BORN WEAK, GROWING STRONG: ANTI-GOVERNMENT PROTESTS AS A SIGNAL OF REBEL STRENGTH IN THE CONTEXT OF CIVIL WARS

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Abstract. All rebel organizations start weak, but how do they grow and achieve favorable conflict outcomes? We present a theoretical model that allows for rebel organizations to gain support beyond their ‘core’ and build their bargaining power during fighting. We highlight that rebel organizations need to win over crucial parts of society to generate the necessary support that allows them to attain favorable civil conflict outcomes. We find empirical support for the argument that low income individuals who initially fight the government (rebel organizations) have to convince middle-class individuals to turn out against the government to gain government concessions. Empirically, we demonstrate that government concessions in the form of peace agreements and the onset of negotiations become more likely when protest occurs in the context of civil conflicts.

Replication Materials: The data, code, and any additional materials required to replicate all analyses in this article are available on the American Journal of Political Science Dataverse within the Harvard Dataverse Network, at: http://dx.doi.org/10.7910/DVN/MYDZNF.
In 2002 a small group of women started praying for peace at a local fish market in Monrovia. They handed out flyers reading: “We are tired! We are tired of our children being killed! We are tired of being abused!! Women, wake up - you have a voice in the peace process!” (Hayward, 2015). One leader of this protest movement was Leymah Gbowee who was later awarded the Nobel Peace Prize (Pedersen, 2016). This protest movement, known as Women of Liberia Mass Action for Peace, is credited with extracting a promise from President Charles Taylor to engage in peace negotiations with the rebel organizations Liberians United for Reconciliation and Democracy and the Movement for Democracy in Liberia (Sengupta, 2003; Diaz, 2010). The leadership of the Women of Liberia Mass Action for Peace were in the majority from Monrovia and while they drew on different social classes, their strongest support base was in the urban capital of Liberia.

“Y’en marre!” (we have had enough!): In 2011 the M23 movement took to the streets of Dakar in Senegal protesting against an unconstitutional third term (Henderson, 2012). These protests were staged against the government while the Movement of the Democratic Forces of the Casamance (MFDC) was still fighting the government. In 2012 the MFDC also engaged in peace talks that continued through 2013 and ended in a broad peace agreement. While the M23 was not formally connected to the MFDC, it shared the MFDC’s anti-government stance with a clear “y’en marre!” (we have had enough!) towards the government (Kelly, 2012; Demarest, 2016). The M23 is an urban youth movement drawing from different opposition parties and initially protesting in Dakar.

Protests during civil wars have received little attention in political science literature. This is surprising since we demonstrate in this article that a) protests are common in the context of civil wars, and b) anti-government protests are associated with the emergence of peace agreements. This article explores how strong rebel organizations can trigger larger anti-government movements, which helps them to gain government concessions. We provide a theoretical argument highlighting that rebel organizations need to expose government weakness to generate widespread anti-government behavior that allows them to attain favorable civil conflict outcomes. Hence, the main argument of this article addresses the question of how rebels with an initially small number of supporters can trigger widespread anti-government behavior and achieve favorable conflict outcomes.

Our article relates to a prominent debate in the social movement literature that is less discussed in the civil war literature, namely the link between rebel organizations that operate on the periphery of the state (rural) and the middle-class that tends to organize in urban areas. As Goodwin and Skocpol (1989, p.492) highlight: “The most successful revolutionary organizations-including those in Vietnam, Zimbabwe, and
Nicaragua—have won the support not just of the poor or middle peasants, but also of landless and migrant laborers, rural artisans, rich peasants, and even landlords”. These successful revolutionary organizations are able to establish “coalitions, alliances, or conjunctures of struggles that cut across divides between urban and rural areas and among different social classes and ethnic groupings” (Goodwin and Skocpol 1989: p.492). In fact, Skocpol (1979: p.113) argues that: “Without peasant revolts, urban radicalism in predominantly agrarian countries has not in the end been able to accomplish social-revolutionary transformations.” Particularly, in the Latin American context Dix (1983) argues that the interactive relationship between the rural and urban was very important because “… the combat entails relatively little mass mobilization of the peasantry before the winning of power and is instead based substantially on a core of radical youth united with or at least tacitly supported by broad elements of urban elites and the middle class (Dix 1983: p.290”). This literature also suggests that supporters in urban areas can be involved in fighting (Gugler 1982), but don’t necessarily engage in most costly forms of anti-government behavior (Almeida 2003). Instead, they engage in protest and demonstrations to express their dissatisfaction with the state. This is in line with more general insights that individuals in urban areas (Walton and Ragin 1990) and those who are better educated are generally more likely to engage in protest activities (Jenkins, Wallace and Fullerton 2008; McVeigh and Smith 1999). Our theoretical argument is inspired by this literature and highlights how wars expose the weakness of the state and create opportunities that can be exploited by social movements (Skocpol 1979). This very much follows from the general view that: “Contentious politics is produced … when the existence of available allies is demonstrated, and the vulnerability of the opponents is exposed” (Tarrow 2011: p.33).

Current civil conflict research is realizing that battle related fighting is not the only factor that determines conflict outcomes. In particular, the recent literature on non-violent campaigns (e.g. Stephan and Chenoweth 2008; Chenoweth and Stephan 2011; Chenoweth and Cunningham 2013) and earlier work on collective sentiments (e.g. Kuran 1989) demonstrates that conflict dynamics are not simply a function of military strength. In fact, there is evidence that fighting and other forms of political resistance are interdependent phenomena and might even impact directly or indirectly on similar conflict dynamics (White 1989). This leads scholars to increasingly investigate the interplay (Shellman, Levey and Young 2013; Dudouet 2013) or trade-off (Chenoweth and Stephan 2011) between non-violent and violent campaigns. We contribute to this literature by arguing that political behavior, short of fighting (e.g. demonstrations or strikes) in the context of ongoing civil conflict, can be the consequence of successful rebel organizations, which signal government weakness and enable larger spread anti-government behavior.
We propose that urban middle-class individuals, who are less likely to express their discontent through joining rebel organizations, demonstrate their anti-government sentiments through protest and strikes. We provide a theoretical argument demonstrating that governments faced with protest in the context of civil wars are more likely to enter peace agreements and negotiations. Hence, different to the existing literature (e.g. Cunningham, 2013; Shellman, Levey and Young, 2013; Dudouet, 2013), we attribute violent and nonviolent behavior to different types of actors that subsequently engage in anti-government behavior.

The dynamic growth of rebel organizations, and consequently their ability to attain their objectives, has received limited attention in the civil war literature. This stands in contrast to the literature on collective action regarding political protest and social movements (Tarrow, 2011; Lohmann, 1994; Finkel, Muller and Opp, 1989; DeNardo, 1985). In this context, the growth of movements is frequently explained by threshold or cascade models (Granovetter, 1978; Kuran, 1989; Lohmann, 1993; Yin, 1998). Starting from the premise that it is difficult to organize collective action (Tullock, 1971; Lichbach, 1995), activists, leaders, or core members have central roles in initiating political movements. Highly committed individuals can signal their discontent through protests and demonstrations and thereby impact the beliefs of others about the strength and legitimacy of a regime or the size of the opposition. Other members of society act upon their updated beliefs, which can increase anti-government behavior.

The idea that rebel organizations need to grow beyond their “core” members is also present in the civil conflict literature. Gaining support among civilians is seen as key to the success of rebel organizations (Kalyvas, 2006). Winning hearts and minds helps rebel organizations to prevent civilians from providing information to government forces that could make them vulnerable. In fact, many scholars (Wood, 2003; Findley and Young, 2007; Bennett, 2008) stress the importance of civilians aligning with either rebel or government forces. Initial loyalties and linkages in the civilian population with either government or rebel forces can change throughout the conflict duration, which stresses the dynamic process of gaining widespread support. While there might be pure financial stakes in allegiance (Berman, Shapiro and Joseph, 2011), there is strong support for the argument that government repression can cause civilians to side with the rebels (Davenport and Moore, 2012). However, less attention has been paid to how rebel organizations trigger more wide-spread anti-government behavior by demonstrating government weakness.

\[\text{It is frequently argued that terrorism tries to exploit this mechanism by provoking indiscriminate or disproportionate response of the government (Lake, 2002).}\]
Our main argument relates to the idea that armed anti-government organizations need to trigger widespread anti-government behavior to reach a favorable settlement with the government. If the rebel organization can demonstrate the weakness of the government, non-armed opposition groups are more likely to turn out against the government, which provides higher incentives for the ruling elite to provide concessions. In turn, the main objective of the government is to keep the armed anti-government organization from growing and thereby minimizing anti-government support from the unarmed opposition. Hence, we present a theory as to how rebel organizations grow strong, enabling widespread anti-government behavior through exposing the weakness of the government, and achieve favorable conflict outcomes.

The article is structured as follows. We first present a short review of the literature in the context of civil war and highlight some core assumptions of this literature. We then present our formal theoretical argument and its empirical implications. The empirical sections provide initial support for our theoretical argument and we highlight limitations and possible extensions in the conclusion.

**How do rebels get what they want?**

What determines the ability of rebel organizations to gain concessions from government? One of the most parsimonious explanations is provided by the bargaining literature on civil war (Walter 2009), which systematically links outcomes of war to the power distribution between rebel organizations and the government, drawing on a well developed theoretical body of work in the context of international conflict (Schelling 1960, Fearon 1995, Powell 1996, 1999, Wagner 2000, Filson and Werner 2002, Powell 2002, Slantchev 2003). There is some empirical support that strong rebels are more likely to attain victories and fight for a shorter time period (Cunningham, Gleditsch and Salehyan 2009) and that states with high bureaucratic qualities are more likely to fend off rebel victories (DeRouen Jr. and Sobek 2004). Bapat (2005), assuming that insurgency collapse becomes less likely over time, argues that if insurgencies survive the initial phase of a conflict, there exists a period of time where peace negotiations become possible after which government defeat becomes more likely. This argument seems to imply that power parity should be associated with peace negotiations (Butler and Gates 2009), which finds some support in the empirical literature (Hultquist 2013).

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2 In the bargaining context, information problems (Weinstein 2005, Fearon and Laitin 2003), commitment problems (Walter 1999, Fearon 2004), and issue indivisibility (Hassner 2003) have been identified as important explanations for the onset, duration, termination, and recurrence of civil wars.
Civilians and the power of rebel organizations

While the majority of bargaining work implicitly or explicitly equates power with military power, there is an increasing awareness that other concepts of power might matter in attaining favorable outcomes and that they will depend on particular government strategies (Cunningham 2011). Against the backdrop of terrorism within civil wars (Thomas 2014; Fortna 2015) and non-violent movements (Stephan and Chenoweth 2008), it becomes obvious that outcomes of civil war are not only determined by military power, an insight that has long been held in research focusing on the role of civilian support for warring parties. Most prominently Tse-Tung (1961:93) proposes that: “The former [people] may be likened to water and the latter [guerrilla] to the fish who inhabit it”, but the importance of civilian support is also stressed in current research. For example, Kalyvas (2006) develops a theory of selective violence in civil wars that rests on the assumption that control of civilians is important to guarantee that information is kept from the enemy. He argues that it is geographical control that endogenously determines the support levels from the civilian population in the sense that the probability of defection to a particular political actor, incumbent, or rebel is positively related to that actor’s control of the territory (Kalyvas 2006).

In this context, civilians’ support for warring parties is conditional on patterns of fighting (e.g. territorial control (Kalyvas 2006)) and one-sided violence (e.g. indiscriminate targeting (Bennett 2008)). For example, Findley and Young (2007) demonstrate that “attrition” strategies by government may lead to increasing support for insurgents opposed to “heart and mind” strategies that provide public goods to civilians. In a game theoretical model, Berman, Shapiro and Joseph (2011) provide a very similar theory and conclude that, everything else equal, increased investment in public goods should decrease support for insurgencies.

The existing literature recognizes that civilian support can take many different forms (Wood 2003). While passive support for the rebels through non-compliance with government actors has been widely highlighted in the literature (Scott 2008), we argue that successful rebel organizations can trigger antigovernment behavior (e.g. protest, strikes, or demonstrations) which can become crucial for rebels to attain their objectives. Nilsson (2012) already alludes to the role of civil society actors to attain durable peace after peace settlements and we further contribute to the nonviolent resistance literature (Chenoweth and Cunningham 2013) by providing a novel theoretical link between violent rebel behavior and antigovernment protest. However, different to the existing literature which theorizes nonviolent and violent behavior as strategic complements, respective substitutes for individual actors (Cunningham 2013 and

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3 For example, Cunningham, Gleditsch and Salehyan (2009) differentiate the concept of “power to target” from the “power to resist”.

4 However, their agent-based model findings also show that “high” committed civilians are always harder to discourage from supporting insurgents (Findley and Young, 2007).
movements (Cunningham, Dahl and Fruge [Forthcoming]) or sees violent and non-violent behavior as part of escalation patterns (Shellman, Levey and Young [2013]; Dudouet [2013]), we attribute violent and non-violent behavior to different types of actors. While violent behavior is used by the core of a rebel organization and initial joiners, nonviolent anti-government behavior can arise from successful rebel organizations demonstrating government weakness.

**The dynamics of gaining strength**

In recent years, the growth of rebel organizations has mostly been the subject of micro-level recruitment theories. Gates (2002) examines recruitment and coherence in rebel groups, in particular when the rebel group and government are competing to recruit supporters. He argues that different aspects of distance, namely geographic, ethnic and ideological, affect these patterns. Rebel organizations prefer to recruit agents that are less likely to defect and so they prefer to recruit individuals that are geographically close to them. However, when the government and the rebel organization are geographically close to one another, recruitment becomes more difficult and ethnic and ideological closeness can compensate for the lack of geographic proximity. Weinstein (2005) examines the impact of endowments on the recruitment process, and ultimately, fighting behavior. While materially well-endowed rebel organizations have an easier time to recruit, they attract opportunistic individuals with little commitment to the long-term goals of the group (Weinstein, 2005). Rebel organizations without such endowments recruit more committed fighters who may help the organization and its discipline in the long run. Further exploring social endowments, Staniland (2014) provides a very differentiated into the social bases of rebel organizations and traces organizational power back to the initial types of social linkages.

Besides organizational and societal features that draw particular groups of individuals, there are also individual level factors that increase the probability of joining rebel organizations. Using micro-level individual surveys from the Sierra Leone civil war, Humphreys and Weinstein (2008) study the conditions under which individuals participate as fighters in civil war. Their findings reveal that participation in an armed group depends on an individual’s relative social and economic standing in society, the benefits and costs of joining such a group, as well as social pressure coming from friends and the larger community. However, being a supporter of the opposition does not seem to be a prominent motivation for joining.

While micro-level theories provide the conditions under which individuals join rebel organizations, these arguments are less interested in how individual level decisions translate into conflict outcomes. Our paper is closely related to cascade or threshold models that are focusing on this process. Building on threshold models developed by Schelling (1971), Granovetter (1978) provides a model of riot behavior where the choice of rioting depends on how many other individuals have already decided to protest. Individuals differ
in how many others have to protest before they join, hence cascade processes take place. Depending on the distribution of individual level thresholds, cascades can develop faster, slower, or stop. In the context of revolutions, Kuran (1989) develops a formal model that explains unanticipated revolutions by the fact that civilians, while not displaying them publicly, might increasingly prefer government change. As more non-activists become unsatisfied with the status quo, it takes only very few activists to trigger a cascade of anti-government actions. The cascade mechanism rests on the assumption that the cost of political action decreases as the size of the protest movement grows (Kuran, 1991). Thus, the individual’s participation in political action, by decreasing the cost of participation, can encourage others to participate as well. In his model, the extremists who are willing to pay a higher cost of participation become active first and as the opposition size grows, the cost of participation falls so that the moderates who are willing to pay only a lower cost of participation follow. At some point, participation spreads across the population like a prairie fire.

Analyzing these cascade processes in more detail, Lohmann (1993, 1994) studies political change through mass action in regimes that have strong control over the dissemination of public information. In her model, individual experiences about regime occur privately, and information about the nature of the regime is dispersed among the population. This dispersed information is revealed over a period of time. As the public obtains information about changes in the size of the protests against the regime, the cascade of political actions is publicly observed, and each individual chooses whether to support the regime or not. If a sufficiently large number of people decide to join the protests, the regime loses public support and collapses. Thus, demonstration of the government’s weakness leads to an increase in anti-government behavior.

**Expanding beyond the Rebel “Core” and gaining Concessions**

Our main argument is that rebel organizations secure concessions from the government when they can demonstrate its weakness, which encourages urban middle-class individuals to engage in anti-government behavior. Hence, even when middle class preferences are aligned with those of the rebel organization, the urban middle class needs to be convinced that the likelihood of success against the government is sufficiently high before joining anti-government activities and bearing the costs.

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5 Unpacking why some individuals are more likely to initiate cascade processes, Van Belle (1996) examines the critical role played by leadership in overcoming both the initial difficulties of collective action and the ongoing problems faced in the pursuit of public goods. He argues that individuals taking the leadership role receive leadership benefits and if these benefits are large enough, they can actually help leaders overcome the high costs of initiating collective action.
We explain the building blocks of our theory via a stylized model with a governing elite in power, a lower class opposition (rural) that constitutes the core of the rebel organization, a middle class (urban) and an upper class. We focus on economic redistribution in order to align preferences across groups and incorporate the empirical insight that rebel organizations are initially more likely to form and operate in poor rural areas. The lower and middle classes prefer more redistribution, while the governing elite favors none (e.g. Acemoglu and Robinson, 2001). The lower class can join the rebel organization to engage in violent anti-government activities, while the middle and upper classes can participate in other forms of anti-government activities such as protests. Anti-government activities create economic and political costs for the elite and may force it into a concession. Rebel activities alone are not sufficient enough to force the elite into a concession. However, despite the aligned preferences of the lower and middle classes for economic redistribution, middle class participation is not immediate. First, participation in anti-government activities within each group is determined by the opportunity cost of participation, which is higher for the middle class. Second, a middle class individual is likely to participate in anti-government activities only if other middle class members also participate (e.g. Kuran, 1991). This creates a collective action problem (e.g. Wood, 2003) among middle class. Third, anti-government activities can force the elite into a concession only if they create sufficiently high costs; these are determined by the unknown ability of government to suppress rebel activities, in other words, by the strength of the organization that is unknown. Society learns about the strength of the organization by updating its beliefs after observing the outcome of rebel activities. The middle class can solve the collective action problem and participate in anti-government activities only if it is convinced of the strength of the rebel organization after updating its beliefs, forcing the elite to concede either immediately or after having updated its beliefs following more successful rebel activities.

We argue that rebel organizations start with individuals with low opportunity costs of participation in violent activities against the government. According to our theory, these are economically deprived individuals in the lower class of the opposition. While the government is unlikely to give concessions to rebel organizations without any societal support, the expansion of such rebel organizations beyond the ‘core’ membership, we argue, emerges if the rebel organization can prove to society its ability to succeed in the pursuit of concessions via successful challenges against the government. Once higher income classes engage in anti-government behavior (especially the middle class), anti-government activities may become costly enough to force a concession from the elite.

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6We think of the middle class as a mix of urban poor (that are still better off than the rural poor) and educated but economically excluded individuals.
7For conditions under which this collective action problem might not hold, see Kalyvas and Kocher (2007).
The ability of rebel organizations to execute successful attacks against government targets, and the ability of governments to avert such attacks affect the degree to which concessions can be gained. However, the role in this power distribution of mass mobilization beyond the core of the rebel organization is largely absent in scholarly work.

**Model**

We introduce a dynamic model of collective action with learning to formalize our arguments. Our stylized model makes several assumptions in order to isolate the middle class mobilization and its impact on elite concession. We can further generalize model to study other aspects of civil wars, including, but not limited to, the role of class preferences on ethnic and economic policies. In such an environment, the rebel organization may also target civilians aligning with the government, and the rebels’ choice of target may signal the strength of the organization when targeting civilians is easier than targeting the government.

In our model, time is discrete and infinite. There is a continuum of agents, which discount future payoffs by $\delta$. Society is divided into a ruling elite and a repressed opposition. The opposition may be a minority like the Kurds in Turkey or a majority like the Sunnis in Syria and is composed of lower class, middle class and upper class, which we denote by $l$, $m$ and $u$, respectively. The size of $\omega$-class is normalized such that $\lambda_\omega$ and $\lambda_l + \lambda_m + \lambda_u = 1$.

The elite acts as a unitary actor. It can keep the status quo or concede to the opposition. A concession is a game ending move. When it concedes, the elite implements policies that are equivalent to a transfer of $c$ to every opposition agent afterwards. For example, the language of the opposition group may be embedded into public education, various public services may be provided in multiple languages, both of which require the hiring of opposition members to public office. The total cost of concession to the elite is $c (= \lambda_l c + \lambda_m c + \lambda_u c)$.

We introduce a rebel organization with unknown capability to hit government targets. The organization is initially composed of a leadership and needs members to fight against the government. Opposition agents can join this rebel organization or engage in other forms of non-violent activities such as protests to show their discontent with the government.

The agents who join the rebel organization attempt to hit government targets while the elite tries to stop such activities. A successful rebel attack demonstrates the ability of the rebel organization to sustain and advance its stated military objective. At the same time, successful attacks signal government weakness to individuals outside of the organization. Whether the elite can successfully suppress the
rebels depends on a number of factors such as the organizational structure of the rebels, as well as other institutional, historic, domestic and international factors.

We model government capability to suppress the rebels probabilistically. This follows the long tradition of modeling power distribution among adversaries in crisis bargaining (Schelling 1960; Fearon 1995; Powell 1996, 1999; Wagner 2000; Filson and Werner 2002; Powell 2002; Slantchev 2003). The probability that rebel activities succeed depends on the intrinsic strength of the rebel organization and the size of the opposition engaged in anti-government activities. The former affects the probability of success directly while the latter captures that it is more difficult for the government to suppress the rebels and avoid the cost as the size of the opposition engaged in anti-government activities increases.

Formally, a rebel attack succeeds with probability $\alpha \lambda$. We refer to such attacks as successful rebel activities. $\alpha$ models the strength of the rebel organization or equivalent weakness of the government, $\lambda$ is the size of the opposition engaged in violent and non-violent anti-government activities.

The rebel organization can be strong, $\alpha = \alpha_h$, or weak, $\alpha = \alpha_l < \alpha_h$. It is common knowledge that $\Pr(\alpha = \alpha_h) = \pi_0$. Nobody can observe the true value of $\alpha$. Society learns about the true value of $\alpha$ via Bayesian updating of beliefs after observing success or failure of rebel activities. A successful rebel attack creates a cost of $\psi$ for the elite. Therefore, the expected cost of a rebel activity to the elite is $\alpha \lambda \psi$.

Participating in anti-government activities is costly for the opposition. The cost depends on the type of activity, as well as the agent’s opportunity cost. We assume that a lower class agent’s cost of participating in rebel activities or protests is zero. Since successful rebel activities may induce middle class participation and in turn force the elite to concede, the lower class prefers to join the rebels. In contrast, joining the rebel organization is prohibitively costly for middle and upper class agents, so they consider engaging in protests. Let $y_l = 0$ be the opportunity cost of the lower class to participate in rebel activities, and $y_m$ and $y_u$ be the opportunity cost of participation in non-violent anti-government activities for the middle and upper class respectively, where $y_l < y_m < y_u$.

**Timing of the game**

Let $\pi_t$ be the belief about $\Pr(\alpha = \alpha_h)$ in period $t$, the strength of the rebel organization. Agents play the following game every period. Given the common belief $\pi_t$, every opposition agent decides whether to participate in an anti-government activity. Observing the participation, the elite decides whether to concede. If the elite concedes, the game ends. If the elite does not concede, anti-government activities take place and the success of the rebels is determined probabilistically. Finally, the common belief of $\pi_t$ about $\Pr(\alpha = \alpha_h)$ is updated to $\pi_{t+1}$ via Bayes rule after observing the outcome.
Equilibrium

Following the threshold models we discuss above, we formalize the mobilization process via learning and cascading in Markov perfect equilibrium (Maskin and Tirole, 2001). A Markov perfect equilibrium is composed of strategies that depend only on payoff-relevant state of the world. The only payoff-relevant state in our model is $\pi_t$, the society’s belief about $\alpha$. We will characterize a symmetric Markov perfect equilibrium based on thresholds on beliefs.

Let $\pi_l$, $\pi_m$, and $\pi_u$ be the equilibrium thresholds that determine participation in anti-government activities by lower, middle and upper class opposition and $\pi_e$ be the equilibrium threshold that determines concession by the elite.

Consider the following threshold equilibrium: Let $\pi_t = \Pr(\alpha = \alpha_h)$ be the belief of the society in period $t$.

- When an opposition agent participates in anti-government activities, she joins the rebel organization if she is lower class and joins the protests otherwise.
- An $\omega$-class opposition agent participates in anti-government activities in period $t$ if, and only if, $\pi_t \geq \pi_\omega$ and as long as all members of society has followed her strategy of participating in anti-government activities. If an agent has ever failed to participate in the past when her participation was expected, everyone else stops participating in anti-government activities forever.
- The elite concedes if, and only if, $\pi_t \geq \pi_e$.
- Agents update their beliefs to $\pi_{t+1}$ according to Bayes rule after observing the success or failure of rebel activities in period $t$.

Since the success and failure of the rebels are observed by all agents, all agents update their beliefs to the same value. Therefore we refer to $\pi_t$ as society’s belief.

Assumptions

We will make the following assumptions:

1. $\alpha_l \psi < c$
2. $\alpha_h \lambda_l \psi < c$
3. $(1 - \delta) y_m < c < (1 - \delta) y_h$
4. $(1 - \delta) \alpha_h \psi(\lambda_l + \lambda_m) < c$
5. $c < \alpha_h \psi(\lambda_l + (1 - \delta) \lambda_m)$

The first assumption implies that the elite would never concede when the rebel organization is weak even if the entire opposition has participated in anti-government activities. The second assumption
implies that the elite would not concede when only the lower class joins the rebel organization even if the elite believes that the rebel organization is strong. These two assumptions imply that, for the elite to concede, society’s belief about the rebel organization being strong should be sufficiently high and participation in anti-government activities should expand beyond the core of the rebel organization. The third assumption states that a middle class agent would prefer to give up a one-period income of \( y_m \) for a life-long stream of \( c \), whereas an upper class agent would not. This assumption itself does not guarantee middle class participation in equilibrium since a life-long stream of \( c \) would be realized only if the elite has conceded. The fourth assumption states that just one period of participation by both lower and middle classes does not create high enough expected costs for the elite to concede even when the elite believes that the rebel organization is strong. Finally, the fifth assumption states that if the elite is sure that the rebel organization is strong and the lower class always participates in rebel activities, middle class participation for one period would create high enough costs that the elite would prefer to concede.

The fifth assumption provides a sufficiency condition for concession. If everybody knows that the rebel organization is strong, participation by lower and middle class opposition is an equilibrium because then the elite concedes and the opposition is better off in this case. Nevertheless, a middle class agent would participate only if sufficient participation by other lower and middle class agents was expected. Consequently, no participation by the middle class and no concession by the elite is also an equilibrium outcome. In other words, the strategic interaction among the opposition agents turns into a collective action problem when society is sure that the rebel organization is strong. The middle class prefers to solve the collective action problem if the rebel organization is strong and refrains from anti-government activities otherwise.

However, the true value of \( \alpha \) is not observable. Our theory argues that inefficient fighting will occur in equilibrium and the collective action problem will be solved via learning as the size of the opposition engaged in anti-government activities evolves with beliefs. When \( \pi_t \) is low, society is not optimistic about the rebel organization’s strength, and the middle class refrains from protesting. If the rebel organization can engage in sufficiently many successful activities, society’s beliefs improve and the middle class joins the protests. Beliefs also govern the elite’s decision to concede, which happens only after the rebels gain support from the middle class.

**Learning**

Given \( \pi_t \), if people observe a successful rebel activity, society updates its belief to

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\pi_{t+1} = \frac{\pi_t \alpha_h}{\pi_t \alpha_h + (1 - \pi_t) \alpha_l} \equiv \pi^s(\pi_t) > \pi_t
\]
and if it observes a failed act, then

$$\pi_{t+1} = \frac{\pi_t(1 - \alpha_h)}{\pi_t(1 - \alpha_h) + (1 - \pi_t)(1 - \alpha_l)} \equiv \pi^f_t < \pi_t$$

Figure 1 explains the dynamics of learning, middle class participation in anti-government activities, and elite behavior.

In Figure 1a, the horizontal axis represents current beliefs $\pi_t$ in period $t$, $\pi^s_{t+1}(\pi_t)$ plots the next period beliefs as a function of $\pi_t$ if the rebel activities of the current period succeed. In this case, society updates is belief to $\pi^s_{t+1} > \pi_t$. Similarly, $\pi^f_{t+1}(\pi_t)$ plots the next period beliefs as a function of $\pi_t$ if the rebel activities in the current period fail. In this case, society updates its belief to $\pi^f_{t+1} < \pi_t$. If $\alpha = \alpha_h$, the beliefs are more likely to improve and will drift towards one in the long-run. If $\alpha = \alpha_l$, the beliefs are more likely to degrade and will drift to zero over time.

Figure 1b focuses on middle class participation. The middle class participates in anti-government activities in the current period $t$ if, and only if, $\pi_t \geq \pi_m$. When $\pi_t = \pi_1$, a successful rebel activity yields $\pi_{t+1} = \pi_m$. If $\pi_1 \leq \pi_t \leq \pi_m$, the middle class refrains from anti-government activities in the current period, and a successful rebel activity triggers middle class participation in the following period $t + 1$. When $\pi_t \leq \pi_1$, the middle class does not participate in the current or following period, because the belief $\pi_t$ is so low that a successful rebel activity cannot improve the belief sufficiently enough that middle class participation occurs in the following period.

Figure 1c explains the dynamics of elite concession. The elite concedes in the current period $t$ if, and only if, $\pi_t \geq \pi_e$. When $\pi_t = \pi_2$, a successful rebel activity yields $\pi_{t+1} = \pi_e$. If $\pi_2 \leq \pi_t \leq \pi_e$, the elite does not concede in the current period, and successful activity triggers elite concession in the following period $t + 1$. When $\pi_t \leq \pi_2$, the elite does not concede in the current or following period, since its belief
\( \pi_t \) is so low that a successful rebel activity cannot improve the belief sufficient enough for elite concession in the following period.

**Equilibrium Analysis**

A lower class agent’s opportunity cost of joining the rebel organization, \( y_l \), is zero. Lower class participation in rebel activities helps society learn about \( \alpha \), and, as a result, may drive participation in anti-government activities to a level that induces concession by the elite. The beliefs do not evolve in the absence of rebel activities. Therefore, the lower class weakly prefers participation in rebel activities to protests or not participating at all.

An upper class agent never participates in any anti-government activity, i.e. \( \pi_u = 1 \), because \( c < (1 - \delta)y_u \) implies that the lifetime benefit of a concession for an upper class opposition agent is less than the opportunity cost of participating in anti-government activities.

We will focus on equilibria in which lower class agents always participate in rebel activities and upper class agents never participate in anti-government activities, that is, \( \pi_l = 0 \) and \( \pi_u = 1 \).

Define \( \alpha_t = \pi_t \alpha_h + (1 - \pi_t)\alpha_l \) as the expected probability of success, given the common belief \( \pi_t \). Let \( \lambda_t \) denote the size of the opposition participating in anti-government activities. Given the strategies, \( \lambda_t \) is determined by thresholds as follows:

\[
\lambda_t = \begin{cases} 
\lambda_l & \text{if } \pi_t < \pi_m \\
\lambda_l + \lambda_m & \text{if } \pi_t \geq \pi_m
\end{cases}
\]

The next proposition ranks equilibrium thresholds for the middle class and the elite. It states that the elite never concedes if the middle class does not participate in protests. This observation provides the first insight into our theoretical argument.

**Proposition 1.** \( \pi_m \leq \pi_e \) in equilibrium.

\( \pi_m = 1 \) corresponds to the equilibrium in which the opposition cannot solve the collective action problem. In this case, the equilibrium behavior is trivial: the middle class never participates in anti-government activities even if the lower class continues participating, society continues to update its beliefs, and the elite never concedes, that is, \( \pi_e = 1 \).

The following proposition states that \( \pi_e = 1 \) cannot be a best response to \( \pi_m < 1 \). Intuitively, when \( \pi_t \) is very close to 1, the lower and middle classes participate in protests and \( \alpha_t \) is very close to \( \alpha_h \) so that conceding now is better than never conceding for the elite by the fifth assumption.

**Proposition 2.** In equilibrium, \( \pi_m < 1 \) implies \( \pi_e < 1 \).
In such non-trivial equilibria, when \( \pi_t \) is low, only the lower class participates in rebel activities. If society’s belief \( \pi_t \) improves beyond \( \pi_m \) after observing successful rebel activities, the middle class participates in protests and if beliefs deteriorate to \( \pi_t < \pi_m \), the middle class stops participating until \( \pi_t \) improves sufficiently again. If society’s belief \( \pi_t \) improves further beyond \( \pi_e \), the elite gives in and concedes to the opposition. The following proposition asserts the existence of a non-trivial equilibrium.

**Proposition 3.** There exists an equilibrium with \( \pi_l = 0 < \pi_m \leq \pi_e < \pi_u = 1 \).

The elite’s best response threshold is a non-decreasing function of the middle class threshold. This is intuitive. The earlier the middle class agents join the protests, the earlier the elite concedes.

There are infinite number of non-trivial equilibria in this game. For example, in the proof of Proposition 3 we show that \( \pi_m = \pi_e = \pi \) is an equilibrium if \( \pi \) is close enough to 1.

We define a minimum threshold equilibrium \((\pi_l, \pi_m, \pi_u, \pi_e)\) as being such that \( \pi_l = 0, \pi_u = 1 \) and there is no other threshold equilibrium \((\pi'_l, \pi'_m, \pi'_u, \pi'_e)\) with \( \pi'_l = 0, \pi'_u = 1 \) and \( \pi'_m < \pi_m \). By definition a minimum threshold equilibrium is unique. This is also interesting from a substantive point of view, because the earliest concession is obtained in that equilibrium. The following graph plots the minimum threshold equilibrium for values \( c = 1, \delta = 0.7, \alpha_l = 0.2, \alpha_h = 0.8, \psi = 2, y_h = 0.5, \lambda_l = 0.6 \) and \( \lambda_m = 0.35 \). The threshold strategies at the minimum threshold equilibrium are \( \pi_m = 0.415 \) and \( \pi_m = 0.74 \). Also, \((\pi_l = 0, \pi_m = \pi_e = \pi, \pi_u = 1)\) is an equilibrium for every \( \pi \geq 0.78 \).

![Figure 2](image-url)

**Figure 2.** Left panel: Best response for the elite/government; Right panel: Expected payoff of the ruling elite/government at the minimum threshold equilibrium

The left panel plots the elite’s best response threshold as a function of middle class threshold. As argued earlier, this is a nondecreasing function: the later the middle class participates, the later the
elite concedes. The minimum threshold equilibrium is realized at $\pi_m = 0.415$ and $\pi_e = 0.74$. Also, $\pi_m = \pi_e = \pi$ constitutes an equilibrium for every $\pi \geq 0.78$. The right panel plots the lifetime expected payoff of the elite at the minimum threshold equilibrium. The elite payoff without the cost of rebel activities and concession is normalized to zero in this graph. Since the lower class always participates in rebel activities in this equilibrium, the expected payoff of the elite is negative even for low values of $\pi$. The payoff decreases as $\pi$ increases, because the lifetime expected cost increases due to the greater likelihood of middle class participation in anti-government activities. When $\pi$ exceeds $\pi_m$, the cost from middle class participation is realized so there is a sudden drop in expected payoff at $\pi_m$. The elite payoff continues to drop as $\pi$ increases beyond $\pi_m$ due to the increased likelihood of concession.

**Empirical section**

We focus on the empirical implication that the societal extension of anti-government behavior beyond the ‘core’ of the rebel organization leads to government concession. Hence, we expect these concessions to become more likely when middle class individuals engage in anti-government behavior alongside low income individuals. Our analysis focuses on two types of concession. We analyze the timing of (a) peace agreements and (b) peace negotiation onsets, which have previously been conceptualized as indicators for government concessions (Thomason 2014; Greig 2015). We also provide initial support for our argument that successful fighting leads to increasing anti-government behavior of middle class individuals.

*Distinguishing low and middle class income anti-government behavior*

Our theoretical argument makes an important distinction between lower-income individuals (mostly rural), who are willing to engage actual fighting activities, and middle income individuals (mostly urban) who are more more likely show anti-government behavior by protesting, striking, or other forms of non-violent behavior. Before turning to our main analyses, we provide empirical support for our argument that economic development is correlated with different types of anti-government behavior. While fighting is associated with rural regions of lower economic activity, protest and riots are associated with urban areas of higher economic activity. We believe it is important to demonstrate this correlation to deliver a convincing argument that our data is capturing the concepts implied by our theoretical framework. At the same time, this section allows us to introduce the primary data sources we used in our analyses.

Throughout this manuscript, we measure the rebel organizations’ ‘core’ activity using the Uppsala Conflict Data Program’s Georeferenced Events Dataset (UCDP-GED version 3-2015) (Sundberg and Melander 2013). We exclude one-sided violence events from the UCDP-GED data and only identify fighting events (dyadic government-rebel events) in Africa between 1989 and 2014. For activity beyond
the ‘core’, we rely on the Social Conflict in Africa Database (SCAD) (Hendrix and Salehyan, accessed on 11 July 2014) to identify demonstrations, protests, and strikes directed against the central or regional government.

The explicit aim of SCAD is to collect information on social and political conflict that is not captured by civil and international war datasets. Their event dataset covers the African continent from 1990-2014 and provides geographical and temporal information for each case. Focusing only on events that target a central or regional government, we extract the following events from SCAD to form a yearly count of Anti-Government Protest: Organized Demonstration, Spontaneous Demonstration, Organized Violent Riot, Spontaneous Violent Riot, and Anti-Government Violence (all definitions in footnotes from Hendrix and Salehyan (accessed on 11 July 2014)).

While the existing literature supports our assumption that low income individuals are more likely to join rebel organizations (Collier and Hoeffler, 2004; Humphreys and Weinstein, 2008), just for this section we use nightlight data to further strengthen our claim that rebel organization fighting is associated with areas of lower economic development (mostly rural), while anti-government protests are a phenomena related to slightly higher economically-developed areas (mostly urban). Nightlight data is increasingly used to measure economic development in areas where little or no survey or census data exists about individuals’ income or regional development (Min, 2015; Weidmann and Schutte, 2017). If our assumption holds, we should see that locations of protest are associated with higher nightlight emissions than fighting locations.

We assign nightlight exposure data to SCAD and UCDP-GED events using DMSP-OLS Nighttime Lights Time Series provided by the PRIO-GRID project (Tollefsen, Strand and Buhaug, 2012). The PRIO-GRID project provides global data coverage on a 25 × 25km resolution for a large number of

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8. “Whereas conflict data is generally available for large-scale events such as civil and international war, the purpose of this dataset is to compile information on other types of social and political disorder.” (Hendrix and Salehyan, accessed on 11 July 2014)

9. The benefit of SCAD is that it provides information on the target of a particular event. In our analysis, we include only events that are targeted against central or regional government and thereby constitute anti-government behavior that is not conducted by rebel organizations.

10. **Organized Demonstrations**: Distinct, continuous, and largely peaceful action directed toward members of a distinct “other” group or government authorities. In this event, clear leadership or organization(s) can be identified. **Spontaneous Demonstration**: Distinct, continuous, and largely peaceful action directed toward members of a distinct “other” group or government authorities. In this event, clear leadership or organization cannot be identified. **Organized Violent Riot**: Distinct, continuous and violent action directed toward members of a distinct “other” group or government authorities. The participants intend to cause physical injury and/or property damage. In this event, clear leadership or organization(s) can be identified. **Spontaneous Violent Riot**: Distinct, continuous and violent action directed toward members of a distinct “other” group or government authorities. The participants intend to cause physical injury and/or property damage. In this event, clear leadership or organization(s) cannot be identified. **Anti-Government Violence**: Distinct violent event waged primarily by a non-state group against government authorities or symbols of government authorities (e.g., transportation or other infrastructures). As distinguished from riots, the anti-government actor must have a semi-permanent or permanent militant wing or organization.
geo-spatial measures. We project the SCAD and UCDP-GED events onto the PRIO-GRID, extract the corresponding grid’s mean nighttime value and assign it to the respective events. Using this procedure, we attain nighttime measures for all SCAD and UCDP-GED events, which we we compare in Figure 3. The left panel in Figure 3 compares the nighttime exposure between SCAD and UCDP-GED events using box plots, while the right panel provides more insights to the actual distribution of nighttime exposure in the two datasets. In line with our expectations, on average SCAD events are recorded in locations with higher nighttime exposure, which implies higher levels of economic development and urbanization compared to UCDP-GED event locations. The demonstrated differences are significantly different at standard levels of statistical significance (differences in mean t-test p≤0.01).

Peace agreements as concessions to rebel organizations

The first analysis focuses on the timing of peace agreements at an aggregate yearly level. Using SCAD events targeting the government as our main measure of anti-government behavior beyond the rebels’ core, we analyze its impact on government concessions. In line with previous work (Thomas 2014, Greig 2015), we use peace agreements as a measure of government concessions. In the post-cold war era, which is the period covered by our data, most conflicts are settled by peace agreements, but we exploit the timing of peace agreements in our statistical analysis (Harbom, Högbladh and Wallensteen 2012).
In fact, while some peace agreements are reached within a year of fighting, others follow long periods of fighting, as shown in Figure 4. We hypothesize that an increase of SCAD events, which we theoretically argue is a signal of middle class individuals turning against the government, is associated with the emergence of peace agreements. We use the UCDP Peace Agreement Dataset (version 2.0) (Harbom, Högbladh and Wallensteen 2006) and Uppsala Conflict Data Project data (Gleditsch et al. 2002) to calculate the fighting time until a peace agreement is reached during a conflict. If multiple peace agreements are reached within a conflict, we calculate the fighting time since the last agreement. Peace agreements that are struck outside of fighting activities are not included in our dataset. Our data includes 44/43 peace agreements and 153/145 yearly observations. Figure 4 plots the duration of peace agreements (outcome variable) against the our main explanatory variable (SCAD events count).

![Figure 4](image-url)

**Figure 4.** Time until peace agreement is reached. For each peace agreement the corresponding anti-government SCAD protest event count is plotted. Dots at the end of the lines mark the beginning of a peace agreement. On the right hand side of the plot are conflicts that started before 1990 and have been settled within our observation period (left-truncated observations).

*Estimation.* We proceed by testing whether an increase in protest, riots, and strikes (lagged by one-year) decreases the duration until peace agreements are struck. We estimate Cox semi-parametric proportional hazard models as we are interested in the time until a peace agreement occurs. Our theoretical model does not imply any particular functional form of the underlying baseline hazard, making Cox proportional hazard models appropriate as they leave the duration dependency unspecified. One of the most crucial assumption made by the Cox model is that explanatory variables shift the baseline proportionally, without a systematic time dependency (Box-Steffensmeier and Zorn 2001). Hence, we provide proportional
hazard tests assessing the correlation between the Schoenfeld residuals and time for each variable in the appendix Table B2. We also include the interaction with the log(time) in our model to test for possible proportionally violations in our models (see appendix Table B3). In the second test, we make an important discovery. The effect of anti-government protest on the timing of peace agreements is conditional on conflict duration. Anti-government protests in roughly the first 2-3 years increases the hazard of peace agreements, but this effect becomes weaker the longer the fighting continues. This finding is explored in greater detail in the following analyses.

Rebel strength. In our model specification, we include three dynamic measures of rebel strength because we argue that the behavior of middle class individuals, and not merely the ‘core’ supporters is important to gain concessions from the government. First, we measure the strength of rebel organizations by coding the number of fighting events in which rebel organizations are involved with the government, because stronger organizations should attract, initiate, and prove resilient to larger number of fighting events. Second, stronger organizations should also have the ability to fight in more geographically-distinct places than weaker ones. Hence, we measure the number of unique PRIO-grids affected by rebel organizations fighting the government. Finally, there is evidence that rebel organization strength is correlated by the ability to move and operate closer to a country’s capital. Therefore, we measure the average distance between the respective capital and fighting events involving rebel organizations and the government.

Control variables. In our analysis, we control for a number of variables that might be correlated with our main explanatory variable and have previously been found to impact our outcome variable, or that we argue are likely influence it. We control for economic development (GDP per capita) (World Bank 2013), because countries with higher GDP per capita might on average have more urban middle class citizens engaging in protest. It is also necessary to control for population size (World Bank 2013), because larger countries might have a higher probability experiencing any kind of protest. We also know that more democratic institutions encourage open political protest and we therefore control for the Polity score of countries (Marshall, Jaggers and Gurr 2009). Finally, we take into account the duration of the overall conflict, which especially matters if we observe multiple peace agreements during a conflict. In a few instances, government faces multiple conflicts at the same time. Hence, we control for the number of ongoing conflicts in a particular country of the conflict. Finally, there is reason to believe that a strong

---

12Note that the duration of the overall conflict is different from the dependent variable in competing risk models, where it is the time until a peace agreement. Since there can be multiple peace agreements within a conflict, conflict duration and time until peace agreement are only equal to one other if there is one peace agreement in a conflict with a single conflict episode. We identified one case where UCDP conflict data and UCDP peace agreement data did not match in the conflict start date. This difference amounted to just one and we dropped this specific first year from our data. Analysis with and without this case do not impact on the reported results.
government can force rebel organizations into peace agreements. While GDP per capita is frequently used to assess state strength, we include the military expenditure (thousands of current year US Dollars) (National Material Capabilities (v5.0) Singer 1988) per capita as a more direct measure of military power. Summary statistics for all variables can be found in the Appendix Table B1.

Table 1. Peace Agreement Models: Cox proportional hazard model estimates. Outcome variable is the time to peace agreement. Unit of analysis is the conflict-year preceding peace agreements.

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Time to peace agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
</tr>
<tr>
<td>SCAD Events&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.282*** (0.118)</td>
</tr>
<tr>
<td>SCAD Events&lt;sub&gt;t-1&lt;/sub&gt; × ln(time)</td>
<td>−0.207*** (0.124)</td>
</tr>
<tr>
<td>GED Event Count&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>−0.0002 (0.005)</td>
</tr>
<tr>
<td>GED Capital Distance&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.0004 (0.001)</td>
</tr>
<tr>
<td>GED PRIO grids affected&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.002 (0.025)</td>
</tr>
<tr>
<td>GDP per capita&lt;sub&gt;t-1&lt;/sub&gt; (log)</td>
<td>−0.335 (0.314)</td>
</tr>
<tr>
<td>Population&lt;sub&gt;t-1&lt;/sub&gt; (log)</td>
<td>−0.216 (0.347)</td>
</tr>
<tr>
<td>Xpolity&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>−0.172 (0.124)</td>
</tr>
<tr>
<td>Conflict Duration</td>
<td>0.026 (0.021)</td>
</tr>
<tr>
<td>Ongoing Conflicts</td>
<td>−0.081* (0.820)</td>
</tr>
<tr>
<td>Military expenditure per capita&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>6.050 (5.080)</td>
</tr>
</tbody>
</table>

Observations 145
Log Likelihood -96.424
Wald Test 599.360*** (df = 11)
LR Test 12.583 (df = 11)
Score (Logrank) Test 12.708 (df = 11)

Note: Clustered country standard errors: *p<0.05; **p<0.01; ***p<0.001

Results. The duration estimation results can be found in Table 1. In line with our theoretical expectation, we find that SCAD events increase the risk of peace agreements, but this effect is time-dependent. The left panel in Figure 5 plots the increase of the percentage increase in the hazard of a peace agreement in the second year of fighting as the number of SCAD events increases, holding all other variables at their median value. At the empirical mean number of SCAD Events in the past year (∼2.5), the hazard of a peace agreement increases by about 39 percent in the second year of fighting. Importantly, we also find that this effect diminishes over time. In the third year the hazard decreases to about 13 percent with very large confidence intervals (center panel in Figure 5). This effect completely disappears by the fourth year.
of fighting (right panel in Figure 5). This finding provides initial evidence on the yearly conflict level of analysis that anti-government behavior beyond the ‘core’ of rebel organizations increases the probability of a peace agreement. However, this effect is time dependent and only anti-government behavior at the beginning of conflicts increases the probability of a peace agreement. We believe this is a meaningful effect providing support for our argument that, at least in the early phases of fighting (which includes fighting after a previous peace agreement), anti-government behavior outside of the rebel organization’s ‘core’ is important to gain concessions from government.

![Graphs showing percentage change in hazard of peace agreements](image)

(A) 2nd year  
(B) 3rd year  
(C) 4th year

**Figure 5.** Percentage change in the hazard of peace agreements conditional on the past year’s number of anti-government SCAD events. Estimates obtained from Model 1 in Table 1. Left panel: Changes after one year of fighting. Center panel: Changes after two years of fighting. Right panel: Changes after three years of fighting. Mean estimates with 95% confidence (dark gray). Rugs above the x-axes show the empirical distribution of SCAD events.

**Negotiation onsets as concessions to rebel organizations**

In a second set of models, we focus on a related phenomena: the onset of negotiations. The onset of negotiations is frequently seen as the government’s response to strong rebel organizations (Thomas, 2014). In a study by Thomas (2014), negotiations are used as an indicator of whether governments reward terrorist activities by rebel organizations through the onset of negotiations. Using data from Thomas (2014) and a similar model specification, we analyze whether anti-government SCAD events, in line with our theoretical argument, have a positive effect on negotiation onset. In addition, we investigate whether SCAD events also have a positive effect on the number of strong rather than weak concessions by the government. The advantage of using Thomas’ data is that we can analyze monthly level dynamics.

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13 We use updated GDP per capita and population data from the World Bank to correct for missing data and add some additional control variables.
(disaggregation in time), rather than yearly aggregations and that the large number of observations allows us to control for a larger set of variables.

**Estimation.** [Thomas (2014)] presents unique data on the specific date at which rebel organizations enter peace negotiations, which we will use throughout the following analysis. We evaluate our theoretical argument by estimating four different models, which have a similar model specification as presented in [Thomas (2014)]. First, we estimate a binary outcome model (Logistic regression) where the outcome variable is whether or not negotiations started in a particular month as coded by [Thomas (2014)]. The second and third model focus on the number of strong and weak concessions ([Thomas 2014]) eventually made by the government using a negative binomial count model.\(^1\) Focusing only on countries and years covered by SCAD and GED leaves us with 1,403 rebel organization months. Similarly to the conflict-level analysis, we find a strong time-dependent effect of anti-governmental SCAD events when including interactions with the time a particular rebel organization is fighting (see Table B4 for time-dependency test for all relevant variables).

**Rebel strength.** In addition to the fairly time invariant measure of rebel strength ([Cunningham, Gleditsch and Salehyan 2009]) included in [Thomas's 2014] original model specification, we add our three dynamic measures of rebel strength as outlined in the previous analysis: 1) the monthly number of fighting events between a rebel organization and the government, 2) the monthly number of distinct PRIO grids in which a rebel organization is operating, and 3) the monthly average distance to the capital.

**Control variables.** We first include the same control variables that feature in [Thomas (2014)]: similar to domestic anti-government, external rebel support an external mediation efforts could be conditional on the actual rebel organization strength. Hence, we include a measure of whether a rebel organization is externally supported from the non-state actor dataset ([Cunningham, Gleditsch and Salehyan 2009]) and whether third party mediation is taking place (UCDP Categorical Variables data set). The number of battle-related deaths is argued to be a measure for the costliness of conflict ([Mason and Fett 1996]), which might increase the probability of protests against the government and also alter the propensity of the government to enter peace agreement negotiations ([Uppsala Conflict Data Program 2016]). There is also some initial support for the idea that conflict types condition fighting dynamics ([Gleditsch and Ward 2013]), which might be correlated with the type of protest we observe, thus we control for conflict incompatibility are originally provided by UCDP ([Gleditsch et al. 2002] Uppsala Conflict Data Program).

\(^1\) [Thomas (2014)] distinguishes between no concessions, minimal, moderate, substantial, and maximal concessions. Multiple concessions can be granted, which allows for a count variable. The variable strong concessions is a count of substantial and maximal concessions, while the coding of weak concessions is a less restrictive coding and includes moderate, substantial, and maximal concessions.
It could also be argued that ethnic conflicts are more consistently linked to grievances that make anti-government protests more likely and there is evidence that ethnic conflicts endure for a longer period of time \cite{Wucherpfennig2012}. \cite{Thomas2014} controls for whether conflicts have an ethnic dimension as coded by Cederman, Wimmer and Min \cite{Cederman2010} and we include this measure in our models. Duration of conflicts are found to be dependent on the number of actors. Because a greater number of actors could be associated with a greater number of other anti-government behavior, we control for the number of active rebels and a count of other conflicts within the same country. We also control for the conflict episode and, more importantly, the month of the episode and its squared and cubed terms to model time-dependency as described in Carter and Signorino \cite{Carter2010}. We also include population size, GDP per capita, and military expenditure per capita for the reasons discussed in the previous analysis. In order to compare the effect of anti-government behavior beyond the ‘core’ of the rebel organization to other activities against the state, we include the number of successful terrorist attacks conducted by rebel organizations in the model specification. This is the main measure that \cite{Thomas2014} introduces in her work, which is coded from the Global Terrorism Database (GTD) \cite{GlobalTerrorismDatabase2016}. \cite{Thomas2014} argues that governments reward ‘bad’ behavior by rebel organizations with peace negotiation onset. The inclusion of this variable is also necessary because the decision to use terrorist attacks may be caused by similar factors, such as rebel strength, that drive anti-government protest.

**Results.** Turning to the results of the negotiations onset model (Table 2 Model 1), we can observe a positive effect for the level of SCAD events in the past month on negotiation onset. Figure 6 provides detailed insights into the effect of SCAD events on negotiation onset. The left panel shows the predicted probability of negotiation onset in the 12th month of fighting, holding all other variables at their median value. Compared to the yearly aggregations, the monthly count of SCAD events is of course much lower, and the empirical observed values are plotted at the bottom of the panel. However, the marginal effect of increases in the level of SCAD events is fairly large. Two protest events in the past month are associated with a 0.31 predicted probability of negotiation onset compared to 0.11 predicted probability if no protest events occur. However, the longer rebel organizations fight, the smaller the effect of anti-government protest becomes after 24 months (center panel Figure 6), two protest events in the past month are associated with a 0.30 predicted probability of negotiation onset compared to 0.13 predicted probability if no protest events occur. After 48 months (right panel Figure 6), two protest events in the past month are associated with a 0.23 predicted probability of negotiation onset compared to 0.16 predicted probability if no protest events occur. This means that over time protest events contribute less to a change in predicted probability for the onset of peace negotiations with a rebel organization.
Table 2. Negotiation onset and outcome models: Logit regression estimates (Model 1) for the negotiation onset model. Table also provides Negative Binomial regression estimates for the strong number of concessions model (Model 2) and the weak concessions model (Model 3).

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negotiation onset</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>logit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of strong concessions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of weak concessions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.0001**</td>
<td>-0.009*</td>
<td>-0.009*</td>
</tr>
<tr>
<td>(0.0001)</td>
<td>(0.0004)</td>
<td>(0.0005)</td>
<td></td>
</tr>
<tr>
<td>Ongoing Conflicts</td>
<td>0.005</td>
<td>-0.010</td>
<td>-0.017</td>
</tr>
<tr>
<td>(0.032)</td>
<td>(0.050)</td>
<td>(0.043)</td>
<td></td>
</tr>
<tr>
<td>Military expenditure per capita</td>
<td>0.0004</td>
<td>0.0001</td>
<td>0.001</td>
</tr>
<tr>
<td>(0.0003)</td>
<td>(0.0003)</td>
<td>(0.0004)</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>0.015</td>
<td>0.147</td>
<td>0.094</td>
</tr>
<tr>
<td>(0.060)</td>
<td>(0.088)</td>
<td>(0.078)</td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td>0.403**</td>
<td>0.322*</td>
<td>0.409**</td>
</tr>
<tr>
<td>(0.132)</td>
<td>(0.150)</td>
<td>(0.136)</td>
<td></td>
</tr>
<tr>
<td>SCAD Events_{t-1}</td>
<td>-0.012*</td>
<td>-0.014</td>
<td>-0.017**</td>
</tr>
<tr>
<td>(0.005)</td>
<td>(0.007)</td>
<td>(0.007)</td>
<td></td>
</tr>
<tr>
<td>Rebel Strength</td>
<td>0.660***</td>
<td>0.912***</td>
<td>0.784***</td>
</tr>
<tr>
<td>(0.146)</td>
<td>(0.207)</td>
<td>(0.181)</td>
<td></td>
</tr>
<tr>
<td>Main Group</td>
<td>0.557</td>
<td>-0.040</td>
<td>-0.212</td>
</tr>
<tr>
<td>(0.311)</td>
<td>(0.421)</td>
<td>(0.576)</td>
<td></td>
</tr>
<tr>
<td>Rebel Support</td>
<td>0.794***</td>
<td>0.694*</td>
<td>0.752**</td>
</tr>
<tr>
<td>(0.214)</td>
<td>(0.315)</td>
<td>(0.274)</td>
<td></td>
</tr>
<tr>
<td>Polity</td>
<td>0.127***</td>
<td>0.094</td>
<td>0.075</td>
</tr>
<tr>
<td>(0.032)</td>
<td>(0.049)</td>
<td>(0.042)</td>
<td></td>
</tr>
<tr>
<td>Battle Deaths (log)</td>
<td>-0.056</td>
<td>0.228</td>
<td>0.298**</td>
</tr>
<tr>
<td>(0.089)</td>
<td>(0.131)</td>
<td>(0.114)</td>
<td></td>
</tr>
<tr>
<td>Month in Episode</td>
<td>-1.295***</td>
<td>-0.595</td>
<td>-0.719</td>
</tr>
<tr>
<td>(0.374)</td>
<td>(0.443)</td>
<td>(0.407)</td>
<td></td>
</tr>
<tr>
<td>Month in Episode(^*)</td>
<td>0.055*</td>
<td>0.014</td>
<td>0.015</td>
</tr>
<tr>
<td>(0.015)</td>
<td>(0.023)</td>
<td>(0.019)</td>
<td></td>
</tr>
<tr>
<td>Month in Episode(^*)</td>
<td>-0.0005*</td>
<td>-0.0002</td>
<td>-0.0002</td>
</tr>
<tr>
<td>(0.0002)</td>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td></td>
</tr>
<tr>
<td>Territorial Conflict</td>
<td>-0.212</td>
<td>0.515</td>
<td>0.696</td>
</tr>
<tr>
<td>(0.694)</td>
<td>(0.965)</td>
<td>(0.824)</td>
<td></td>
</tr>
<tr>
<td>Ethnic Conflict</td>
<td>1.279***</td>
<td>0.266</td>
<td>0.368</td>
</tr>
<tr>
<td>(0.266)</td>
<td>(0.338)</td>
<td>(0.302)</td>
<td></td>
</tr>
<tr>
<td>Third Party</td>
<td>1.811***</td>
<td>0.704</td>
<td>0.876*</td>
</tr>
<tr>
<td>(0.371)</td>
<td>(0.424)</td>
<td>(0.367)</td>
<td></td>
</tr>
<tr>
<td>Count Rebel Organizations</td>
<td>0.227</td>
<td>0.416</td>
<td>0.676</td>
</tr>
<tr>
<td>(0.152)</td>
<td>(0.231)</td>
<td>(0.204)</td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td>0.0004***</td>
<td>0.003**</td>
<td>0.001***</td>
</tr>
<tr>
<td>(0.0003)</td>
<td>(0.002)</td>
<td>(0.002)</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>0.000</td>
<td>-0.0000**</td>
<td>-0.0000**</td>
</tr>
<tr>
<td>(0.000)</td>
<td>(0.0000)</td>
<td>(0.0000)</td>
<td></td>
</tr>
<tr>
<td>Military expenditure per capita</td>
<td>2.146</td>
<td>0.537</td>
<td>-0.298</td>
</tr>
<tr>
<td>(2.530)</td>
<td>(3.618)</td>
<td>(3.137)</td>
<td></td>
</tr>
<tr>
<td>Ongoing Conflicts</td>
<td>1.110*</td>
<td>0.425</td>
<td>0.835</td>
</tr>
<tr>
<td>(0.434)</td>
<td>(0.664)</td>
<td>(0.558)</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-7.544***</td>
<td>-7.728***</td>
<td>-7.619***</td>
</tr>
<tr>
<td>(1.028)</td>
<td>(1.371)</td>
<td>(1.195)</td>
<td></td>
</tr>
</tbody>
</table>

Observations: 1,403
Log Likelihood: -465.977
Akaike Inf. Crit.: 981.954

Note: *p<0.05; **p<0.01; ***p<0.001
We not only find this time-dependency for anti-government behavior, but also for successful terrorist attacks that that were originally analyzed by Thomas (2014). When comparing the effect size of anti-governmental behavior compared to the effect of successful terrorist attacks, we find that a single protest event has a larger effect of a single successful terrorist attack, and the difference between these effects is significantly different at standard levels. Hence, our results highlight that less violent forms of anti-government behavior seem to play an important role in the context of negotiation onset, especially because the mean number of protest and successful terrorist attacks is comparable (mean successful terrorist attack = 0.1935 events per month; mean protest events per month = 0.1948).

If protest events are a signal of strong rebel organizations enabling the anti-government behavior of the middle class, they should also help rebel organizations to achieve more favorable concessions. Turning to a comparison of whether protests lead to a higher number of strong concessions rather than weak ones, we find that the estimate for protest in the strong concession count model (Table 2 Model 2) is slightly larger than in the weak concession count model (Table 2 Model 3). This difference is statistical significant at conventional levels. This pattern is similar to the findings for successful terrorist attacks found by Thomas (2014), which we cannot replicate in our study with a slightly different subsample, perhaps because we only consider countries that are covered by SCAD and GED.

![Figure 6](image_url)

**Figure 6.** Predicted probability of negotiation onset conditional on the number of past-month’s anti-government SCAD events. Estimates obtained from Model 1 in Table 2. Left panel: Changes after 12 months of fighting. Center panel: Changes after 24 months of fighting. Right panel: Changes after 48 months of fighting. Mean estimates with 95% confidence (dark gray). Rugs above the x-axes show the empirical distribution of SCAD events.
Our theoretical model also provides empirical implications on the impact of GED events on SCAD events. We argue that strong rebel organizations are more likely to signal that middle class individuals are facing a weak government, which leads individuals outside of the rebels’ core to engage in anti-government behavior. Hence, we should observe that sustained fighting events, which arguably only strong rebels can engage in, are associated with an increase in protest, demonstration, and riot events. Using our yearly conflict dataset, we test whether changes in our measure of rebel organization strength impacts on SCAD event count. We include our three measures of rebel strength in the analysis.

We estimate five different models to estimate not only the effect of GED events on SCAD events, but also evaluate the robustness of the relationship. First, we estimate a basic negative binomial model controlling for GDP per capita, total population, Polity scores, count of other ongoing conflicts in the country, government military expenditure per capita, and conflict duration. In the second model we include the lagged dependent variable (DV-lag) and in the third model country-fixed effects (FE). The fourth is a DV-lag FE model and in the final model we estimate a negative binomial random effects model. The results are reported in Table 3 and demonstrate that only changes in the number of PRIO-grids affected by fighting events between the government and rebel organizations have a positive effect on the number of SCAD events. This empirical pattern is consistent with the idea that rebel organizations that can sustain or maintain high intensity conflict with the government are more likely to trigger broader anti-government behavior.

**Conclusion**

All rebel organizations start with a “core” of members that have very low opportunity costs, but have to evolve into broader movements to gain concessions from the government. In this article, we propose a theoretical argument that alludes to the fundamental mechanisms at play when organizations trigger anti-government behavior beyond their “core” and facilitate the turn-out of middle class individuals against the government. Past research on political protest and social movements (Tarrow 2011; Lohmann 1994; Finkel, Muller and Opp 1994; DeNardo 1985) and more recent work on non-violent campaigns (Chenoweth and Cunningham 2013; Chenoweth and Stephan 2011) highlight the power of political action that goes beyond battlefield fighting. Inspired by this literature, we analyze the interaction between behavior of low income individuals and middle class individuals (political protest) in the context of civil conflicts. Rather then seeing non-violent and violent behavior as strategic complements or substitutes

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15Measurement and sourced of all variables discussed in the previous analyses
for individual actors, we theorize non-violent behavior as a consequence of successful rebel organizations. Only if rebel organizations can demonstrate their strength, middle class individuals will join the broader anti-government movement. Political leaders that are faced with anti-government actions from middle and low-income individuals will make concessions that are favorable to the rebel organization. The growth of rebel organizations has mainly been subject of the rebel recruitment literature (Gates 2002; Weinstein 2005; Humphreys and Weinstein 2008). These micro-level approaches have provided important insights about the conditions under which rebel organizations can successfully recruit and the types of individuals they may be able to attract. However, existing micro-level approaches mainly focus on the initial ability of rebel organizations to recruit individuals, but rarely make the growth of broader anti-government behavior conditional on their success or failure. In contrast, authors in the protest and

| Table 3. Negative binomial models assessing the relationship between changes in measures of rebel organization strength (Capital distance, PRIO grids affected, and event count) and current SCAD event counts. |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                | Base Model      | DV-lag Model    | FE Model        | FE DV-lag Model | RE Model        |
| Model 1        | Model 2         | Model 3         | Model 4         | Model 5         |
| (Intercept)    | –12.892***      | –7.976**        | 50.929          | 50.858          | –14.966***      |
|                | (2.548)         | (2.531)         | (66.952)        | (66.584)        | (3.190)         |
| ΔGED Event Count | 0.001           | –0.002          | –0.001          | –0.001          | 0.000           |
|                | (0.003)         | (0.003)         | (0.002)         | (0.002)         | (0.003)         |
| ΔGED Capital Distance | –0.001         | –0.000          | –0.000          | –0.000          | –0.001          |
|                | (0.000)         | (0.000)         | (0.000)         | (0.000)         | (0.000)         |
| ΔGED PRIO grids affected | 0.022         | 0.030**         | 0.027**         | 0.028**         | 0.023*          |
|                | (0.013)         | (0.012)         | (0.009)         | (0.009)         | (0.011)         |
| GDP per capita_{t-1}(log) | 0.441*         | 0.286           | 1.499*          | 1.534*          | 0.539*          |
|                | (0.184)         | (0.175)         | (0.666)         | (0.669)         | (0.229)         |
| Population_{t-1}(log) | 0.693***       | 0.405*          | –3.509          | –3.537          | 0.810***        |
|                | (0.158)         | (0.160)         | (4.071)         | (4.051)         | (0.194)         |
| Xpolity_{t-1} | 0.204***        | 0.123*          | 0.205           | 0.200           | 0.145*          |
|                | (0.060)         | (0.059)         | (0.133)         | (0.133)         | (0.073)         |
| Conflict Duration | –0.021         | –0.003          | 0.152           | 0.144           | –0.028*         |
|                | (0.011)         | (0.010)         | (0.111)         | (0.111)         | (0.014)         |
|                | (4.730)         | (4.420)         | (6.945)         | (6.983)         | (5.430)         |
| SCAD Events_{t-1} | 0.122***       | 0.021           |                |                |                |
|                | (0.025)         | (0.027)         |                |                |                |
| AIC            | 581.250         | 566.620         | 574.860         | 574.323         | 572.964         |
| BIC            | 613.086         | 602.005         | 729.145         | 733.556         | 611.298         |
| Deviance       | 152.266         | 151.894         | 140.669         | 140.348         | 141             |
| Num. obs       | 141             | 141             | 141             | 141             | 141             |

**p < 0.001, *p < 0.01, *p < 0.05
social movement literature explain the growth of movements with threshold or cascade models, where actors condition their behavior on observed behavior (Granovetter, 1978; Kuran, 1989; Lohmann, 1993). Rather than solving the collective action problem of political organizations (Tullock, 1971; Lichbach, 1995) through selective incentives provided by leadership decisions or structural pre-conditions, cascade and threshold models see changes in the beliefs of actors as a key to collective action. The notion of our theoretical argument is very similar in the sense that low income individuals have to convince high income individuals that they are strong enough to reach a settlement with the government. Once members of the middle class turn against the government it is willing to provide concessions to the rebel organization.

Our empirical results indicate that demonstrations and protests at the beginning of conflicts increase the ability of rebel organizations to attain favorable peace agreements. This provides novel insights to the interplay between violent and non-violent anti-government behavior in the context of civil conflicts. From this perspective civilians gain agency and are no longer only the water in which the fish swim, but become fish themselves. This alludes to a broader strategic role for actors that are beyond the “core” or rebel organizations. In this article we have a very clear definition of what constitutes the “core” of rebel organizations by making a very sharp distinction between low-income types that resort to rebel fighting and middle-class types that are more likely to use protest and demonstrations to express their discontent.

Finally, this article speaks to the growing interest in the relationship between political, as well as economic inequalities, and civil conflict (Østby, 2008; Østby, Nordas and Rød, 2009; Cederman, Weidmann and Gleditsch, 2011; Alesina, Michalopoulos and Papaioannou, 2012). That is, the distribution of income types (Yin, 1998) is likely to influence the initial size of the rebel organization’s core and how quickly they can motivate broader anti-government behavior to force government concessions. We hope that this article demonstrates that an enhanced understanding of the conditions under which rebel organizations grow and trigger anti-government behavior will contribute to the explanation of general conflict dynamics (onset, duration, recurrence) in future work.
A. Appendix: Proofs

A Markov perfect equilibrium is a subgame perfect equilibrium in which strategies depend only on the payoff relevant state of the game and not on time index or history. The only payoff relevant state in our model is \( \pi_t \), beliefs about the probability \( \alpha = \alpha_h \). Consider strategies that depend only on beliefs about the probability \( \alpha = \alpha_h \). We will refer such strategies as threshold strategies. An equilibrium in threshold strategies is a Markov perfect equilibrium. There exists a Markov perfect equilibrium in our game. For example, \( \pi_l = \pi_m = \pi_u = \pi_e = 1 \) is a Markov perfect equilibrium. According to these threshold strategies, no agent participates in rebel activities and the elite does not concede when \( \pi < 1 \). Since participation is costly and an agent’s participation does not change the continuation game, not participating is optimal when other agents do not participate in rebel activities. Then it is optimal for the elite not to concede when there is no participation.

Since \( y_l = 0 \), there is no opportunity cost of participating in rebel activities for lower class agents. Participation may induce concession in the future, which benefits lower class agents. Therefore \( \pi_l = 0 \) is always optimal for them. So, we will focus on equilibria with \( \pi_l = 0 \). Also, \( c < (1 - \delta)y_u \) implies that life time benefit of a concession to an upper class opposition agent is less than the income that he has to give up in order to participate in rebel activities, so upper class opposition will never participate in rebel activities, i.e. \( \pi_u = 1 \). In the rest of the appendix, we will characterize equilibria with \( \pi_l = 0 \) and \( \pi_u = 1 \).

Proof of Proposition 1

Proof. If no middle class opposition participates in equilibrium, then it is optimal for the elite to not concede, so \( \pi_m = \pi_e = 1 \) and \( \pi_m \leq \pi_e \) holds in this equilibrium. Consider any other threshold equilibrium with \( \pi_m < 1 \). Suppose that \( \pi_e < \pi_m \). Consider the elite strategy at the threshold belief \( \pi = \pi_e \). If the elite plays according to the threshold \( \pi_e \), then it concedes when \( \pi = \pi_e \) and its payoff is \(-c\). Consider an alternative strategy of not conceding this period and conceding next period. Since \( \pi_e < \pi_m \), the middle class agents do not participate in rebel activities this period. So, the maximum expected cost from a rebel activity this period is \( \alpha_h \lambda l \psi < c \). The elite bears the cost of \( c \) from concession from the next period on. So the maximum cost of the alternative strategy is \( (1 - \delta)\alpha_h \lambda l \psi + \delta c \). That is the elite’s minimum expected payoff from this strategy can be computed as

\[
-(1 - \delta)\alpha_h \lambda l \psi - \delta c
\]
If the elite concedes today, then his payoff is \(-c\). Since
\[-(1 - \delta)\alpha_h \lambda_l \psi - \delta c > -c\]
equivalently \(\alpha_h \lambda_l \psi < c\), this is a profitable deviation. This is a contradiction, therefore \(\pi_e < \pi_m\) cannot hold in equilibrium. This completes the proof. \(\square\)

Given thresholds \(\pi_l, \pi_m, \pi_e\), let \(U_\omega(\pi)\) be the expected payoff of \(\omega\)-class opposition agents when the belief is given by \(\pi\) and they play according to the threshold \(\pi_\omega\). Similarly let \(U_e(\pi)\) be the elite’s expected payoffs, given the threshold strategies and the belief.

The payoffs from threshold strategies can be written recursively. Given a common belief \(\pi\), \(\alpha(\pi) = \pi \alpha_h + (1 - \pi) \alpha_l\) is the expected probability of success. Agents update their beliefs as follows. If people observe a successful rebel activity, then
\[
\pi'(\pi) = \frac{\pi \alpha_h}{\pi \alpha_h + (1 - \pi) \alpha_l} \equiv \pi^s(\pi) > \pi
\]
and if they do not observe a failure, then
\[
\pi'(\pi) = \frac{\pi (1 - \alpha_h)}{\pi (1 - \alpha_h) + (1 - \pi)(1 - \alpha_l)} \equiv \pi^f(\pi) < \pi
\]

Consider player strategies that are given by the thresholds \(\pi_l = 0, \pi_u = 1, \pi_m\) and \(\pi_e \geq \pi_m\). \(\lambda\) is the size of the participants in rebel activities, which is induced by the belief \(\pi\):
\[
\lambda(\pi) = \begin{cases} 
\lambda_l & \text{if } \pi < \pi_m \\
\lambda_l + \lambda_m & \text{if } \pi \geq \pi_m 
\end{cases}
\]

The payoff to the elite from playing the threshold strategy \(\pi_e \geq \pi_m\) can be computed recursively as follows:
\[
U_e(\pi) = \begin{cases} 
-(1 - \delta) \alpha(\pi) \lambda_l \psi + \delta U_e(\pi'(\pi)) & \text{if } \pi < \pi_m \\
-(1 - \delta) \alpha(\pi) (\lambda_l + \lambda_m) \psi + \delta U_e(\pi'(\pi)) & \text{if } \pi_m \leq \pi < \pi_e \\
-c & \text{if } \pi \geq \pi_e
\end{cases}
\]

where
\[
EU_e(\pi'(\pi)) = \alpha(\pi) U_e(\pi^s(\pi)) + (1 - \alpha(\pi)) U_e(\pi^f(\pi))
\]
is the expected continuation payoff from the next period on.

The first line in \(U_e(\pi)\) is the elite’s payoff when beliefs are low, \(\pi < \pi_m\), so that the middle class does not participate in rebel activities. The first term is the expected cost from lower class activities and the second term is the expected payoff from tomorrow on. Given the current period beliefs \(\pi\), the activities
succeed with probability $\alpha(\pi)$ and the beliefs are updated to $\pi^*(\pi)$ the next period so that the elite’s continuation payoff is given by $U_e(\pi^*(\pi))$. The activities fail with probability $1 - \alpha(\pi)$; in this case the beliefs are updated to $U_e(\pi^f(\pi))$ and the elite’s continuation payoff is given by $U_e(\pi^f(\pi))$. Therefore, the expected payoff $EU_e(\pi^f(\pi))$ is calculated as above.

The second line in $U_e(\pi)$ is the elite’s payoff when beliefs are such that $\pi_m \leq \pi < \pi_e$ so that both lower and middle classes participate in rebel activities but the elite does not concede. The expected cost of the activities becomes $-(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi$ in this case. Finally, the third is the elite’s payoff when beliefs are such that $\pi_e \leq \pi$ so that the elite concedes.

Let

$$u_{\text{threshold}} = \lim_{\pi \uparrow \pi_e} U_e(\pi)$$

be the limit payoff to the elite when the beliefs approach to the elite’s threshold from below. If $u_{\text{threshold}} < -c$, the elite can increase their payoff by slightly lowering their threshold. Similarly, if $w_{\text{threshold}} > -c$, the elite can improve their payoff by slightly increasing their threshold. So, optimality requires that

$$u_{\text{threshold}} = -c$$

The payoff function of the middle class opposition agents, $U_m(\pi)$, can be computed similarly as

$$U_m(\pi) = \begin{cases} 
(1 - \delta)y_h + \delta EU_m(\pi'(\pi)) & \text{if } \pi < \pi_m \\
\delta EU_m(\pi'(\pi)) & \text{if } \pi_m \leq \pi < \pi_e \\
y_h + c & \text{if } \pi \geq \pi_e
\end{cases}$$

where

$$EU_m(\pi'(\pi)) = \alpha(\pi)U_m(\pi^*(\pi)) + (1 - \alpha(\pi))U_m(\pi^f(\pi))$$

When $\pi \geq \pi_m$, the threshold strategy dictates participation by a middle class agent. Alternatively, he can choose not to participate. In this case, given the strategies of other players, nobody will participate in rebellious activities any longer so there will be no concession in the future. So, her continuation payoff from such deviation is $y_h$. Therefore, optimality of $\pi_m$ implies that

$$U_m(\pi_m) = \delta EU_m(\pi'(\pi_m)) \geq y_h$$

**Proof of Proposition 2**

**Proof.** Suppose that there exists an equilibrium with $\pi_l = 0$, $\pi_u = 1$ and $\pi_m < 1$. Then $\pi_m \leq \pi_e$ by Proposition 1. To the contrary, suppose that the elite does not concede in the equilibrium, i.e. $\pi_e = 1$.
Then $U_e$ can be written recursively as follows:

$$U_e(\pi) = \begin{cases} 
-(1 - \delta)\alpha(\pi)\lambda_l\psi + \delta EU_e(\pi'(\pi)) & \text{if } \pi < \pi_m \\
-(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi + \delta EU_e(\pi'(\pi)) & \text{if } \pi_m \leq \pi < 1 \\
-c & \text{if } \pi = 1
\end{cases}$$

where

$$EU_e(\pi'(\pi)) = \alpha(\pi)U_e(\pi^s(\pi)) + (1 - \alpha(\pi))U_e(\pi^f(\pi))$$

We can prove that $U_e(\pi) \geq U_e(\pi')$ for all $\pi < \pi' < 1$ as follows. Start with a function $W_n$ such that $W_n(\pi) \geq W_n(\pi')$ for all $\pi < \pi' < 1$. Produce $W_{n+1}$ as follows:

$$W_{n+1}(\pi) = \begin{cases} 
-(1 - \delta)\alpha(\pi)\lambda_l\psi + \delta EW_n(\pi'(\pi)) & \text{if } \pi < \pi_m \\
-(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi + \delta EW_n(\pi'(\pi)) & \text{if } \pi_m \leq \pi < 1 \\
-c & \text{if } \pi = 1
\end{cases}$$

where

$$EW_n(\pi'(\pi)) = \alpha(\pi)W_n(\pi^s(\pi)) + (1 - \alpha(\pi))W_n(\pi^f(\pi))$$

$W_{n+1}$ satisfies $W_{n+1}(\pi) \geq W_{n+1}(\pi')$ for all $\pi < \pi' < 1$ and $W_n$ converges to $U_e$ as $n$ goes to infinity. So $U_e(\pi) \geq U_e(\pi')$ for all $\pi < \pi' < 1$ is satisfied in the limit.

Consider $\pi = 1 - \varepsilon > \pi_m$ for $\varepsilon$ positive and arbitrarily small. Then $\pi^s(\pi)$ and $\pi^f(\pi)$ are arbitrarily close to 1 and $\alpha(\pi), \alpha(\pi^s(\pi))$ and $\alpha(\pi^f(\pi))$ are arbitrarily close to $\alpha_h$. Also

$$U_e(\pi) = -(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi + \delta EU_e(\pi'(\pi))$$

where

$$EU_e(\pi'(\pi)) = \alpha(\pi)U_e(\pi^s(\pi)) + (1 - \alpha(\pi))U_e(\pi^f(\pi)) \leq U_e(\pi^f(\pi)) \leq -\alpha(\pi^f(\pi))\lambda_l\psi$$

The first inequality follows from $\pi^f(\pi) < \pi^s(\pi)$ so that $U_e(\pi^f(\pi)) > U_e(\pi^s(\pi))$ as proven above. The second inequality follows from the fact that $\alpha(\pi^f(\pi))\lambda_l\psi$ is a lower bound for the cost that the elite bears when the beliefs are given by $\pi^f(\pi)$. This lower bound is achieved when only the lower class participates in rebel activities forever. Note that the lower class always participates in rebel activities since $\pi_l = 0$, so this cost is accounted for in $U_e(\pi^f(\pi))$. In addition, $U_e(\pi^f(\pi))$ accounts for the costs of middle class participation so that $U_e(\pi^f(\pi)) \leq -\alpha(\pi^f(\pi))\lambda_l\psi$.

Substitute $EU_e(\pi'(\pi)) \leq -\alpha(\pi^f(\pi))\lambda_l\psi$ in the expression of $U_e(\pi)$ above to obtain

$$U_e(\pi) \leq -(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi - \delta\alpha(\pi^f(\pi))\lambda_l\psi$$
Proposition 4. Let \( \pi_e \) be best response for the ruling elite. Then \( \pi_e = \pi_m \) for some \( \pi_m < 1 \).

Proof of Proposition 4

Proof. Let \( \pi_e \) be a best response to \( \pi_m < 1 \). Then \( \pi_m \leq \pi_e < 1 \) by Propositions 1 and 2. Suppose that \( \pi_m < \pi_e \) for all \( \pi_m < 1 \). Consider \( \pi_m = 1 - \varepsilon \) for a positive and arbitrarily small \( \varepsilon \) and \( \pi = \pi_m + \varepsilon \) for \( \varepsilon \) such that \( \pi \in (\pi_m, \pi_e) \). Then

\[
U_e(\pi) = -(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi + \delta EW(\pi'(\pi))
\]

where

\[
EU_e(\pi'(\pi)) = \alpha(\pi)U_e(\pi^s(\pi)) + (1 - \alpha(\pi))U_e(\pi^f(\pi)) \leq U_e(\pi^f(\pi))
\]

As in the proof of Proposition 2, \( U_e(\pi^f(\pi)) \leq -\alpha(\pi^f(\pi))\lambda_l\psi \) implies

\[
U_e(\pi) \leq -(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi - \delta \alpha(\pi^f(\pi))\lambda_l\psi
\]

\( \pi^f(\pi) \) goes to 1 and \( \alpha(\pi) \) goes to \( \alpha_h \) as \( \pi \) goes to 1. If we choose \( \varepsilon \) arbitrarily small, the right hand side of this inequality goes to \( -\alpha_h\psi(\lambda_l + (1 - \delta)\lambda_m) \) as \( \pi \) goes to 1. By assumption \( -\alpha_h\psi(\lambda_l + (1 - \delta)\lambda_m) > c \).

So, there exists a positive and small enough \( \varepsilon \) such that

\[
U_e(\pi) \leq -(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi - \delta \alpha(\pi^f(\pi))\lambda_l\psi \approx -\alpha_h\psi(\lambda_l + (1 - \delta)\lambda_m) < -c
\]

So the payoff from concession when \( \pi = \pi_m \) is higher than the payoff from not conceding when \( \pi = \pi_m \). Therefore \( \pi_m < \pi_e \) for all \( \pi_m < 1 \) cannot hold, so that \( \pi_e = \pi_m \) for large enough \( \pi_m < 1 \). \( \square \)
Proof of Proposition 3

Proof. Consider any \( \pi_m < 1 \) such that the elite’s best response satisfies \( \pi_e = \pi_m \). Such \( \pi_m \) exists by Proposition 4. We will prove that \( (\pi_l = 0, \pi_u = 1, \pi_m, \pi_e = \pi_m) \) is an equilibrium. Since \( \pi_e \) is a best response to \( \pi_m \), we only need to prove that \( \pi_m \) is also a best response. Suppose that middle class agents participate when \( \pi \geq \pi_m \). Given the strategies of all other agents, consider a middle class opposition agent. If he participates when \( \pi \geq \pi_m \), then the elite concedes and the agent achieves an extra payoff of \( c \) forever. If he does not participate, nobody will participate in rebel activities forever, and anticipating this, the elite will not concede because the elite would suffer the cost of rebellious activities for just one period, which is less than the cost of concession by Assumption 4. This means that the middle class agent would save the one period income of \( y_m \) but lose the life-long stream of \( c \) by not participating. Since \( (1 - \delta)y_m < c \) by Assumption 3, the middle class agent would be worse off by not participating. Therefore, participation when \( \pi = \pi_m \) is a best response for the agent given that the other middle class agents in the opposition also follow the \( \pi_m \) threshold strategy, so a non-trivial equilibrium with \( \pi_m \leq \pi_e < 1 \) exists. □

Proposition 5. The elite’s best response threshold strategy is a non-decreasing function of the opposition’s threshold strategy.

Proof of Proposition 5

Proof. Let \( \pi_e \) be the elite’s best responses to the opposition’s threshold strategy \( \pi_m \). For any \( \pi_e \geq \pi_m \), \( U_e \) can be computed recursively as follows:

\[
U_e(\pi) = \begin{cases} 
-(1 - \delta)\alpha(\pi)\lambda_l\psi + \delta E U_e(\pi'(\pi)) & \text{if } \pi < \pi_m \\
-(1 - \delta)\alpha(\pi)(\lambda_l + \lambda_m)\psi + \delta E U_e(\pi'(\pi)) & \text{if } \pi_m \leq \pi < \pi_e \\
-c & \text{if } \pi \geq \pi_e
\end{cases}
\]

As we argued above, optimality in equilibrium requires that \( \lim_{\pi \uparrow \pi_e} U_e(\pi) = -c \). If \( \pi_m \) increases, then \( U_e(\pi) \) increases for all \( \pi < \pi_e \) and \( \lim_{\pi \uparrow \pi_e} U_e(\pi) > -c \) holds. This implies that the elite’s best response increases with \( \pi_m \). □

Proposition 3 asserts existence of equilibrium with middle class participation in rebel activities. However, there may be multiple such equilibria. We define a minimum threshold equilibrium \( (\pi_l, \pi_m, \pi_u, \pi_e) \) as being such that \( \pi_l = 0, \pi_u = 1 \) and there is no other threshold equilibrium \( (\pi'_l, \pi'_m, \pi'_u, \pi'_e) \) with
\( \pi_i' = 0, \pi_u' = 1 \) and \( \pi_m' < \pi_m \). By definition a minimum threshold equilibrium is unique. It is also interesting from a substantive point of view because concession is obtained the earliest in that equilibrium. We compute the minimum threshold equilibrium numerically for various parameter values.
B. Appendix: Tables

Table B1. Summary statistics for yearly peace agreement analysis.

<table>
<thead>
<tr>
<th>Statistic</th>
<th>N</th>
<th>Mean</th>
<th>St. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict Duration</td>
<td>145</td>
<td>10.848</td>
<td>11.501</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>Anti-government SCAD Events</td>
<td>145</td>
<td>2.352</td>
<td>3.386</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>GED Event Count</td>
<td>145</td>
<td>46.055</td>
<td>49.758</td>
<td>1</td>
<td>286</td>
</tr>
<tr>
<td>GED Capital Distance</td>
<td>145</td>
<td>521.277</td>
<td>397.854</td>
<td>3.986</td>
<td>1,533.672</td>
</tr>
<tr>
<td>GED PRIO grids affected</td>
<td>145</td>
<td>15.276</td>
<td>11.501</td>
<td>1</td>
<td>78</td>
</tr>
<tr>
<td>GDP per capita (log)</td>
<td>145</td>
<td>6.733</td>
<td>6.663</td>
<td>4.764</td>
<td>7.823</td>
</tr>
<tr>
<td>Population (log)</td>
<td>145</td>
<td>16.340</td>
<td>0.871</td>
<td>14.521</td>
<td>17.775</td>
</tr>
<tr>
<td>Xpolity</td>
<td>145</td>
<td>−1.214</td>
<td>1.916</td>
<td>−3</td>
<td>5</td>
</tr>
<tr>
<td>Conflict Duration</td>
<td>145</td>
<td>25.366</td>
<td>11.137</td>
<td>1</td>
<td>43</td>
</tr>
<tr>
<td>Ongoing Conflicts</td>
<td>145</td>
<td>1.193</td>
<td>0.396</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Military Expenditure per capita</td>
<td>145</td>
<td>0.017</td>
<td>0.037</td>
<td>−0.00000</td>
<td>0.329</td>
</tr>
</tbody>
</table>

Table B2. Proportionality test for Model 1 (Table 1). Testing a non-zero slope of Schoenfeld residuals as a function of time, where \( \rho \) is the coefficient of the slope. A \( \chi^2 \) test is used as a statistical test of whether \( \rho \) is different from zero. All p-values indicate that we cannot reject the null hypothesis, which indicates that the model does not violate the proportionality assumption.

<table>
<thead>
<tr>
<th></th>
<th>( \text{rho} )</th>
<th>( \text{chisq} )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCAD Events(_t-1)</td>
<td>0.084</td>
<td>0.355</td>
<td>0.551</td>
</tr>
<tr>
<td>GED Event Count(_t-1)</td>
<td>0.046</td>
<td>0.082</td>
<td>0.775</td>
</tr>
<tr>
<td>GED Capital Distance(_t-1)</td>
<td>0.176</td>
<td>0.600</td>
<td>0.439</td>
</tr>
<tr>
<td>GED PRIO grids affected(_t-1)</td>
<td>0.070</td>
<td>0.154</td>
<td>0.695</td>
</tr>
<tr>
<td>GDP per capita(_t-1)(log)</td>
<td>−0.055</td>
<td>0.087</td>
<td>0.768</td>
</tr>
<tr>
<td>Population(_t-1)(log)</td>
<td>−0.108</td>
<td>0.507</td>
<td>0.476</td>
</tr>
<tr>
<td>Xpolity(_t-1)</td>
<td>0.028</td>
<td>0.053</td>
<td>0.818</td>
</tr>
<tr>
<td>Conflict Duration</td>
<td>0.002</td>
<td>0.0005</td>
<td>0.983</td>
</tr>
<tr>
<td>Ongoing Conflicts</td>
<td>−0.050</td>
<td>0.121</td>
<td>0.728</td>
</tr>
<tr>
<td>Military expenditure per capita(_t-1)</td>
<td>−0.086</td>
<td>0.145</td>
<td>0.704</td>
</tr>
<tr>
<td>GLOBAL</td>
<td>1.696</td>
<td>1.998</td>
<td></td>
</tr>
</tbody>
</table>
Table B3. Peace Agreement Models. Cox proportional hazard model estimates. Outcome variable is the time to peace agreement. Model includes all relevant variables interacted with the log of time.

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to peace agreement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCAD Events ( t_{-1} )</td>
<td>0.206*** (0.089)</td>
<td>0.350** (0.147)</td>
</tr>
<tr>
<td>SCAD Events ( t_{-1} \times \ln(\text{time}) )</td>
<td>-0.187*** (0.103)</td>
<td>-0.298* (0.170)</td>
</tr>
<tr>
<td>GED Event Count ( t_{-1} )</td>
<td>-0.014 (0.014)</td>
<td></td>
</tr>
<tr>
<td>GED Event Count ( t_{-1} \times \ln(\text{time}) )</td>
<td>0.008 (0.007)</td>
<td></td>
</tr>
<tr>
<td>GED Capital Distance ( t_{-1} )</td>
<td>-0.001 (0.002)</td>
<td></td>
</tr>
<tr>
<td>GED Capital Distance ( t_{-1} \times \ln(\text{time}) )</td>
<td>0.0002 (0.001)</td>
<td></td>
</tr>
<tr>
<td>GED PRIO grids affected ( t_{-1} )</td>
<td>0.032 (0.063)</td>
<td></td>
</tr>
<tr>
<td>GED PRIO grids affected ( t_{-1} \times \ln(\text{time}) )</td>
<td>-0.010 (0.034)</td>
<td></td>
</tr>
<tr>
<td>GDP per capita ( t_{-1} \times (\log) )</td>
<td>-0.323 (0.316)</td>
<td></td>
</tr>
<tr>
<td>Population ( t_{-1} \times (\log) )</td>
<td>-0.295 (0.378)</td>
<td></td>
</tr>
<tr>
<td>Xpolity ( t_{-1} )</td>
<td>-0.183* (0.129)</td>
<td></td>
</tr>
<tr>
<td>Conflict Duration</td>
<td>0.034 (0.025)</td>
<td></td>
</tr>
<tr>
<td>Ongoing Conflicts</td>
<td>-0.583 (0.827)</td>
<td></td>
</tr>
<tr>
<td>Military expenditure per capita ( t_{-1} )</td>
<td>4.129 (5.541)</td>
<td></td>
</tr>
</tbody>
</table>

Observations | 153 | 145 |
Log Likelihood | -103.459 | -95.438 |
Wald Test | 55.750*** (df = 2) | 1,406.820*** (df = 14) |
LR Test | 5.566 (df = 2) | 14.556 (df = 14) |
Score (Logrank) Test | 6.311* (df = 2) | 14.064 (df = 14) |

Note: Clustered country standard errors. *p<0.05; **p<0.01; ***p<0.001
Table B4. Negotiation onset model: Logit regression estimates for the negotiation onset model including all relevant variables interacted with the month count (time) of the respective spell.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCAD Events&lt;sub&gt;t−1&lt;/sub&gt;</td>
<td>0.622**</td>
<td>(0.200)</td>
</tr>
<tr>
<td>SCAD Events&lt;sub&gt;t−1&lt;/sub&gt;×Month in Episode</td>
<td>−0.009</td>
<td>(0.004)</td>
</tr>
<tr>
<td>GED Event Count&lt;sub&gt;t−1&lt;/sub&gt;</td>
<td>0.001</td>
<td>(0.062)</td>
</tr>
<tr>
<td>GED Event Count&lt;sub&gt;t−1&lt;/sub&gt;×Month in Episode</td>
<td>−0.001</td>
<td>(0.001)</td>
</tr>
<tr>
<td>GED Capital Distance&lt;sub&gt;t−1&lt;/sub&gt;</td>
<td>0.001</td>
<td>(0.004)</td>
</tr>
<tr>
<td>GED Capital Distance&lt;sub&gt;t−1&lt;/sub&gt;×Month in Episode</td>
<td>−0.00001</td>
<td>(0.00001)</td>
</tr>
<tr>
<td>GED PRIO grids affected&lt;sub&gt;t−1&lt;/sub&gt;</td>
<td>0.0004</td>
<td>(0.002)</td>
</tr>
<tr>
<td>GED PRIO grids affected&lt;sub&gt;t−1&lt;/sub&gt;×Month in Episode</td>
<td>0.00001</td>
<td>(0.00001)</td>
</tr>
<tr>
<td>Success&lt;sub&gt;t−1&lt;/sub&gt;</td>
<td>0.380**</td>
<td>(0.135)</td>
</tr>
<tr>
<td>Success&lt;sub&gt;t−1&lt;/sub&gt;×Month in Episode</td>
<td>−0.012*</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Rebel Strength</td>
<td>0.666***</td>
<td>(0.146)</td>
</tr>
<tr>
<td>Main Group</td>
<td>0.542</td>
<td>(0.312)</td>
</tr>
<tr>
<td>Rebel Support</td>
<td>0.803***</td>
<td>(0.215)</td>
</tr>
<tr>
<td>Polity</td>
<td>0.121***</td>
<td>(0.034)</td>
</tr>
<tr>
<td>Battle Deaths (log)</td>
<td>−0.057</td>
<td>(0.089)</td>
</tr>
<tr>
<td>Episode</td>
<td>−1.306***</td>
<td>(0.391)</td>
</tr>
<tr>
<td>Month in Episode</td>
<td>0.039*</td>
<td>(0.016)</td>
</tr>
<tr>
<td>Month in Episode&lt;sup&gt;2&lt;/sup&gt;</td>
<td>−0.0005*</td>
<td>(0.0002)</td>
</tr>
<tr>
<td>Month in Episode&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.00000*</td>
<td>(0.00000)</td>
</tr>
<tr>
<td>Territorial Conflict</td>
<td>−0.202</td>
<td>(0.703)</td>
</tr>
<tr>
<td>Ethnic Conflict</td>
<td>1.307***</td>
<td>(0.268)</td>
</tr>
<tr>
<td>Third Party</td>
<td>1.832***</td>
<td>(0.372)</td>
</tr>
<tr>
<td>Count Rebel Organizations</td>
<td>0.233</td>
<td>(0.152)</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>0.0004***</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Population</td>
<td>−0.000</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Military expenditure per capita</td>
<td>2.070</td>
<td>(2.560)</td>
</tr>
<tr>
<td>Ongoing Conflicts</td>
<td>1.172**</td>
<td>(0.441)</td>
</tr>
<tr>
<td>Intercept</td>
<td>−7.844***</td>
<td>(1.066)</td>
</tr>
</tbody>
</table>

Observations: 1,403  
Log Likelihood: 465.347  
Akaike Inf. Crit.: 986.695

Note: ∗p<0.05; ∗∗p<0.01; ∗∗∗p<0.001


Global Terrorism Database, (Data file). 2016. *National Consortium for the Study of Terrorism and Responses to Terrorism, (START).*

**URL:** [https://www.start.umd.edu/gtd](https://www.start.umd.edu/gtd)


**URL:** [www.scaddata.org](http://www.scaddata.org)

Department of Peace and Conflict Research Report 99.


URL: [www.ucdp.uu.se](http://www.ucdp.uu.se)


URL: [www.ucdp.uu.se](http://www.ucdp.uu.se)


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