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A transformation of political violence? Substitution and complementarity in terrorism and civil war

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ABSTRACT

There is a widespread perception that terrorism has increased over the last two decades, and common data on terrorism appear to back this up. This raises questions about the relationship between terrorist tactics and other types of political violence. Some argue we see a transformation of political violence, where indirect targeting through attacks on civilians replace conventional civil conflict where non-state actors directly target the state and security forces. We examine the relationship between terrorism and civil war in terms of potential substitution or complementarity between tactics, moving from trends in aggregate data over time to disaggregated analyses focusing on specific non-state actors and relative allocation of direct and indirect targeting. We find little evidence consistent with strict substitution, or growth in indirect attacks in countries outside episodes of civil war, but more evidence consistent with growing complementarity between terrorism and civil war, with increased use of terrorist attacks within civil wars over the period where terrorism appears to have increased. We examine whether increased use of terrorism in civil war coincides with observable changes in the characteristics of ongoing civil wars, and find increasingly asymmetric conflicts where rebels may benefit more from carrying out terrorist attacks.

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Introduction

The concept of terrorism arguably dates back to the French Revolution, and there is a long history of movements resorting to terrorist attacks as well as academic studies of terrorism and terrorist movements (see Dietze and Verhoeven 2022; Hoffman 2017/1998; Rapoport 1984). The 2001 9/11 attacks in the U.S. and the ensuing war on terror, however, greatly increased popular attention to terrorism and its prominence in research. This has been accompanied by a widespread perception that terrorism is becoming a more frequent and pervasive phenomenon. This perception also appears to be backed up by common data sources on terrorism, suggesting that the frequency of terrorist attacks has increased dramatically since 9/11, especially since the mid-2000. For example, the initial launch of

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the *Global Terrorism Index* in 2015 argued that there had been a five-fold increase in terrorist attacks since 9/11 (see Institute for Economics and Peace 2015), a claim which received considerable publicity.¹ The most recent 2025 *Global Terrorism Index* argues that terrorism is spreading geographically and affecting an increasing number of countries (Institute for Economics and Peace 2025). The increase in terrorism is often cited as a key characteristic of a changing security environment in many prominent policy reports and strategy documents. For example, it was a core premise for the commitment to train additional staff in the 2015 U.K. *National Security and Strategic Defence and Security Review*. Moreover, the perception that terrorism is increasing seems widespread among the public – 2025 polling data by YouGov indicate that nearly 60% of U.K. respondents believe that terrorism has increased over the last 5 years, and about 75% believe that terrorist attacks in the U.K. are very or fairly likely.²

This apparent increase in terrorist attacks raises many questions about what might motivate actors to resort more frequently to terrorism over time as well as the relationship of terrorism to other forms of political violence actors may use. Some argue that we see a fundamental transformation of conflict where conventional conflict – in the sense of direct confrontation between armed combatants – is giving way to more unconventional forms of political violence, with more violent attacks against noncombatant civilians and efforts to target an opponent through indirect attacks and the expected consequences of the attacks (see, e.g. Ash 2016; Gray 2015; Kaldor 2013; Walter 2017; Žižek 2008). This also has important implications for ongoing debates over trends in conflict, where some scholars argue that we actually see a decline in violence and warfare, especially after the end of the Cold War, even if others dispute the evidence for such trends (see, e.g. Braumoeller 2019; L.-E. Cederman, Gleditsch, and Wucherpfennig 2017; Cunen, Lid Hjort, and Mogleiv Nygård 2020; K. S. Gleditsch and Pickering 2014; Goldstein 2011; Pinker 2011). Most of these analyses tend to look at data on conventional interstate wars or civil wars. One might contend that this approach overlooks important alternative types of political violence such as terrorism. If these appear to be increasing and possibly emerging as a replacement to conventional conflict, then any apparent decline in conventional civil conflict could mask a substantive transformation of political violence. Claims about a transformation of political violence are often rather imprecise and rarely engage with systematic research or data on political violence. Žižek (2008), for example, does not refer to any existing data sources on conflict and violence, and has little empirical material beyond some discussion of selected real-world events. In this manuscript, we try to leverage insights from existing data sources to compare the relationship between terrorist tactics and civil war more systematically as potential substitutes and complements.

The conventional economic approach to defining substitutes and complements in consumer theory focuses on whether the compensated cross-price effect is positive or negative (see, e.g. Mas-Colell, Whinston, and Green 1995, 70–1). Two activities are substitutes if increased use of one reduces the marginal return from the other, with the result that an actor reallocates effort away from one tactic to the other. Two activities are complements if increased use of one activity raises the marginal return from the other, making the two activities jointly more productive than the sum of their parts. Bread and butter provides a suitable example of two goods that are complements (where one is better with the other), whereas guns and butter are often considered substitutes in the sense that resources devoted to one would leave less for the other, and one has no

meaningful effect on increasing the return of the other. In the context of political violence, some formal models of tactical choice by rebels propose guerrilla warfare and terrorism as alternative technologies, and examine how the relative attractiveness depends on the costs and expected returns of each to the rebels given costs imposed on a rival government (see Bueno de Mesquita 2013). Terrorist tactics and conventional civil war would be strict substitutes if one alternative is consistently used instead of another, or the use of one tactic detracts from the value of the other or makes use of the other tactic less effective. Terrorist attacks and conventional civil war activities may be considered complements for a rebel group if the use of one tactic enhances the effectiveness of another. In some plausible scenarios, rebel groups in an ongoing civil war can benefit from carrying out terrorist attacks if these can help raise the profile of a group and increase recruitment, and in turn help bolster conventional fighting capacity. They also may have low pure resource costs for carrying out such attacks if the logistical demands are modest, and suffer few negative political consequences if a group's audience considers terrorist attacks justified, even if they entail collateral civilian casualties. Terrorist attacks may also enhance conventional direct military pressure if attacks help stretch the government's capacity to respond on the battlefield and force it to disperse responses across multiple fronts and targets.

Our approach is inspired by the notion of transference in tactics pioneered by Enders and Sandler in a series of studies identifying changes in terrorist attack modes and the specific types of targets chosen in response to external events or changes such as counterterrorism policies and protective measures (see, e.g. Enders and Sandler 1993, 2006, 2012; Sandler 2014). From this perspective, transference arises as displacement or substitution effects, when the costs of some type of attacks or targets rise, thus making other targets relatively more attractive by comparison. This may be an unintentional result of government measures or actions, but reflects rational behavior in the sense of strategic adaptation by non-state actors. This broader body of work on transference in terrorism has documented apparent changes in terrorist attack modes, for example when the introduction of airport metal detectors in the 1970s led to a decline in skyjackings as it became more difficult to bring guns or explosive devices onto airplanes, but an increase in other forms of attacks against less well-protected targets (see Enders and Sandler 1993). Similarly, efforts to develop better protection of U.S. embassies or military installations abroad had the effect of increasing the likelihood that groups would seek to attack embassy staff or military personnel outside secured compounds. It plausibly also decreased the relative costs of attempting to strike targets inside the U.S. relative to U. S. targets abroad (see Sandler 2014). The absence of major terrorist attacks inside the U.S. after 9/11 could plausibly be attributed to the greatly increased costs due to improved homeland security measures and policies, but this in turn could have the effect of making weaker targets in other countries relatively more attractive options (Enders and Sandler 2006).

Most studies of transference to date have examined impacts on different types of terrorism and targets rather than the potential relationship of terrorism with conventional political violence. More generally, studies of terrorism and civil war have often evolved in a disconnected manner. They tend to be conducted by different scholarly communities, leading to 'islands of cumulative knowledge [that] have rarely been integrated' (see Findley and Young 2012, 298). However, more recent scholarship has examined the

observed overlap between terrorist tactics and civil war. This provides many useful answers to questions, such as what sort of rebels are more likely to use terrorist tactics in armed conflicts, or under what conditions terrorism is more likely to be used more intensively in ongoing civil wars (e.g. de la Calle and Sánchez-Cuenca 2015; Findley and Young 2012; Fortna 2015; Joyce and Page Fortna 2025; Polo and Gleditsch 2016). There is also research on factors inducing substitution away from specific tactics such as terrorism. K. S. Gleditsch and Polo (2016) provide evidence suggesting that the volume of ethnic terrorism declines following reforms or decreases in the factors motivating movements and facilitating recruitment, such as political accommodation and concessions to group autonomy. This echoes previous research looking at accommodation of ethnic groups, finding a lower subsequent risk of new civil war outbreaks and higher prospects for settlements in ongoing civil wars (see L.-E. Cederman, Gleditsch, and Wucherpfennig 2017). Others examine the use of terrorism as a means for extracting concessions or negotiations in conventional violent campaigns. Thomas (2014) suggests the use of terrorism during a civil war can increase the prospects that a government will accept to negotiate with a group (for a related argument on escalation and negotiation dynamics, see Menninga and Prorok 2021). However, there has been less attention to trends and changes over time in the relationship between tactics, or how changes in the profiles of non-state actors may be associated with changes in incentives for terrorism over other types of tactics.

In this manuscript, we consider the relationship between terrorist activities and civil war over time from the perspective of tactics in political violence as potential substitutes or complements. We examine if the increase in terrorism reflects growing use of terrorism outside civil war or a growth in terrorism as a tactic within civil war. We consider the frequency of terrorism within civil war as well as changes over time and the relationship to group profiles, using data on terrorist attacks from the Global Terrorism Database, data on civil wars and events within civil wars from the Uppsala Conflict Data Program, as well as new empirical data that allow identifying actors involved in events across the two sources to examine allocation between the two types of violent activities. Our analysis provides little evidence consistent with strict substitution where we see more terrorism outside civil war or more terrorist attacks instead of conventional violence. We find more evidence of growing complementarity, suggesting that terrorism is increasingly used as a tool in ongoing civil wars. We also consider whether the increase in terrorism may simply reflect changes in what is considered terrorism over time or reporting biases leading to more events. The results from these analyses are not consistent with what we would expect to see if the increase in terrorism in civil war simply reflected reporting biases or changes in coding criteria. We further show evidence of changes in the profile of actors in contemporary conflicts, suggesting a higher prevalence of conflict profiles likely to see greater incentives for rebels to use terrorism more intensely as a tool in warfare and greater complementarity with conventional conflict.

Terrorism and civil war: indirect vs. direct targeting

Terrorism is very much a contested concept (see, e.g. Goodwin 2006; Weinberg, Pedahzur, and Hirsch-Hoefler 2004), and a content analysis by Schmid and Jongman (1988) has uncovered over 260 distinct definitions of terrorism. We conceptualize terrorism as

a distinct type of tactic in political violence that involves *indirect targeting* by a non-state actor where the government is the ultimate or main intended target (see Polo and Gleditsch 2016; Sandler 2014; Stanton 2013). From this perspective, terrorism differs from direct conventional violence in that the physical targets of an attack are not the main intended audience. If terrorists attack civilians in order to undermine the government, the specific victims may be entirely arbitrary or essentially irrelevant, and the intention is to put pressure or coerce a government through the consequences or implications following from the attack.³ Terrorist attacks can impose notable costs on governments through generating fear and expectations of further attacks (i.e. terrorize), or by demonstrating the inability of a government to control violence on its territory or prevent attacks, potentially undermining confidence among supporters and the public at large.

In contrast to terrorism as indirect targeting, actors may also engage in political violence that directly targets an opponent, most prominently conventional warfare where a non-state actor engages in direct confrontations with government forces. Standard definitions of civil war emphasize episodes of active armed conflict between a non-state actor over a specific incompatibility, leading to battle deaths exceeding some minimum threshold (see N. P. Gleditsch et al. 2002; Sambanis 2004). But terrorism is primarily a tool, or a means to an end, and non-state actors may of course also combine both direct and indirect attacks. There is nothing in a definition of terrorist attacks as indirect targeting which implies that actors could not also engage in civil war or other forms of directly targeting political violence. Drawing on the analogy to consumer theory, strict substitution between terrorism and civil war would imply corner solutions, when all resources are spent on one alternative and none on the other, whereas complementarity yields interior solutions where actors combine alternatives and use of one does lead to less use of the other (i.e. substitution).

Many historical examples provide suggestive evidence of strategic integration of terrorist tactics in conventional civil war campaigns. In the Tamil War in Sri Lanka (1983–2009), the Tamil Tigers (LTTE) conducted a large-scale conventional military campaign in the Tamil core areas in the north, including naval and air deployment, and combined this with a campaign of suicide bombings in the capital Colombo. The terrorism campaign helped divert government effort from the fighting on the northern front in order to secure civilian centres and arguably helped extract political concessions that pure efforts on the conventional battlefield could not have delivered. This is strongly consistent with complementarity in terrorism and conventional civil war. Hopgood (2005, 46) notes that the Black Tigers (an elite suicide bombing squad) was not ‘a weapon of last resort but an integral part of, even an intensification of, a strategy of insurgency’. In the Iraqi insurgency following the 2003 U.S. invasion and the fall of Saddam Hussein, Al-Qaeda in Iraq and its successor Islamic State of Iraq combined attacks on coalition targets with mass-casualty bombings of Shiite civilian targets. The terrorist attacks provoked a sectarian retaliation that in turn helped feed insurgent recruitment and greater military effectiveness. Byman (2016, 144) emphasizes how ‘for the Islamic State, terrorism is part of its civil war strategy’. Over the course of the decades-long civil war in Colombia, the Revolutionary Armed Forces of Colombia (FARC) combined guerrilla warfare in the periphery with urban bombings, kidnappings for ransom, and attacks on infrastructure. The two activities were complementary for financing and promotion and jointly helped

highlight the political cost of the government's counterinsurgency response (see, e.g. Feldmann 2018).

The idea of substitution and complementarity in tactics of political violence is a helpful theoretical heuristic, and data on civil war and terrorism as events involving direct and indirect targeting can allow us to consider trends in the use of tactics over time and whether behavior changes in ways consistent with substitution or complementarity. However, we also appreciate that the direct and indirect attack distinction may be difficult to apply in practice. Determining whether a specific event involves direct or indirect targeting is often not straightforward, as many individual attacks may involve both direct and indirect targets. Data on terrorist attacks and events in civil war do not always separate activities in a clean manner, and determining whether something should be regarded as one or the other will often rely on subjective judgements. However, we can at least to some extent overcome some of these challenges by focusing jointly on the relationship between data sources and how individual actors behave over time and respond to events.

Measuring terrorism and the frequency of terrorism

The Global Terrorism Database (GTD) is a common data source documenting domestic and transnational terrorist events over the period 1970 to 2020 (at the time of writing), with supplementary information on date, location, perpetrators, targets, methods, and resulting casualties (see LaFree and Dugan 2007). The identification of actors allows considering additional information on the actors or organizations involved in each attack and their relationship to other events, attributes, or behavior within conflict. We appreciate that not all events in the GTD may unambiguously constitute terrorism in the sense of indirect targeting (see, e.g. de la Calle and Sánchez-Cuenca 2015).⁴ However, these data constitute both the main basis for the conventional wisdom on the state of terrorism and the claim that terrorism has increased and a reasonable proxy for events involving indirect targeting. The first by itself substantiates the need to better understand the empirical basis for the claim and the distribution of terrorist events in the GTD with respect to activities in civil war. And with regard to the second, we can consider to what extent trends and relationships with civil war are sensitive to changes in the definition of terrorism at the event level as well as the potential influence of possible sources of bias such as changes in reporting and recording.

We examine trends in the frequency of terrorism and the evidence for the alleged increase in terrorism for all recorded attacks in the GTD in the left panel in Figure 1. This suggests that the frequency of terrorism has evolved in a wave-like pattern, with notable spikes. Terrorism gradually increases up to the aftermath of the end of the Cold War in the early 1990s (note that data are missing for 1993 in GTD). We then see a decline in the frequency of terrorism up until the mid-2000s, and a dramatic increase since then. The start of the up-turn in terrorism does not actually coincide with 9/11 itself, but matches more closely in time the emergence of large-scale violent resistance to U.S.-led military campaigns in Afghanistan and Iraq. The frequency of terrorism reaches a peak in 2014, with a notable decline since then, although it remains at a historically high level in the most recent year of the GTD data (2020). However, alarmism has not abated; the 2025 *Global Terrorism Index*

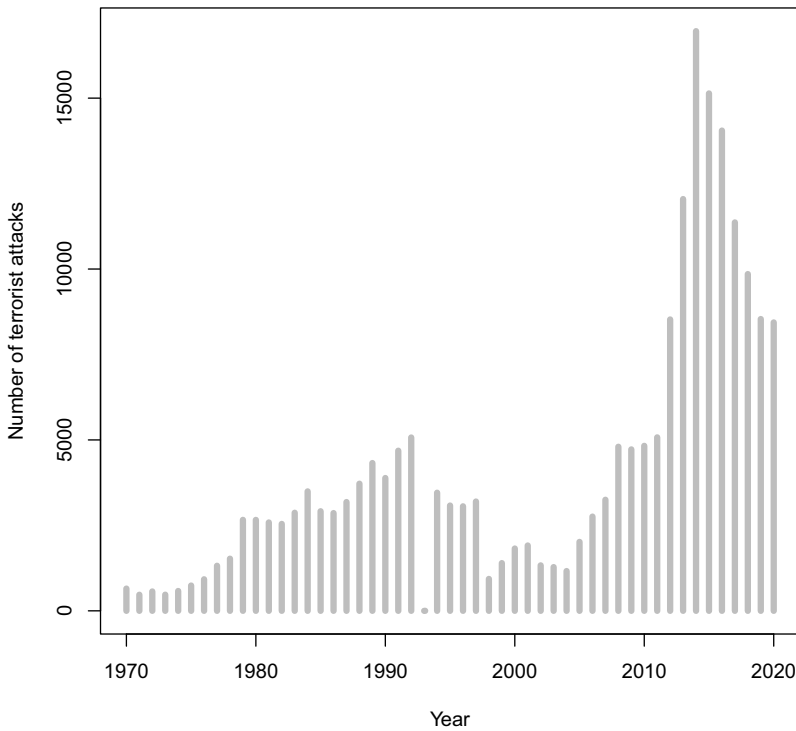


Figure 1. GTD events by year.

report notes that terrorism has declined from very high levels in countries such as Afghanistan and Iraq over recent years, but argues that terrorism has spread to more countries and that the ‘epicentre of terrorism has shifted from the Middle East and North Africa into the Sahel region of sub-Saharan Africa’ (Institute for Economics and Peace 2025, 4).

These trends could be seen as consistent with an increase in terrorism over the two most recent decades, a period where conventional violence is often seen to be decreasing. In the online appendix, we show similar shaped trends in analyses restricted to only events that satisfy a stricter GTD definition of terrorism. Moreover, looking at severity, or the number of people killed in attacks, also yields similar trends for the increase and peak over the recent two decades. We also compare the rates of fatal and non-fatal events as a check on whether the increase can be attributed to increased reporting of violent events, as Weidmann (2016) suggests that this should lead to an increased share of less severe events over time (see also Drakos and Gofas 2006). We find no evidence of a higher proportion of non-fatal events during the period where terrorism has increased – the relative proportion has actually declined. As such, it does not seem as if biases arising from changes in media coverage alone can account for the apparent increase in terrorism. However, these figures do not consider whether terrorism has increased outside, or instead of, conventional violence, which requires a direct comparison to civil war and the relationship between the two.

Terrorism inside and outside civil war

We first examine the relationship between terrorist events and other types of conventional conflict by looking at the overlap between terrorist event locations and countries that are classified as experiencing civil conflict according to the Uppsala Conflict Data Program (UCDP).⁵ Panel a in the upper left of [Figure 2](#) breaks down the time trend in the total number of terrorist attacks by year and considers whether events occur in countries with UCDP wars – bar shaded in black – or outside civil wars – grey section on top of the frequency bars. We report changes by year in the relative proportion of terrorist attacks that occur in countries with civil war in panel b in the upper right of [Figure 2](#).

If we had strict substitution away from conventional conflict and toward terrorism – with resort to terrorism instead of civil war or increased terrorism outside civil war – then we should observe an increase in terrorist activities taking place in countries that do not experience an ongoing civil war. It is clear from these plots that most of the increase in

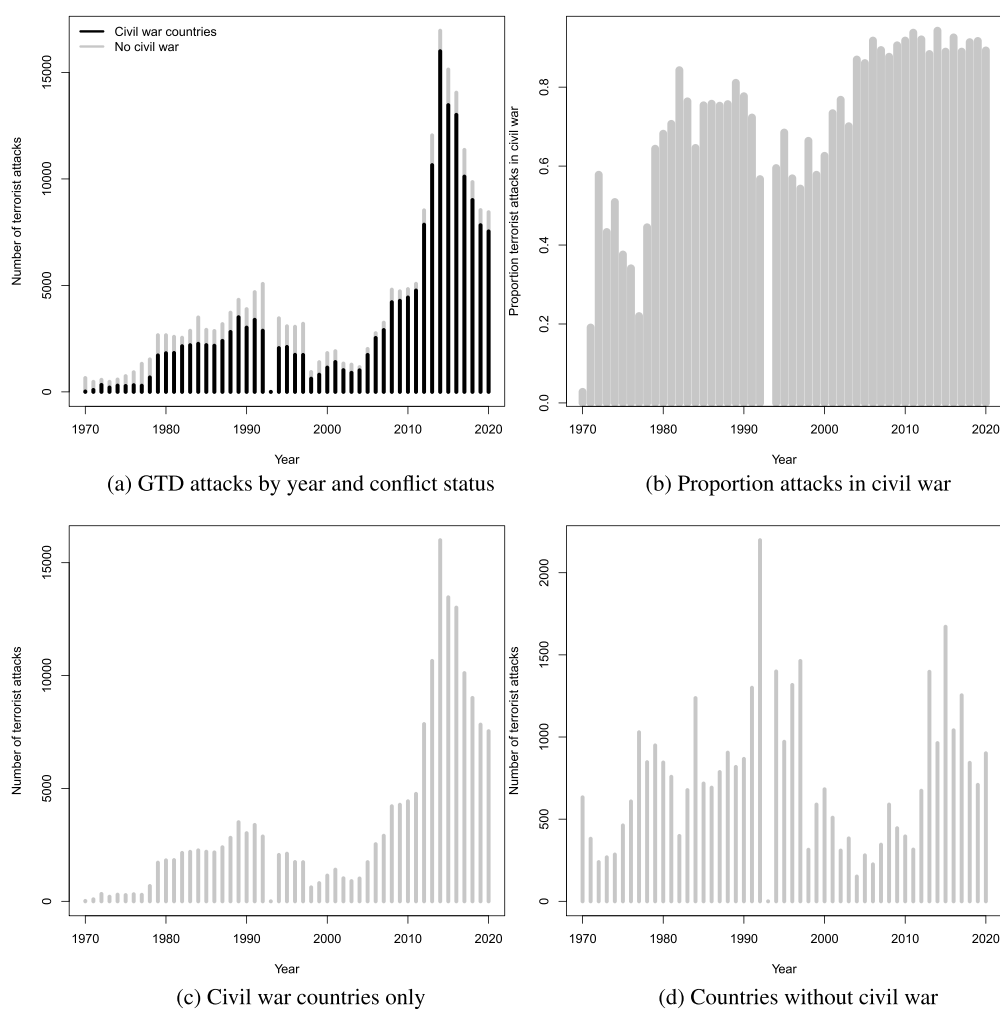


Figure 2. GTD attacks, by conflict status.

terrorism over the period when the number of GTD events is increasing has taken place within countries already experiencing a civil war. The share of terrorist attacks in countries with civil war has fairly consistently exceeded 50% since the 1980s. It reaches a new high threshold above 80% after the U.S. invasion of Iraq and remains stable, even in the most recent years where the total number of recorded terrorist events has declined. In the lower row of [Figure 2](#) we show separate trends for terrorist attacks in countries with civil war and countries not experiencing civil war. This shows that the time trend for terrorism overall is largely identical to, and mainly driven by, events in countries in civil war (panel c, lower left). When we plot the trend for countries without an ongoing civil war (panel d, lower right), we do not find a notable increase after the mid 2000s, at least compared to the earlier increase in terrorist activity up to the early 1990s, shortly after the end of the Cold War. In short, these data conclusively show how most of the increase in terrorism since the mid 2000s has taken place in countries also experiencing a civil war. This is *not* consistent with arguments about strict substitution or transference from civil war to terrorism. In the online appendix, we report alternative estimates using only events that satisfy the strict GTD definition criteria, and although this reduces the total number of events, it does not change the relative shares.

Terrorism before and after civil war

Beyond overlapping years, one may wonder if there is a clearer relationship between terrorism and the onset and termination of civil war. Research on terrorism as a political strategy has often highlighted the role of terrorist attacks to help the long-term development of a group, through raising the profile of a movement or generating a coercive response from the authority that helps promote growth in group support and recruitment (see, e.g. Bapat 2005; A. H. Kydd and Walter 2006; Lake 2002). From a bargaining perspective, actors can have incentives to use violence to force the government to the negotiating table, but also decrease attacks to demonstrate capacity to control violence, and extremist or rival factions have incentives to step up terrorist attacks to spoil peace agreements acceptable to moderates (see, e.g. Bueno de Mesquita 2005; A. Kydd and Walter 2002; Thomas 2014). This motivates an analysis of trends in terrorism in the years leading up to the outbreak of a civil war and following the termination of a civil war. If there is an increasing trend up to the start of a civil war, then the observed overlaps of terrorism and civil war might be seen as an end result from terrorist activity, where even modest increases in terrorism could be concerning as an early indicator of a high risk of civil war. Moreover, if terrorism remains widespread in the aftermath of a civil war, then an observed decrease in civil war may reflect a transformation toward other types of political violence in the aftermath of a civil war rather than a successful settlement of the underlying conflict.

To examine the timing of terrorist attacks and civil war episodes, we bin all events for a country based on when the events occur, i.e. in the years leading up to a civil war episode (pre) or after an episode of civil war (post). In [Figure 3](#), we plot the averages for each sequence of years before and after, compared to the years with civil wars as year 0. The dramatic difference here is really the high average during years with civil war compared to all periods before or after a civil war, and this is even more remarkable as this is based only on data for countries that actually experience civil war at some point in the observed time span of the data. There is some modest indication of an upswing in terrorism in the years leading up to

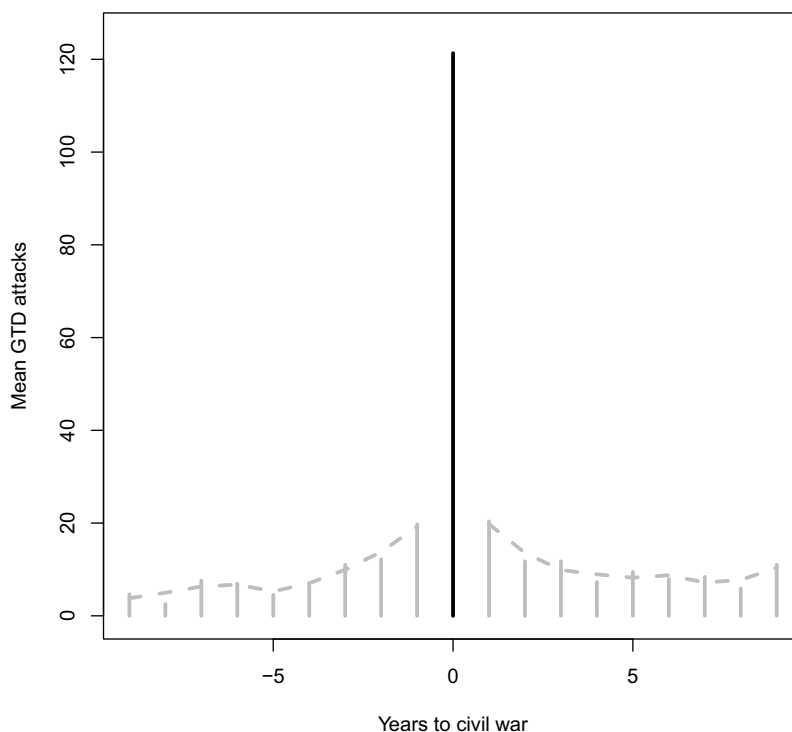


Figure 3. GTD attacks by year.

a civil war. However, the trend is not very pronounced and largely confined to the calendar year immediately before a civil conflict is deemed to have started. The start dates of conflicts are often difficult to classify precisely, and for these data also dependent on the cumulative threshold of casualties rather than the timing of initial events. And there is no evidence of any sustained high level of terrorism after a civil war, with a declining trend as we move further away from previous civil wars. This gives additional support to the argument that terrorism does not seem to emerge as a replacement for civil war and that any increase in terrorism observed in recent years stems from a higher number of terrorist events within episodes of civil war. Moreover, ending civil wars is associated with a large decrease in terrorism rather than a permanently high level.

Indirect and direct attack frequencies

At this point, we have only considered ongoing civil war in a binary fashion as episodes over some interval t_1 to t_{1+k} , but not the relative distribution of indirect and direct attacks within civil war. Greater use of terrorism within civil war could be seen as consistent with growing complementarity of terrorist tactics within civil wars. However, this is at best indirect evidence, and does not contain any information on the level of activity in conventional civil war. Most existing studies of terrorism and civil war to date have looked only at periods where countries are in civil war and not directly compared the frequency of terrorism to the frequency of conventional attacks. Recall that the standard theoretical

definition of complementarity between activities is that use of one increases the returns from the other. From this perspective, co-occurrence alone does not need to reflect complementarity. For example, we may have common scaling, where the alternatives are entirely independent, and a higher number of terrorist attacks simply reflect more intense civil wars with no increase in the relative rate. The notion of so-called new wars furthermore arguably does not suggest strict substitution but could also be interpreted as a claim that actors within civil wars increasingly rely on terrorist violence and indirect attacks targeting civilians. Beyond whether we see terrorism within civil war, we need to consider allocation of attacks within a civil war, and whether we see a transference of violence within civil wars where unconventional terrorist attacks increase in frequency relative to conventional attacks (see Martin and Weinberg 2016). Whereas the standard UCDP armed conflict dataset only identifies conflicts as episodes, the UCDP Georeferenced Event Dataset (GED) identifies events within state-based conflicts between a government and a non-state actor (Sundberg and Melander 2013).

We first examine the frequency of events recorded as terrorist attacks in the GTD and battle events within civil war as an approximation of the intensity of each tactic and the relative allocation of unconventional/terrorist attacks and conventional attacks in civil war. Panel a in Figure 4 shows a dramatic increase in the number of events per year in the GED data after 2010, peaking around 2015, and a subsequent decline after this. The peak reflects the civil war in Syria after 2011, which sees an unusually high number of events. Panel b in Figure 4 plots the average number of events by individual conflict, with overall largely similar time trends. We show in the online appendix how the number of deaths from events looks quite different, with fewer deaths in the years of the event peak. In general, there seems to be an increase in the number of events over time in civil conflicts but a decrease in the recorded number of deaths, with the Syrian civil conflict and Tigray war as notable divergent examples. This may perhaps reflect improved data collection efforts, identifying smaller events at a growing rate over time, but potentially a genuine growth in low-intensity conflict events over time, possibly due to high numbers of smaller conflicts involving IS affiliated groups.

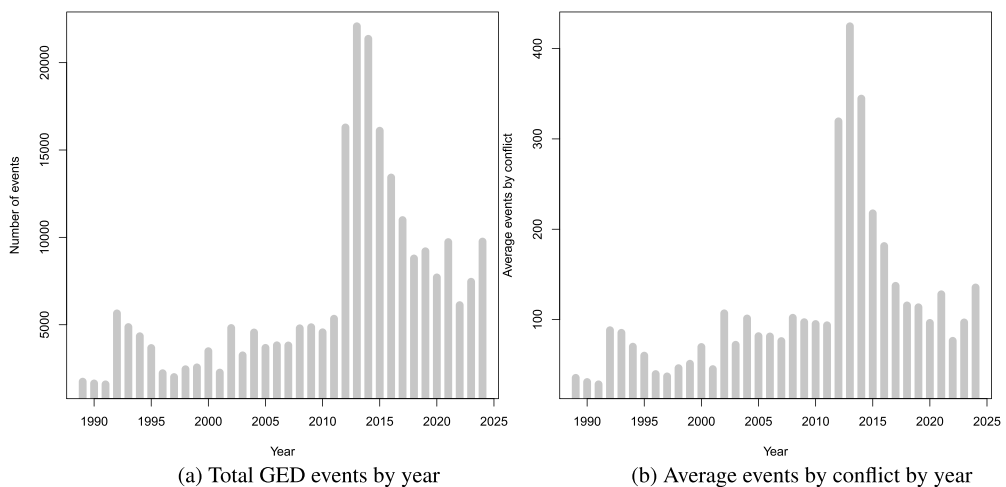


Figure 4. GED frequency by year, total and average by conflict.

These distributions suggest that conflict events within civil war and terrorist attacks often trend together. The fact that most of the increase in terrorism is confined to countries with civil war and a high frequency of conventional violence – with Afghanistan and Iraq as prominent examples driving the peak, and the absence of clear trends in terrorism outside civil war – is consistent with growing complementarity between terrorism and civil war. However, greater observed occurrence does not by itself allow us to infer strategic complementarity, since we cannot conclusively rule out potential rival explanations, such as common causes leading to independent increases in both, or positive trends introduced from definitional stretching of terrorism over time. For a more direct examination of complementarity, we next turn to examining the relative allocation of direct and indirect attacks for particular actors, to what extent the same organizations use both tactics (as opposed to different factions specializing in each), and evidence supporting coordinated and strategic combinations of the two tactics consistent with complementarity.⁶

Growing complementarity of terrorism in civil war?

It is clear from the evidence reviewed so far that any increase in terrorism has not occurred outside, or plausibly instead of, civil wars. However, the analyses above focusing on aggregate trends tell us less about whether terrorism may be used relatively more frequently within civil wars compared to conventional attacks, and if so, why. As previously discussed, we have complementarity between terrorist activities and conventional civil war if engaging in one tactic raises the marginal returns of the other, with the implication that we should observe resort to terrorist attacks at higher rates within civil wars than we would expect if the two tactics were independent, or if one detracted from the other. To understand the relative allocation between plausibly direct and indirect attacks over time or the possible changing incentives for terrorism in civil war, we need to focus on actors involved in civil war and their characteristics. We use a data set called ACD2GTD, described in Polo and Gleditsch (2016), connecting actors in individual terrorism events recorded in the GTD to the actors in conflicts in events identified in the state-based conflict Uppsala/PRIO Armed Conflict Data (ACD).

Focusing on specific actors is helpful since we can in principle examine direct attacks in conventional civil war and indirect attacks, and whether use of one tactic can plausibly make the other more effective. Existing research on factors that promote terrorist tactics in civil war has provided many insights on the rebel profiles or type of actors or conflicts more likely to see greater use of terrorist attacks, but this body of work has to date rarely examined the rate of activities other than terrorism (see, e.g. de la Calle and Sánchez-Cuenca 2015; Findley and Young 2012; Fortna 2015; Polo and Gleditsch 2016). Moreover, this research is mainly comparative across conflicts and actor profiles and does not consider change over time. Focusing on specific actors also allows us to consider attributes explicitly through other data sources, such as the size or relative power of rebel groups compared to a government through the Non-State Actor (NSA) data (Cunningham, Gleditsch, and Salehyan 2013). Furthermore, we can examine whether identifiable changes in the composition of actors in civil wars may produce waves in the use of terrorism or the intensity of terrorism. Although the data on actors across the two sources and their attributes are available only up to 2011, the existing data cover the

period with the main increase in resort to terrorism, and provide a sufficiently long period to allow for meaningful analysis.

Figure 5 panel a in the upper left corner compares the total number of GED attacks attributed to an actor in a given year with the total number of GTD attacks attributed to the same actor, with the absolute frequencies logged after adding one to the base. Logged figures are helpful here since we can think of the values as percentage increases, and how changes in one correspond to change in the other. We can evaluate the degree of separation in the sense of direct substitution, where an actor engages in only one activity, by examining the horizontal/vertical lines at 0 where only one activity is used. As can be seen, there are many observations where non-state actors do not carry out any terrorist attacks in a specific year in which they are engaged in conflict – this amounts to just above 45% of all the actor-year observations. Classifying the share of actors involved in terrorism only with no conventional direct attacks with these data is more difficult, since we cannot assume

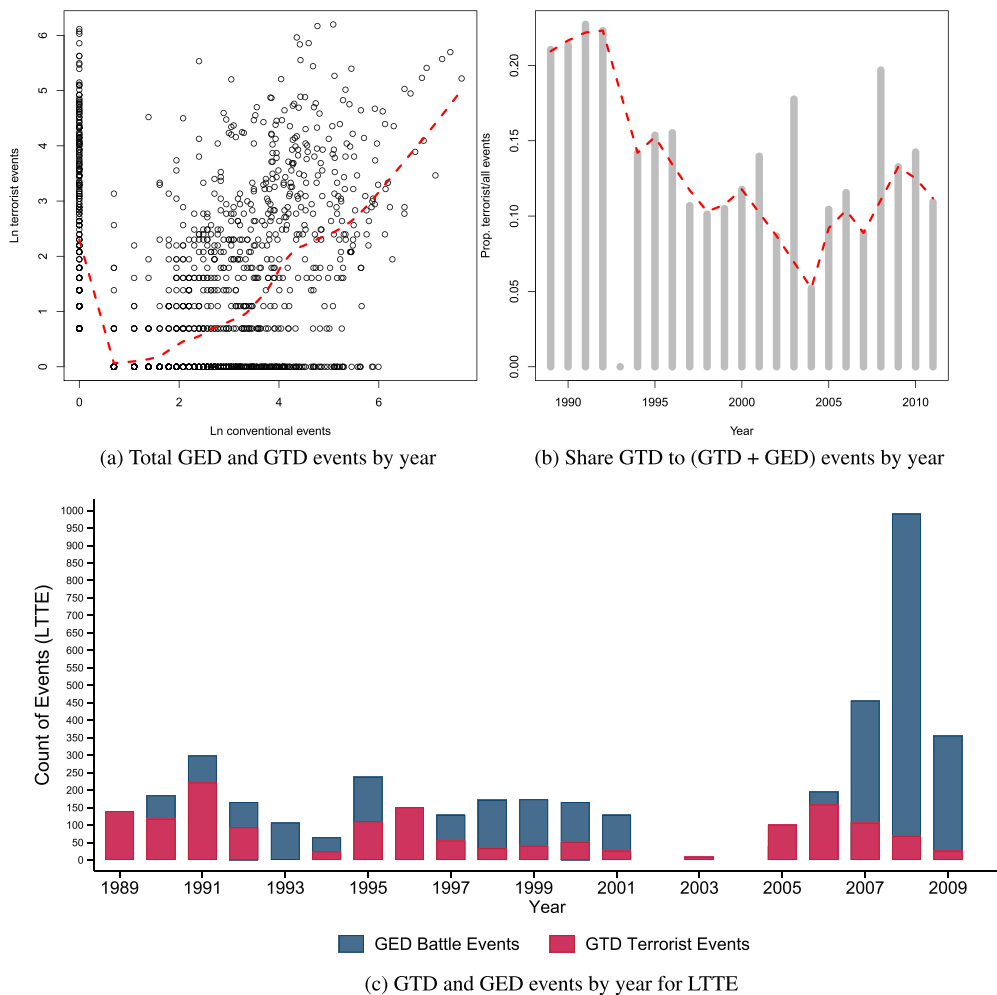


Figure 5. Relative rates.

to have the full universe of actors. The UCDP ACD data are limited to actors that generate more than 25 battle-deaths in a given year, and actor information often is missing for GTD events, likely more so for events involving more obscure groups not engaged in a conventional armed campaign. With these caveats, we still find a sizeable share of observations (almost 20%) where groups that carry out terrorist attacks in a year have not been simultaneously involved in conventional conflict during the same year.

Although there is substantial separation, it is also clear from panel a in [Figure 5](#) that a majority of armed groups are recorded as engaging in events in both GED and GTD, which we can use to approximate direct and indirect targeting, with the caveats noted above. Indeed, among the groups that carry out events recorded in both data sources, there is a relatively close relationship between the magnitude of conventional events in the GED data and indirect attacks in the GTD data. A local regression smoother superimposed on the scatterplot suggests a roughly linear relationship above ≥ 0 conventional events. This is consistent with what we would expect under complementarity, in the sense that indirect terrorist attacks can enhance the effectiveness of conventional conflict, reflected in a larger number of conventional attacks. However, although this analysis is consistent with complementarity, we do not have a direct way of determining a baseline frequency of event and how this changes with the use of other tactics, and we cannot directly rule out common scaling where all events are simply more likely in higher intensity conflict, but use of one is largely independent of the others. In the Supplementary Appendix, we provide a similar analysis of GED vs GTD frequencies by actors focusing on deaths rather than events. Here, there is a much less direct relationship, reflecting a high share of terrorist attacks without casualties, and the group-years with the highest civil war fatalities actually see fewer deaths from terrorist events.

Panel a in [Figure 5](#) speaks to relationships between GED and GTD events as proxies for the relative allocation to each by groups but does not consider the potential changes over time. In panel b [Figure 5](#), we consider allocation for all groups and plot the rate of GTD events over all recorded events (i.e. GTD + GED) as a measure of the average relative rate of terrorism activity, with a superimposed time trend as a local regression smoother. This indicates an apparent increase in the relative share of plausible terrorist events in group profiles after 2003. This is consistent with terrorism becoming a more attractive tool for groups involved in a civil war. However, in historical perspective, this is not unprecedented, as there was a higher share of terrorist events in conflicts in the period around the 1990s at the outset of the series. We also note that this runs against the idea that GTD is simply including more events in conventional conflict since 9/11 2001 and the growing salience of terrorism, which would suggest that we should see a linear increase.

In Panel c, in [Figure 5](#), we show an example of allocation of direct battle events from GED and terrorist attacks in GTD for an individual conflict, based on the example of the Tamil Tigers (LTTE) in Sri Lanka discussed previously. We see relatively higher use of terrorist attacks in the early part of the period, before the group expands its conventional activity. We also see that the relative use of terrorism in this case decreases towards the end of the period, when the LTTE was facing a serious direct challenge from the government military offensive, eventually leading to a conclusive military defeat for the group.

Given changes in the relative reliance on terrorism over time by groups in a civil war, it is natural to ask if these can be related to identifiable changes in the profiles of non-state

actors that would lead us to expect an increased use of terrorism in a civil war context. A prominent candidate likely to induce differences in behavior is changes in relative power and the degree of asymmetries in ongoing civil conflicts. Many have argued that terrorism is a more likely weapon of choice for relatively weak actors that have limited capacity for carrying out larger numbers of conventional attacks or may benefit relatively more from terrorist activities as a means to build conventional armed capacity (see, e.g. Bapat 2005; Bueno de Mesquita 2013; Crenshaw 1981). Polo and Gleditsch (2016) present evidence suggesting that relatively weaker non-state actors in civil war carry out more terrorist attacks as measured by lower ratios of rebel troops to government troops.

In light of this, a plausible conjecture is that the increase in terrorism in civil war from the mid-2005 reflects a conflict landscape with a higher proportion of more asymmetric conflicts, with a higher number of weaker rebels relative to governments. Moreover, we can also have a drift towards changes in conflict asymmetries arising as a result of trends in civil war and changes in rates of conflict settlement. For example, many civil wars with relatively stronger rebels have been more likely to see settlement in the aftermath of the Cold War, in an environment where stronger armed groups were more likely to be offered concessions or peace agreements (see, e.g. L. E. Cederman, Gleditsch, and Buhaug 2013). But if relatively stronger rebels were more likely to be screened out of the sample over time, we may be left with a remaining population where the average rebel group in ongoing civil wars becomes consistently weaker (Cunningham, Gleditsch, and Salehyan 2009, 2013).

We can examine the evidence for changes in the relative power of rebels over time using data on rebel to government troop ratios from the Non-State Actor (NSA) data (Cunningham, Gleditsch, and Salehyan 2013). Figure 6 shows that the changes in observed power ratios for rebel to government troops are consistent with what one would expect if these mechanisms generated observed shifts towards more terrorism in civil war over time. We see a notable decline after 2000 or the period when civil wars become more likely to be settled, and the number of ongoing wars declined. Indeed, the

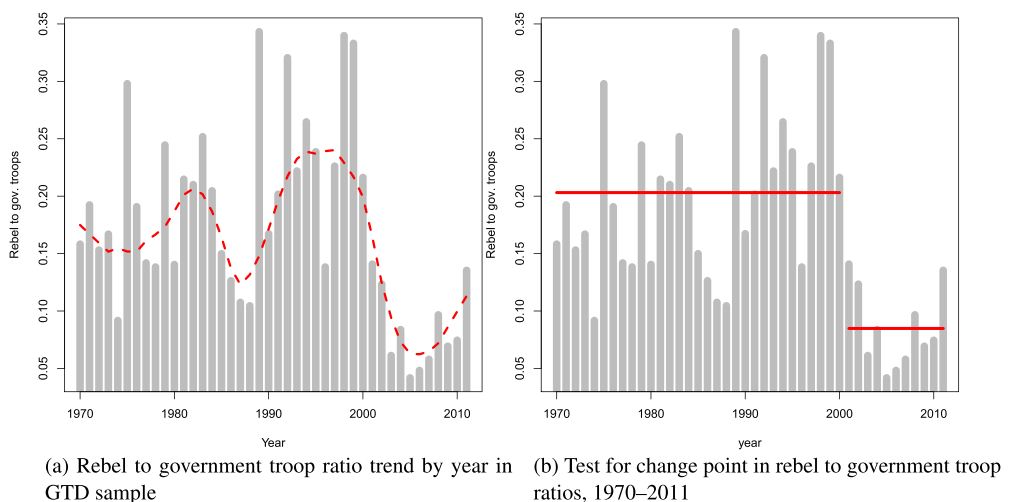


Figure 6. Power ratio trend with change point detection.

median power ratio for the pre-1999 period is almost 3.5 times higher than for the post-2000, suggesting a very different population of government and non-state actor dyads in ongoing conflict.

Beyond simply eyeballing trends, we can conduct more formal tests for change points in the time series for the rebel to government troop power ratios over the observed period (i.e. 1970 to 2011). We use a binary segmentation algorithm to identify changes in the mean (see Fryzlewicz 2014; Killick and Eckley 2014; Killick, Fearnhead, and Eckley 2012). Conceptually, this approach identifies the most significant change-point candidate in the current segment, splits the data at that point, and then recurses on the remaining sub-segments until the end solution satisfies the Schwarz Information Criterion penalty to prevent overfitting. For the troop ratio power trend, we find that a two-regime model provides a reasonable fit, with 2001 as an inflection point and with a substantially higher rebel to government troop ratio average in the period before 2001 (above 0.20) than the period after 2001 (less than 0.1).

To get some sense of the quantitative magnitude that such changes could give rise to, we rely on the data and model reported by Polo and Gleditsch (2016) for the estimated impact of variation in troop power ratios on resort to terrorism in ongoing civil wars. We refer to the original article for all details on the original measures and data sources. We estimate a model based on their main specification and data up to 1999 for training. (We report the results in full in the online appendix – these are generally similar to the original results for the full sample.) Based on these results, and the negative coefficient for troop ratio indicating that relatively weaker rebels are more likely to engage in more terrorist attacks, we examine how the predicted number of attacks in the observed civil wars for the subsequent period starting in 2000 would differ under counterfactual strength profiles. More specifically, we compare the predicted number of terrorist attacks in the observed civil wars from 2000, holding all other factors constant, if all the conflict profiles had the higher 1999 power median, compared to the lower 2000 power median. We find that such a change alone would predict an additional 300 terrorist attacks over the period 2000–2011. This alone does not suffice to fully reproduce the entire increase in terrorism, but it is still a non-trivial amount, comparable to the full number of observed attacks in an average year in the earlier period with lower frequencies of terrorism. We also note that our analysis does not explicitly model autoregressive trends and clustering. There are strong reasons to suspect that terrorist attacks increase in proportion with experience, and Clauset and Gleditsch (2012) show that terrorist groups display development curves where the number of attacks increases and the timing between attacks decreases over time. This clustering of events is also a much noted empirical regularity, often used as motivation for count models with overdispersion in studies of terrorist attacks.

The above analysis assumes that all else is equal, but there are strong reasons to suspect that not everything else remains equal, and many associated changes other than observable troop ratios over time may encourage more use of terrorist tactics in civil war. Although not directly considered by Polo and Gleditsch (2016), external or foreign support to actors in civil wars is a key factor potentially influencing both relative power (even if not necessarily manifested in changes in troops) as well as incentives for terrorist attacks, as reflected in the widespread use of terrorist tactics against U.S. or NATO forces in Afghanistan and Iraq. Cunningham, Gleditsch, and Salehyan (2016) demonstrate that patterns of foreign support in civil wars in the NSA data appear to change in the 2000s, in the aftermath of the post-Cold War peak in civil conflicts but evolve in very different ways for support to governments and rebels. As shown in panel a in Figure 7, the share of governments receiving support from other

states has remained high, but the share of rebels receiving support has declined notably (panel b). External support for rebels in a civil war has historically been more common than support for a government but declines notably from a peak shortly after 2000. This provides another indication of changes towards more asymmetric civil conflicts with poorer rebels. Existing work has focused on how external support for rebels and alignment with a foreign patron could weaken rebel ties to a local population, but greater government dependence on foreign support can also increase the value of attacks on foreign personnel and targets, and if these are better protected, then terrorist tactics and explosive devices may be more attractive alternative than direct military confrontation (see Salehyan, Gleditsch, and Cunningham 2011; Weinstein 2006).

In panels c and d of Figure 7, we consider formal tests for change points in the external support share series over time, again using binary segmentation. In this case, we see a much higher suggested number of change points than for the power ratio trends. For government support, we have essentially a four-step increase for regimes with an

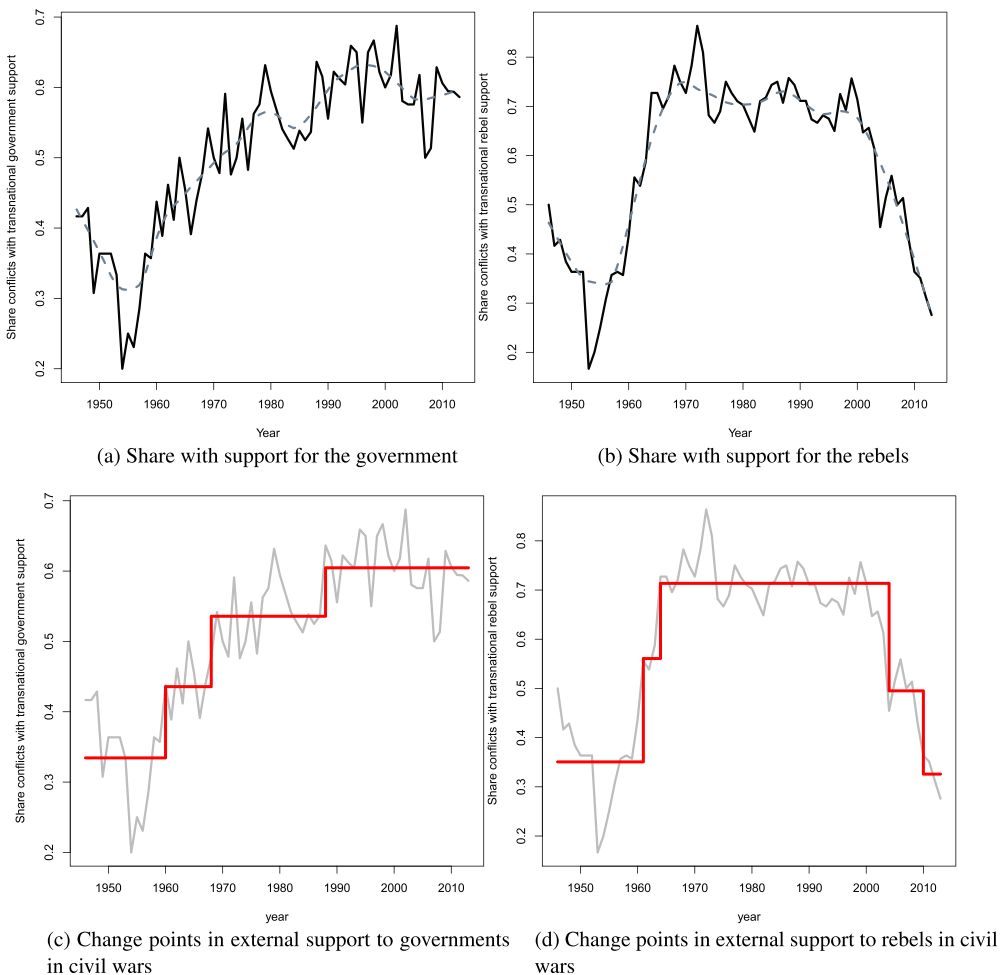


Figure 7. Patterns of external support in ongoing civil wars.

increasingly high share of government support, with the initial apparent u-shaped pattern smoothed into a single (lowest) state. For rebel support, we have a long regime with high transnational support from the early 1960s up to the mid-2010, with low transnational support regimes before and after. One may further imagine that conflicts with different types of support are likely to favor particular terrorist tactics such as attacks against military officials, and this could be examined with more detailed information on foreign involvement in conflicts (see Dreher and Gassebner 2008; Salehyan, Gleditsch, and Cunningham 2011; Weinstein 2006).

We see these analyses as consistent with, and supportive of, our claim that terrorism has become more common in civil wars under specific conditions where we expect higher incentives to use more intensively terrorist tactics, including more weak rebels with limited capacity to target governments effectively in direct confrontations, and a higher share of conflicts where governments receive, and may be more dependent on, external support. Since our measures end in 2011, we cannot examine to what extent these changes can account for the relative decline after the peak of terrorist activity in civil war following the U.S. withdrawal from Afghanistan and Iraq, although they seem consistent with the logic. We do not claim that our measures based on troops are ideal to capture effective power and incentives, and there is room for improvement. A promising extension here would be to examine event studies following changes in conflict, such as decisive battles that change power or expectations or shocks to the external environment and trace whether these lead to observable changes in the relative allocation of direct and indirect attacks. For example, Polo and González (2020) provide evidence indicating that terrorism follows battlefield dynamics, where rebels become more likely to launch terrorist attacks following losses or setbacks on the conventional battlefield.

Discussion and conclusions

In this manuscript, we have examined the evidence for the alleged increase in terrorism and examined its relationship with civil war as a form of conventional political violence, involving direct targeting of opponents. Our analyses suggest little evidence of substitution from civil war to terrorism or that we see more terrorism instead of civil war, and the bulk of the recorded increase in terrorism occurs in cases of countries already in ongoing civil war. We also find little evidence for a relationship between terrorism and the timing of civil war, or that terrorism remains at clearly higher levels in the aftermath of civil war. From this perspective, there is little reason to think that a decline in civil war should lead to a dramatic rise in terrorism. However, we find more evidence of growing complementarity in terrorism and civil war in that terrorism appears to be used increasingly within civil war relative to conventional direct attacks over the period where terrorism appears to be increasing. We also find evidence of observable changes in actor profiles likely to promote greater relative use of terrorism in civil war, including a shift towards more asymmetric conflicts with relatively weaker rebels and high levels of external support to governments and a notable fall in transnational support for rebel groups. We also show that these changes would lead us to see higher expected frequencies of terrorism during the 2000s.

The concept of transference advanced by Enders and Sandler has greatly contributed to our understanding of strategic behavior and tactics in terrorism, helping to demonstrate that actors adopt the choice of targets in response to external changes and events such as

protective measures that decrease the relative costs of specific types of attacks and targets over others. Our analysis underscores the wider utility of examining transference between terrorism and other types of political violence and civil war in particular. Our empirical analysis is highly suggestive and consistent with the idea actors in conflict can often benefit from combining strategies, but the specific incentives will depend on profiles and context. The analysis could be strengthened and taken further in different ways, including through event-level studies of impacts that lead to changes in the costs and benefits of direct and indirect attacks for individual actors, or more complicated models simulating the evolution of groups under different counterfactual scenarios. Beyond political violence, we think there are many potential payoffs from examining transference in terms of substitution or potential complementarity with political actions other than violence. The conceptual framework is helpful for studying changes from terrorism to conventional political behavior, and to what extent specific strategies to engage the leadership of a group or their core base can help induce substitution away from terrorism. In certain parts of the world, terrorism and other political activities are often closely intertwined, as when political parties have close ties to armed militias, or events such as elections can promote or encourage resort to terrorism. Focusing on transference in terms of substitution and complementarity can help provide a broader understanding of political behavior and incentives for violence than studies focusing on individual tactics in isolation.

Notes

1. <https://www.theguardian.com/uk-news/2014/nov/18/fivefold-increase-terrorism-fatalities-global-index>.
2. <https://yougov.co.uk/politics/articles/52491-ahead-of-the-20th-anniversary-of-the-77-bombings-concern-about-terrorism-has-been-rising>.
3. In this sense, terrorism as indirect targeting is also conceptually distinct from direct violence against civilians if these constitute the intended targets. Examples of this may include attempts to force compliance or cooperation by local populations, or efforts to generate ethnic cleansing or flight from an area.
4. Some argue that the concept of terrorism has been stretched over time, leading to more events classified as terrorism if they involve explosive devices or violence against civilians – see for example the *Human Security Report 2007*, <http://www.hsrgroup.org/docs/Publications/HSB2007/2007HumanSecurityBrief-Chapter1-DeclineInTerrorism.pdf>.
5. The UCDP defines civil conflicts as conflicts between non-state actors and a government, over control of the government or a territory, that generate at least 25 battle deaths in a calendar year (see N. P. Gleditsch et al. 2002; Melander, Pettersson, and Themnér 2016).
6. We examine the relationship between deaths from the two events in the online appendix. This yields a much less close relationship than events, with much higher casualties from some conventional attacks in civil war than terrorist attacks. We also explore in more detail the frequency and severity distribution of terrorism within and outside episodes of civil war. These analyses confirm that terrorism is much more frequent in countries with civil war. As such, episodes of civil war are more likely to see both a higher number of attacks and a higher cumulative numbers of deaths, even if there could be greater relative risks of severe attacks outside civil war proportional to their lower frequency.

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