Signaling Resolve Through Credit-Claiming

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Ilayda B. Onder*

Abstract

What explains when militant groups claim attacks? In this study, I argue that militant groups are more likely to claim attacks early in the organization's lifespan and after major blows to reputation like loss of a leader due to leadership decapitation. This is because credit-claiming helps militants signal resolve to a wider audience, thereby burnishing the organization's reputation. Specifically, I argue that claims of militant attacks are costly for organizations because they may be met with government retaliation. However, groups that are younger or have recently suffered the loss of a leader seek to use government retaliation to signal resolve. I find support for this proposition using two sets of empirical analyses. First, I show that claims increase the risk of government retaliation. Then, using a comprehensive dataset of 592 groups, I show that militant groups are more likely to claim attacks in the earliest phases of their lifespans and after their leaders are killed/captured. Although civilian victimization and emerging due to splintering are found to be depressing credit claiming, the findings also suggest that (i) groups that only target security forces, (ii) groups that victimize civilians, (iii) groups that emerged independently without known affiliations with existing groups, and (iv) splinter groups all issue fewer claims as they age. These findings help elucidate a largely overlooked dimension of strategic militant behavior.

Keywords: credit-claiming, reputation, resolve, leader decapitation, retaliation

*Ph.D. Candidate, The Pennsylvania State University. ibo6.psu.edu.

Introduction

On August 3, 2014, a vicious armed assault killed 953 people in Sinjar, Iraq. Although sources attributed the attack to the Islamic State of Iraq and the Levant (ISIL), no militant group claimed responsibility. Two years later, on June 25, 2016, assailants threw hand grenades at the Kurdish Rudaw TV station in Arbil, Iraq, injuring six journalists. The ISIL and the Kurdish Islamic Group each claimed responsibility for the attack. Why is it that no group claimed credit for one of the deadliest incidents of militant violence in Iraq, whereas multiple groups claimed responsibility for a minor attack?

A claim is a public declaration in which somebody representing the militant group states that the group is responsible for a violent incident. Credit claiming is conceptually different from government's or media's attribution of an incident to a group[1]. Claims are not allegations; they are directly announced by the perpetrators. Yet, the lion's share of terrorist attacks worldwide goes unclaimed (Abrahms and Conrad 2017). A remarkable portion of attacks by militants fighting civil wars goes unclaimed as well.

This study explores the relationship between militant groups' lifespan, decapitation, and credit-claiming. I argue that when selectively employed at specific phases of the group's lifespan, credit-claiming is a strategy for building a reputation for resolve. Through credit-claiming, militants signal that they are not only willing to bear the initial material costs of the attack but also additional indirect costs that arise due to the claim. These indirect costs may take several forms: government retaliation (Hoffman 2010), public backlash (Abrahms and Conrad 2017), or loss of international support (Byman 2005). This study focuses specifically on the risk of government retaliation because of the centrality of government response to the group's operations. While generating public support or building international reputation is not central to every group's strategy (Tokdemir and Akcinaroglu 2016), all militants devote resources to countering government actions.

If credit-claiming is a strategy for sending stronger signals of resolve, militants should claim more when they need to demonstrate resolve. I argue that two factors create a greater need for demonstrating resolve: the phase of the militant group's lifespan at which the attack is perpetrated and group decapitation. Anonymous attacks do not have much signaling value for newborn groups because it is difficult, if not impossible, to tie an attack to an unknown group. This diminishes the risk of retaliation associated with the attack. Thus, attacks perpetrated at the initial phase of a group's lifespan need to be claimed to send strong signals of resolve. Furthermore, decapitation may dismantle the reputation the groups built over the years and incentivize them to send new

[1]For the purposes of this study, if a militant attack was attributed to a particular militant group, it is assumed that the group perpetrated the attack. If, however, the group did not publicly take responsibility, the attack is considered anonymous.

signals.

I hypothesize that (i) groups claim more at the earliest phases of their lifespans, (ii) groups that target non-civilians claim more than others, but they, too, claim less as they age, (iii) groups that emerged independently, without known affiliations to existing groups claim more than splinter groups, but both types of groups claim less as they age, and (iv) groups claim more immediately after they are decapitated (e.g., the leader of the group is killed or imprisoned). I find support for my hypotheses using a comprehensive dataset of 592 groups.

This study offers at least three contributions to the study of credit-claiming and militants' communication with their audience. First, my findings expand our understanding of how militants use claims to build a reputation. Rather than focusing on factors that disincentivize claims, I theorize about the factors incentivizing militants for strategically pursuing credit-claiming. This adds to our understanding of militant strategies for different kinds of reputation building. Second, by empirically demonstrating the association between claims and the risk of government retaliation, I show that claims are costly: an argument put forward but not tested by extant works. And third, my research draws attention to the ways armed actors use non-armed instruments such as claims to communicate with their audience.

Why Do Militants Avoid Claiming Credit?

Why militants claim attacks remains a question in the literature. Earlier studies focus on the dichotomy between the scholarly assumption that militants want publicity and the evidence that they rarely claim responsibility.

The ideology thesis posits that groups with secular ideologies issue claims to generate publicity because secular ideologies emphasize mass public support. In contrast, groups driven by religious ideologies emphasize service to God and pay little attention to credit-claiming (Rapoport 1997). The theory of claims that focus on group ideology does not fully explain the puzzle of claiming. First, the empirical record shows that religiously oriented groups do not have a monopoly on anonymous attacks (Hoffman 2010). Secondly, group ideology tends to be fixed or is only subject to subtle changes. Ideology-related theories cannot satisfactorily explain why a given group claims some attacks while denying responsibility for others.

Alternative strategic explanations are plentiful. For example, the state sponsorship thesis posits that groups with foreign state supporters are less likely to claim (Pluchinsky 1997), because sponsors want to keep their sponsorship of militancy secret, so they discourage credit-taking. Other studies focus on militants' incentives to avoid government retaliation and public backlash. Hoffman (2010) argues that terrorists refrain from claiming because they do not want to be blamed when counterterrorism response is indiscriminate. Abrahms and Conrad (2017) and Kearns (2021)

argue that they are more likely to withhold credit for attacks directly target or kill many civilians. These alternative theories of credit-claiming speak to why groups may claim some attacks while withholding credit for others. That is to say, they focus on the "negative incentives" while omitting the "positive incentives" from their discussion.

A final strain of literature theorizes on the positive incentives. The competitive environment thesis posits that groups competing against rivals use claims to distinguish themselves (Hoffman 2010; Kearns 2021). The studies on suicide terrorism suggest that claiming suicide attacks can establish a culture of martyrdom among the civilian constituency (Hafez 2006). Finally, Kearns, Conlon, and Young (2014) offer an alternative rationalist explanation: groups may false claim a rival's attack to prevent the rival from demonstrating power or blame attacks on rivals to distance themselves from acts of violence. Although these theories offer important insights into groups' strategic use of claims, it is important to acknowledge that not all groups use suicide terrorism or operate in competitive environments.

The scholarly study of credit-claiming would benefit from a general theory that applies to a wide-range of groups operating in diverse settings and explains why and when groups actively pursue credit-claiming as a strategy. In this study, I focus on the "positive incentives" and build my theory on the premise that some groups have positive incentives to claim while others do not. I also address a second and interrelated lacuna in the literature, which is the limited attention given to the potential utility of claims. While many studies highlight the risks that claims entail, others emphasize claims' utility in distinguishing the group from its rivals. In this study, I go beyond the existing theories by theorizing how claims, precisely because of the risks that they entail, have the utility of signaling resolve to the government even in the absence of competitors. In the next sections, I briefly review the literature on signaling resolve in strategic settings and discuss how the strategic need to signal resolve informs militants' willingness to claim responsibility.

Militant Attacks as Costly Signals of Resolve

Militant attacks are a form of costly signaling[2] (Kydd and Walter 2006). Since militants are weaker than their adversaries, they cannot coerce their adversary into doing as they wish. However, public display of violence can demonstrate how far militants are willing to go to obtain their political goals; in other words, how resolved they are.

Although there is scholarly consensus on attacks being costly signals of resolve, some aspects of militant signaling are understudied. For example, much of the militant signaling literature

[2]A costly signal is a credible threat which carries costs that the senders would be unwilling to incur if they were unwilling to carry out the threat (Fearon 1997).

ignores the nuances between weak and strong signals. Most scholars treat every attack as communicating equal levels of resolve while leaving out from their analysis two aspects of signaling that are likely to influence the strength of signals: the claims of responsibility and the timing of the attack. For example, several extant works (Hoffman and McCormick 2004; Siegel and Young 2009; Spaniel 2019) make use of signaling games played between the government and a known militant group whose responsibility for the attack is taken for granted. In reality, several militant groups -some of which are notorious, whereas others are little known to the public- may challenge the government. It is not always clear which group perpetrated the attack. Are claimed and anonymous attacks equally costly? If not, claimed, and anonymous attacks may not send equally strong signals.

Secondly, these signaling games model how militants signal resolve in the first period and whether the government chooses to surrender in the next period. In reality, the strategic interaction between the militants and governments is a repeated game that may last for decades. Are militant attacks perpetrated early in the conflict and those perpetrated later in the conflict equally costly? The literature on inter-state war, especially the bargaining-while-fighting literature, accounts for "belief updating" in the aftermath of attacks (Powell 2004) and establishes that initial performance of warring parties reveal more information about resolve than the performance in later stages of war (Slantchev 2003). Integrating these insights into the study of militant signaling would require theorizing on how the timing of attacks affects their signaling value. In the next two sections, I first discuss how claims of responsibility bring additional costs, more specifically how they raise the risk of government retaliation. Then, by focusing on when militant groups have greater incentives to signal, I theorize how the timing of the attack influences credit-claiming behavior.

Claims as Additional Indirect Costs

Incorporating claims of responsibility into theories of costly militant signaling is crucial because claims carry additional costs. Previous studies argue that large-scale and operationally-complex attacks entail larger costs (Abrahms and Conrad 2017). These operational costs are incurred by the militants before or during the attack. Yet, they do not necessarily inform the future of the conflict. Large-scale attacks would not automatically trigger militarized government response unless the government knows which group perpetrated the attack. Even the most lethal attacks that entail the highest operational costs do not possess the risk of government retaliation if they remain anonymous. However, claims entail additional costs of a different nature: anticipated government retaliation (Hoffman 2010). By claiming credit, groups signal that they are not only willing to bear the initial operational costs of the attack but also willing to bear additional costs that arise only because the attack was claimed. While committing an anonymous attack gives the militants

the option to back down from their challenge without publicizing their demands, acknowledging their part in the attack partially commits the militants into a costly conflict with a much stronger adversary that will potentially retaliate.

The magnitude of these additional costs depends on the government's behavior. After a claim is issued, governments decide on whether to retaliate and the extent of the retaliation. Thus, claims of responsibility entail indirect costs that depend on the government's decisions. Nonetheless, they create costs for the militants that perpetrating anonymous attacks does not necessarily create.

I argue that because issuing claims is costlier than perpetrating anonymous attacks, strong signals of militant resolve can be communicated through credit-claiming. When do militants have strategic incentives to bear the indirect costs entailed by claims? In other words, when are they more likely to use credit-claiming to signal resolve, despite the additional costs it generates?

Incentives for Militants to Send Stronger Signals of Resolve

To explore when militant groups have strategic incentives to bear the indirect costs entailed by claims, I consider how the costs of perpetrating and claiming attacks may apply to newborn and well-known groups differently. Then, I discuss how the phase of the militant group's lifespan at which the attack is perpetrated influences credit-claiming behavior.

Private information about conflicting parties' capabilities, resolve and preferred tactics is an acute problem early in the conflict (Nygard and Weintraub 2014). Militant attacks serve an information-revealing role in that after a sufficient number of attacks, governments typically develop an accurate assessment of militant capabilities, resolve and tactics (Fearon 2004). As a group perpetrates many attacks over the years, the government learns how the group operates, and it becomes relatively easy to know which attacks are perpetrated by that group, even without claims. For well-known groups, the indirect cost of an attack (e.g., the risk of government retaliation) cannot be revoked even if the group withholds responsibility for the attack. Thus, once a group is well-known enough, every attack could be costly enough. This suggests that attacks perpetrated at the later phases of the group's lifespan do not necessarily need to be claimed to send strong signals.

Initial attacks by newborn groups pose an interesting dilemma to signaling. For four reasons, it may be more important for the militants to signal higher resolve early in the conflict. First, in contrast to well-known groups, nascent or newborn groups "are often clandestine and based in remote regions of states with under-resourced news media" (Larson and Lewis 2018, 871). Moreover, news media usually start broadcasting on a given group only after large-scale violence is observed (Shkolnik 2019). Because of this, when newborn groups perpetrate attacks, the media and public will have difficulty tying them to the attack. This logically decreases the indirect costs associated with the attack. If the attack cannot be tied to the group, the group does not suffer

from the risk of government retaliation. What follows from this is that unclaimed attacks are not very costly for newborn groups. Accordingly, attacks perpetrated at the initial phase of a group's lifespan need to be claimed to send strong signals.

Secondly, initial attacks are the signals on which the government builds its first assessment of the group. The stronger those signals are, the more resolved the group will be viewed. Being viewed as more resolved initially could benefit the group later. Furthermore, intelligence information about the group's strength would be scarce before the initial attacks. Informational asymmetries facing the government are more severe when the government faces a largely unknown group (Webster 2019; Williams 2019). The initial attacks by newborn groups will likely serve as the best sources of information that the government has about the group before the government starts collecting intelligence. Given that the initial attacks are the signals on which the government builds its first assessment of the group, the initial attacks must send stronger signals for militants to gain leverage.

Thirdly, nascent militant groups need to mobilize resources and recruits in order to transform their organization into a sustained armed group (Fjelde and Nilsson 2018). Nevertheless, many nascent groups disband before they are able to transform into more capable groups because they fail to gain popularity within the civilian constituency they claim to represent (Lewis 2017). Newborn groups are to still be in the process of reaching out to their constituency and consolidating their recruitment pool. While the hardliners in the group's potential recruitment pool may be ideologically predisposed to support the group's agenda, it is harder to reach out to moderates. By provoking the government into a disproportionate retaliatory response, newborn groups can radicalize the moderates (Findley and Young 2012) and consolidate the support of the fence-sitters. If claims provoke government retaliation, claiming attacks as early as possible would signal to the government that the group is sufficiently strong, mobilized and resolved even in its infancy to withstand an initial wave of retaliation and to transform itself into a sustained armed group that could reap the benefits of civilian constituency support that arises from provoking retaliation.

Finally, the nascent stages of militancy are often characterized by militant groups' attempt to eradicate rival groups, either by destroying or co-opting them (Fjelde and Nilsson 2018; Shkolnik 2019). Groups can use claims to signal greater resolve to distinguish themselves from rivals in a manner similar to outbidding (Kydd and Walter 2006; Cunningham, Bakke, and Seymour 2012; Nygard and Weintraub 2014). By claiming attacks as early as possible, groups may signal to the government and their constituency members that they are more resolved than their rivals.

An alternative argument could be that provoking retaliation by credit-claiming is too risky for newborn groups because newborn groups are weak and can easily be eradicated by government retaliation. Yet, although retaliatory government response is common when a militant campaign is in its infancy (Bapat 2005), most groups persist beyond their infancy regardless of the nature of the

government's counterinsurgency policy (Asal et al. 2019), and retaliatory government responses are associated with an increase in militant violence rather than the demise of militancy (Dugan and Chenoweth 2012; Asal et al. 2019). Although retaliation is always a risk that militant groups must bear, which is exactly why claims, by increasing the risk of retaliation, signal greater resolve, the previous research offers little support for the assertion that newborn groups can easily be eradicated by government retaliation.

If signals of resolve are particularly important for newborn groups because intelligence information is scarce, mobilization and consolidation of the civilian constituency is incomplete and rival groups pose a viable threat, a militant group's exigency for demonstrating resolve should decrease as the group becomes more well-known, a variety of credible information about the group becomes available and constituency support is consolidated. This implies that the need for demonstrating resolve and, thus, credit-claiming decreases over the years.

Hypothesis 1a. Militant groups are most likely to claim attacks at the earliest and least likely at the latest phases of their lifespans.

How do target types, which groups prefer to attack, inform the exigency to signal resolve? Previous research documented that attacks targeting civilians depress credit claiming because civilian victimization generates enormous audience costs (Kearns 2021). While it is possible that groups that purposefully target civilians refrain from claiming credit to protect their public image, another possibility is that since attacks victimizing civilians are costlier than others, they already have substantial signaling value. Attacks targeting civilians can signal enormous resolve even without claims because they are more likely to be labeled as terrorism (Hase 2021), attacks that are framed as terrorism receive more media attention (Persson 2004), exposure to news about terrorism induces anger (Wayne 2022), and anger enhances support for retaliation (Huddy et al. 2021; Wayne 2022). The media coverage, framing, and anger associated with attacks against civilians may incur enough costs that groups targeting civilians may not need to issue claims to signal resolve.

However, numerous studies have established that attacks against security forces incur fewer audience costs and carry lower political risk than attacking civilians (Berrebi and Klor 2008; Fortna 2015). Attacks against security forces aim to use armed propaganda to generate support for the perpetrator group or to erode public support for the target, rather than to instill fear (Brum 2013; Edwards and Pierson 2022). If attacks targeting the security forces incur fewer audience costs, they need to be claimed to send strong signals of resolve. Furthermore, if such attacks aim to alter the trajectories of public support in favor of the perpetrator group, they need to be claimed to by the perpetrators in order for the group to reap the benefits from the attack. Therefore,

Hypothesis 1b. Groups that target non-civilians are more likely to claim attacks than those

that target civilians, even in the latest phases of their lifespans.

What other group characteristics, besides targeting choices, influence newborn groups' exigency to signal resolve? Previous research has shown that the founding processes that give rise to groups can have profound impact on their trajectories and bargaining strategies (Braithwaite and Cunningham 2020). Newborn groups that emerged by splintering from an existing group come from pre-existing militant structures that have been signaling and bargaining with the government for some time. Splinter groups may not need to signal as much because their parent group might have already established a reputation (Nygard and Weintraub 2014). Moreover, many splinter groups are rooted in the hardliner elements of their parent group and split during or right after peace processes (Fjelde and Nilsson 2018; Duursma and Fliervoet 2020). Leaving negotiations or refusing to give up arms after government concessions can signal that splinter groups are already resolved.

Yet, newborn groups that emerged independently, without known affiliations with an existing group, appear on the scene without prior interactions or bargaining with the government (Nygard and Weintraub 2014). Such groups face high "barriers to entry", which may prolong them from acquiring high organizational capacity initially (Fjelde and Nilsson 2018). Furthermore, their bargaining with the government involves greater informational asymmetries than that of splinter groups because the government may lack an accurate assessment of their resolve. If groups that emerged independently lack prior interactions with the government, they have a greater exigency to send strong signals of resolve until they build a reputation. Therefore,

Hypothesis 1c. Groups that emerged independently without known ties to existing groups are more likely to claim attacks than those that emerged as splinters.

The discussion around H1 assumes that as time passes, every attack becomes costly. That is to say that as time passes, the exigency for groups to increase the costs of their attacks by claiming-credit decreases. This argument assumes that once groups build a reputation for resolve through credit-claiming in the initial phases, reputations would last as long as groups continue to perpetrate anonymous attacks that are logically tied to the group. In reality, there may be developments that disrupt the group's reputation.

The interstate signaling literature pays a great deal of attention to whether reputations last and, if they do, whether they stick with the leader or the country (Walter 2006, Crescenzi, Kathman, and Long 2007, Dafoe, Renshon, and Huth 2014). Extant works find evidence for leader-specific reputations in cases where the leaders were very influential in policymaking (Renshon, Dafoe, and Huth 2018).

There are several reasons to believe that militant groups' reputation for resolve would stick

with the leader rather than the group, and the exigency to signal resolve through credit-claiming would increase with every leadership change. First, compared to states, militant groups, even the most bureaucratized ones, are much less institutionalized. Most groups rely on their leader's judgment and planning rather than complex bureaucratic systems when building military capacity and perpetrating attacks[3]. Secondly, militant groups are likely to have charismatic leaders whose ideological inspirations keep the group mobilized. In that sense, militant leaders resemble more influential country leaders (Renshon, Dafoe, and Huth 2018) than policymakers that make decisions as a group. Scholars of civil conflict have examined the effect of decapitation -the capturing or killing of the leader(s) of the group- on the likelihood of group survival. Extant works find that decapitated groups are less likely to survive, and hierarchically organized groups are particularly vulnerable to decapitation (Olken 2007, Price 2012).

These findings imply that decapitation weakens the group. Similarly, the government and the general public likely perceive decapitation as weakening the group militarily and organizationally. Furthermore, given how influential leaders are within militant groups, the reputation for resolve the group built over the years may be lost when the leader is killed or imprisoned. Thus, I argue that decapitation dismantles the group's reputation for resolve built earlier through credit-claiming and creates a new exigency for demonstrating resolve. Decapitated groups have higher incentives to send strong signals of resolve to convince the government that they are determined to continue fighting despite losing their leader.

Hypothesis 2. Militant groups are more likely to claim attacks immediately after they are decapitated.

Empirical Analysis

The study's theoretical framework assumes that credit-claiming creates additional costs because it makes government retaliation more likely. The first part of my empirical analysis tests the presumed relationship between credit-claiming and the risk of retaliation. After presenting the evidence that groups that claim attacks risk retaliation by the government, I move on to the second part of my empirical analysis, which tests my hypotheses.

[3]This is most likely to hold for hierarchically organized groups whereas it may not fully apply to groups that operate through a loosely connected network of cells

Data

I use time-series cross-sectional data that cover 562 militant groups that operated in ninety-five countries from 1998-2016. The unit of analysis is militant group-year. In constructing the dataset of groups, I relied on a list of groups included in the Extended Data on Terrorist Groups (EDTG) dataset (Hou, Gaibulloev, and Sandler 2019). EDTG identifies groups from the Global Terrorism Database (GTD). The fact that these two datasets aim to collect information on terrorist groups may raise questions concerning whether they cover the wide range of groups. This is unlikely to be a problem because both datasets define terrorism very broadly. The GTD defines a terrorist attack as "the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation" (10). Given that the GTD does not restrict itself to attacks targeting civilians, I am confident that the group list I obtained from the EDTG is not limited to terrorist groups and covers a wide range of groups[4]. Still, the EDTG and other datasets on militant groups may have systematically omitted very short-lived militant groups, as it is difficult for researchers to collect reliable data on most short-lived groups. The author acknowledges that this is a potential limitation of these data sources.

To obtain information about claims, I matched the groups identified in the EDTG with those identified in the GTD[5]. Unfortunately, the time frame of the data is limited to the period between 1998 and 2016 because the GTD's credit-claiming indicator is only systematically available after 1997. As a result, my dataset covers 592 groups that operated sometime between 1998 and 2016.

Given that part of my empirical analysis -testing H1a- is concerned with newborn groups, the year at which groups enter the dataset could bias the estimations. If perpetrating or claiming the first attack makes a group enter my dataset, it would not be surprising that the groups are more likely to claim attacks in the earliest phases of their lifespans. This is unlikely to be a problem for my dataset. First, the EDTG does not rely on the GTD to code the years that a group is active. A group enters the GTD when secondary sources attribute an attack to that group. That is to say that the groups do not enter the GTD until they perpetrate their first attack. However, the EDTG relies on several secondary data sources to collect information on when the group was founded and ended. Since I rely on the EDTG to obtain a list of groups, the year in which the groups enter my dataset is irrelevant to when they perpetrate their first attack. Indeed, 188 out of 592 groups (32%) in my dataset did not perpetrate any attacks in their first year of operation. Secondly, even when a group perpetrates its first attack the year it is founded, this does not necessarily mean that claiming an attack makes the group enter the dataset. 241 out of 592 groups (%41) in my dataset did not

[4]I rely on the EDTG instead of the GTD because the EDTG uses a single name for groups that operate under multiple names.

[5]A list of the group names that I matched with their counterparts in the GTD is in Appendix 1.

claim any attacks in their first year of operation.

Testing the Relationship between Credit-Claiming and the Risk of Retaliation

To test the validity of the retaliation assumption, I merged my time-series cross-sectional data with Asal et al.'s (2019) data on governments' conciliatory and coercive counterinsurgency tactics. Asal et al. (2019) dataset's coding criteria require evidence that a particular conciliatory or coercive tactic was used against the group itself, rather than civilian populations. The inclusion criteria for Asal et al. (2019) dataset are based on the Uppsala Conflict Database Program (UCDP) Battle-Deaths Dataset. Consequently, the coverage of the dataset is limited to 140 organizations examined between 1998 and 2012. Nevertheless, the group-level and time-variant nature of the data allows me to assess the extent to which claims increase the risk of government retaliation.

To measure government retaliation, I use Asal et al.'s (2019) stick variable. Sticks are "repressive or punitive tactics that make use of any police, military, intelligence, or judicial mechanisms to counter the group" (Asal et al. 2019, 1720) and include arrests of militants or military offensives. This dependent variable, Retaliation, is a binary indicator coded 1 if the group was targeted with retaliatory government actions in a given year. I also make use of Asal et al.'s (2019) carrot variable to assess if credit-claiming is associated with government's conciliatory actions. This dependent variable, Conciliation, is a binary indicator coded 1 if the government response to the group included negotiations, ceasefires, or concessions in a given year. The main independent variable is the logged number of claimed attacks by a group in a given year[6]. I lag this variable one year. Based on the theoretical discussion, I expect that claimed attacks will increase the likelihood of retaliation and decrease the likelihood of conciliation.

I control for unclaimed attacks, which denote the number of attacks perpetrated but not claimed for[7], and several other factors[8] that may influence credit-claiming behavior and the risk of government retaliation. Given the binary nature of the dependent variables, I use logistic regression models.

The results from the first part of the analysis, summarized in Table 1, support the retaliation thesis. In Models 1-3, the number of claimed attacks by a given group in a given year is associated with an increase in the likelihood of observing government retaliation against that group the next year. Groups that claim more attacks face a greater risk of government retaliation in the near future. It is important to note that the positive effect of attacks on the likelihood of retaliation is limited to claimed attacks. The findings suggest that unclaimed attacks do not increase the risk of retaliation.

[6]The data on claims come from the Global Terrorism Database (GTD)'s claimed indicator.

[7]Data come from the Global Terrorism Database (GTD).

[8]Data come from Asal et al. (2019) dataset.

These findings are robust to including different controls. Models 4-6, the number of claimed attacks by a given group is associated with a decrease in the likelihood of observing government conciliation. Yet, the Claimed Attacks variable is not significant in any of the Conciliation models. Overall, the findings of the first part of the analysis suggest that credit-claiming increases the risk of government retaliation, supporting the premise that claims create additional costs.

Timing of the Attack and Credit-Claiming

Having established that claimed attacks are costlier signal of resolve than anonymous attacks, I turn to empirically testing the relationship between credit-claiming and the factors that create strategic incentives to send stronger signals of resolve. In the second part of my analysis, to test the study's hypotheses, I turn to my time-series cross-sectional data covering 562 militant groups that operated in ninety-five countries from 1998-2016. As explained in the previous section, this dataset is a militant group-year dataset and mainly relies on the EDTG.

The outcome of interest in the second part of the analysis is the militant attacks claimed by their perpetrators. The data on the group's credit-claiming behavior are adopted from the GTD. For each attack included in the GTD, the database's Perpetrator Group Name (gname) indicator identifies the group thought to have perpetrated the attack. The GTD relies on government and media sources to identify the perpetrator group and assumes that the group to which the sources attributed the attack was responsible for the attack. The database's Claim of Responsibility (claimed) indicator records whether representatives of the group identified as having perpetrated the attack took responsibility for it. Therefore, the Perpetrator Group Name indicator reflects the attribution of the attack to a group, whereas the Claim of Responsibility variable reflects the credit claiming.

I use the GTD's Perpetrator Group Name and Claim of Responsibility indicators to measure the (1) attacks attributed to a given group but remained anonymous and (2) attacks that were both attributed to and claimed by the group. This approach presents a couple of challenges to research design. First, testing group-level arguments about credit claiming necessitates knowing which group was responsible for each attack. Although for many attacks, there is enough information available to government officials and the media for the attack to be credibly attributed to the group responsible, for other attacks, attribution may not be as credible, or sources may not even be able to make an attribution[9]. Secondly, it may be difficult for groups to credibly claim attacks by other groups (Hoffman 2010). However, they may still attempt to free-ride on the success of rivals by false claiming an attack perpetrated by another group (Kearns, Conlon, and Young 2014). The fact that the credibility of attributions and claims may sometimes be questionable presents a concern for scholarly attempts to test group-level arguments about credit claiming. I acknowledge this

[9]Approximately 52% of the attacks perpetrated between 1998-2016 are unattributed in the GTD.

Table 1. Logit Models of Retaliatory and Conciliatory Government Response against Militant Groups, 1998–2012

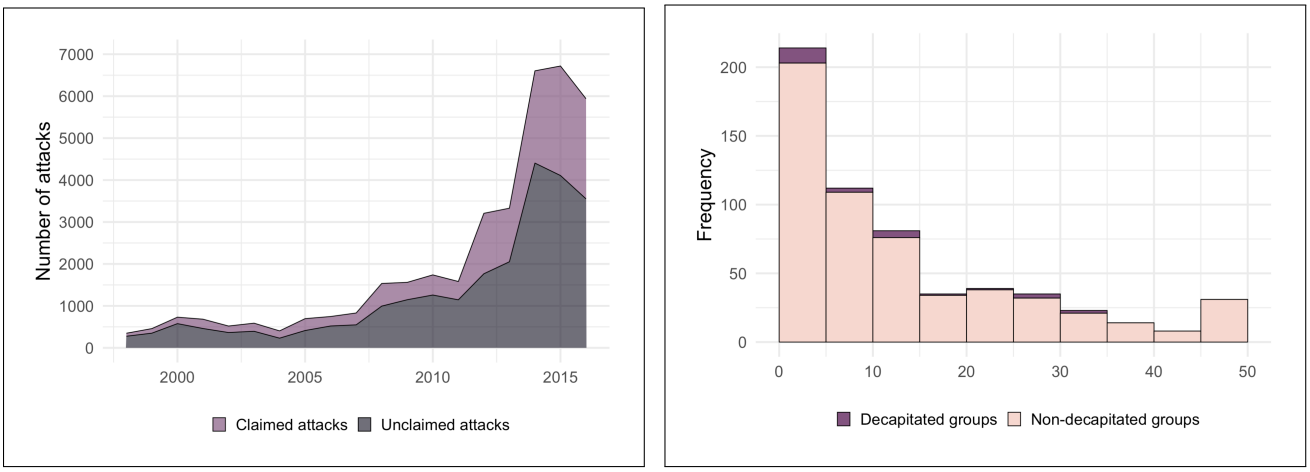
	DV: Retaliation			DV: Conciliation		
	(1)	(2)	(3)	(4)	(5)	(6)
Claimed Attacks (logged) L1	0.203*	0.590***	0.559***	-0.497	-0.566	-0.504
	(0.109)	(0.205)	(0.203)	(0.464)	(0.621)	(0.625)
Unclaimed Attacks (logged) L1	-0.116	-0.383***	-0.423***	0.005	0.350	0.394
	(0.090)	(0.140)	(0.148)	(0.273)	(0.334)	(0.377)
Battle-related deaths (logged)	0.101***	0.056	0.078	-0.168*	-0.265*	-0.384***
	(0.036)	(0.055)	(0.059)	(0.091)	(0.150)	(0.175)
Non-militant casualties (logged)	0.120**	0.230***	0.248***	-0.137	-0.134	-0.064
	(0.051)	(0.074)	(0.080)	(0.157)	(0.206)	(0.212)
Group size	-0.830***	-0.597***	-0.591***	0.756***	0.763*	0.867*
	(0.118)	(0.179)	(0.186)	(0.268)	(0.444)	(0.511)
Ethno-nationalist	0.071	-0.086	-0.079	0.080	-0.726	-0.781
	(0.173)	(0.252)	(0.263)	(0.505)	(0.685)	(0.732)
Religious-oriented	0.162	0.398	0.383	-0.837*	0.048	0.969
	(0.177)	(0.269)	(0.284)	(0.483)	(0.708)	(0.840)
Leftist	0.366*	-0.127	-0.032	-2.330**	-1.705	-1.287
	(0.196)	(0.257)	(0.297)	(1.047)	(1.106)	(1.169)
Militant: State sponsorship	0.907***	0.786***		0.589		0.663
	(0.287)	(0.290)		(0.771)		(0.825)
Militant: Territorial control	-0.246	-0.464		0.072		0.143
	(0.311)	(0.336)		(0.784)		(0.908)
Militant: Social service provision	-0.723	-0.689		0.701		0.704
	(0.520)	(0.529)		(1.192)		(1.471)
Militant: Political office	-2.260**	-3.777***		-1.197		0.378
	(0.984)	(1.084)		(1.612)		(2.165)
State: Human rights violations		-0.341**			-0.335	
		(0.165)			(0.431)	
State: Regime type		-0.207***			0.340*	
		(0.060)			(0.175)	
State: GDP per capita (logged)		0.552***			-1.463**	
		(0.146)			(0.574)	
State: Population (logged)		-0.002			-0.364*	
		(0.081)			(0.207)	
Observations	834	448	448	834	448	448

Note: *p<0.1; **p<0.05; ***p<0.01

concern as both valid and important, yet contend that it is an unavoidable one with the current state of scholarly data available on militant attack perpetrators.

The dependent variable is the number of attacks attributed to and claimed by a given group in a given year. Figure 1(a) shows the annual trends in the number of claimed and unclaimed attacks. Although both types of attacks have consistently increased over the years, the increase in the number of unclaimed attacks after 2010 is more notable.

The first main independent variable is Group Duration which denotes the duration in years of a militant group's existence since its formation[10]. It is coded 1 for a militant group's first year of operation and incrementally increases over time. If the group started its violent activities before 1998, the variable starts from the age of the group in 1998. For instance, if the group was founded in 1993, the Group Duration variable starts from six.



(a) Annual Trends in Militant Attacks **(b)** Survival Rates of Militant Groups

Figure 1. Trends in Credit-Claiming Behavior and Group Survival

The second independent variable -Civilian Targets- is coded 1 if the group purposefully targeted civilians in a given year and 0 otherwise. The Civilian Targets variable only includes attacks on private citizens, according to the GTD[11]. I interact Civilian Targets with Group Duration to test Hypothesis 1b, which postulates that groups targeting non-civilians are more likely to claim attacks than those targeting civilians, even in the later phases of their lifespans.

The third independent variable is Splinter Group History. Splinter groups history denotes

[10]Data come from the EDTG's duration indicator.

[11]Some previous studies include, in civilian targets, GTD categories such as private businesses, telecommunications, transportation, utilities. However, attacks on such property are not necessarily aimed at harming civilians. Groups may target a transportation facility late at night to avoid civilian casualties. Since the theory suggests that civilian victimization depresses claims because civilian casualties increase audience costs, I choose to only include attacks directly targeting civilians.

groups that emerged by splintering from an existing group as "splinters" and those that emerged independently without known ties to an existing group as "joiners"[12]. I interact Splinter Group History with Group Duration to test Hypothesis 1c, which predicts that "joiner" groups that emerged independently are more likely to claim than those that emerged as splinters.

The fourth independent variable is Group Decapitation; a binary indicator coded 1 for the year the group leader is captured, imprisoned, or killed and 0 for every year that no decapitation occurs[13]. I also include in my models the first, second, and third lags of this variable. Figure 1(b) compares the lifespans of decapitated and non-decapitated groups. Most militant groups in both subsets survived less than twenty years.

In my main models, I control for several factors that could influence credit-claiming behavior and vary across a group's lifespan. First, since the theory rests on the premise that claims signal resolve, I control for alternative factors that could signal resolve: the total number of attacks perpetrated by the group and the logged number of non-militant casualties in a given year. The level and severity of militant violence can demonstrate resolve by displaying how far groups are willing to go to obtain their goals (Abrahms and Conrad 2017), and thus groups that are able to perpetrate many high casualty attacks may not need to signal resolve through credit-claiming. Secondly, many extant works that rely on bargaining theory argue that groups should be more willing to take credit for attacks that demonstrate greater organizational capacity (Wright 2011; Min 2013). Some attacks such as transnational terrorist attacks or assassinations require greater sophistication and should demonstrate greater capacity (Abrahms and Conrad 2017; George 2018). Moreover, newborn groups may not yet be able to perpetrate many high casualty or logistically sophisticated attacks (Asal and Rethemeyer 2008). Hence, I control for the level of attack diversity maintained by a group and the share of transnational attacks in a group's repertoire in a given year. Thirdly, principal-agent framework suggests that foot-soldiers may perpetrate attacks that defy group leaders' preferences (Abrahms and Conrad 2017). Such agency problems are likely to be more acute for non-hierarchically organized groups. In addition, as groups age, the risk of internal fragmentation may increase (Duursma and Fliervoet 2021), making principal-agent disagreements more drastic. Thus, I control for the presence of hierarchical leadership in a given year. Finally, I control for religious group ideology and the presence of rival groups to test the ideology and competitive environment theories outlined in the literature review. The total number of attacks is aggregated

[12]Data come from the Foundations of Rebel Group Emergence (FORGE) Dataset's preorg indicator (Braithwaite and Cunningham 2020). If the group evolved/splintered from a pre-existing group included in UCDP (preorg == 1) or from a pre-existing group that did not cause 25 or more battle-related deaths (preorg == 2), it is coded as a "splinter".

[13]Data come from the EDTG's fate_leader indicator. If the group experiences more than one decapitation, this variable is coded 1 for every time that decapitation occurs.

using the GTD. Other controls come from the EDTG.

In the robustness checks presented in the Appendix, I use additional sets of controls related to (i) group goals, (ii) non-violent militant activities, and (iii) the region where the group operates. A full list of variables, their descriptions, and data sources, are in Appendix 2.

The nature of the dependent variable -number of claimed attacks- create some challenges to the empirical estimation strategy. First, the variable is zero-inflated: approximately 77% of the group-year observations are zero. Secondly, the number of claimed attacks include two different types of zeros: those that denote the group-years where the group perpetrated attacks but never claimed any and those group-years where the group did not perpetrate any attacks. The study's hypotheses are more concerned with the former and explain why, given they carry out attacks, groups would choose to claim attacks. However, dropping the group-years where the group did not perpetrate attacks could potentially bias the estimates. To tackle these challenges, I use zero-inflated negative binomial and Heckman selection models.

Zero-inflated negative binomial models (ZINB) estimate a binary model to model the probability of observing a non-zero outcome and a negative binomial model to model the counts of the outcome of interest when the count measure is over-dispersed. Using ZINB models, I estimate each group-year's probability of observing an attack together with the outcome of interest (e.g., the number of claimed attacks). The zero parts of the models only include Group Duration whereas the count parts include all the independent variables discussed above.

Heckman selection models simultaneously estimate the sampling probability of each observation (e.g., the selection equation) and the conditional expectation of the dependent variable (e.g., the outcome equation). Using Heckman estimation, I model each group-year's probability of selection (e.g., perpetrating at least one attack) together with the probability that the group will claim all the attacks it perpetrated in a given year. The selection equations of the models only include Group Duration and an exclusion restriction[14], whereas the outcome equations include all the independent variables discussed above.

In the Appendix, I also present robustness checks using alternative estimation strategies: ZINB models where the DV is the number of unclaimed attacks, seemingly unrelated regression models where the first equation models the logged number of claimed attacks and the second equation models the logged number of unclaimed attacks, and OLS models using the share of attacks in a

[14]Heckman models should include at least one variable in the selection equation that does not appear in the outcome equation (Sartori 2003). These are known as exclusion restrictions. The exclusion restriction in my selection models is whether the group has multiple base countries as recorded by the EDTG's mul_bases indicator. Whether the group operates in multiple countries influences the probability that it will perpetrate at least one attack, as being active in multiple countries creates vast opportunities to organize attacks. However, I do not expect this variable to influence group' credit-claiming strategy significantly, because the exigency to signal resolve may be very high even if the group operates in a single country.

given year that the militant group claimed. All estimation strategies yield comparable results.

Findings

The results from the second part of the analysis, summarized in Table 2-3, support the study's hypotheses. Militant groups are found to claim more in the earliest phases of their lifespans, whereas they claim much less at the latest stages of their lifespans (H1a). The effect of the phase of the group's lifespan at which the attack is perpetrated on credit-claiming behavior also holds for groups that target non-civilians and those that target civilians, meaning that groups, regardless of their preferred targets, become less likely to claim as they age. Yet, as H1b predicted, groups that target non-civilians are found to be more likely to claim attacks than those that target civilians, even in the latest phases of their lifespans. The results also suggest that as time passes, groups that target non-civilians and groups that target civilians become almost equally unlikely to claim attacks. The phase of the group's lifespan at which the attack is perpetrated has comparable effects on "joiner" and splinter groups. Groups, regardless of how they emerged, become unlikely to claim as they age. However, as H1c predicted, joiner groups that emerged independently are found to claim more than splinter groups.

Militant groups are more likely to claim attacks two years after decapitation (H2), although the first year after decapitation does not seem to be a significant predictor of claims. In addition, the initial positive effect of decapitation on claims diminishes quickly. These findings are robust across different model specifications and robustness checks presented in Appendices.

The outcome equations of Heckman selection estimations are presented in Table 2. The estimations from the selection equation are in Appendix 3. The dependent variable in the outcome equation is whether the group claimed all attacks it perpetrated in a given year. The count parts of ZINB models are presented in Table 3. In both tables, the latter four models include two control variables that the first four models do not.

Models 7 and 10 test the hypothesized relationship between credit claiming and the phase of the group's lifespan at which the attacks are perpetrated (H1a). Model 10 includes two controls that Model 7 does not: hierarchical leadership and presence of rivals groups. Group Duration has a significant negative effect. Figure 2(a) shows that the predicted probability of militant groups claiming all the attacks they perpetrate decreases as groups age. All else being equal, the predicted probability that groups will claim all their attacks in their 5th year is 49%, whereas it is only 35% when groups are in their 45th year.

These findings are replicated using ZINB models. Models 15 and 19 show that groups claim less attacks as they age. As shown in Figure 3(a), on average, groups claim 0.87 attacks in their 5th year and only 0.33 attacks in their 45th year. The findings support the argument that the strategic

Table 2. Heckman Selection Models of Militant Credit-Claiming, 1998–2016

	DV: Whether all attacks were claimed							
	Duration (7)	Splinter (8)	Target (9)	Decapitation (10)	Duration (11)	Splinter (12)	Target (13)	Decapitation (14)
Group duration (in years)	−0.003**	−0.001	−0.008***		−0.003*	−0.002	−0.059**	
	(0.001)	(0.002)	(0.003)		(0.002)	(0.002)	(0.024)	
Duration*Splinter group		−0.006**				−0.003		
		(0.003)				(0.003)		
Duration*Civilian targets			0.004				0.058**	
			(0.003)				(0.024)	
Splinter group	−0.082***	0.035		−0.074***	−0.112***	−0.061		−0.095***
	(0.030)	(0.058)		(0.029)	(0.034)	(0.065)		(0.033)
Civilian targets	−0.319**		−0.333***	0.114	−0.309		−0.928***	0.174
	(0.129)		(0.038)	(0.169)	(0.220)		(0.329)	(0.297)
Decapitation				0.122*				0.114*
				(0.063)				(0.068)
Decapitation (L1)				0.053				0.010
				(0.061)				(0.069)
Decapitation (L2)				0.113*				0.139**
				(0.063)				(0.069)
Decapitation (L3)				0.059				0.100
				(0.071)				(0.077)
Total number of attacks	−0.051***	−0.056***	−0.068***	−0.037**	−0.059***	−0.060***	−0.065***	−0.054***
	(0.017)	(0.017)	(0.012)	(0.017)	(0.019)	(0.019)	(0.019)	(0.020)
Number of non-militant casualties	−0.015	−0.016*	−0.006	−0.021**	−0.012	−0.013	−0.013	−0.017
	(0.010)	(0.010)	(0.007)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Attack diversity	0.022	0.026	−0.136***	0.015	0.028	0.028	0.028	0.045
	(0.070)	(0.070)	(0.048)	(0.069)	(0.075)	(0.075)	(0.076)	(0.076)
Share of transnational attacks	0.104*	0.099	0.054	0.129**	0.072	0.075	0.062	0.111*
	(0.061)	(0.061)	(0.035)	(0.061)	(0.066)	(0.066)	(0.066)	(0.066)
Religious fundamentalist group	−0.053*	−0.041	−0.008	−0.054*	−0.069**	−0.063*	−0.065*	−0.061*
	(0.032)	(0.033)	(0.021)	(0.031)	(0.034)	(0.035)	(0.035)	(0.034)
Hierarchical leadership					0.048	0.051	0.029	0.045
					(0.040)	(0.040)	(0.040)	(0.040)
Rival groups					0.002	−0.004	0.031	0.020
					(0.050)	(0.050)	(0.050)	(0.050)
Constant	0.944***	0.580***	0.919***	0.387**	0.951***	0.617***	1.527***	0.345
	(0.152)	(0.084)	(0.059)	(0.183)	(0.242)	(0.100)	(0.345)	(0.309)
# Selected	474	474	1826	435	409	409	376	409
# Non-selected	3530	3530	3530	3530	3530	3530	3530	3530
# Total observations	4004	4004	5356	3965	3939	3939	3939	3906

Note: Standard errors in parentheses. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 3. Zero-Inflated Negative Binomial Models of Militant Credit-Claiming, 1998-2016

	DV: Whether all attacks were claimed							
	Duration (15)	Splinter (16)	Target (17)	Decapitation (18)	Duration (19)	Splinter (20)	Target (21)	Decapitation (22)
Group duration (in years)	−0.024***	−0.013**	−0.045***		−0.022***	−0.012*	0.004	
	(0.005)	(0.006)	(0.009)		(0.006)	(0.006)	(0.062)	
Duration*Splinter group		−0.029***				−0.035***		
		(0.010)				(0.012)		
Duration*Civilian targets			0.030***				−0.021	
			(0.009)				(0.062)	
Splinter group	−0.482***	0.014		−0.396***	−0.449***	0.116		−0.340**
	(0.119)	(0.207)		(0.126)	(0.140)	(0.232)		(0.147)
Civilian targets	0.495		−0.179	0.892	0.492		0.534	0.637
	(0.427)		(0.110)	(0.642)	(0.494)		(0.811)	(0.646)
Decapitation				0.308				0.361
				(0.229)				(0.240)
Decapitation (L1)				0.422*				0.312
				(0.240)				(0.266)
Decapitation (L2)				0.403				0.491*
				(0.254)				(0.268)
Decapitation (L3)				0.216				0.041
				(0.285)				(0.304)
Total number of attacks	1.390***	1.375***	1.599***	1.370***	1.381***	1.378***	1.359***	1.346***
	(0.064)	(0.063)	(0.038)	(0.069)	(0.073)	(0.072)	(0.072)	(0.079)
Number of non-militant casualties	−0.115***	−0.110***	−0.059***	−0.126***	−0.084**	−0.080**	−0.078**	−0.094**
	(0.036)	(0.035)	(0.021)	(0.038)	(0.038)	(0.037)	(0.038)	(0.041)
Attack diversity	−0.456*	−0.427	−0.599***	−0.394	−0.631**	−0.672**	−0.739**	−0.510
	(0.265)	(0.264)	(0.143)	(0.289)	(0.288)	(0.286)	(0.288)	(0.312)
Share of transnational attacks	0.775***	0.751***	0.798***	0.821***	0.827***	0.788***	0.843***	0.915***
	(0.258)	(0.255)	(0.115)	(0.287)	(0.281)	(0.278)	(0.283)	(0.304)
Religious fundamentalist group	−0.244**	−0.177	0.038	−0.104	−0.229*	−0.161	−0.162	−0.037
	(0.121)	(0.122)	(0.063)	(0.131)	(0.131)	(0.131)	(0.130)	(0.139)
Hierarchical leadership					0.036	0.009	−0.069	0.049
					(0.153)	(0.150)	(0.149)	(0.163)
Rival groups					0.199	0.158	0.306*	0.152
					(0.184)	(0.181)	(0.179)	(0.200)
Constant	−1.835***	−1.585***	−2.033***	−2.819***	−1.969***	−1.674***	−2.136***	−2.668***
	(0.423)	(0.175)	(0.104)	(0.636)	(0.517)	(0.227)	(0.826)	(0.658)
Observations	791	791	5,173	708	659	659	659	588

Note: Standard errors in parentheses. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$

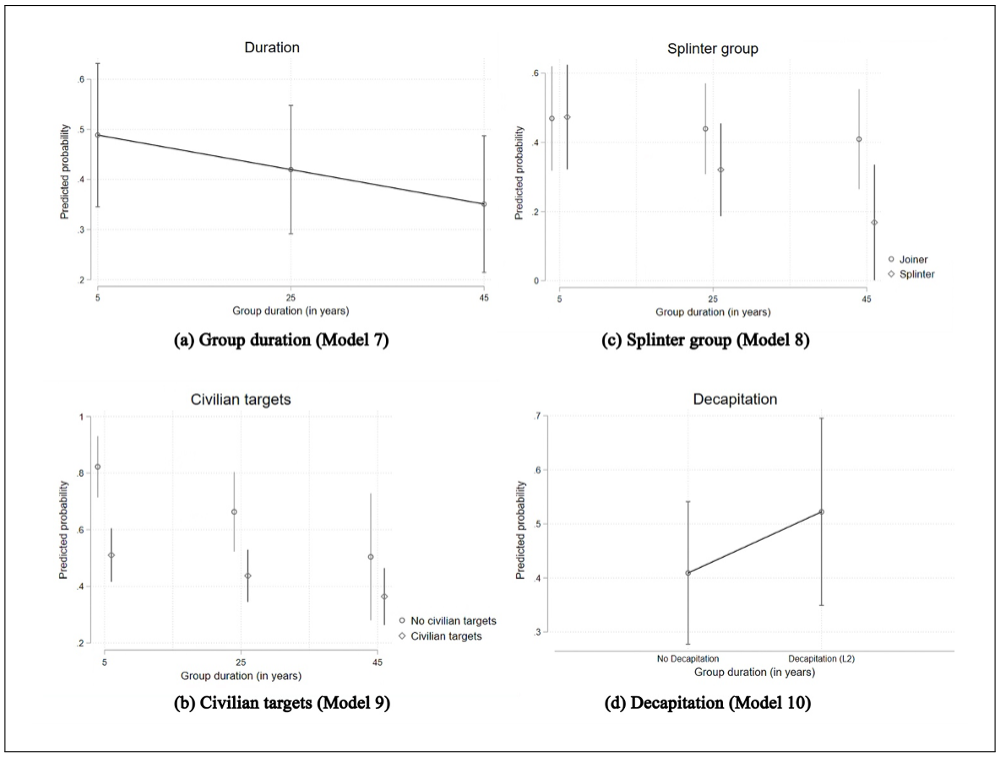


Figure 2. Predicted probabilities of groups' claiming all their attacks
Predictions are obtained from the selection models in Table 2 by keeping control variables at their means and medians.

environment in which the groups operate motivates credit-claiming at the earliest phases of groups, whereas it discourages credit-claiming in the latest phases.

In Models 9, 13, 17, and 21, I interact Group Duration with Civilian Targets to see if the credit-claiming behavior of groups that target non-civilians differs from their counterparts that do. In two model specifications and estimation strategies, the interaction terms are significant. However, the predicted probabilities from Models 9 reveal interesting patterns. Figure 2(b) shows that groups that target non-civilians and those that target civilians are similar because the predicted probability of claiming attacks decreases for both types of groups as they age. As predicted in H1b, groups that target non-civilians are much more likely than their counterparts that target civilians to claim attacks in the earliest phases of their lifespans. However, as time passes, both types of groups become almost equally less likely to issue claims. This finding suggests that the offsetting effect of civilian victimization on credit claiming is especially pronounced for newborn groups. Yet, as the main theoretical argument asserts, the exigency to signal resolve diminishes over time. Thus, regardless of their targeting choices, militant groups become less likely to issue responsibility claims at later stages of their lifespans.

In Models 8, 12, 16, and 20, I interact Group Duration with Splinter Group History to inves-

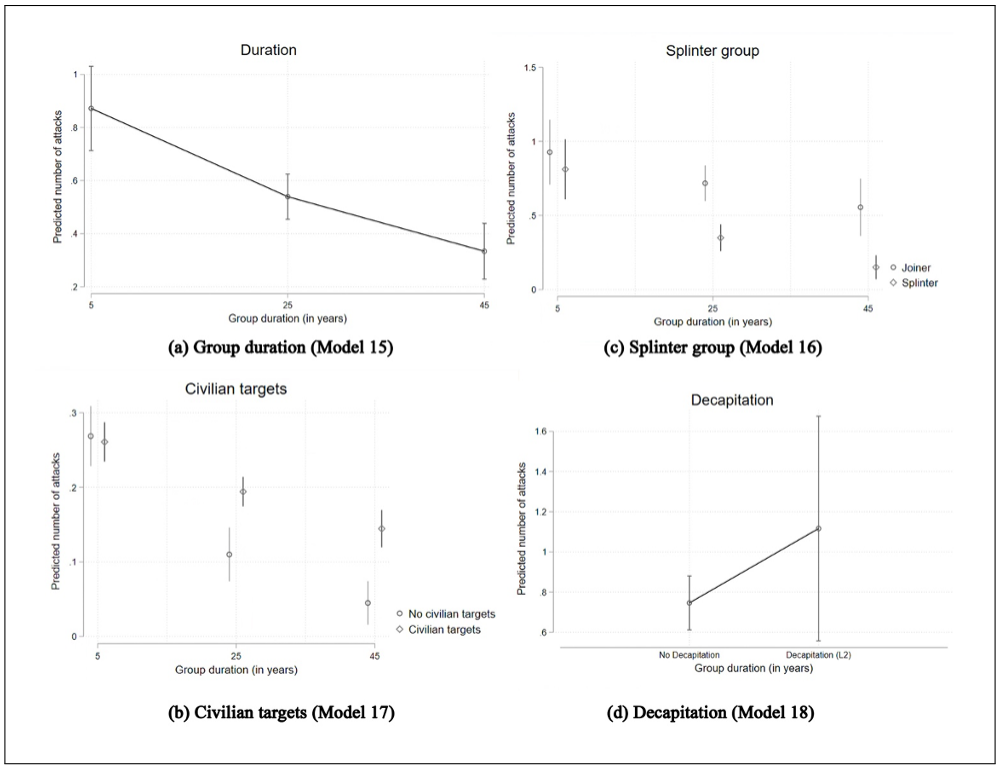


Figure 3. Predicted number of claimed attacks
Predictions are obtained from the ZINB models in Table 3 by keeping control variables at their means and medians.

tigate if the way groups are born moderates the relationship between age and exigency to resolve through credit-claiming. In three model specifications and estimation strategies, the interaction terms are significant. The predicted probabilities from Model 8 and predicted counts form Model 16 provide more insights. Figure 2(c) shows that joiner groups that emerged independently and splinter groups are similar because the predicted probability of claiming attacks decreases for both types of groups as they age. Similarly, Figure 3(c) shows that the predicted number of claimed attacks decreases for both groups as time passes. As the main theoretical argument of this study asserts, the exigency to signal resolve diminishes over time, regardless of how groups emerged. However, as predicted in H1c, joiner groups are more likely than their splinter counterparts to claim their attacks. This finding suggests that the exigency for signaling resolve remains higher for joiner groups than for splinter groups even after they mature.

Models 10, 14, 18, 22 test the hypothesized relationship between credit claiming and decapitation by including the decapitation dummy and its first, second, and third lags and using different model specifications and estimation strategies. As expected, the coefficients on the decapitation variables are positive. However, only the second lag is consistently significant. Militant groups are more likely to claim attacks and claim more attacks two years after being decapitated. The findings

suggest that the effects of decapitation are not immediate, diminish quickly, and are not substantially large. For example, as shown in Figure 3(d), the predicted probability of militant groups claiming all the attacks they perpetrate two years after being decapitated is 52%. This probability is 41% without decapitation. Given that only one of the group decapitation variables is significant, I find only partial and weak support for H2.

Why does decapitation initially increase the probability of claiming and the number of claims issued, but its effect diminishes over time? One explanation may be related to decapitation's immediate and long-term effects on militant group strength and survival. Scholars argued that decapitation is such a significant blowback that it could lead to the termination of the group's activities. However, the data in this study reveal that out of 167 groups that experienced decapitation, only seventeen groups demised immediately after the decapitation, whereas the rest managed to survive. This implies that even though decapitation could bring the end of a militant group, it rarely does so immediately. In most cases, groups that manage to survive the first year after decapitation have quite a high chance of surviving. If the weakening effects of decapitation peak immediately after decapitation and gradually decrease over the years, the strategic incentives for decapitated groups to signal resolve via credit-claiming should also gradually become less prominent, leading to a decrease in credit-claiming over the years.

Among the control variables in Tables 2 and 3, only a few variables are consistently significant. The number of non-militant casualties leads to a decrease in the probability of claiming all attacks (Table 2) and in the number of claimed attacks (Table 3). Groups that are able to cause many casualties are likely using armed propaganda to signal their resolve and refraining from credit-claiming to avoid public backlash due to casualties. The share of transnational attacks in a militant group's repertoire leads to increases in the likelihood and number of claims. The religious-fundamentalist groups are less likely to claim attacks than their secular counterparts as many extant works predicted.

Robustness Checks

I make various model specification changes to ensure the robustness of my findings. The first important concern is the possibility that the findings are not robust to the inclusion of additional control variables. I address this possibility by estimating models with additional controls related to (i) group goals, (ii) non-violent dimensions of militant activities, and (iii) the region in which the group operates. The models in Tables A6-A7 of Appendix 6 include controls related to the political goals of a militant group, which are binary indicators of whether the group has a regime-change goal, and a territorial-change goal. The models in Tables A8-A9 of Appendix 6 include controls related to the non-violent dimensions of militant activities, which are binary indicators of whether

the group had state sponsorship, provided social services, provided public services and involved in drug trafficking. Finally, the models in Tables A10-A11 of Appendix 6 include controls for the region of operation. The inclusion of additional sets of control variables does not change the main findings.

The second important concern is the possibility that the findings are not robust to different estimation strategies. In Appendices 4-5, I present OLS models and seemingly unrelated regression models. Using different estimation strategies does not change the main findings.

The third important concern is the possibility that the findings are driven by sample selection. The analysis dataset contains a vast number of militant groups. Although I do not expect that the selection of cases would bias the results in this study, it is possible that adjusting the sample of militant groups would change the findings. I address this possibility by restricting the dataset to the militant groups that use suicide terrorism (106 groups). Previous research found that suicide attacks are almost always claimed by the perpetrators (Pape 2003). Tables A12-A13 of Appendix 7 presents the model estimations run on the subset of militant groups that use suicide terrorism. The main finding about the phase of the group at which the attacks were perpetrated does not change.

Finally, it is plausible that a few outliers drive the findings concerning the relationship between duration and credit claiming (e.g., militant groups that had long lifespans). I address this possibility by narrowing the sample just to include militant groups that had short lifespans[15] in Tables A14-A15 of Appendix 7. The findings remain unchanged.

Conclusion

Militant attacks are said to be costly signals. However, it is unclear whether anonymous attacks can convey the information that perpetrators intended to convey. This study argues that claims of responsibility are more successful in conveying the intended message because they generate additional indirect costs due to the increased risk of government retaliation. Thus, credit claiming contributes to militant groups' efforts to signal greater resolve. Relying on this insight, I discussed how factors such as the phase of the militant group's lifespan at which the attack is perpetrated, non-civilian targets, emerging independently without ties to known groups, and group decapitation create an exigency for signaling greater resolve and hypothesized that those factors should be associated with more claims.

Using data on the retaliatory and conciliatory responses to militant groups, I show that groups that claim more attacks are more likely to suffer from government retaliation. Then, using a dataset

[15]The shortest group lifespan is one year, whereas the longest is forty-seven years. Thus, I created this subsample by only including groups that survived shorter than 23.5 years.

of 592 militant groups in ninety-five countries, I show that militant claims of responsibility for attacks appear to be driven at least in part by the phase of the group's lifespan at which the attacks occur. Newborn groups claim more. Although groups that only target security forces are more likely than those that victimize civilians to claim, both types of groups are unlikely to claim as they age. Similarly, both joiner groups that emerged independently without ties to existing groups and splinter groups alike, claim less attacks as they age, Furthermore, I show that groups are more likely to claim immediately after their leaders are killed or imprisoned.

This study improves our understanding of militant signaling and credit-claiming behavior. Unlike previous scholars who argued that credit-claiming is driven by group ideology or the use of suicide terrorism, I argue that militants claim credit when they need to signal greater resolve regardless of whether they adhere to an Islamist ideology, target civilians, or use suicide terrorism. My findings suggest several directions for future research. If militant groups need to demonstrate higher resolve in their early years, does claiming credit for a substantial number of attacks initially help groups survive longer? Does claiming more attacks help militant groups extract concessions from the government? If yes, do militant groups alter their credit-claiming behavior once they receive partial concessions from the government?

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