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## Weapons of Choice

Axel Dreher  
Merle Kreibaum

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## Abstract

This article investigates the effect of natural resources on whether ethno-political groups choose to pursue their goals with non-violent as compared to violent means, distinguishing terrorism from insurgencies. It is hypothesized that whether or not the extraction of fossil fuels sparks violence depends both on the group's characteristics and the state's reaction. Data are taken from the Minorities at Risk Organizational Behavior (MAROB) project, covering 118 organizations in 13 countries of the Middle East and North Africa over the 1980-2004 period. The multinomial logit models combine group- and country-specific information and show that ethno-political groups are more likely to resort to rebellion rather than using non-violent means or becoming terrorists when representing regions rich in oil. This effect is enhanced for groups already enjoying regional autonomy or being supported by a foreign state but can be mitigated by power sharing arrangements.

JEL-Code: Q340, F510.

Keywords: terrorism, rebellion, resource curse, oil.

*Axel Dreher*  
*Heidelberg University*  
*Bergheimerstrasse 58*  
*Germany – 69115 Heidelberg*  
*mail@axel-dreher.de*

*Merle Kreibaum\**  
*Georg-August University Goettingen*  
*Platz der Goettinger Sieben 5*  
*Germany – 37073 Goettingen*  
*merle.kreibaum@wiwi.uni-goettingen.de*

\*corresponding author

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## I Introduction

The discovery and exploitation of oil can contribute to a country's economic growth and prosperity. Resource-abundance can however also turn into a threat to stability and peace. While this aspect of the so-called "resource-curse" is widely discussed in the context of civil wars (e.g., Fearon and Laitin 2003; Collier and Hoeffler 2004), it has largely been neglected in the literature analyzing the causes of terrorism. This neglect is surprising. In a large number of countries, natural resource abundance has disadvantaged the local population, leading to high regional unemployment and mass immigration (Karl 2007). It thus seems straightforward that marginalized populations in areas with a wealth of natural resources might resort to terrorism in order to express their grievances. This problem plays a particularly important role in the Middle East and North Africa (MENA) region, which has a large number of oil-rich, fragile states.

Consider Iraq. Political groups such as the Kurdistan Democratic Party or the Patriotic Union of Kurdistan, which represent the Kurdish minority in the North of the country, first fought for more autonomy, then for their own state. During the course of this fighting, they have resorted to violent means, both at a terrorist scale and at a larger battle-sized scale. While the public discourse of the movement focuses on the discrimination of this largest people without their own territory, petroleum reserves are likely to be another important driver of their unrest. Despite obtaining significant regional autonomy in 1991, the situation has remained tense, with oil revenues being a main cause of conflict both among Kurds (Wimmer 2002) and between the Kurds and the national government (Chulov 2009).

In this paper, we use a combined framework to investigate whether and to what extent the availability of oil in a region determines whether ethno-political organizations choose to pursue their aims with non-violent means, resort to terrorism, or start insurgencies, thus closing an important gap in the literature. Our focus is on political organizations claiming to represent the interest of specific ethnic populations before their own state, i.e., we look at activities within their own country, at the sub-national level.<sup>1</sup> We expect the type of violence applied is a strategic choice, depending on the organization's characteristics, the context, and the reaction of the state to its actions. Applying a rational actor approach (outlined in section II), we theorize that groups will weigh risks and benefits of their political actions based on the support they enjoy, their aims, and the strength of the state they face.

We test our hypotheses using data from the Minorities at Risk Organizational Behavior (MAROB) dataset combined with geo-coded data on natural resource reserves. This allows us to match political groups with fossil fuel availability at the regional level, as we explain in more detail in

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<sup>1</sup> As Denny and Walter (2014) point out, the bulk of civil wars are initiated by an ethnic group, frequently as a consequence of grievances along ethnic lines.

section III. In the same section we also explain how our multinomial logit panel models combine organization- and country-specific information to test the determinants of an organization's choice between pursuing their goals with non-violent means, taking up arms for small-scale terrorist activities, or for a larger-scale rebellion.

A number of studies on the country-level either predominantly focuses on greed or on the relative importance of greed and grievances (see, *inter alia*, Collier and Hoeffler 2004, Collier et al. 2009, Reagon and Norton 2005). More recently, the focus moved beyond the country-level, with Hunziker and Cederman (2012) analyzing the behavior of ethnic groups. We further zoom in on the unit of analysis and look at political organizations, thereby adding an important perspective to the literature. We present our results in section IV. They show that insurgencies are more likely with larger resource extraction, both with respect to non-violent means and terrorism. Both support by foreign states and regional autonomy (and thus a demonstrated will for at least some degree of independence) enhance the escalating impact of oil. The choice to engage in terrorist activities is however not affected by resource availability within a group's territory. This leads us to conclude that economic considerations (or greed) are the main channel through which natural resources affect large-scale violence. While terrorism seems to be driven more by political factors, grievances generated by the extraction of oil are not sufficiently strong to induce terrorist activities among the groups in our sample. We discuss the policy implications of these findings in the final section.

## **II Theory**

As Hunziker and Cedermann (2012) point out, the civil war literature widely accepts the existence of a link between petroleum and intra-state conflict. Fearon and Laitin (2003), Humphreys (2005) and de Soysa and Neumayer (2007), among many others, find that countries rich in oil and gas have a higher risk of civil war. This is attributed to a number of factors that can broadly be classified to represent, first, greed or opportunity and, second, grievances. The greed-based hypothesis postulates that resources directly lead to rebellions or coups because controlling an area or state rich in resources is comparably more valuable than one without them. The presence of natural resources has been shown to weaken institutions, as politicians have no incentives to develop them when they do not have to rely on a broad tax base (e.g., Fearon and Laitin 2003). Furthermore, resource abundance allows rebel groups easy access to finance, making revolutions more feasible (Collier et al. 2009).

However, the grievance-channel to violent behavior should not be neglected. As de Soysa and Binningsbø (2009, 21) show, natural resource abundance leads to the repression of large parts of the population. Hunziker and Cederman (2012) find that violent reactions of ethnic groups become likely when members of the group feel themselves deprived of their fair share of gains from natural

resources and when these resources incur negative externalities on them that are not mitigated by participatory political institutions. Their examples of externalities include the reorganization of land rights, pollution, disruptions of the labor market due to shifts in demand away from unskilled workers, large-scale in-migration, urbanization, and rapid centralization of state powers. They thus find the role of grievances to be of equal importance to that of greed in explaining civil war.<sup>2</sup> Karl (2007) stresses the absence of a significant multiplier effect of oil wealth, limited opportunities for technology diffusion, and consequently low living standards for large parts of the population in areas rich in oil.

In a study on 13 cases, Ross (2004) tests potential causal channels for the resource-conflict relationship. He stresses the importance of the geographical distribution of oil across the country for conflict. Separatist motives are likely to come into play in cases of grievances over the distribution of benefits from such resource extraction or based on the incentive to control these revenues. He also shows preemptive repression of groups by the own state out of fear to lose control over resources as well as interventions by foreign states to spark civil wars.

In contrast to the literature on larger scale civil unrest, natural resources hardly feature in the literature on what determines terrorism.<sup>3</sup> Exceptions to this are Tavares (2004), Bravo and Dias (2006), and Sambanis (2008). Yet, their results are inconsistent and they do not provide specific theories as to why resource wealth should play a role in the occurrence of terrorism. Gassebner and Luechinger (2011) include the share of a country's total exports made up by primary goods in their large-scale robustness analysis of what determines terror. Across their models, they do not find a robust relationship between their measure of resource abundance and the number of terrorist attacks against a country's citizens.

Arguably, presence of natural resources is important in determining the extent of terrorism as well as insurgencies. The externalities of mineral resource extraction described above all compound into substantial grievances, potentially leading representatives of repressed minorities to resort to terrorist activities.<sup>4</sup> For example, the transformation or modernization of the economy has been found to lead to socio-economic and demographic changes feeding through to terrorism (Ross 1993). Specifically, the link between political rights and terrorism has been commonly shown in the literature (e.g. Danzell 2010; Krueger and Malecková 2003). These rights are often restricted in areas of resource extraction as described above. Furthermore, Piazza (2011) reports that countries

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<sup>2</sup> Also see Denny and Walter (2014).

<sup>3</sup> We refer here to oil, gas, diamonds and other non-renewable valuables rather than renewable resources such as wood or narcotics. There is a substantial literature on the relation between narcotics and terrorism, in particular regarding the financing of terrorist activity in Colombia (one example is Leech 2004).

<sup>4</sup> One might argue that natural resources would allow governments to buy consent or repress opposition, thereby reducing terror rather than increasing it (Karl 2007; de Soysa and Binningsbø 2009). However, such effects should be absorbed by control variables such as GDP per capita and democratic participation. We therefore hypothesize terror to increase as a consequence of natural resource abundance.

featuring minority economic discrimination are more likely to experience domestic terrorist attacks. As discussed above, the exclusion of some groups from the gains of fossil fuels is common. The neglect of natural resources in the literature on terrorism is thus surprising.

So far, our discussion concerned the choice of violence over non-violent means, but we have had no hypotheses regarding the likelihood of resorting to terrorism over insurgency or vice versa. Sambanis (2008) stresses that terrorism and civil wars are distinct strategic choices with civil wars being driven more by economic factors and terrorist activities rather than political aspects. The logic of opportunity cost established in civil war would then not fit terrorists' considerations. Specifically, he finds the power (a-)symmetry between the group and the state as well as the level of public support to determine the degree of mobilization and the type of violence. Regan and Norton (2005) differentiate between the importance of grievances as the backbone of a movement and of resources as the means of paying out selective benefits to group members. They find that, overall, similar factors are related to protest, rebellion, and civil war (namely, income and distributional issues, repressive policies of the state, and access to exploitable resources) but that the reaction of the state determines whether violence escalates, where repression is more effective at lower than at higher levels of violence.

A small and recent literature analyzes groups that apply terrorism during civil war (but not the distinct choice between them), finding that democracies are more vulnerable to civilian casualties and thus terrorism while groups depending on mass mobilization would not attack civilians (Stanton 2013). Additionally, terrorism appears to benefit the group's survival, but not to be effective in reaching its political goals (Fortna 2014). Findley and Young (2012) describe how terrorism plays different roles before, during, and after a conflict. Similar to our theoretical framework, Polo and Gleditsch (2014) see terrorism in civil war as a bargaining process between the group and the state, based on the rebels' objectives, their available resources and the expected reaction by the government.

The approach of looking at groups rather than at countries is valuable both from a theoretical and from an empirical point of view. Conceptually, the greed versus grievances debate seems too broad and simplistic (Keen 2008). Finer degrees of motivation and strategic policy choices are likely to play a role, which can only be identified by looking at organizations. One possibility to capture these strategic considerations is to apply a rational actors' perspective and to assume that a group's ability for collective violence depends on its members' expected costs and benefits taking into account the socio-economic and political context (Conteh-Morgan 2003). The group does not operate in a vacuum but is affected by its surroundings, especially the state against which it rebels and which reacts to this threat. The institutional environment influences the ability of opposing groups to mobilize, their perceived chances of success and the political measures at their disposal

(Muller and Seligson 1987). Noticeably, collective action turns violent when those protesting against a certain perceived grievance do not have access to institutions that peacefully mediate them (Tarrow 1998).

In the context discussed here, a group's strategic "weapon of choice" will depend on balancing of costs and benefits of reaching the political aim most efficiently. The extent of mobilization – clearly smaller for terrorist activities than for insurgencies – then depends on both the need or the desired political outcome as well as on the ability, i.e., the strength of the state and the number of people willing to join the movement.

Based on theory and evidence described in this section, our empirical analysis is built along the following hypotheses: The mere existence of fossil fuels in a region leads to disturbances which can cause both terrorism and insurgency, while at the same time, revenues can be used to pay selective benefits (e.g., Regan and Norton 2005).<sup>5</sup> We thus expect both forms of violence to increase with oil revenues (Hypothesis 1). Following Hunziker and Cederman (2012) this effect on insurgencies should be mitigated with increased citizen participation in the wealth created by the resources and in deciding about how to exploit them (Hypothesis 2a). In line with Dreher and Fischer (2010), we expect participation in power to also reduce the extent of terrorism (Hypothesis 2b). Closely related, political discrimination should enhance violence linked to resources (Hypothesis 3a for terrorism and Hypothesis 3b for insurgencies). In line with Sambanis (2008) we consider terrorism to be driven more by political reasons and insurgencies by economic ones, thus expecting the effect of discrimination to be larger for terrorist activities (Hypothesis 3c). We interact our oil measure with indicators for access to political power as well as political discrimination to test Hypotheses 2 and 3. In contrast, where separatist motivations exist and a state of autonomy has already been reached, oil revenues might be a motivation to violently strive for complete secession (Ross 2004).<sup>6</sup> Thus, we interact our oil indicator with a measure of autonomy and expect that it exclusively strengthens the effect of oil on insurgencies (Hypothesis 4). As Karl (2007) points out, oil-induced income inequality is likely to be perceived as more severe compared to similar levels of inequality due to other reasons because the income generating process is perceived to be unfair. We therefore also interact our measure of resource abundance with economic discrimination and just as for political discrimination expect a stronger impact on terrorist activities than on civil wars (giving rise to Hypotheses 5a on terror, 5b on insurgencies, and 5c on the comparative effect). We expect the strength of the group to play a key role. The stronger the state relative to dissenting groups, the higher the probability that

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<sup>5</sup> While it is an interesting question whether it is the desire for enrichment that drives insurgency, or whether it is that access to oil revenues that increases the capacity for insurgency, we cannot distinguish these two channels in our analysis. For different groups, this mechanism is likely to be very different, for example depending on whether we look at the onset or the continuation of political violence.

<sup>6</sup> An example for this process are the Kurds in Iraq as described in the introduction.

such groups will turn to terrorism rather than other forms of violence (Hypothesis 6).<sup>7</sup> In other words, if a group feels strong enough vis-à-vis the state, it will dare to take up arms in a more coordinated fashion (Carter 2014; Ross 2004; Regan and Norton 2005; Sambanis 2008). We will test this using the variable of whether a group is supported by a foreign state as a proxy for the strength of an organization as “an available source of support external to the arena of conflict can empower organizations to engage in contentious politics in a way inaccessible to those without similar sources” (Asal et al. 2013, 309f).

### III Method and Data

Our approach follows a number of recent papers focusing on violent organizations relying on multinomial logit regressions (Gaibullov and Sandler 2014; Asal et al. 2015; Carter 2012). Closely related to our work, Meierrieks and Krieger (2014) model the choice between terrorism and civil war.<sup>8</sup> The multinomial logit model allows us to determine differential impacts of the variables of interest on the strategic choice of the observed political organizations. This assumes that the process from peace to terrorism to insurgency is not continuous, i.e., it is not a process of (de-)escalation, but rather represents separate decisions. However, even if the process were ordered, the multinomial specification would still be important to be able to estimate separate coefficients for the explanatory variables for each possible outcome. When organizations engage in terror and larger scale insurgencies in the same year we code them as insurgencies, as our method of estimation requires the groups to be exclusive.<sup>9</sup> In general, most groups that are peaceful remain peaceful (with a likelihood of 90.6 percent), but especially with regard to terrorism, there is quite some movement both towards escalation and de-escalation.<sup>10</sup>

We implement our specification as a multi-level model, including random intercepts for each organization. This allows us to exploit the panel structure of our dataset and thus variation for the

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<sup>8</sup> Meierrieks and Krieger (2014) compare the determinants of Islamist terrorism and civil wars that involve Islamist groups for 155 countries between 1968 and 2006. They find that the onset of Islamist conflict is associated with the discrimination of Islamic minorities, military dependence from the U.S. and a large Muslim population. Large governments and external cultural influences, in contrast, matter for the onset of Islamist terrorism.

<sup>9</sup> Of the 525 observations (group-years) coded as being involved in an insurgency by us, 30 percent also apply terrorism. Our results do not change when we omit those observations that are coded for more than one form of violence. While our main models are unable to distinguish the coexistence of the two forms of violence as a fourth category from the other categories, results are unchanged in a multinomial logit model with year fixed effects and standard errors clustered at the organization level. Insurgency is still significantly determined by oil reserves on a group's territory but this relationship is neither significant for terrorism nor for the overlapping category.

<sup>10</sup> The probability to apply terrorist activities in the next year conditional on applying terrorist activity in the current year is 57.8 percent. Online Appendix A2 shows the probabilities to transition between the various outcomes.



same group over time rather than across organizations. This is a novelty with regard to the other studies using multinomial logit models introduced above.<sup>11</sup> Our reduced-form empirical model is at the organization-year level:

$$WEAPON_{i,t} = \alpha + \beta RESOURCES_{i,t-1} + \gamma X_{i,t-1} + \delta RESOURCES_{i,t-1} * X_{i,t-1} + \zeta Z_{i,t-1} + \varepsilon_{i,t}, \quad (1)$$

where *WEAPON* reflects organization *i*'s "weapon of choice" in year *t*, *RESOURCES* is our indicator of natural resource abundance, where we expect  $\beta > 0$  (Hypothesis 1). *X* represents the variables we interact with oil production to test our hypotheses: (i) two indicators for political discrimination and whether the ethnic group shares power with others (Hypotheses 2 and 3); (ii) an indicator for regional autonomy of the ethnic group (Hypothesis 4); (iii) an indicator for the group being economically discriminated against (Hypothesis 5); and (iv) whether a group was supported by a foreign state (Hypothesis 6). We expect  $\delta > 0$  in all cases but for power sharing where it should be  $\delta < 0$ . *Z* contains our control variables (at the country- and group-level) and  $\varepsilon$  is the error term, which is clustered at the organization level. All our independent variables are lagged by one year in order to minimize the bias due to reversed causality.<sup>12</sup>

Our main variables are taken from Asal et al.'s (2008) Minorities at Risk Organizational Behavior (MAROB) dataset. The dataset contains an unbalanced panel of 118 political organizations claiming to represent the interests of 22 ethnic groups in 13 countries and territories of the Middle East and North Africa, over the 1980-2004 period.<sup>13</sup> Our dependent variable measures whether an organization is peaceful in a given year, whether it carries out any terrorist activity, or whether it is involved in a larger scale insurgency, thus ranging between zero and two.<sup>14</sup> Distinguishing the two forms of violence is a key challenge to our econometric analysis. We will rely on a combination of action-based (the level of violence) and actor-based (the group's attributes) approaches (Asal et al. 2012). According to Mickolus et al. (2004, 2) "terrorism is the use or threat of use, of anxiety inducing

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<sup>11</sup> We implement the model using the *gllamm* package in Stata 13.0 (Rabe-Hesketh et al. 2004). A possible third stage would be the country-level. However, due to the small number of countries in our sample the resulting model is fragile when estimating a three-level model. Including dummies for each country is also not an option as some countries do not have any oil (and thus no variation in our variable of interest), and we would lose the observations for six out of the 13 countries in the sample. We therefore do not use these models.

<sup>12</sup> Clearly, to the extent that the variables are correlated over time, using their lag will not completely eliminate reversed causality and other sources of endogeneity. To the extent that our variable of interest is positively or negatively correlated with endogenous control variables, this could bias its coefficient in either direction. In line with the previous literature, we cannot correct for this bias.

<sup>13</sup> The countries and territories included in the sample are Algeria, Bahrain, Cyprus, Iran, Iraq, Israel, Jordan, Lebanon, Morocco, Saudi Arabia, Syria, Turkey, West Bank and Gaza.

<sup>14</sup> Our "peace" category comprises both inaction and non-violent political action such as protests etc. While MAROB's variable *domorgprot* would allow us to distinguish the two (as suggested by Chenoweth and Cunningham 2003, e.g.), as we are mainly interested in severe attacks on the state we do not introduce this additional separation. Of the 1,107 observations (group-years) coded as "peaceful" in our sample, only 97 engage in non-violent forms of protest. While our main models are unable to distinguish the two forms of peaceful protest, results are unchanged in a multinomial logit model with year fixed effects and standard errors clustered at the organization level when we add non-violent protests as a fourth category to our model.

extranormal violence for political purposes by any individual or group, whether acting for or in opposition to established government authority, when such action is intended to influence the attitudes and behavior of a target group wider than the immediate victims.” Criteria for the inclusion of a group in the MAROB database include that they must not be created by the government and that they have to be political in their goals and activities. Following a large number of previous studies, the definition for terrorism applied here is a narrow one, comprising violent attacks on civilians only (including non-security state personnel such as civil service personnel and government representatives), but excluding those on state institutions and the military, which are conceptually different and often termed as guerilla activities (see inter alia Abrahms 2012; Fortna 2014; Kydd and Walter 2006). Specifically, any group that attacked civilians on a low scale or forcefully secured their support is deemed to be a terrorist organization.<sup>15</sup> Large-scale violent events include those targeting security personnel and state institutions as well as those attacks that attempt to seize control over a town, guerilla activity, and civil wars fought by rebel military units with base areas. Violence arising from groups with control over a specific area with some degree of governance structure is also included in this category.

Asal et al.’s (2008) data have two main advantages over alternative datasets. First, they are available at the organization- rather than the ethnicity- or country-level. Compared to data at the country level, this allows using geo-coded data on natural resources to test whether resources in a certain region affect violence related to the same region. More broadly, our data allow the investigation of more differentiated reasons for violence. Rather than attributing violence to ethnicities as a whole, characteristics of groups from the same ethnicity can be distinguished (Asal and Wilkenfeld 2013). Second, the dataset includes peaceful as well as violent groups. This is contrary to most previous organizational-level studies that include organizations only once they become violent (Stanton 2013; Fortna 2014) and are therefore unable to examine the determinants of why organizations choose to be violent per se. However, the data have a number of drawbacks as well. The most important one is the limited regional coverage and the resulting small number of independent observations we can exploit for our regressions. The MENA region is different from other areas in a number of ways, so that we are careful in not generalizing our results to other regions of the world. What is more, while Asal et al. (2008) follow clear guidelines on how to code organizations’ actions, the boundaries between terrorism and insurgencies in particular are

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<sup>15</sup> The MAROB dataset defines terrorism in the narrow manner that we do, and this definition is similar to the criteria for inclusion in the most recent version of the Global Terrorism Database (GTD). Among the large number of definitions of terrorism, there are also broader ones encompassing those groups that mainly or exclusively attack state institutions. As our aim is to distinguish terror from broader insurgencies and to identify differences in their respective determinants, we choose this specific cutoff, while in reality the borders can be blurred. When we rely on the broader definition instead, our results regarding the determinants of violent behavior with peace as a base category remain very similar, while we hardly find differences between the two forms of violence.

sometimes blurred (Sambanis 2008), and the resulting data are noisy. We have no reason, however, to expect a systematic bias in testing our hypotheses and make this distinction as clear as possible by applying the strict definition described above.

We rely on two indicators for natural resource abundance, coded at the regional level. Our main resource indicator follows Hunziker and Cederman (2012) who use data from Horn's (2010) "Giant Oil and Gas Fields of the World" database which includes geo-coded information on the location and size of petroleum occurrence across the world (for fields containing at least 500 million barrels oil or gas equivalents). The data allow us to code the share of a state's oil reserves that is situated on a specific ethnic group's territory. The annual value of a country's oil production (taken from Ross 2013) is then weighed with these shares to estimate the return to oil production on a group's territory in a given year in 2009 US\$.<sup>16</sup> The resulting resource-variable thus varies across groups and time. Given that the variable is highly skewed, we use it in logs.<sup>17</sup>

Our second indicator of resource abundance is a binary indicator based on the geo-coded location of oil and gas fields in PRIO's Petroleum dataset v.1.2 (Päivi et al. 2007).<sup>18</sup> It has the advantage of also including small fields. However, these data do not measure the degree of resource abundance. What is more, they hardly vary within groups in the same country and do not vary at all within the same country over time.

We use a number of variables to control for observed heterogeneity at the group- and country-level. At the group-level, and also taken from the MAROB database, we control for the goals of a group. Specifically, we include indicator variables for organizations that aim to eliminate political, economic, or cultural discrimination, groups that aim for autonomy or independence, and groups that want to establish an Islamic state.<sup>19</sup> Asal et al. (2008) coded these variables based on the expressed aims and motivations of the groups as reported in newspapers and other sources. We expect fighting for autonomy or independence, or an Islamic state, to lead groups to taking up arms at a larger scale as these are goals that states do not usually give in to. Organizations with "other" goals are the omitted category.

We control for whether organizations receive financial, political, humanitarian or military support from foreign states, as this is likely to fuel violence. We control for negotiations between the state government and the political organization, as members of the group that do not wish to reach

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<sup>16</sup> For a detailed discussion of the merits and drawbacks of this measure see Hunziker and Cederman (2012).

<sup>17</sup> In cases without any fossil fuels on the territory of a group, we add one to the oil value before taking logs. The smallest non-zero value is 1,827,721 so that one is a reasonably small value to add.

<sup>18</sup> Other, more easily lootable resources such as diamonds or narcotics might also be relevant for our hypothesis. However, such resources are hardly relevant in the region we consider here – the Middle East and North Africa.

<sup>19</sup> The goals of a group might reflect the degree of grievances it experiences and might thus close an important transmission channel for how resource abundance affects terrorism and insurgencies. When we exclude these variables, however, our results are very similar.

an agreement with the state or that expect larger concessions when showing strength could opt for increased violence. In addition, we include whether or not the government uses violence against an organization, that is, if the organization is considered legal or if it faces lethal violence by the state. We also add a variable indicating whether a group provided social services as this requires a certain degree of organization as well as financial means and thus strength.

At the country level, we rely on a number of standard control variables from the terrorism and civil war literature. Due to our very small sample of countries, however, we will not put a huge weight on their estimated coefficients. We control for whether or not the country is a democracy, relying on indicators from Freedom House (2014) for the average of the civil liberties and political rights, ranging between one and seven, with higher values indicating less freedom.<sup>20</sup> We also include a country's logged GDP per capita to proxy for its level of development. As Sambanis (2008) points out, the negative correlation between per capita GDP and civil war is widely accepted. GDP per capita however is not a robust determinant of terrorism (Gassebner and Luechinger 2011; Sambanis 2008).<sup>21</sup> We control for ethno-linguistic fractionalization because of the assumption that a higher degree of fractionalization leads to a higher potential for conflict. However, the empirical evidence regarding the effects of fractionalization is mixed (see Blattman and Miguel 2010).

In line with the previous literature we expect greater levels of repression in countries with larger populations, where the chance for conflict is larger (de Soysa and Binningsbø 2009). Gassebner and Luechinger (2011) find population to be among the few variables that robustly increase terrorism. Collier and Hoeffler (2004) and Collier et al. (2009) find the risk of civil war to increase with population. Following Hunziker and Cederman (2012) we also control for the logged value of oil produced at the national level, which could be related to facets of the resource curse relevant at the country- rather than the group-level. We report the sources of all variables and their descriptive statistics in Online Appendix A, while Appendix B reports the exact definitions of all variables.

#### IV Results

Table 1 shows the results without interacted variables, with peace being the omitted base category. The coefficients thus allow us comparing the choice of the two forms of violence with respect to peace. We report relative risk ratios (or odds ratios) that can be directly interpreted with respect to the quantitative effect of the variables. These exponentiated multinomial logit coefficients show to what extent the risk of an outcome changes relative to the reference group following a unit change

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<sup>20</sup> The empirical evidence on the effect of democracy on terror is mixed (Sandler 1995; Gassebner and Luechinger 2011), while a negative correlation between civil war and democracy is well-established (e.g., Sambanis 2008).

<sup>21</sup> According to Enders et al. (2014), the effect of GDP per capita on terrorist attacks is non-linear in their global sample. It is arguably linear among the sample of lower-middle and middle income countries that we consider here.

in a variable, for constant values of the other variables in the model.<sup>22</sup> Odds ratios larger than one indicate a positive correlation between an explanatory variable and the respective outcome, while odds ratios smaller than one indicate negative relationships. By testing whether the difference between the odds ratios for our two violent outcomes is significant, we can also compare them among each other.

We start with including our two oil variables without any control variables (columns 1 and 2 of Table 1) before adding group characteristics (columns 3 and 4) and finally estimating the full model (without any interactions, columns 5 and 6). As can be seen, ethno-political groups are more likely to engage in insurgencies the higher the value of the oil resources that were extracted from their territory in the previous year.<sup>23</sup> This effect is robust across the different specifications. The odds ratios in columns 2, 4, and 6 of Table 1 are significant at the ten (column 2) and at the one (columns 4 and 6) percent levels and indicate that the odds of a group being involved in an insurgency rather than in peaceful activities increase by a factor of 1.37 (full model, column 6) with an increase in the logged value of oil production in the group's area by one (its mean being 7.55). There is no evidence that resource abundance in the group's territory affects its choice of terrorism versus peace, however (this can be seen from columns 1, 3, and 5 of Table 1).<sup>24</sup> These results point to the absence of grievances arising from the extraction of oil strong enough to induce terrorism among the countries and years in our sample. Thus, regarding Hypothesis 1, it appears that the effect of oil on insurgencies as reported in the previous literature finds support at the sub-national level, while we do not find a significant relationship with terrorism. When comparing the coefficients for the two violent outcomes, oil makes civil wars significantly more likely than terror (p-value 0.0009).

Regarding the control variables of the models, the results in Table 1 show that the groups' official goals do not appear to make a difference regarding their pursuing these aims in a peaceful or violent manner. In contrast, aiming at eliminating economic discrimination is significantly more related to large-scale violence than to terrorism. Having the support of a foreign state makes both forms of violence more likely (columns 3 to 6). There is no significant difference between the two outcomes in this regard (p-value 0.8561). A state using violence against a group robustly increases the likelihood of this group turning to terrorism, while the same is only true for insurgencies in the full model (column 6), but even here the impact is significantly larger for terrorist activities than for insurgencies (p-value 0.04). Negotiations reduce the probability of terrorism (significant at the 5 and 10 percent level), while a group providing social services – our proxy for the degree of organization –

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<sup>22</sup> See [http://www.ats.ucla.edu/stat/stata/output/stata\\_mlogit\\_output.htm](http://www.ats.ucla.edu/stat/stata/output/stata_mlogit_output.htm) (accessed April 23, 2014).

<sup>23</sup> There might be reverse causality, so that violence reduces the amount of oil produced. In this case the estimated coefficient would reflect a lower bound for the effect of oil abundance on conflict. Also note that our results hold when we use the dummy for the existence of oil fields rather than oil production below, which is arguably exogenous to conflict.

<sup>24</sup> Online Appendix C shows the predicted probabilities for the three outcome variables as a function of oil.

is more likely to resort to both forms of violence, the effect being significant at the 1 percent level in all specifications (columns 3 to 6).

As pointed out above, we do not put a lot of weight on the national control variables due to the small number of countries in the sample. Overall, the effect of oil production at the national level is not robustly significant. When adding group characteristics (column 4) and also country-level variables (column 6), however, it seems that extracting fossil fuels somewhere on the national territory decreases the probability of violent outbreaks, possibly due to positive spill-overs from these regions in terms of social services or employment. Focusing on the full model (i.e., columns 5 and 6), both richer and less democratic countries are more likely to face terrorist attacks but not to be confronted with larger-scale challenges. While the positive relationship between per capita GDP and terrorism is in line with the literature above, the negative association between democracy and terrorism is not, and might arise both from the specificities of the region under observation or the small sample size. On the other hand, ethnolinguistic fractionalization has a large and positive effect on insurgency (in line with the previous literature) but does not appear to be linked to terror. This is also confirmed by the significant difference between the two odds ratios in columns 5 and 6 ( $p$ -value 0.003).

We next turn to Hypothesis 2, testing whether the effect of oil extraction on the “choice of weapons” depends on possibilities of political participation of the ethnic group. Interpreting the significance of interaction effects in nonlinear models such as ours might not be straightforward. However, these difficulties do not pertain to incidence rate ratios, which rely on a multiplicative rather than an additive scale (Buis 2010) and thus correctly calculate the significance of the incidence ratio.

An ethnic group is considered to be increasingly politically discriminated against if a group is not only politically under-represented but if, additionally, there are either no measures taken to remedy the situation or even measures introduced that further restrict the group’s political participation relative to other groups. We take this variable from the Minorities at Risk (2009) database. In order to measure whether an ethnic group represented by an organization in our sample has a share in central political power, we rely on a variable from the Ethnic Power Relations dataset (Wimmer et al. 2009). It can be seen that while political grievances per se do on average increase the probability of terror by a factor of 1.8 (Table 2, column 1), we do not find an effect conditional on regional fuel extraction for either type of violence (columns 1 and 2). While this is in line with our assumption of terrorism being a more political phenomenon than insurgency, it does not appear to be linked to natural resources. In contrast, the diminishing effect of power sharing on

the relationship between oil and civil war finds support in column 4.<sup>25</sup> This result is in line with our hypothesis and Hunziker and Cederman's (2012) observation that groups that participate in power are less likely to choose violent over peaceful means.

Columns 1 and 2 of Table 3 present the results for Hypothesis 3, including an interaction term between our indicator of resource abundance and a binary variable indicating whether or not an ethnic group enjoyed regional autonomy. This information is also taken from the EPR database (Wimmer et al. 2009). While regional autonomy appears to make terrorism less likely in combination with oil reserves (column 1), it increases the probability of violent conflict (column 2). This is in line with Sambanis (2008), showing economic factors to be comparably important for civil wars, while terrorist activities are predominantly driven by political aspects. Political grievances over the appropriation of fuel revenues are largely addressed by the status of regional autonomy while only independence grants full economic control. The finding regarding civil war is also in accordance with Ross's (2004) result that regions where ethnic groups strive for more autonomy might be driven into secessionist wars where financial incentives from natural resources are available.

Columns 3 and 4 of Table 3 turn to Hypothesis 4, testing the impact of economic discrimination. The findings resemble those for political discrimination in that economic discrimination per se increases the probability for terrorism twofold (column 3) but does not appear to be related to insurgencies or have a differential effect in oil-extracting areas.

The results for Hypothesis 5 – expecting support by a foreign state to increase the likelihood for insurgency in oil-rich regions due to increased strength of the group relative to the central state and also based on higher stakes for the supporting state – yields some interesting insights: Column 1 of Table 4 shows that the significant effect of foreign support on terrorism is independent of oil. In contrast, just as discussed by Ross (2004), the high possible income from fossil fuels seems to encourage foreign states to back groups in larger scale insurgencies (column 2).

In summary, we find evidence in line with the “resource curse” in relation to large-scale violence but not when it comes to terrorism. In our approach to differentiating the two, we find political and economic discrimination to increase terrorism, but independent of oil resources. However, while power sharing can mitigate the escalating impact of mineral resources, in areas that strive for more independence, the prospect of high revenues appears to induce insurgencies. Similarly, foreign state involvement in regions with fossil fuel reserves is likely to spark civil wars but not terrorism.

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<sup>25</sup> The number of observation is noticeably reduced in columns 3 and 4 because the EPR data are not available for Bahrain, Cyprus or the Palestinian territories.

## V Tests for Robustness

Online Appendix D tests the robustness of our main results to using PRIO's binary indicator of the existence of oil fields rather than oil extraction. As described above, this database also includes small fields but does not measure the degree of resource abundance. Furthermore, this indicator hardly varies within groups and it is constant over time within the same region. It is likely that it is this loss in power which leads to one difference in the results of this robustness check compared to the main results: Considering Hypothesis 1, the relationship between fossil fuels and both forms of violence is no longer robustly significant – in three out of six specifications, oil reserves in the region of a group now make terrorist activities significantly less likely than peace (in line with Tavares 2004). Possibly, revenues from resource extraction are spent at the advantage of the local population, offsetting potential grievances that might exist.

However, with this oil indicator, the likelihood of insurgency rather than terrorism is still significantly higher, in line with the main findings. All findings from the models including interaction terms equally hold. Overall, our main results are thus robust to using the alternative measure of resource abundance.

Online Appendix E presents a number of further tests for robustness. Columns 1 and 2 show our main specification with standard errors clustered at the country rather than at the organization level. Columns 3 and 4 apply the Polity IV (Marshall et al. 2014) rather than the Freedom House measure for democracy.<sup>26</sup> Finally, columns 5 and 6 replace ethnolinguistic fractionalization with polarization, following Montalvo and Reynal-Querol (2005) among others, who argue that a measure of polarization better should capture the non-monotonic relationship between ethnic diversity and conflict compared to an index of fractionalization. Again, the number of observations is noticeably reduced as this measure is not available for Lebanon and the Palestinian territories. These three variations leave our main findings unchanged.

## V Conclusion

In this paper we investigate what determines ethno-political organizations' choice between pursuing their goals with peaceful means or violent action, distinguishing between smaller-scale terrorist activities and larger scale insurgencies. Combining the two forms of violent behavior within the same framework does not only allow us to identify determinants of violence as such but to distinguish between different forms of violent actions. According to our theory, the extraction of natural resources exerts externalities on ethnic groups populating the regions where resources are extracted, leading to grievances. At the same time, revenues from fossil fuels represent important economic incentives. The consequent risk of both terrorism and rebellion depends on the group's

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<sup>26</sup> As Polity IV does not include the Palestinian territories, we did not use it in the main analyses above.



characteristics as well as the state's reaction to its actions. Based on this reasoning, we run a multinomial logit model where we include regional and national oil production and then add a number of interaction terms representing these factors. Indeed, our results show that insurgencies are more likely with greater resource extraction, both with respect to peace and with respect to terrorism. The choice to take up arms for terrorist activities is not affected by resource availability however.

Access to a share in political power reduces the likelihood of insurgencies. While Hunziker and Cederman (2012) interpret this result to indicate the importance of grievances rather than greed, ethnic groups participating in power might also be able to extract a larger share of the resources in their territory, reducing the chances of greed-based insurgencies. This reading is supported by the finding that a status of regional autonomy helps to diminish the effect of regional oil extraction on terrorist activities but even enlarges the probability of insurgencies. What is more, while economic and political grievances per se increase the risk of terrorism, this relationship appears to be independent from fossil fuel extraction. Additionally, in regions where oil can be extracted, foreign states' support of the political group also escalates violent processes.

Taken together, our findings indicate that natural resources are an essential factor in the mobilization for civil war, e.g., as a means for selective payments, but are less important for terrorist movements, where a smaller degree of mobilization is required. This is in line with the analyses of both Sambanis (2008) and Ross (2004). We also conclude that terrorism is rather driven by political than economic factors. In contrast, greed dominates grievance as a motive for ethno-political organizations to turn to civil wars as a consequence of oil production in the regions of the ethnicities that they represent (in line with the country-level analyses in Collier and Hoeffler 2004 and Collier et al. 2009).

In addition, the regional distribution of oil matters as do specific group characteristics and an organization's standing vis-à-vis the state. The information on all of these aspects is lost when comparing countries, as is the focus of most of the previous literature. Furthermore, although the geographical coverage of the MAROB data is limited to the MENA region, looking at groups should arguably benefit from a higher external validity as the "rationality of actors" should be independent from their country of origin.

Our results bear important policy implications. In order to reduce the negative consequences of oil resources, central governments need to carefully balance the degree of decentralization and regional autonomy they give to the regions containing these resources. Countries plagued with terrorism (but not larger scale insurgencies) will do well to give affected regions some regional autonomy. Countries affected by larger scale insurgencies should give regional groups a share in political power short of regional autonomy. Returning to the example of Iraq we raised in the

introduction, and taking our results at face value, greater regional autonomy has already proved to increase the risk of insurgency while reducing terrorism coming from the country's Kurdish minority. The larger scale insurgency of the Islamic State (IS) should thus not result in regional autonomy, but rather with a share in political representation at central government.

Future research should take up the innovations of this paper – notably moving the "resource curse" literature to the sub-national level, looking at political groups, and comparing causes of violent behavior per se as well as causes of its different forms – and include further geographical regions and natural resources.

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**Table 1: Determinants of Terror and Insurgency, Multinomial Logit, 1980-2004**

	(1)	(2)	(3)	(4)	(5)	(6)
	Terror	Insurgency	Terror	Insurgency	Terror	Insurgency
Log(Group oil production)	1.0505 (0.556)	1.3027* (0.074)	1.0237 (0.733)	1.3523*** (0.004)	0.9863 (0.863)	1.3739*** (0.000)
Log(National oil production)	0.9316 (0.374)	0.7928 (0.118)	0.9694 (0.635)	0.8094** (0.048)	1.0113 (0.897)	0.7995** (0.040)
Goal: Eliminate discrimination			2.3900 (0.372)	3.5440 (0.428)	4.6385 (0.192)	15.4623 (0.125)
Goal: Autonomy, independence			0.2933 (0.253)	0.1286 (0.212)	0.2305 (0.205)	0.7397 (0.870)
Goal: Eliminate economic discrimination			0.6957 (0.761)	6.5291 (0.231)	0.4010 (0.430)	5.9578 (0.166)
Goal: Eliminate cultural discrimination			0.9944 (0.994)	1.1051 (0.910)	0.4422 (0.263)	0.7651 (0.757)
Group supported by foreign state			4.3188*** (0.003)	3.5508*** (0.004)	3.4554** (0.033)	3.0760** (0.017)
Goal: Islamic state			3.8189 (0.326)	2.7597 (0.631)	7.5744 (0.208)	4.5127 (0.528)
State uses violence against group			3.1923** (0.018)	2.0715 (0.175)	9.5612*** (0.000)	3.6533* (0.068)
State negotiated with organization			0.3487** (0.038)	0.5955 (0.376)	0.3139* (0.057)	1.0216 (0.969)
Group provides social services			7.8942*** (0.009)	15.7226*** (0.003)	15.0198*** (0.001)	18.3152*** (0.000)
Log(GDP p.c.)					5.6679** (0.014)	2.3939 (0.165)
Log(Population)					0.8819 (0.691)	1.2537 (0.621)
Freedom House					1.9433* (0.056)	1.2300 (0.558)
Ethnolinguistic Fractionalization					0.3019 (0.582)	161.61** (0.029)
Number of groups	112		107		105	
Number of observations	5031		4146		3360	
Log-Likelihood	-865.122		-644.0801		-424.210	

Notes: Odds ratios shown. p-values in parentheses: \*, \*\*, \*\*\* significant at 10, 5, 1%.

All variables are lagged by one year and standard errors are clustered at the organization level.

**Table 2:** Determinants of Terror and Insurgency, Multinomial Logit, 1980-2004, political participation

	(1)	(2)	(3)	(4)
	Terror	Insurgency	Terror	Insurgency
Log(Group oil production)	0.9353 (0.464)	1.2995*** (0.002)	0.9510 (0.565)	1.574*** (0.000)
Log(National oil production)	1.1241 (0.268)	0.7694*** (0.022)	1.8782** (0.013)	0.7794** (0.050)
Interaction term oil and political discrimination	1.0011 (0.960)	1.0445 (0.108)		
Political discrimination	1.8595** (0.038)	0.6683 (0.255)		
Interaction term oil and power sharing			1.0757 (0.440)	0.7439*** (0.001)
Ethnic group shares power with others			3.2593 (0.375)	15.5840* (0.082)
Goal: Eliminate discrimination	1.4955 (0.758)	21.7271* (0.071)	5.0529 (0.288)	31.0613** (0.031)
Goal: Autonomy, independence	0.0467** (0.014)	0.7460 (0.864)	0.0363** (0.019)	1.5207 (0.785)
Goal: Eliminate economic discrimination	0.5522 (0.578)	4.1135 (0.192)	0.3483 (0.478)	12.0103* (0.079)
Goal: Eliminate cultural discrimination	0.4503 (0.297)	0.7560 (0.757)	0.4655 (0.458)	0.4457 (0.358)
Group supported by foreign state	3.0618* (0.053)	3.1245** (0.018)	1.5395 (0.510)	3.1019* (0.062)
Goal: Islamic state	5.0159 (0.333)	3.8678 (0.561)	6.9557 (0.265)	8.3164 (0.309)
State uses violence against group	8.2473*** (0.000)	3.8343* (0.060)	4.3994** (0.035)	3.2653 (0.177)
State negotiated with organization	0.4441 (0.168)	1.0857 (0.867)	1.2195 (0.816)	0.9899 (0.989)
Group provides social services	24.7150*** (0.000)	17.1722*** (0.000)	15.5049** (0.032)	3.9018 (0.293)
Log(GDP p.c.)	4.3357** (0.025)	1.8579 (0.307)	26.4131*** (0.001)	1.3115 (0.715)
Log(Population)	0.6580 (0.211)	1.7141 (0.227)	0.0047*** (0.003)	2.6938 (0.198)
Freedom House	1.7503* (0.083)	1.1299 (0.696)	0.6037 (0.423)	0.5517 (0.132)
Ethnolinguistic Fractionalization	0.2441 (0.515)	256.1573** (0.015)	4.1443 (0.665)	17279.61*** (0.005)
Number of groups		103		88
Number of observations		3336		2496
Log-Likelihood		-414.307		-308.901

Notes: Odds ratios shown. p-values in parentheses: \*, \*\*, \*\*\* significant at 10, 5, 1%.

All variables are lagged by one year and standard errors are clustered at the organization level.



**Table 3:** Determinants of Terror and Insurgency, Multinomial Logit, 1980-2004, autonomy and economic discrimination

	(1)	(2)	(3)	(4)
	Terror	Insurgency	Terror	Insurgency
Log(Group oil production)	1.0168 (0.801)	1.3070*** (0.000)	0.9763 (0.777)	1.3220*** (0.001)
Log(National oil production)	1.6052** (0.046)	0.8466 (0.101)	1.1082 (0.275)	0.8107** (0.036)
Interaction term oil and autonomy	0.2985** (0.011)	1.2488** (0.020)		
Ethnic group has regional autonomy	0.4640 (0.486)	0.1562 (0.347)		
Interaction term oil and economic discrimination			0.9958 (0.865)	1.0137 (0.674)
Economic discrimination			2.0703*** (0.005)	0.8947 (0.735)
Goal: Eliminate discrimination	6.7570 (0.163)	5.9306 (0.242)	1.5449 (0.735)	15.7567* (0.100)
Goal: Autonomy, independence	0.1063* (0.078)	1.1442 (0.931)	0.0645** (0.019)	0.7793 (0.883)
Goal: Eliminate economic discrimination	0.8145 (0.903)	10.7317 (0.155)	0.4703 (0.475)	4.5170 (0.190)
Goal: Eliminate cultural discrimination	0.7677 (0.772)	0.6494 (0.590)	0.5880 (0.446)	0.9323 (0.938)
Group supported by foreign state	1.4092 (0.593)	2.4767* (0.068)	3.0868* (0.058)	3.1423** (0.017)
Goal: Islamic state	6.4859 (0.231)	3.7913 (0.443)	5.2837 (0.257)	3.9200 (0.538)
State uses violence against group	5.2080** (0.016)	3.5900 (0.121)	9.2161*** (0.000)	4.0111* (0.051)
State negotiated with organization	0.7862 (0.679)	0.4717 (0.407)	0.4506 (0.206)	1.0384 (0.944)
Group provides social services	7.5275* (0.095)	4.7495 (0.224)	23.6191*** (0.001)	16.8742*** (0.000)
Log(GDP p.c.)	11.4476*** (0.001)	3.0434 (0.109)	4.5287** (0.019)	2.1512 (0.195)
Log(Population)	0.0165** (0.015)	2.3049 (0.274)	0.7384 (0.320)	1.3006 (0.506)
Freedom House	0.5500 (0.302)	0.6541 (0.308)	1.6142 (0.159)	1.2024 (0.569)
Ethnolinguistic Fractionalization	21.298 (0.335)	33533.7*** (0.001)	0.4054 (0.681)	134.374** (0.31)
Number of groups		88		103
Number of observations		2517		3336
Log-Likelihood		-315.477		-415.383

Notes: Odds ratios shown. p-values in parentheses: \*, \*\*, \*\*\* significant at 10, 5, 1%.

All variables are lagged by one year and standard errors are clustered at the organization level.

**Table 4:** Determinants of Terror and Insurgency, Multinomial Logit, 1980-2004, support by foreign state

	(1)	(2)
	Terror	Insurgency
Log(Group oil production)	0.9709 (0.716)	1.3192*** (0.004)
Log(National oil production)	1.0092 (0.915)	0.7960** (0.039)
Interaction term oil and foreign support	1.0788 (0.192)	1.1511** (0.037)
Goal: Eliminate discrimination	4.1009 (0.233)	12.0715 (0.180)
Goal: Autonomy, independence	0.1790 (0.151)	0.4983 (0.722)
Goal: Eliminate economic discrimination	0.4467 (0.505)	6.2673 (0.177)
Goal: Eliminate cultural discrimination	0.4434 (0.270)	0.7170 (0.696)
Group supported by foreign state	2.7315* (0.094)	1.6774 (0.225)
Goal: Islamic state	7.1523 (0.232)	3.9499 (0.582)
State uses violence against group	10.2335*** (0.000)	4.1796** (0.046)
State negotiated with organization	0.28333** (0.045)	0.5300 (0.769)
Group provides social services	16.8462*** (0.000)	22.1404*** (0.000)
Log(GDP p.c.)	5.2592** (0.021)	2.2999 (0.198)
Log(Population)	0.8934 (0.714)	1.2742 (0.599)
Freedom House	1.8763* (0.075)	1.2218 (0.580)
Ethnolinguistic Fractionalization	0.3457 (0.627)	180.3083** (0.027)
Number of groups	105	
Number of observations	3360	
Log-Likelihood	-421.664	

Notes: Odds ratios shown. p-values in parentheses: \*, \*\*, \*\*\* significant at 10, 5, 1%.

All variables are lagged by one year and standard errors are clustered at the organization level.

## ONLINE APPENDIX: NOT INTENDED FOR PUBLICATION

### Appendix A: Descriptive Statistics and Sources

	Mean	SD	Min	Max	N	Source
"Weapon of Choice"	0.54	0.83	0	2	1120	MAROB (Asal et al. 2008)
Regional Oil Production (Million US\$)	1886.85	6610.28	0	76698.83	1120	Horn (2010)
National Oil Production (Million US\$)	8697.324	19409.7	0	162612	1120	Horn (2010), Ross (2013)
Oil Dummy	0.38	0.49	0	1	1120	PRIO (Päivi et al. 2007)
GDP p.c.	9780.94	6933.80	2161.97	28093.65	1120	Penn World tables, World Development Indicators
Population in 1000s	13834.36	17306.95	374.13	69342.13	1120	World Development Indicators
Freedom House	4.53	1.90	1	7	1120	Freedom House
Polity IV	0.71	8.13	-10	10	761	Marshall et al. (2014)
Ethnolinguistic Fractionalization	0.50	0.20	0.23	0.82	1120	Yeoh (2012)
Ethnolinguistic Polarization	0.62	0.18	0.11	0.98	793	Montalvo and Reynal-Querol (2005)
Goal: remedial policies	0.60	0.49	0	1	1119	MAROB (Asal et al. 2008)
Goal: autonomy, independence	0.25	0.44	0	1	1119	MAROB (Asal et al. 2008)
Goal: eliminate economic discrimination	0.19	0.39	0	1	1120	MAROB (Asal et al. 2008)
Goal: eliminate cultural discrimination	0.32	0.47	0	1	1120	MAROB (Asal et al. 2008)
Group supported by foreign state	0.35	0.48	0	1	1100	MAROB (Asal et al. 2008)
Goal: Islamic state	0.08	0.27	0	1	1120	MAROB (Asal et al. 2008)
State uses violence against group	0.12	0.32	0	1	1117	MAROB (Asal et al. 2008)
Group provides social services	0.21	0.41	0	1	1116	MAROB (Asal et al. 2008)
Ethnic group has regional autonomy	0.15	0.34	0	1	832	Ethnic Power Relations (Wimmer et al. 2009)
Ethnic group shares political power	0.18	0.39	0	1	833	Ethnic Power Relations (Wimmer et al. 2009)
State negotiated with group	0.06	0.24	0	1	953	MAROB (Asal et al. 2008)
Political Discrimination	2.25	1.73	0	4	1029	MAR
Economic Discrimination	2.05	1.61	0	4	1029	MAR

Notes: Oil production variables are displayed in million US\$ but are included in totals in the analysis.

All variables except for the "Oil Dummy" and ethnolinguistic fractionalization/ polarization vary from year to year.

**Appendix A2:** Transition Probabilities between Strategic Choices in the Group Panel Data

	"Weapon of Choice"			
	Peace	Terrorism	Insurgency	Total
Peace	90.61	3.82	5.58	100.00
Terrorism	29.81	57.76	12.42	100.00
Insurgency	12.15	5.47	82.39	100.00
Total	61.66	9.48	28.86	100.00

Notes: This table shows the transition probabilities from one outcome (peace, terror, and insurgency) to another from one year to the next for the same organization.

## Appendix B: Definition of Variables

	Definition
"Weapon of Choice"	<p>0 = no violent behavior; 1 = terrorism, i.e., attacks on civilians incl. non-security state personnel, no control of territory; 2 = insurgency, i.e., attacks targeting security personnel and state authorities, local rebellion, guerilla activity, civil war, control of territory.</p> <p>We code our dependent variable as terrorism when any of Asal et al.'s (2008) variables orgst6 or orgst7 are greater than zero, or domorgviolence equals one, four, or five. Orgst6 is a three-scale ordinal variable where values larger than zero indicate that a group forcefully secures financial, material, or personnel support from the local population. Orgst7 is a three-scale ordinal variable, where values greater than zero imply that a group attacks civilians, including non-security state personnel. Domorgviolence is a six-scale ordinal variable where one indicates that an "organization is using violence as occasional strategy but is not specifically targeting persons," four implies that a group "is occasionally targeting civilians," and five shows that it is "targeting civilians regularly." We code the dependent variable as insurgency when Asal et al.'s (2008) variable domorgviolence equals two or three, orgreb is greater than two, or orgst8 or orgst9 are greater than zero. For domorgviolence this implies that an organization "is using violence regularly as a strategy but is targeting security personnel." Orgreb is an eight-scale ordinal variable where values greater than two imply that an organization is involved in "local rebellion," "small-scale guerilla activity," "intermediate guerilla activity," "large-scale guerilla activity," or "civil war." Orgst8 is a three-scale ordinal variable with values greater than zero implying "small-scale" and "intermediate guerilla activity"; orgst9 is a three-scale ordinal variable where values greater than zero indicate that a group "controls movement into/ out of a territory" or "sets up government structures."</p>
Regional Oil Production	Value of the share of the national hydrocarbon production in a year, located on an ethnic group's territory, in constant 2009 million US \$ (for fields containing at least 500 million barrel oil or gas equivalents)
National Oil Production	Value of the national hydrocarbon production in a year in constant 2009 US \$ (for fields containing at least 500 million barrel oil or gas equivalents)
Oil Dummy	Indicates that hydrocarbon reserves are located on an ethnic group's territory
GDP p.c.	GDP per capita, PPP, in constant 2005 US \$
Population	Measured in 1000s
Polity IV	Polity scale ranges from +10 (strongly democratic) to -10 (strongly autocratic)

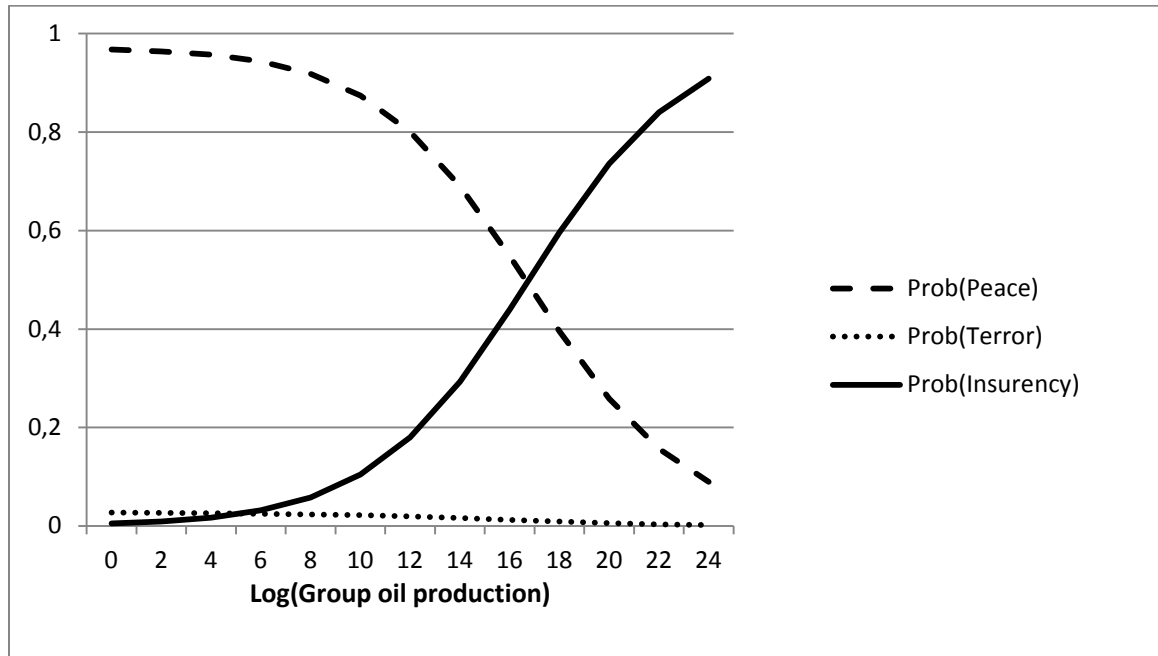
**Appendix B (continued)**

	Definition
Ethnolinguistic Fractionalization	Probability that a randomly selected pair of individuals in a society will belong to different groups; from 0 = complete homogeneity to 1 = complete heterogeneity
Ethnolinguistic Polarization	Captures the distance of the distribution of ethnic groups from the bipolar distribution, ranging from 0 = least polarized to 1 = maximally polarized (bipolar)
Freedom House	Average of civil liberties and political rights indices; from 1 = free to 7 = not free; civil liberties: freedom of expression and belief, associational and organizational rights, rule of law, and personal autonomy and individual rights; political rights: electoral process, political pluralism and participation, and functioning of government
Goal: remedial policies	Major organizational goals focused on eliminating discrimination and on creating increasing remedial policies
Goal: autonomy, independence	Major organizational goals focused on creating or strengthening autonomous status for group or on creating a separate state for the group or revanchist change in border of state
Goal: eliminate economic discrimination	Group expresses economic grievances focused on elimination of discrimination or on creating or strengthening economic remedial policies
Goal: eliminate cultural discrimination	Group expresses cultural grievances focused on elimination of discrimination or on strengthening economic remedial policies (i.e., establishing or increasing state funding for cultural protection and/or promotion)
Group supported by foreign state	Has org. received support from foreign state in year being coded - i.e. financial, humanitarian, political, or military support?
Goal: Islamic state	Has the organization expressed the goal of creating an islamic state/ an islamic government or of introducing islamic law?
State uses violence against group	Does the state use periodic or consistent lethal violence against the organization? Binary indicator that equals one when Asal et al.'s (2008) three-scale ordinal variable stateviolence is larger than one, indicating that a state is using "periodic lethal violence" or "consistent lethal violence against the organization."
Group provides social services	The provision of social services is a minor or major strategy of the organization

**Appendix B (continued)**

	Definition
Ethnic group has regional autonomy	Elite members of the group have no central power but have some influence at the subnational level (i.e., the provincial or district level, depending on the vertical organization of the state)
Ethnic group shares political power	Any arrangement that divides executive power among leaders who claim to represent particular ethnic groups (formal or informal arrangements)
State negotiated with group	The state negotiated with the group in the year and the state might even have made concessions
Political Discrimination	0 = no discrimination, 1=neglect but remedial policies; 2=neglect, no remedial policies; 3=social exclusion, neutral policies; 4 = exclusion/ repressive policy
Economic Discrimination	0 = no discrimination, 1=neglect but remedial policies; 2=neglect, no remedial policies; 3=social exclusion, neutral policies; 4 = exclusion/ repressive policy

**Appendix C:** Predicted probabilities of the three outcomes as a function of lagged Log(Group oil production)



Notes: The estimates are based on the model of columns 5 and 6 of Table 1. They show the predicted probabilities of the three outcomes conditional on all control variables included held constant at their mean.



**Appendix D: Determinants of Peace and Insurgencies, Multinomial Logit, 1980-2004, alternative oil measure**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Terror	Insurgency	Terror	Insurgency	Terror	Insurgency	Terror	Insurgency	Terror	Insurgency	Terror	Insurgency
Oil or gas field on group's territory	0.0468** (0.0454)	0.339 (0.534)	0.0471 (0.0778)	0.122 (0.248)	0.0147** (0.0205)	0.440 (0.946)	0.0599 (0.0993)	0.204 (0.428)	0.0957 (0.141)	0.452 (0.865)	0.0259*** (0.0269)	0.0701 (0.121)
Log(national oil production)	1.081 (0.0551)	1.091 (0.0888)	1.172* (0.0847)	1.126 (0.0941)	1.798* (0.433)	1.107 (0.0795)	1.635* (0.360)	1.035 (0.0932)	1.162* (0.0871)	1.084 (0.0885)	1.086 (0.0540)	1.103 (0.0896)
Group supported by foreign state	3.951* (2.235)	3.640** (1.778)	3.289* (1.817)	3.581* (1.788)	1.329 (0.800)	2.914 (1.645)	1.471 (0.948)	2.757 (1.522)	3.289* (1.898)	3.639** (1.800)	2.996 (1.725)	1.720 (0.727)
Ethnic group politically discriminated			2.085** (0.489)	1.104 (0.371)								
Interaction oil and political discrimination			0.809 (0.332)	1.379 (0.789)								
Interaction oil and power sharing					10.74 (19.72)	0.0147* (0.0305)						
Ethnic group shares political power with others					0.994 (1.220)	1.118 (1.861)						
Interaction oil and regional autonomy							0.00000886*** (0.0000138)	234.6* (517.7)				
Ethnic group has regional autonomy							0.484 (0.483)	0.208 (0.391)				
Ethnic group economically discriminated									1.989** (0.503)	1.027 (0.340)		
Interaction oil and economic discrimination									0.792 (0.394)	0.831 (0.616)		
Interaction oil and foreign state support											5.315 (5.990)	38.40* (57.61)
Number of groups		105		103		88		88		103		105
Number of observations		3,360		3,336		2,517		2,517		3,336		3,360
Log-Likelihood		-424.049		-416.696		-317.374		-317.256		-417.753		-420.463

Notes: Odds ratios shown. Additional control variables (as in main specifications) are included in all regressions but not shown. p-values in parentheses: \*, \*\*, \*\*\* significant at 10, 5, 1%

Standard errors are clustered at the organization level.

**Appendix E: Determinants of Peace and Insurgencies, Multinomial Logit, 1980-2004, alternative specifications/ covariates**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Terror	Insurgency	Terror	Insurgency	Terror	Insurgency	Terror	Insurgency
Log(Group oil production) (Lag)	0.9863 (0.895)	1.3739*** (0.000)	0.9863 (0.892)	1.3725*** (0.006)	0.9019 (0.459)	1.7575*** (0.001)	1.0095 (0.909)	1.4787*** (0.003)
Log(National oil production (Lag)	1.0113 (0.920)	0.7995*** (0.000)	1.0113 (0.921)	0.7993 (0.114)	1.0720 (0.568)	0.7917* (0.089)	1.1677 (0.209)	0.9091 (0.546)
Group supported by foreign state	3.4554 (0.154)	3.0760** (0.046)	3.504* (0.093)	3.1285* (0.062)	6.4668* (0.063)	3.1417 (0.269)	5.7551 (0.130)	4.4281 (0.190)
State uses violence against group	9.5612*** (0.000)	3.6533*** (0.005)	9.582*** (0.000)	3.6856** (0.012)	2.2435 (0.321)	3.4627 (0.269)	4.3496* (0.054)	5.5114 (0.117)
State negotiated with organization	0.3139* (0.081)	1.0216 (0.974)	0.320 (0.202)	1.0233 (0.966)	5.85e-08 (0.198)	1.2403 (0.682)	0.3296 (0.398)	0.4623 (0.294)
Group provides social services	15.0198*** (0.000)	18.3152*** (0.000)	15.296*** (0.001)	18.2678*** (0.001)	12.3340*** (0.008)	45.8325*** (0.000)	24.5443*** (0.003)	17.8276*** (0.005)
Log(GDP p.c.)	5.6679*** (0.002)	2.3939 (0.439)	5.531** (0.022)	2.3738 (0.402)	29.3888*** (0.004)	1.1277 (0.888)	2.7998 (0.372)	17.9102** (0.024)
Log(Population)	0.8819 (0.737)	1.2537 (0.515)	0.8819 (0.737)	1.2701 (0.593)	1.8560 (0.216)	1.4555 (0.508)	0.9956 (0.993)	2.9022 (0.245)
Freedom House	1.9433** (0.015)	1.2302 (0.716)	1.9165* (0.087)	1.2304 (0.713)			0.6373 (0.473)	0.8620 (0.775)
Polity IV					0.8312** (0.016)	1.4052*** (0.001)		
Ethnolinguistic Fractionalization	0.3019 (0.571)	161.61** (0.019)	0.3006 (0.629)	157.380* (0.066)	13.5016 (0.667)	4.53e+06*** (0.000)		
Ethnolinguistic Polarization							0.0007* (0.054)	469.8275 (0.315)
Number of groups		105		105		96		80
Number of observations		3360		3360		2409		2379
Log-Likelihood		-424.210		-424.322		-220.672		-226.723

Notes: Odds ratios shown. Additional group characteristics (as in main specifications) are included in all regressions but not shown. p-values in parentheses: \*, \*\*, \*\*\* significant at 10, 5, 1%

All variables are lagged by one year and standard errors are clustered at the organization (columns 5 to 8), country (columns 1 and 2) or ethnic group level (columns 3 and 4).