributes to the recent political economy literature on the incentives of autocratic leaders in ethnically divided and weakly institutionalized societies. By suggesting a driver of civil war that had not previously been emphasized in the literature, we call attention to the seemingly unintended consequences of international efforts to weaken the leaders of autocratic regimes. This suggests that embargoes and other measures that aim at weakening local autocrats in the quest for a more democratic world ought to be weighted against alternative policies when rulers have incentives to hold on to power by any means, even at the expense of the life of their people.

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Table 1: Descriptive Statistics

	Obs.	Mean	Std. Dev.	Min.	Max.	Source
Main variables and controls						
Incidence of armed conflict	2,437	0.294	0.456	0	1	UCDP
Lagged oil reserves per capita	2,437	0.497	3.828	0	65.625	Humpherys (2005)
Lagged oil and diamonds prod. per capita	2,426	0.078	0.325	0	4.810	Humpherys (2005)
Mil Expenditure/GDP	434	3.275	3.124	0.2	20.2	SIPRI
Log Population	2,437	9.044	1.450	5.663	14.047	PWT 6.3
Log Real GDP pc	2,209	7.810	0.925	5.836	11.248	PWT 6.3
GDP growth	2,176	1.544	8.404	-64.360	131.243	PWT 6.3
Log Mountainous terr.	2,437	2.061	1.436	0	4.557	F&L (2003)
Log Openness	2,209	3.912	0.723	0.816	6.434	PWT 6.3
Polity score	2,437	-6.803	2.044	-10	-1	Polity IV database
No. ethnic groups	2,374	15.063	18.381	2	110	Widemann et al. (2010)
Resource concentration index	1,486	0.877	0.131	0.5	0.999	Own calculation
Incidence of ethnic conflict	2,437	0.181	0.385	0	1	Cederman et al. (2009)
Dummy Prod. Nat. Res	2,437	0.584	0.493	0	1	CSCW/PRIO
Dummy End Cold War	2,437	0.182	0.386	0	1	–

Notes: UCDP is the Uppsala Centre Data Program that maintains the Uppsala/PRIO Armed Conflict Dataset (Gleditsch et al. 2001). CSCW/PRIO is the Center for the Study of Civil War from the Peace Research Institute Oslo, PRIO. PWT is the Penn World Table (Heston et al. 2009). F&L (2003) is Fearon and Laitin (2003). SIPRI is the Stockholm International Peace Research Institute.

Table 2: Resource abundance, ruler strength, and conflict incidence

Linear probability model Dependent variable: *Armed conflict incidence*	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: *Oil reserves*						
Oil reserves per cap.	0.172**	0.162**	0.165**	0.148**	0.156**	-0.0114
	(0.0689)	(0.0654)	(0.0674)	(0.0629)	(0.0655)	(0.0140)
MilEx share of GDP	0.0108	0.0252***	0.0213**	0.0170*	0.0192*	0.0129
	(0.00833)	(0.00883)	(0.00882)	(0.0101)	(0.0109)	(0.00946)
Oil reserves per cap. ×	-0.0200***	-0.0180**	-0.0183**	-0.0164**	-0.0173**	-0.000635
MilEx share of GDP	(0.00762)	(0.00719)	(0.00746)	(0.00695)	(0.00719)	(0.000931)
Panel B: *Production of oil and diamonds*						
Resources prod. per cap.	1.233**	1.697***	1.783***	1.723***	1.663***	0.508
	(0.532)	(0.508)	(0.533)	(0.546)	(0.556)	(0.412)
MilEx share of GDP	0.0135	0.0275**	0.0227**	0.0170	0.0182	0.0161
	(0.01000)	(0.0113)	(0.0107)	(0.0111)	(0.0118)	(0.0137)
Resources prod. per cap. ×	-0.144***	-0.154***	-0.156***	-0.144***	-0.142***	-0.0364
MilEx share of GDP	(0.0490)	(0.0490)	(0.0501)	(0.0500)	(0.0512)	(0.0387)
Controls						
Population		✓	✓	✓	✓	✓
GDP level		✓	✓	✓	✓	✓
GDP growth		✓	✓	✓	✓	✓
Rough terrain			✓	✓	✓	
Openness			✓	✓	✓	✓
Continent fixed effects				✓	✓	
Year fixed effects					✓	✓
Country fixed effects						✓
Observations	442	434	434	434	434	434

Notes: Robust standard errors in parentheses. Resources prod. per cap. is the population-normalized sum of the production of oil and diamonds in each country and year (source: Humphreys, 2005). Oil reserves per cap. is the population-normalized quantity of oil reserves per country and year (source: Humphreys, 2005). MilEx share of GDP is the share of military expenditure to GDP in each country and year (source: SIPRI). * is significant at the 10% level, ** is significant at the 5% level, *** is significant at the 1% level.

Table 3: Resource abundance, ruler strength, and *incidence of ethnic conflict*

Linear probability model Dependent variable: *Ethnic conflict incidence*				
	Oil reserves		Resource prod.	
	(1)	(2)	(3)	(4)
Reserves/Production	0.160**	0.169**	1.560***	1.458***
	(0.0668)	(0.0708)	(0.529)	(0.534)
MilEx share of GDP	0.0230**	0.0256**	0.0213*	0.0231*
	(0.0106)	(0.0115)	(0.0128)	(0.0151)
Reserves/Production ×	-0.0177**	-0.0189**	-0.131***	-0.128**
MilEx share of GDP	(0.00735)	(0.00773)	(0.0490)	(0.0504)
Controls				
Population	✓	✓	✓	✓
GDP level	✓	✓	✓	✓
GDP growth	✓	✓	✓	✓
Rough terrain	✓	✓	✓	✓
Openness	✓	✓	✓	✓
Continent fixed effects	✓	✓	✓	✓
Year fixed effects		✓		✓
Observations	434	434	434	434

Notes: Robust standard errors in parentheses. Dependent variable is the incidence of armed conflicts labeled as *ethnic* by Cederman et al. 2009. Resources prod. per cap. is the population-normalized sum of the production of oil and diamonds in each country and year (source: Humphreys, 2005). Oil reserves per cap. is the population-normalized quantity of oil reserves per country and year (source: Humphreys, 2005). MilEx share of GDP is the share of military expenditure to GDP in each country and year (source: SIPRI). * is significant at the 10% level, ** is significant at the 5% level, *** is significant at the 1% level.

Table 4: The role of resource inequality

Linear probability model Dependent variable: *Armed conflict incidence*	Oil reserves		Resource prod.	
	(1)	(2)	(3)	(4)
Panel A: *Resource inequality - Top quartile*				
Reserves/Production	0.0982**	0.0377*	2.511**	0.119
	(0.0488)	(0.0205)	(1.201)	(0.534)
MilEx share of GDP	-0.00199	-0.00224	-0.00328	-0.000863
	(0.0105)	(0.00577)	(0.0125)	(0.00592)
Reserves/Production ×	-0.0265**	-0.0129*	-0.561	-0.468*
MilEx share of GDP	(0.0125)	(0.00695)	(0.422)	(0.245)
Observations	53	53	53	53
Panel B: *Resource inequality - Rest of the sample*				
Reserves/Production	0.0122	0.0106	1.157**	1.133*
	(0.0157)	(0.0233)	(0.551)	(0.590)
MilEx share of GDP	0.0385***	0.0424***	0.0471**	0.0501**
	(0.0076)	(0.0086)	(0.0210)	(0.0236)
Reserves/Production ×	-0.0011	-0.0009	-0.0897	-0.0877
MilEx share of GDP	(0.0019)	(0.0027)	(0.0755)	(0.0819)
Observations	160	160	160	160
Controls				
Population	✓	✓	✓	✓
GDP level	✓	✓	✓	✓
GDP growth	✓	✓	✓	✓
Rough terrain	✓	✓	✓	✓
Openness	✓	✓	✓	✓
Continent fixed effects	✓	✓	✓	✓
Year fixed effects		✓		✓

Notes: Robust standard errors in parentheses. Resources prod. per cap. is the population-normalized sum of the production of oil and diamonds in each country and year (source: Humphreys, 2005). Oil reserves per cap. is the population-normalized quantity of oil reserves per country and year (source: Humphreys, 2005). MilEx share of GDP is the share of military expenditure to GDP in each country and year (source: SIPRI). Panel A and B consider the sample of the country year in the top quartile of the resource distribution inequality index, and the rest of the sample, respectively.* is significant at the 10% level, ** is significant at the 5% level, *** is significant at the 1% level.

Table 5: Addressing potential endogeneity: lagged military expenditure

Linear probability model Dependent variable: *Armed conflict incidence*	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: *Oil reserves*						
Oil reserves per cap.	0.174**	0.163**	0.171**	0.153**	0.153**	0.0390
	(0.0747)	(0.0724)	(0.0764)	(0.0716)	(0.0736)	(0.0628)
Lag MilEx share of GDP	0.0074	0.0203**	0.0156*	0.0119	0.0121	0.0089
	(0.0086)	(0.0092)	(0.0091)	(0.0105)	(0.0110)	(0.0074)
Oil reserves per cap. ×	-0.0200**	-0.0179**	-0.0189**	-0.0169**	-0.0168**	0.0011
Lag MilEx share of GDP	(0.0078)	(0.0075)	(0.0080)	(0.0075)	(0.0077)	(0.0015)
Panel B: *Production of oil and diamonds*						
Resources prod. per cap.	1.865***	2.141***	2.372***	2.328***	2.373***	0.423
	(0.533)	(0.525)	(0.576)	(0.600)	(0.618)	(0.344)
Lag MilEx share of GDP	0.0126	0.0237**	0.0197*	0.0138	0.0133	0.0106
	(0.0104)	(0.0111)	(0.0106)	(0.0110)	(0.0112)	(0.0091)
Resources prod. per cap. ×	-0.197***	-0.189***	-0.211***	-0.199***	-0.201***	-0.0158
Lag MilEx share of GDP	(0.0432)	(0.0451)	(0.0477)	(0.0476)	(0.0488)	(0.0368)
Controls						
Population		✓	✓	✓	✓	✓
GDP level		✓	✓	✓	✓	✓
GDP growth		✓	✓	✓	✓	✓
Rough terrain			✓	✓	✓	
Openness			✓	✓	✓	✓
Continent fixed effects				✓	✓	
Year fixed effects					✓	✓
Country fixed effects						✓
Observations	386	382	382	382	382	382

Notes: Robust standard errors in parentheses. Resources prod. per cap. is the population-normalized sum of the production of oil and diamonds in each country and year (source: Humphreys, 2005). Oil reserves per cap. is the population-normalized quantity of oil reserves per country and year (source: Humphreys, 2005). Lag MilEx share of GDP is the lagged share of military expenditure to GDP in each country and year (source: SIPRI). * is significant at the 10% level, ** is significant at the 5% level, *** is significant at the 1% level.

Table 6: Alternative measures of ruler's strength and resource abundance

Linear probability model Dependent variable: *Armed conflict incidence*	(1)	(2)	(3)	(4)	(5)	(6)
Resources Presence	-0.0885***	-0.140***	-0.0989***	-0.0982***	-0.0975***	0.0881
	(0.0207)	(0.0238)	(0.0237)	(0.0234)	(0.0235)	(0.193)
Post Cold War	-0.0757**	-0.128***	-0.124***	-0.0914***		
	(0.0363)	(0.0355)	(0.0343)	(0.0350)		
Post Cold War x	0.218***	0.232***	0.243***	0.200***	0.205***	0.0580
Resources presence	(0.0490)	(0.0490)	(0.0477)	(0.0499)	(0.0502)	(0.119)
Controls						
Population		✓	✓	✓	✓	✓
GDP level		✓	✓	✓	✓	✓
GDP growth		✓	✓	✓	✓	✓
Rough terrain			✓	✓	✓	
Openness			✓	✓	✓	✓
Continent fixed effects				✓	✓	
Year fixed effects					✓	✓
Country fixed effects						✓
Observations	2,437	2,176	2,176	2,176	2,176	2,176

Notes: Robust standard errors in parentheses. Resource presence is a dummy that equals 1 for the country-years with positive production of either oil or diamonds, according to the DIADATA and PETRODATA from the CSCW at PRIO. Post Cold War end is a time-dummy that equals 1 for the post-Cold War period. * is significant at the 10% level, ** is significant at the 5% level, *** is significant at the 1% level.

Table 7: Robustness - Threshold to define autocracy

Linear probability model Dependent variable: *Armed conflict incidence*	PolityIV< 0 (1)	PolityIV< −1 (2)	PolityIV< −2 (3)	PolityIV< −3 (4)	PolityIV< −4 (5)	PolityIV< −5 (6)	PolityIV< 6 (7)
Oil reserves per cap. ×	-0.0173**	-0.0146**	-0.0147**	-0.00846*	-0.00926*	-0.00639	-0.0158***
MilEx share of GDP	(0.00719)	(0.00655)	(0.00654)	(0.00490)	(0.00509)	(0.00453)	(0.0058)
Resources prod. per cap. ×	-0.142***	-0.164***	-0.162***	-0.0777	-0.0872	-0.0537	-0.0458
MilEx share of GDP	(0.0512)	(0.0520)	(0.0542)	(0.0515)	(0.0532)	(0.0536)	(0.0436)
Oil reserves per cap. ×	-0.0168**	-0.0133**	-0.0131**	-0.00846	-0.00917	-0.00706	-0.0153**
Lag MilEx share of GDP	(0.00769)	(0.00660)	(0.00647)	(0.00534)	(0.00562)	(0.00490)	(0.00627)
Resources prod. per cap. ×	-0.201***	-0.209***	-0.210***	-0.105*	-0.115*	-0.0845	-0.0824*
Lag MilEx share of GDP	(0.0488)	(0.0525)	(0.0538)	(0.0607)	(0.0617)	(0.0623)	(0.0467)
Post Cold War x	0.205***	0.208***	0.189***	0.109**	0.150**	0.135**	0.169***
Resources presence	(0.0502)	(0.0517)	(0.0532)	(0.0554)	(0.0598)	(0.0634)	(0.0429)
Controls							
Population	✓	✓	✓	✓	✓	✓	✓
GDP level	✓	✓	✓	✓	✓	✓	✓
GDP growth	✓	✓	✓	✓	✓	✓	✓
Rough terrain	✓	✓	✓	✓	✓	✓	✓
Openness	✓	✓	✓	✓	✓	✓	✓
Continent fixed effects	✓	✓	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓	✓	✓

Notes: Robust standard errors in parentheses. Resources prod. per cap. is the population-normalized sum of the production of oil and diamonds in each country and year (source: Humphreys, 2005). Oil reserves per cap. is the population-normalized quantity of oil reserves per country and year (source: Humphreys, 2005). (Lag) MilEx share of GDP is the (lagged) share of military expenditure to GDP in each country and year (source: SIPRI). Resource presence is a dummy that equals 1 for the country-years with positive production of either oil or diamonds, according to the DIADATA and PETRODATA from the CSCW at PRIO. Post Cold War end is a time-dummy that equals 1 for the post-Cold War period. Columns restrict the analysis to the sample of country/years for which the `polity2` autocracy/democracy score fulfils the condition in the heading. * is significant at the 10% level, ** is significant at the 5% level, *** is significant at the 1% level.

Table A1: Ordered probit estimates for alternative conflict-intensity thresholds

O-probit Dependent variable: *Armed conflict intensity*					
	(1)	(2)	(3)	(4)	(5)
Oil reserves per cap. ×	-0.0711***	-0.0883***	-0.0858***	-0.0901**	-0.0943**
MilEx share of GDP	(0.0201)	(0.0292)	(0.0280)	(0.0382)	(0.0395)
Resources prod. per cap. ×	0.118	0.0219	0.0203	0.0844	0.0971
MilEx share of GDP	(0.174)	(0.157)	(0.161)	(0.162)	(0.166)
Oil reserves per cap. ×	-0.0852***	-0.102***	-0.0947***	-0.107**	-0.104**
Lag MilEx share of GDP	(0.0244)	(0.0309)	(0.0297)	(0.0424)	(0.0435)
Resources prod. per cap. ×	-0.478**	-0.561**	-0.566**	-0.492*	-0.562**
Lag MilEx share of GDP	(0.222)	(0.266)	(0.252)	(0.257)	(0.277)
Post Cold War x	0.620***	0.695***	0.761***	0.680***	0.701***
Resources presence	(0.141)	(0.147)	(0.147)	(0.153)	(0.153)
Controls					
Population		✓	✓	✓	✓
GDP level		✓	✓	✓	✓
GDP growth		✓	✓	✓	✓
Rough terrain			✓	✓	✓
Openness			✓	✓	✓
Continent fixed effects				✓	✓
Year fixed effects					✓

Notes: Robust standard errors in parentheses. Armed conflict intensity is an index equal to 2 for country years with more than 1000 conflict-related casualties, equal to 1 for country years with conflict-related casualties between 25 and 1000, and 0 otherwise. Only the coefficients of the interaction terms are reported. Resources prod. per cap. is the population-normalized sum of the production of oil and diamonds in each country and year (source: Humphreys, 2005). Oil reserves per cap. is the population-normalized quantity of oil reserves per country and year (source: Humphreys, 2005). (Lag) MilEx share of GDP is the (lagged) share of military expenditure to GDP in each country and year (source: SIPRI). Resource presence is a dummy that equals 1 for the country-years with positive production of either oil or diamonds, according to the DIADATA and PETRODATA from the CSCW at PRIO. Post Cold War end is a time-dummy that equals 1 for the post-Cold War period. * is significant at the 10% level, ** is significant at the 5% level, *** is significant at the 1% level.

Table A2: Resource inequality and *incidence of ethnic conflict*

Linear probability model Dependent variable: *Ethnic conflict incidence*	Oil reserves		Resource prod.	
	(1)	(2)	(3)	(4)
Panel A: *Resource inequality - Top quartile*				
Reserves/Production	0.0982**	0.0377*	2.511**	0.119
	(0.0488)	(0.0205)	(1.201)	(0.534)
MilEx share of GDP	-0.00199	-0.00224	-0.00328	-0.000863
	(0.0105)	(0.00577)	(0.0125)	(0.00592)
Reserves/Production ×	-0.0265**	-0.0129*	-0.561	-0.468*
MilEx share of GDP	(0.0125)	(0.00695)	(0.422)	(0.245)
Observations	53	53	53	53
Panel B: *Resource inequality - Rest of the sample*				
Reserves/Production	0.0177	0.0234	1.343***	1.563***
	(0.0144)	(0.0249)	(0.508)	(0.552)
MilEx share of GDP	0.0401***	0.0504***	0.0443**	0.0712***
	(0.0072)	(0.0091)	(0.0199)	(0.0213)
Reserves/Production ×	-0.0013	-0.0022	-0.0881	-0.149*
MilEx share of GDP	(0.0018)	(0.0028)	(0.0700)	(0.0758)
Observations	160	160	160	160
Controls				
Population	✓	✓	✓	✓
GDP level	✓	✓	✓	✓
GDP growth	✓	✓	✓	✓
Rough terrain	✓	✓	✓	✓
Openness	✓	✓	✓	✓
Continent fixed effects	✓	✓	✓	✓
Year fixed effects		✓		✓

Notes: Robust standard errors in parentheses. Resources prod. per cap. is the population-normalized sum of the production of oil and diamonds in each country and year (source: Humphreys, 2005). Oil reserves per cap. is the population-normalized quantity of oil reserves per country and year (source: Humphreys, 2005). MilEx share of GDP is the share of military expenditure to GDP in each country and year (source: SIPRI). Panel A and B consider the sample of the country year in the top quartile of the resource distribution inequality index, and the rest of the sample, respectively.* is significant at the 10% level, ** is significant at the 5% level, *** is significant at the 1% level.