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ABSTRACT

What determines the activity and lethality of militant groups? To answer this question, a two-step count method disentangles activity and lethality in terms of ideology, capacity, and environmental factors. A first step assesses the determinants of group activity, measured by the number of incidents in which a group was involved. The second step considers the number of fatalities, conditional on the number of incidents. Similar factors drive militant group activity and lethality, but some links are stronger than others. Specifically, ideological factors are particularly strong determinants of lethality; capacity and environmental factors matter more for activity.

KEYWORDS: Militant Groups; Lethality; Activity; BAAD; GTD

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1. Introduction

Militant groups[1] have various adverse effects on society. According to Gassebner et al. (2008, 2011), politicians' reelection probabilities and the stability of government cabinets decline in the wake of a militant attack. These same authors show that the effects grow more intense with a greater number of casualties. In relation to traditional economic outcomes, Abadie and Gardeazabal (2003) show that increased levels of activity by ETA, a Basque group, lower regional production in the Basque country; the effect intensifies when ETA activity is particularly high. Similarly, in a comparative study of 187 countries, Llussá and Tavares (2011) show that private consumption and investments decrease in the wake of militant group attacks, especially when more fatalities are associated with the attacks. Without an extensive survey of extant literature, two stylized facts can be derived from a brief review. First, militant group incidents exert negative effects on various economic, political, and societal outcomes. Second, these negative effects are aggravated when the number of fatalities incurred in the course of the incidents increases.

These findings beg a key question: What determines the lethality and activity of militant groups? The determinants of militant group activity on a national level often are well understood (for a survey, see Gassebner and Luechinger 2011), but analyses of the activity and lethality of individual groups are inconclusive. Empirical literature focused on individual groups usually considers only a handful of related groups (e.g., Jaeger and Paserman 2006, 2008)—with the notable exception of Asal and Rethemeyer's (2008a) investigation regarding which organizational characteristics best predict the number of fatalities that militant groups actually amassed between 1998 and 2005. They find that ideological factors, such as religion, are very strong determinants of lethality, as are capacity factors, such as group size, but

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[1] Substantial debate continues regarding how to refer to armed, non-state actors. For this study, I refer to such actors as militant groups and leave it to readers to assess whether any particular group in question consists of freedom fighters, insurgents, rebels, terrorists, or something else.

environmental factors, such as economic development, matter only marginally.[2] However, their analysis does not differentiate between lethality and activity; groups with a high fatality count may be very active groups but not necessarily highly lethal groups. Consider the examples of ETA and Jaish-e-Mohammed, a Pakistani group. The lethality count for the former reached 52, and that for the latter was 49 between 1998 and 2005. Yet the ETA reached this number of fatalities during the course of 174 incidents, whereas Jaish-e-Mohammed attained it in only 15 events. Thus, it may be difficult to argue that they are both equally lethal.

Instead, this article seeks to define which organizational characteristics can predict lethality and which are more effective predictors of activity. To this end, I start by classifying militant groups' strategy choices, in terms of ideology, capacity, and environment, in accordance with extant literature. The database for assessing the separate predictors integrates the Big Allied and Dangerous (BAAD) data set constructed by Asal and Rethemeyer (2008a) and the Global Terrorism Database (GTD 2011). The BAAD contains an elaborate array of militant group characteristics; the GTD contains data about the number of incidents and the number of fatalities during each incident.[3] Therefore, this combined database supports an empirical analysis of the predictors of militant group activity and lethality, using a two-step count methodology: first analyze the determinants of group activity using the number of incidents, then analyze the determinants of group lethality using the number of fatalities, conditional on the number of incidents.

Militant group activity and lethality both are driven by similar factors. However, each factor is a stronger driver of either activity or lethality. For example, ideological factors (e.g., religion) exert a particularly strong effect on lethality but are relatively less strong

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[2] In a related study, Asal and Rethemeyer (2008b) study the characteristics of militant groups that do *not* kill.
[3] The Appendix reveals that Asal and Rethemeyer's (2008a) main findings can be replicated well using the fatality data from the GTD instead of the BAAD. In addition, because the GTD is updated yearly, it is possible to extend their results, up to 2011.

determinants of activity. A capacity factor such as organizational size affects both lethality and activity positively, yet its impact on activity is twice as great as its impact on lethality. In contrast, economic development, as an indicator of the environment, has a positive impact on activity but a negative one on lethality. The degree of democratization does not affect activity but reveals a non-monotonic impact on lethality.

This research thus contributes to growing literature on the determinants of behaviors of individual militant groups; the results are broadly in line with prior research into militant group activity (e.g., Asal and Rethemeyer 2008a; Piazza 2009). However, unlike prior analyses, this investigation teases out the factors that determine whether groups are associated with many fatalities because they engage in many attacks and which factors determine whether groups are truly lethal, in the sense that they cause many fatalities per attack. This differentiation highlights that, for instance, the positive impact of group size on lethality documented by Asal and Rethemeyer (2008a) actually is a positive impact on activity; lethality is much less affected by group size. Finally, this article helps shed light on the complex relationship between the level of democratization and militant group activity (Horowitz and Potter 2013) by highlighting that groups from countries with intermediate levels of democratization are significantly more lethal than groups from either very autocratic or very democratic countries.

Accordingly, this study identifies the types of militant groups that cause the most negative impacts on economic, political, and societal outcomes. By understanding which groups are likely to cause many incidents and/or fatalities, states can better develop counterterrorism strategies to address the most disruptive groups first, which in turn should significantly mitigate the negative impact of militant groups on regional production, private investments, or political stability.

The next section provides a brief overview of literature dealing with the activity and lethality of militant groups. Section 3 describes the data and methods. Section 4 represents the core of the analysis, namely, the two-step procedure used to sequentially analyze the determinants of activity and then lethality. Section 5 concludes and provides directions for future research. As noted previously, the Appendix contains a replication of Asal and Rethemeyer's (2008a) analysis, using the fatality data from GTD instead of BAAD.

2. Activity versus Lethality: Background

A militant group's choice of strategy represents the outcome of the actions it takes to maximize its objectives. These objectives depend on the group's ideology, though its ability to reach its objectives is constrained by its capacities and the environment in which it operates (Crenshaw 1988).[4] That is, a group's characteristics reflect its ideology, capacity, and environment; the following sections briefly review how each characteristic might affect a group's lethality and activity. The data sources are detailed in Section 3; Table 1 lists the covariates and summary statistics.

2.1 Ideology

The varying ideologies of militant groups suggest five categories, captured using dummy variables.

1. Ethnonationalist groups, such as the Irish Republican Army and the Free Aceh Movement.

2. Leftist groups, including the Italian Red Brigades and the Japanese group Kakurokyo.

3. Religious groups, such as the Islamic Jemaah Islamiya and the Christian Lord's Resistance Army.

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[4] The objectives of militant groups need not be uniquely political. Abrahms (2008) argues that ample evidence suggests militant groups should be understood as solidarity maximizers rather than political maximizers. Whether groups actually reach their objectives is an equally debated topic (Gould and Klor 2010).

4. A combined category of ethnonationalist and religious groups, including the Afghan Taliban and Palestinian Hamas, which differ substantially from the pure forms of either group.[5]

5. A catch-all category of other groups of various ideologies (anarchist, environmentalist, right-wing), which represents the reference group.

Hoffman (1999) argues that in their desire to maximize their standing with a higher being, religious groups show almost no restraint in their use of violence. Simon and Benjamin (2001) claim that leftist and ethnonationalist show more restraint, because their strategies tend to be premeditated to avoid alienating the general population. Asal and Rethemeyer (2008a) qualify the sharp distinction between religious and other ideologies by suggesting that the choice of strategy depends on whether the group sees the general population as potential converts, such that the impact of ideology on strategy choice may be ambiguous. However, in their empirical analysis, they find that groups that combine ethnonationalist with religious ideology are the most lethal, followed by purely religious groups. Leftist and pure ethnonationalist groups are hardly more lethal than the reference group.

2.2 Capacity

The ability of militant groups to pursue a strategy that would maximize their objective depends on their capacities. In contrast with traditional economic agents, militant groups own largely unobserved capacities; there are no periodic reports of their holdings or assets, let alone an overview of the capacities of its leading members. The assessment of the capacity of militant groups thus relies on indirect measures of their strength: the size of the group (0 = fewer than 100 members, 1 = 100 to 1000 members, 2 = 1000 to 10,000, and 3 = more than 10,000 members), the number of groups with which the group is allied, the age of the group

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[5] To avoid double counting, these groups do not enter the religious or ethnonationalist categories.

(in years divided by ten), whether the group is state sponsored, and whether it controls territory.

For each capacity factor, it is possible to argue that it makes the group stronger, yet it is not clear a priori what impact this strength has on the activity and lethality of militant groups. Stronger groups might benefit because they seemingly could cause havoc if they so chose, but they do not necessarily need to invoke the costs associated with such a strategy. Alternatively, strong groups might engage in many small incidents with few fatalities, to keep the public aware of their presence. If these strong groups choose to act though, they likely are very effective. These contradicting theoretical predictions are reflected in empirical literature, such that group size and group allies appear to have positive impacts on fatalities, but state sponsorship is associated with fewer fatalities (Asal and Rethemeyer 2008a; Horowitz and Potter 2013).

2.3 Environment

In addition to individual capacities, the environment in which a group operates may constrain its ability to execute its strategy. To capture the influence of the environment, this study uses two home country characteristics: the level of democratization and the level of economic development. The former is measured by the POLITY2 indicator, which ranges from –10 (strongly autocratic) to 10 (strongly democratic). The latter is measured by energy consumption per capita (in thousands of metric coal-ton equivalents), a commonly used measure of development.

Both indicators consistently have been linked to militant group activity in country-level studies (Gassebner and Luechinger 2011). Theoretically, a stronger democratic environment should give aggrieved groups more possibilities to express their views nonviolently. However, very autocratic regimes have less restraint in prosecuting militant groups. The relationship between democratization (i.e., civil liberties) and militant-group

activity thus may be non-monotonic (Wilson and Piazza 2013). Finally, the economic environment should affect militant groups' activities by creating (or destroying) outside options for potential members. A weak economic environment also might reduce the government's ability to combat militant groups. Both environmental indicators are set to their beginning-of-sample values for this study.

2.4 Synthesis

Overall, no clear-cut empirical or theoretical predictions emerge regarding how ideology, capacity, and environment affect the activity and lethality of militant groups. The following sections therefore present the empirical analysis of these factors, which serves to gauge which covariates determine group activity versus group lethality. The covariates in the analysis are listed in Table 1; the next section details their data sources. The covariates used for the current investigation are meant to be representative but not exhaustive indicators for each of the categories.

3. Data and Methods

3.1 Overlap between BAAD and GTD

The database for assessing the separate predictors integrates the Big Allied and Dangerous (BAAD) data set constructed by Asal and Rethemeyer (2008a) and the Global Terrorism Database (GTD 2011). The BAAD contains an elaborate array of militant group characteristics; the GTD contains data about the number of incidents and the number of fatalities during each incident.

Whereas there are 395 militant groups in the BAAD data set, the combined BAAD and GTD data produce a data set with 235 groups.[6] This decline is substantial but less critical, considering that the typical organization excluded is small (i.e., 1.14 mean fatalities compared with 51.93 in the full sample). In addition, one-third (54 of the 160 excluded) are so-called

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[6] For a complete discussion of the BAAD data set, see Asal and Rethemeyer (2008a). For a description of the GTD (2011) database, see www.start.umd.edu/gtd.

Greek gas guys—groups that typically perform one or two non-lethal arson attacks and then are never heard of again. The two biggest groups missing from the combined sample are Maras Salvatruchas and Tawhid Islamic Brigades with 28 and 34 fatalities, respectively. The former is generally being seen as a street gang and not a militant group. The latter is most likely absorbed being in the larger Tawhid and Jihad group (which is included in the sample) in the GTD. Other smaller organizations drop out for similar reasons.

In light of substantial literature highlighting the discrepancies among various terrorism-related data sources (e.g., Enders et al. 2011), it is pertinent to note that the fatality counts between the GTD and BAAD differ, yet their correlation is 0.81.[7] The dependent variables and the covariates used for the empirical analysis appear in Table 1, along with their sample statistics and sources.

For this study, the main advantage of the GTD database is that it records all militant group activity, regardless of whether it resulted in a fatality. Table 2 contains some preliminary evidence that this distinction is not irrelevant, based on rankings of the most active organizations that indicate the number of incidents in which they were involved or the number of fatalities they caused between 1998 and 2005. An organization such as ETA, though very active, was not particularly lethal. In contrast, Al Qa'ida was not particularly active but was exceptionally lethal. Overall, the correlation between the number of incidents (activity) and the number of deadly victims (lethality) is only 0.63.

While the BAAD database was constructed using data from 1998 to 2005, the GTD database is updated annually. Hence, I am able to perform the various analyses for the short period covered in BAAD as well as the extended period up to 2011.

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[7] This high correlation does not eliminate the concern that any database requires reports of incidents and fatalities and assertions or claims of responsibility by a specific group.

3.2 Correlates of War and Polity IV

In addition to the dependent and independent variables taken from the BAAD and GTD, this analysis relies on the 2010 release of Polity IV (Marshall and Jaggers 2003) and the fourth release of the Correlates of War (Singer 1988; Singer et al. 1972) data sets. The POLITY2 score indicates the degree of democratization in the home country of the militant group, ranging from –10 (strongly autocratic) to 10 (strongly democratic), so it serves as a good indicator of the political climate of the home country. The Correlates of War data set provides total energy consumption (thousands of coal ton equivalents) and total population size information, which are combined to form a measure of energy consumption per capita to capture the degree of development in the home country.

3.3 Empirical Methods

The empirical analysis relies on a count model of the number of incidents and number of fatalities that a militant group caused between 1998 and 2005 or between 1998 and 2011. Count models have been a mainstay in political economy research ever since King (1988) argued that alternative modeling methods lead to biased, inconsistent, and inefficient results. A count model assumes that the data generating process does not follow a normal distribution and that a count can never be negative. The data generating process is better captured by a Poisson distribution; a regression based on this distribution outperforms any other empirical model. Ignoring the underlying data generating process and using ordinary least squares, albeit in logarithmic form, would lead to inconsistent predictions, such as negative event counts.

The Poisson regression model relies on the restrictive assumption that the conditional mean and variance of the dependent variable are equal, yet a class of generalized count models (e.g., Cameron and Trivedi 2005, 2009) also can handle overdispersion (i.e., when the variance is greater than the mean). The present analysis therefore uses a count model based on

the negative binomial distribution, which estimates the conditional mean and variance separately.[8] In addition, the estimation sample contains multiple militant groups from the same country, so standard errors are clustered on the country level.[9]

Count models are attractive in that they can be used to analyze processes in two steps. In this study for example, it is possible to analyze the number of incidents that occur, and then, conditional on the number of incidents, assess how many fatalities ensued, using the number of incidents as a so-called offset. Effectively, the offset includes the number of first-step events as an explanatory variable but forces its coefficient to equal 1. If a group was not involved in any incidents, it automatically is excluded from the second step. Therefore, the two-step procedure differentiates between groups that did not have any fatalities because they did not engage in any incidents and groups that had no fatalities because no one was killed during incidents they initiated.

For the first step of the analysis, where I study the number of incidents I use the number of years a group was active during the sample period as the offset variable. After all, groups that where active for more years are more likely to have engaged in more incidents. This variable is also taken from the BAAD database. As the BAAD database has not been updated, including this offset necessitates the assumption that groups active between 1998 and 2005 remained active until 2011. This assumption does not materially affect the empirical results as dropping the offset does not alter the inference drawn from the remaining covariates.[10]

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[8] Formal tests of overdispersion indicate that the negative binomial regression model outperforms the Poisson regression model. This is indicated by the fact that the natural logarithm of the dispersion parameter Alpha exhibited in the various estimation tables always differs significantly from zero.

[9] All findings for this study are robust to the exclusion of either FARC (most active group) or Al Qa'ida (most lethal group). There are 54 clusters and a cross-check of the sensitivity of the results to the use of classical standard errors instead of clustered standard errors did not lead to any changes in the conclusions. The difference between classical and robust standard errors in various specifications generally is very small, so the "canaries are still alive" (King and Roberts 2012). These results are available on request.

[10] These results are available on request.

From the outset it is important to clarify that the difference between the determinants of activity and lethality found in the empirical analysis below is not because some groups did not engage in any incidents and, hence, were automatically dropped from the lethality specification. Focusing only on groups that engaged in at least one attack during the sample period does not change the conclusions.[11]

In the exposition of the empirical results, I present the estimated model with all covariates included at once. Selectively excluding covariates from the estimation specification may lead to endogeneity problems due to omitted variable bias, so the results presented next offer the preferred specification.[12]

4. Activity versus Lethality: Empirics

The empirical results are presented in Table 3. In the first column we predict the number of incidents that a militant group was involved in and in the second column we predict the number of victims a militant group generated conditional on its number of incidents. In the third and fourth column we repeat the same exercise but for the extended period up to 2011. The interpretation of the results is relatively straightforward: a positive sign on an estimated coefficient indicates a positive effect, a negative sign a negative effect; the larger the absolute value of the coefficient, the larger the impact on the dependent variable.[13] The main finding indicates that though similar variables drive both activity and lethality, their respective impacts differ substantively.

4.1 Ideology

Across ideological groups, the ethnonationalist and leftist classifications had no effect on activity but a positive impact on lethality, of roughly equal sizes. In contrast, religious

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[11] Not shown but available on request.

[12] None of the covariates can credibly be seen as an outcome of the other covariates, so the problem of *bad controls* appears negligible (Angrist and Pischke 2008).

[13] Formally, the coefficients indicate the logarithm of the ratio of expected counts between successive values of the covariate while keeping the other covariates constant. To interpret the practical significance of the results one could take an exponential transformation of the observed coefficients. However, as that is a monotonic transformation we base our discussion on the raw values of the coefficients.

ideology is a significant predictor of activity and lethality, but its impact on lethality is more than twice as large as its impact on activity, which suggests that religious groups do not necessarily strike more often than others, but when they strike, they tend to be much more lethal.[14] A similar pattern arises for groups that are both ethnonationalist and religious. By comparing the third and fourth with the first and second columns in Table 3, it is clear that the conclusions regarding ideological factors hold for the extended period too.

4.2 Capacity

For the capacity-related factors, larger groups tend to engage in more attacks, which may be simply a mechanical relationship (i.e., bigger groups engage in more incidents because they can mobilize more members). However, the impact of size on lethality is much smaller than its impact on activity. Hence, larger groups may be substantially more active, but they are not much more lethal than small groups. This finding qualifies previous findings of a positive relationship between size and lethality (Asal and Rethemeyer 2008a); such results might be due to larger groups' greater activity, not necessarily their lethality. The discrepancy in these findings exists because earlier analyses did not differentiate groups who caused many fatalities by engaging in many attacks and those that caused many fatalities because the relatively fewer attacks in which they engaged were very lethal.

The age of groups does not seem to have an impact on either the activity or the lethality of the groups. That is, the negative impact of organizational age on activity found for the sample from 1998 to 2005 is not robust to the extension of the sample up to 2011.

Organizations that are well connected tend to engage in more attacks, but these attacks are not more lethal. Similar to size, these findings qualify conclusions by Asal and Rethemeyer (2008a), who find a positive relationship between the number of organizational connections and militant groups' lethality. Their finding might be attributed to higher activity of militant groups; it likely does not imply higher lethality.

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[14] As noted before, this finding is robust to the exclusion of Al Qa'ida, the most lethal group in the sample.

Groups with territorial control are more active and more lethal, and the impact is greater for the latter than the former measure. This ordering reverses for the extended period of observation though. Finally, groups that receive sponsorship from states are not more lethal or more active than groups that do not rely on state support.

The varying results for the capacity indicators reconfirm that capacity does not have a singular or clear-cut impact on the strategy of militant groups. Some capacity indicators, such as size and connectedness, enhance activity and lethality, but state support has no impact. In addition, each indicator seems to affect activity and lethality to varying extents. Size, in particular, has a much stronger impact on activity than on lethality.

4.3 Environment

Energy consumption per capita, as an indicator of economic development, has opposing impacts on activity and lethality. Although groups from more advanced countries tend to be associated with more attacks, the attacks themselves are less lethal than those by groups from less advanced countries. Therefore, groups from richer countries use relatively more violence but are restrictive in the number of fatalities they cause. The opposite effect may also reflect richer countries' better capacities to deal with the threat of militant groups.

Finally, regarding the role of democratization, this study uncovers no effect, in line with findings by Horowitz and Potter (2013) and Asal and Rethemeyer (2008a). However, a more precise outcome emerges from an analysis that features a non-monotonic relationship, acknowledging that very autocratic regimes can deter militant groups through suppression, while very strong democracies deter them by giving the aggrieved an alternative channel to express their views. In Table 4, instead of including democratization as a continuous variable, three separate dummy variables indicate the different levels of democratization: very autocratic (POLITY values from −10 to −5), intermediate regimes (−5 to 5), and very

democratic (5 to 10).[15] The adjusted estimation results show that democratization does not matter for activity but has a non-monotonic impact on the lethality of militant groups. Groups from countries with intermediate levels of democratization are significantly more lethal than groups from either very autocratic or very democratic countries. This pattern corroborates the recent findings of Wilson and Piazza (2013), who suggest that the relationship between the strategy of militant groups of democratization of the home country is more complex than usually considered.

5. Conclusions and Directions for Research

This article reports an investigation of the determinants of the lethality and activity of militant groups active between 1998 and 2005 and for an extended period to 2011. The two-step procedure began by investigating the determinants of a group's activity according to the covariates of the number of incidents in which it was involved. Conditional on the number of incidents, the analysis also determined the covariates to predict each group's lethality by focusing on the number of fatalities accrued through its incidents.

A primary finding reveals that militant group activity and lethality are driven by similar covariates, though each covariate is a stronger driver of either activity or lethality. For example, religious ideology, as a measure of group objectives, predicts group lethality much more powerfully than group activity. Size, as a proxy for group capacity, instead offers a much stronger predictor of group activity than of group lethality. Per-capita energy consumption, as a measure of the environment, is even a positive predictor of group activity but a negative predictor of group lethality.

These results are broadly in line with prior studies (e.g., Asal and Rethemeyer 2008a; Piazza 2009). However, in contrast with prior work, this study differentiates between determinants of activity and lethality and thereby is able to highlight that a previously

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[15] Each of these groups is politically meaningful but also large enough to overcome the problems due to small sample sizes (i.e., 45, 27, and 157, respectively).

reported positive impact of group size on lethality (Asal and Rethemeyer 2008a) actually is a positive impact on activity; lethality is much less affected by group size. This study also helps reveal the complex relationship between the level of democratization and militant group activity (Wilson and Piazza 2013).

This article highlights which types of groups cause negative impacts on various economic, political, and societal outcomes, including private investments (Llussá and Tavares 2011), regional production (Abadie and Gardeazabal 2003), and political stability (Gassebner *et al.*, 2011). Understanding which groups are most likely to cause many incidents and/or fatalities facilitates a counterterrorism strategy that seeks to deal with the most disruptive groups first, to significantly mitigate the negative impacts of militant groups on society.

Other questions also might be addressed through the combination of the GTD with the BAAD data set applied herein. For example, researchers could extend Enders et al.'s (2011) methods to investigate the determinants of national versus transnational terrorism. Because the GTD provides such a detailed account of target choice, another research path might consider the organizational drivers that lead groups to pursue weak versus strong targets (Abrahms and Mierau 2013) or conventional versus non-conventional tactics (Bueno de Mesquita 2013). The GTD also records which weapons were used in each attack, so the combined database could elucidate which groups are most likely to engage in a campaign that employs chemical, biological, or nuclear weapons (Asal et al. 2012). Such analyses might help determine which characteristics lead groups to engage in strategies of violence, with negative effects for an array of economic, political, and societal outcomes.

The current study is mainly empirical in nature; ongoing research into the activity and lethality of militant groups therefore should seek a better understanding of the theoretical mechanisms that underlie the empirical results provided here. This promising area of research might offer insightful theoretical explanations.

Appendix: Replication of Asal and Rethemeyer's (2008a) Study

The core analysis undertaken by Asal and Rethemeyer (AR) relied on the second release of the COW database and the first release of the BAAD data. Therefore, this replication starts with the original specification, using updated versions of the two databases. The sample is limited to the 235 organizations that appear in both the BAAD and the GTD. After substituting the fatality data from the BAAD for fatality data from the GTD, it is possible to extend the original analysis to 2011, because the GTD is updated yearly.

The replication results in Table A1 confirm the results of AR, in that column 1 lists largely the same results obtained from their data. The updates of the COW data led to a notable difference from the original results though, in that energy use per capita is negatively significant, which implies that militant groups from richer countries tend to be less lethal.[16] Column 2 offers similar results when the estimation sample includes only those groups that appear in both BAAD and the GTD. Column 3 provides nearly the same results for fatality data provided by the GTD instead of the fatality data that AR used. Finally, Column 4 extends the data set to include fatalities until 2011; again, most of AR's conclusions remain applicable.[17]

The impact of state sponsorship is the only substantive conclusion that changes with the use of fatality data from the GTD instead of the BAAD. The original analysis by AR indicated a negative impact of state sponsorship on lethality; the current replication indicates a positive impact. However, according to the main results of the current study (see Table 3), state sponsorship becomes an irrelevant determinant of both activity and lethality with the more elaborate two-step count method.

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[16] The updates also affect the estimated coefficients for the other covariates, exacerbated by the update to the measure of control of territory in the BAAD data.

[17] The specification in the final column assumes that groups active between 1998 and 2005 remained active up to 2011. This assumption does not materially affect the results; dropping the covariate *log years active* led to unchanged results. These results are available on request.

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TABLE 1

Descriptive Statistics (N=235; Period: 1998-2005)

	Minimum	Maximum	Mean	Standard deviation	Source
Dependent variables					
Incidents	0	436	19.96	50.32	GTD
Fatalities	0	3480	97.26	331.89	GTD
Ideology					
Ethnonationalist ideology	0	1	0.29	0.46	BAAD
Leftist ideology	0	1	0.21	0.41	BAAD
Religious ideology	0	1	0.15	0.36	BAAD
Ethnonationalist & religious	0	1	0.20	0.40	BAAD
Capacity					
Size	0	3	0.71	0.88	BAAD
Organizational age	1	87	15.32	14.01	BAAD
Organizational connections	0	33	1.92	3.08	BAAD
State sponsorship	0	1	0.12	0.33	BAAD
Control of territory	0	1	0.11	0.31	BAAD
Environment					
POLITY2	-10	10	4.47	6.83	POLITY
Energy consumption per capita	0.03	18.37	4.78	4.78	COW

TABLE 2

Ranking Militants Groups on Activity and Lethality

Rank	Group Name	Incidents
1	Revolutionary Armed Forces of Colombia	436
2	Liberation Tigers of Tamil Eelam	290
3	Chechen Rebels	283
4	Taliban	238
5	Basque Fatherland and Freedom	174
6	Moro Islamic Liberation Front	168
7	National Liberation Army of Colombia	153
8	Salafist Group for Preaching and Fighting	145
9	National Union for the Total Independence of Angola	141
10	Hamas	137

Rank	Group Name	Fatalities
1	Al-Qa`ida	3480
2	Revolutionary Armed Forces of Colombia	1654
3	Liberation Tigers of Tamil Eelam	1506
4	National Union for the Total Independence of Angola	1451
5	Lord's Resistance Army	1258
6	Chechen Rebels	1228
7	Armed Islamic Group (GIA)	989
8	Tawhid and Jihad	843
9	Al-Qa`ida in Iraq	806
10	Taliban	739

Notes: Top-10 ranks based on the number of incidents and number of fatalities, respectively. Period of observation is between 1998 and 2005.

TABLE 3
Lethality versus Activity

	1998-2005		1998-2011	
	Incidents	Fatalities	Incidents	Fatalities
Ethnonationalist ideology	0.236	1.045**	0.363	0.891**
	(0.353)	(0.441)	(0.374)	(0.439)
Leftist ideology	-0.091	1.010***	0.191	0.956**
	(0.268)	(0.389)	(0.391)	(0.398)
Religious ideology	0.927*	2.350***	0.914*	2.235***
	(0.491)	(0.576)	(0.477)	(0.569)
Ethnonationalist & religious	1.070***	2.097***	1.038***	1.891***
	(0.409)	(0.616)	(0.399)	(0.538)
Size	1.000***	0.260	1.487***	0.264*
	(0.135)	(0.158)	(0.132)	(0.138)
Organizational age/10	-0.789***	-0.264	-0.433	-0.480
	(0.184)	(0.181)	(0.396)	(0.396)
Organizational age squared/100	0.074*	0.012	0.017	0.019
	(0.040)	(0.024)	(0.024)	(0.023)
Organizational connections	0.101***	0.047*	0.187***	0.038
	(0.036)	(0.025)	(0.066)	(0.025)
State sponsorship	0.286	0.709*	0.326	0.645*
	(0.315)	(0.379)	(0.350)	(0.374)
Control of territory	0.504	1.004**	0.835***	0.887**
	(0.359)	(0.468)	(0.272)	(0.408)
Energy consumption per capita	0.087***	-0.128***	0.101***	-0.129***
	(0.023)	(0.035)	(0.024)	(0.033)
POLITY2	0.006	-0.019	0.023	-0.023
	(0.020)	(0.023)	(0.015)	(0.019)
Offset	ln(Years active)	ln(Incidents)	ln(Years active)	ln(Incidents)
Constant	1.302***	-0.142	0.328	1.855
	(0.322)	(0.467)	(1.591)	(1.608)
Observations	234	214	234	219
Alpha (log)	0.386***	0.722***	0.538***	0.510***
	(0.117)	(0.179)	(0.094)	(0.155)

Notes: Robust standard errors clustered at the country level in parentheses. Estimation based on a negative binomial regression of the number of incidents or fatalities by a militant group between 1998 and 2005 (2011, for the last two columns). The offset indicates what, if applicable, the dependent variable was conditioned on. If a group was not involved in any incidents, it is automatically dropped from the second step of the estimation. Alpha is the estimated dispersion parameter, if it is unequal to 0 the negative binomial regression outperforms the Poisson regression. */**/*** Statistical significance at the 10%/5%/1% level.

TABLE 4
Lethality versus Activity: Non-monotonic impact of democratization

	1998-2005		1998-2011	
	Incidents	Fatalities	Incidents	Fatalities
Ethnonationalist ideology	0.237	1.074***	0.358	0.919**
	(0.366)	(0.416)	(0.382)	(0.411)
Leftist ideology	-0.149	0.861**	0.154	0.817**
	(0.279)	(0.358)	(0.393)	(0.356)
Religious ideology	0.894**	2.688***	0.805*	2.402***
	(0.447)	(0.565)	(0.469)	(0.568)
Ethnonationalist & religious	1.022***	1.859***	0.960**	1.813***
	(0.390)	(0.387)	(0.378)	(0.392)
Size	0.964***	0.427***	1.473***	0.381***
	(0.132)	(0.150)	(0.131)	(0.131)
Organizational age/10	-0.793***	-0.123	-0.432	-0.271
	(0.197)	(0.164)	(0.398)	(0.333)
Organizational age squared/100	0.076*	-0.007	0.017	0.007
	(0.043)	(0.021)	(0.024)	(0.019)
Organizational connections	0.116***	0.069***	0.207***	0.057***
	(0.041)	(0.024)	(0.073)	(0.021)
State sponsorship	0.228	0.296	0.262	0.303
	(0.317)	(0.274)	(0.350)	(0.262)
Control of territory	0.458	0.433	0.825***	0.470
	(0.364)	(0.413)	(0.285)	(0.356)
Energy consumption per capita	0.079***	-0.142***	0.101***	-0.139***
	(0.021)	(0.036)	(0.023)	(0.034)
POLITY2 (-10 to -5)	-0.279	-0.096	-0.351	0.017
	(0.316)	(0.311)	(0.252)	(0.285)
POLITY2 (-6 to 4)	0.269	1.699***	0.122	1.490***
	(0.327)	(0.334)	(0.290)	(0.295)
POLITY2 (5 to 10)	Reference	Reference	Reference	Reference
Offset	ln(Years active)	ln(Incidents)	ln(Years active)	ln(Incidents)
Constant	1.417***	-0.639	0.498	0.658
	(0.336)	(0.463)	(1.630)	(1.378)
Observations	234	214	234	219
Alpha (log)	0.376***	0.535***	0.536***	0.335**
	(0.116)	(0.170)	(0.095)	(0.142)

Notes: Robust standard errors clustered at the country level in parentheses. Estimation is as in Table 3 but the POLITY2 score is now measured using three categories instead of a continuous scale.
*/**/*** Statistical significance at the 10%/5%/1% level.

Replication of Asal-Rethemeyer (2008)

	Fatalities (BAAD)	Fatalities (BAAD)	Fatalities (GTD)	Fatalities (GTD)
Size	1.340***	1.433***	1.288***	1.684***
	(0.172)	(0.192)	(0.212)	(0.215)
Religious ideology	2.998***	2.784***	3.549***	3.400***
	(0.840)	(0.771)	(0.796)	(0.778)
Ethnonationalist ideology	0.808*	0.758*	1.552***	1.511***
	(0.477)	(0.396)	(0.536)	(0.491)
Ethnonationalist & religious	3.463***	3.135***	4.060***	3.973***
	(1.033)	(0.936)	(1.001)	(0.939)
Leftist ideology	-0.498	0.178	1.073**	1.195**
	(0.356)	(0.433)	(0.443)	(0.477)
POLITY2	0.022	0.016	-0.031	-0.029
	(0.031)	(0.038)	(0.036)	(0.033)
Organizational age/10	0.627	0.195	-0.840	6.318
	(0.717)	(0.750)	(0.661)	(14.121)
Organizational age squared/100	-0.059	-0.018	0.062	-0.193
	(0.080)	(0.082)	(0.062)	(0.439)
Organizational connections	0.199***	0.159**	0.094**	0.132**
	(0.071)	(0.075)	(0.041)	(0.054)
Energy consumption per capita	-0.132**	-0.077	-0.076*	-0.066*
	(0.059)	(0.073)	(0.041)	(0.040)
State sponsorship	-0.677*	-0.460	0.868**	0.946**
	(0.388)	(0.452)	(0.407)	(0.458)
Control of territory	0.735*	0.452	1.364**	1.288**
	(0.392)	(0.568)	(0.596)	(0.628)
Log years active	-0.059	-0.047	0.967*	-26.011
	(0.486)	(0.586)	(0.577)	(54.728)
Constant	-0.775	-0.284	1.080	15.591
	(1.003)	(1.009)	(0.966)	(29.065)
Observations	395	235	235	235
Alpha (log)	1.701***	1.518***	1.565***	1.450***
	(0.099)	(0.087)	(0.127)	(0.117)

Notes: Robust standard errors clustered at the country level in parentheses. Estimation based on a negative binomial regression of the number of fatalities by a militant group between 1998 and 2005 (2011, for the last column). Column 1 replicates Column 1 of AR (2008, p. 444), Column 2 re-estimates the model for the militant groups that are both in the GTD and the BAAD data sets, Column 3 re-estimates Column 2 based on the fatality count in the GTD, and column 4 extends the time frame of column 3 to 2011. Alpha is the estimated dispersion parameter, if it is unequal to 0 the negative binomial regression outperforms the Poisson regression.
*/**/*** Statistical significance at the 10%/5%/1% level.

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