Provocation and the Strategy of Terrorist and Guerilla Attacks

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Abstract

Violent non-state groups are usually weaker than the states they target. Accordingly, theory suggests that groups carefully condition their choice of tactics on anticipated state response. Yet, we know very little about whether and how groups strategically plan attacks in anticipation of state response. We do not know if and under what conditions groups employ violent tactics to provoke or avoid a forceful state response, although extant theory is consistent with both possibilities. Relatedly, there is little systematic evidence about why groups choose terrorist or guerilla tactics and how this choice relates to anticipated state response. I develop a theoretical and empirical model of the interaction between groups and states that generates unique evidence on all three fronts. Using data on attacks in Western Europe from 1950–2004, I show that guerilla attacks are associated with provocation of forceful state response, while terrorist attacks are associated with avoiding forceful response. Furthermore, I show that groups effectively choose their tactics to avoid forceful state responses that are too damaging for themselves but provoke forceful responses that disproportionately harm civilians. These findings survive several difficult robustness and model specification tests.

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Despite a large and growing literature about violent non-state groups, we know little about perhaps the most basic decision they make: whether to attack with terrorist or guerilla tactics. Almost all existing literature exclusively examines either terrorist or guerrilla tactics and does not explore the strategic calculations behind groups’ decision to use one tactic over the other.\footnote{Throughout the paper, I define terrorist tactics as attacks that target civilians, and guerilla tactics as attacks that target the security forces of the state. See Hoffman (2006) for a good treatment of definitional issues.} Relatedly, much of the existing literature at least implicitly distinguishes between “terrorist groups” that target civilians and “guerrilla groups” that target state security forces. This distinction is often misleading as many groups use both guerrilla and terrorist tactics. Moreover, the idea that violent non-state groups are strategic actors is widely held among political scientists and policy-makers. Accordingly, prominent theory (e.g., Kydd and Walter (2006)) and case studies (e.g., English (2003) on the Irish Republican Army) suggest that groups strategically plan attacks taking into account how they expect the state to respond.

Extant theory suggests two seemingly contradictory ways in which anticipated state responses to attacks can enter into the strategic calculus of groups. First, attacks that provoke the usually more powerful state to respond with force can endanger group survival. Thus, groups often actively avoid potentially fatal direct engagement with state forces. For example, in a 1971 treatise on the urban guerrilla, leaders of the Red Army Faction (RAF), a small urban guerilla group based in West Germany, note that it is dangerous “to push [the group] into confrontations that can only lead to defeat (Moncourt and Smith, 2009, 96).” Second, it can also sometimes be good strategy for groups to provoke the state to use its firepower in a way that causes civilian collateral damage, but is not fatal to the group. In internal and public discussions of ideal strategy for urban guerillas, RAF leaders repeatedly cite Brazilian guerilla and public theorist Carlos Marighella, who advocated provocation. RAF leader Andreas Baader begins a January, 1972 letter to the press with the following quote from Marighella: “The cops will continue to fumble about in the dark, until circumstances oblige them to see that the political situation has become a military situation (Moncourt and Smith, 2009, 120).” The premise of a strategy of provocation is to carry out attacks that elicit a forceful response which harm civilians more than group members, helping groups gain support and power. However, provocation can be fatal if the state is able to precisely apply force to group members.
Despite general agreement that violent groups strategically plan attacks, the literature has lagged behind in incorporating state response into empirical analysis of group attacks. Consequently, there is no broad and direct empirical evidence that groups strategically plan attacks in anticipation of state response. If attacks are strategic, when are tactics chosen to provoke a substantial state response or to avoid it? While it seems clear that groups condition the tactics they choose on the response they expect from the state, we know very little about the strategic interaction that influences their choice.

Data from post-World War II Western Europe highlight an important connection between tactics and state responses: only about 1% of all terrorist attacks elicit a forceful state response while nearly 10% of all guerrilla attacks do so. I show that a critical element that helps explain this pattern is groups’ expectation about whether state retaliation will occur and whether it is likely to involve precision strikes against group members or attacks that seem destined to produce a lot of civilian casualties. Western European states are better at discriminating group members from civilians following guerrilla attacks relative to terrorist attacks, which makes forceful response much more likely following guerilla attacks. From the group’s perspective, it is counterintuitive that guerrilla tactics are associated with provocation, while terrorist tactics are associated with avoiding state response. Clearly, groups prefer to provoke the state the more inaccurate it is, which suggests that terrorist tactics should be associated with provocation. However, the state is only provoked when it has a great enough ability to discriminate group members from civilians. Accordingly, groups use guerilla attacks to provoke when the state is moderately accurate in its response so that it is still precise enough to find forceful response worthwhile but not so accurate to deter the group from using guerilla tactics. Overall, the empirical model provides new and nuanced evidence that groups are remarkably good at choosing tactics to avoid precise forceful responses that effectively target group members, while choosing tactics to provoke forceful responses that harm civilians but do not impose much damage on group members.

The finding that guerrilla attacks are more likely to generate forceful state response due to the accuracy of state responses to guerilla attacks sheds new light on why high capacity states, such as wealthy democracies, experience high rates of terrorist violence (e.g., Li (2005)) but are unlikely to experience a high volume of guerilla attacks (e.g., Fearon and Laitin (2003)). Scholars of violent politics have long argued that states’ power to respond to terrorist or guerrilla attacks is
a central challenge for violent non-state groups. Accordingly, carrying out attacks in states with high capacity to respond to violence is thought to be relatively unattractive and risky. However, one of the most replicated findings in the literature is that advanced democracies experience a relatively high number of attacks against civilians. For example, from the 1960s through the 1980s, Western Europe experienced more terrorist attacks than any other region in the world. Given that Western European democracies are relatively wealthy and high capacity, this pattern is rather puzzling. Interestingly, violent non-state groups targeting Western European democracies in the post WWII era carried out around 200% more terrorist attacks, targeting civilians, than guerrilla attacks, targeting state forces. The lack of attacks against state forces in Europe is surprising given that over 90% of the attacking groups have primary goals that are anti-state. My findings suggest that a key reason why terrorist attacks are more common than guerilla attacks is that the state is generally better at employing effective forceful responses to guerrilla attacks.

In sum, despite the central role that state capacity to respond plays into the literature, this is the first paper to explicitly integrate it into a model of group attacks. The paper illustrates how groups’ choice of tactics depend on anticipated state response and provides much needed evidence over when and why groups choose tactics to avoid or provoke a forceful state response. The empirical model I develop is uniquely suited to assessing the strategic motivations of groups and helps to deal with the specific endogeneity problems that arise from the strategic relationship between groups’ choice of tactics and states’ decisions to respond with force. Moreover, I demonstrate that the strategic empirical model I estimate easily outperforms non-strategic models of tactical choice. Additionally, I discuss several difficult robustness and model specification tests that rebut the idea that the results are driven by factors like group strength and a number of other possible objections.

Provocation or Avoidance? Tactics and State Response

The idea that violent non-state groups strategically plan and carry out attacks is firmly established in the existing literature. First, the idea that groups plan attacks to provoke a forceful state response that leads to collateral damage is prominent. The basic idea is that provocation of the

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2 Crenshaw 1981.
3 Chalk 1993. Similar patterns are present in the 1970s and 1980s Global Terrorism Database.
4 Atkinson, Sandler and Tschirhart 1987; Bueno de Mesquita 2005a,b; Crenshaw 1981; Kydd and Walter 2002, 2006; Lake 2002; Li 2005; Pape 2003; Pillar 2001; Richardson 2006.
imprecise use of force by the state generates grievances among the population that hurt the state, e.g., in terms of public opinion, and conversely help the group, e.g., in terms of radicalization. Second, the idea that groups plan attacks to avoid potentially debilitating state response is also prominent. Because the state is almost always much more powerful than non-state violent groups, provoking the state to use its superior firepower against the group is costly and puts the group’s survival at risk. While these two ideas seem inconsistent with each other, I argue that they are two sides of the same coin. Groups prefer to avoid provoking state responses that effectively target group members, but can benefit from provoking forceful responses that target civilians and generate grievances. Furthermore, groups can use either terrorist or guerilla tactics and one might be associated with avoiding state response while the other is associated with provocation. In what follows, I review each of these ideas and their relation to group tactical choice.

On the one hand, a number of scholars suggest that groups plan attacks to provoke a draconian state response that produces collateral civilian damage (Merari, 1993; Kydd and Walter, 2006). Recent literature that examines provocation as a strategy focuses mostly on terrorism: Merari (1993) discusses provocation as a “terrorist strategy” and Kydd and Walter (2006) classify provocation as one of five major strategies of terrorism. Similarly, Bloom (2005) argues that groups are likely to provocatively use terrorist tactics as part of an outbidding process when multiple groups compete for support among a constituent population. Existing evidence suggests provocation is a tenable idea, as recent public opinion data shows that state-caused civilian collateral damage has a significant and lasting effect on whether citizen preferences are radical, i.e., amenable to the use of violence, or moderate (Jaeger et al., 2012). Given that terrorist tactics are often thought of as the preeminent “weapon of the weak”, a provocation strategy is plausible as it can serve to redress the imbalance between the group and state (Lake, 2002). Yet, guerilla tactics can also provoke a draconian state response. English (2003) notes that Irish Republican Army (IRA) attacks against British security forces frequently elicited a draconian response that was helpful to the IRA. He points out that from 1918–1921, “Crown Forces, frustrated at not being able to convict those responsible for attacking, injuring and killing their comrades, resorted to reprisals targeted against violent opponents, but affecting (and causing disaffection among) much wider numbers than that (English, 2003, 17).” Similarly, in his highly influential treatise on guerilla conflict, Carlos Marighella advocates the use of guerilla tactics to provoke imprecise state response (Marighella, 1971).
On the other hand, much of the literature on political violence suggests that groups strategically attack to avoid a harsh state response. Since violent non-state groups are almost always a lot weaker than the state, avoiding potentially debilitating forceful state responses is essential. In an influential article about the causes of terrorism, Crenshaw (1981, 382–383) emphasizes that the most salient deterrent of terrorism is the state’s ability to react repressively to violence. McAdam (1982) provides evidence that a lack of repression facilitated the use of political violence by groups in the fight for civil rights in the United States. More recently, Li (2005) argues that the constraints upon a state’s ability to effectively react to attacks increases the strategic incentives of groups to use violence. In contrast, attacks are less likely in countries where the state is quite able to respond forcefully. In a similar vein, the theoretical frameworks of Sandler, Tschirhart and Couley (1983) and Bueno de Mesquita (2005a) both suggest that counterterrorism actions have a negative effect on the welfare of a group. The larger implication of these studies is that if the net effect of a harsh state response is negative for a group, it will try to plan attacks that do not provoke a forceful response.

Interestingly, the literature suggests that both strategies of provocation and avoidance make attacks against democratic states relatively attractive to groups. Scholars such as Li (2005) and Pape (2003) suggest that democracies are attractive targets because they are unable to respond swiftly and forcefully to groups. Scholars argue that a provocation strategy is effective against democracies because they are unable to employ a maximally brutal “scorched earth” response to an attack due to constraints on the power of executives to use force (Kydd and Walter, 2006, 70–72).\footnote{See Valentino (2005) for evidence of how genocide, the harshest of such scorched earth responses, can be used to suppress rebel movements.} While democratic states usually face real constraints, they also face more direct public pressures to respond in a firm and observable way to attacks (Kydd and Walter, 2006; Richardson, 2006; Bueno de Mesquita, 2007). This pressure often leads to measures that increase the government’s ability to use force against groups, such as the development of special anti-terrorism units (Chalk, 1993) or restrictions on civil liberties (Dragu, 2011). The coupling of significant constraints on the use of force with incentives to respond observably to threats leads democracies to be especially prone to a strategy of provocation.

In sum, the literature highlights both the idea that violent groups choose tactics to provoke the
state and the idea that they choose tactics to avoid forceful response. However, existing evidence does not provide a clear sense of under what conditions groups plan attacks to strategically avoid or provoke forceful state response. I argue that the precision with which democratic states can respond to attacks is central to whether groups prefer provocation or avoidance of forceful response. Relatedly, if a state’s forceful response to a tactic is too imprecise, a democratic state is unlikely to find forceful response attractive. Unfortunately, we know little about the precision with which states can forcefully respond to terrorist or guerilla attacks. In one of the few related systematic studies, Benmelech, Berrebi and Klor (2010) show that indiscriminate and imprecise Israeli punitive home demolitions are associated with a greater number of subsequent suicide attacks, while demolitions that precisely target the homes of known group members have the desired effect of decreasing violence. While this provides clear evidence that the precision of state response matters, it does not tap directly into how groups strategically choose tactics in anticipation of state response. To understand how and whether groups choose tactics to provoke or avoid a forceful state response, I develop a theoretical and empirical model of the strategic relationship between violent groups and states.

Theoretical Model

Three main factors influence the effectiveness of a strategy of provocation or avoidance for violent groups. First, provocation requires a forceful response from the state. Second, the appeal of provocation for the group hinges critically on its ability to absorb the costs of a forceful state response. Thus, if the state very effective in discriminating between group members and civilians, groups will prefer to avoid state response. Third, provocation does not pay for the group unless the state’s response results in collateral damage among non-group members of the population that hurt the state and help the group. I develop the simplest possible theoretical model that allows analysis of the circumstances under which a group’s optimal strategy is to use either terrorist or guerilla tactics, or both, to provoke or avoid forceful response from a completely informed state.\footnote{I assume that both the group and the state have complete information. It is more interesting to identify the conditions under which fully informed states will be provoked and fully informed groups will provoke or avoid than to show that information asymmetry can lead to provocation. It is quite obvious that if the state lacks information about the group’s ability to avoid its reprisals that it might use a forceful response when it is counterproductive. However, I show below that provocation is possible even when there is no informational asymmetry. Another possible way to model provocation is via domestic pressure on the state to react forcefully. See the appendix for a version of}
The game has the structure depicted in figure 1. First, the violent group (denoted V) decides whether to carry out a terrorist attack, a guerilla attack, or no attack. If the group does not attack, both players receive the status quo payoff of 0. If the group chooses to attack employing either terrorist or guerilla tactics, the state (denoted S) decides whether to respond forcefully or not. If the group employs terrorist tactics and the state does not respond forcefully, the group receives a payoff of \( c_t - k_t \), while the state receives a payoff of \(-c_t\). The parameter \( c_t \) represents the damage imposed by a terrorist attack, of which the most prominent element involves civilian deaths and injuries. The group receives higher payoffs from more damaging attacks, while the state pays higher costs for an attack as it imposes more damage. The costs of carrying out the attack for a group are captured by \( k_t > 0 \).

Figure 1: The Strategic Attacks Game

If the group carries out an attack and the state responds with force, the players' payoffs reflect the damage the state response imposes on the group and the collateral damage to civilians. If the group targets civilians and the state responds forcefully, the group receives a payoff of \( c_t - k_t - \alpha_t \pi + (1 - \alpha_t) \pi \). The parameter \( \alpha_t \in [0, 1] \) represents the proportion of damage that the state’s the model that assumes the state pays a cost for not responding to an attack that increases in attack severity. The key insights are no different than those from the model presented here.
response to a terrorist attack imposes on group members versus civilians. The parameter $\pi > 0$ captures the amount of human damage that results from the state’s forceful response. Thus, as $\alpha_t \to 1$, the state is becoming increasingly precise in targeting group members, while as $\alpha_t \to 0$ the state response is becoming increasingly imprecise, producing collateral damage among civilians. In sum, the group benefits as the proportion of the damage from the state’s response inflicted on civilians increases, and is harmed as the state is able to more precisely target group members. The state’s payoff following a terrorist attack and its forceful response is $-c_t + \alpha_t \pi - (1 - \alpha_t)\pi - \omega$. Thus, it benefits from accurately targeting group members and pays a cost for collateral damage it imposes on the civilian population.

Forceful response to a terrorist attack carries costs to the state in addition to those incurred from collateral damage. For instance, states with more resources and greater capacity will find forceful response less costly to employ. It is also possible that when states face a group with a territorial goal, the costs of forceful response might be lower because their members are much more likely to be clustered in the area they make claims and thus less difficult to locate, e.g., the PIRA in Northern Ireland. Alternatively, the ideology of a state’s government and its winning coalition of voters likely affects the political cost of using force in response to a violent attack. I capture this cost to responding with force with the parameter $\omega \geq 0$.

If the group chooses to directly target state forces by employing guerilla tactics, group and state payoffs are analogously defined. The only difference is that both players’ payoffs are subscripted by $g$, to indicate that the group carried out a guerilla attack, rather than $t$, which indicates a terrorist attack. For example, if the group carries out a guerilla attack and the state responds forcefully, the group receives a payoff of $c_g - k_g - \alpha_g \pi + (1 - \alpha_g)\pi$ and the state receives $-c_g + \alpha_g \pi - (1 - \alpha_g)\pi - \omega$. This formulation allows the damage imposed by a guerilla and terrorist attack to differ, the costs of the two tactics to differ for the group, and the state’s precision in its response to each tactic to differ. The players’ payoffs for each possible outcome in the game are summarized in figure 1.

The model is consistent with several prominent mechanisms by which provocation helps the group and hurts the state. For instance, Bueno de Mesquita (2005b) argues that state response can generate economic externalities that facilitate recruitment, while Lake (2002) and Kydd and Walter (2006) argue that forceful state response radicalizes moderates and facilitates recruitment.

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7I thank an anonymous reviewer for this suggestion.
Similarly, Rosendorff and Sandler (2004) suggest that forceful state responses increase grievances among the population, which aids group recruitment efforts. I simply assume that when a forceful state response causes civilian casualties and damage, this hurts the state and helps the group.

There are two potential objections to the assumptions of the model which I briefly address here. First, the idea that groups benefit from all civilian casualties resulting from terrorist attacks is contestable. It is possible that the group tries to target civilians that are from a portion of society that are not potential supporters (e.g., Catholics vs. Protestants in Northern Ireland), and that it actually pays a cost for hitting the “wrong” civilians. If a group hits the “wrong” civilians, the backlash to the group from it’s target constituency could plausibly be analogous to the backlash the state receives when it harms civilians with forceful responses. To account for this idea, I also analyze a version of the model in which the group gains only from casualties among a portion of civilians and pays costs for harming the “wrong” civilians. The basic character of the results is the same, although the conditions under which carrying out terrorist or guerilla attacks makes sense for the group are more restrictive as the group’s accuracy decreases.\(^8\)

A second potential objection is that the above model does not contain any bargaining between the state and group. As shown by Fearon (1995), bargaining often makes conflict under complete information inefficient, which might make both violent group attacks and forceful state responses suboptimal. However, the set of violent sub-state groups I focus on in this paper are almost always far too weak to be involved in negotiations with the state. The literature on violent non-state actors emphasizes that groups carry out painful attacks to demonstrate to the state that they are capable enough to be taken seriously (e.g., Kydd and Walter (2006)).\(^9\) Groups that are very successful might eventually be seen as serious enough threats to become involved in negotiations with the target state, but this is rare and typically takes place after years of successfully having shown itself to be a force to be reckoned with via painful attacks. Thus, the idea that relatively weak groups try to demonstrate and build upon their capabilities by carrying out as damaging of attacks as possible (conditional on the cost, \(k_i\), not being too high) is theoretically reasonable.\(^10\)

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\(^8\)See the appendix for this version of the model.
\(^9\)This argument is also put forth by Pape (2003), as he argues that the extraordinary destructiveness of suicide attacks leads groups to often “succeed” by entering into negotiations with the state.
\(^10\)See the supplemental appendix for an empirical assessment of this claim.
Equilibrium Conditions

I use the sub-game perfect equilibrium (SPE) refinement to analyze the game. As play is sequential and the players have complete and perfect information, there is a unique equilibrium in pure strategies for any distribution of the model’s parameters (Mas-Colell, Whinston and Green, 1995, 276). Table 1 summarizes the equilibrium conditions for the state and group in the game. The table outlines each possible equilibrium path of play for the state and group along with the corresponding equilibrium conditions that must hold for each path of play to be optimal.

The table reflects the logic of backwards induction, with each row representing a possible equilibrium path of play for the state and violent group. Thus, the column on the far left lists the three possible equilibrium paths of play for the state when it has experienced an attack. The equilibrium condition that must hold for this path of play to be optimal for the state is noted in the next column to the right. The column to the right of the state’s equilibrium conditions lists the possible paths of play for the group given that the state plays the strategy listed to the left in the same row. The final column states the equilibrium condition for the group that must hold for the path of play to be optimal. To simplify the notation in the table, I denote the tactic chosen by the group as tactic $i$, while the tactic not chosen is tactic $j$. This notation facilitates the presentation of general and parsimonious equilibrium conditions. Accordingly, I subscript all parameters in the players utilities here with $i$ and $j$, where $i \in \{t,g\}$ and $i \neq j$. If the chosen tactic is a guerilla attack, then $i = g$ and $j = t$, which means that the tactic not chosen is terrorism.

The state’s decision to employ a forceful response to an attack using tactic $i$ hinges on its precision in targeting group members, i.e., $\alpha_i$. The state uses force in response to either tactic if enough of the damage it will inflict hits group members rather than civilians. In all the state’s equilibrium conditions, when $\omega = 0$ at least 50% of the damage sustained from a forceful response must target group members. As the costs to forceful response in addition to collateral damage

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11 The only additional requirement for this result to hold is that no player be indifferent over two possible actions. I assume that when the state is indifferent it chooses to not forcefully respond, and when the group is indifferent between two options it chooses to not attack or to attack civilians (if the indifference is between the two tactics).

12 It is possible for each path of play to be optimal in equilibrium.

13 For example, this allows me to list one equilibrium condition for “Attack with Tactic $i$ if” both when the government always responds with force and when the government never responds with force. If I subscripted by $t$ and $g$, I would have to write out separate conditions for each tactic.

14 If we allow the state’s utility from $\pi$ to be a non-linear but monotonic function of $\alpha_i$, the proportion of damage that afflicts group members versus civilians, the character of the results does not change. However, the baseline cut-point for $\alpha_i$ is no longer necessarily $\frac{1}{2}$. I assume a linear function to make the equilibrium conditions straightforward.
increase, i.e., $\omega$ increases above zero, the state’s threshold increases above the baseline of $\alpha_i = \frac{1}{2}$. This straightforward equilibrium condition suggests that the state is quite smart in its use of force, as it will only use force when more of the resulting damage hurts group members than civilians.

The group’s equilibrium behavior when a forceful response is possible also depends on $\alpha_i$, the precision of the state’s response. If the state responds forcefully to the use of tactic $i$, the group will employ the provocative tactic $i$ if a large enough proportion of the damage from the response afflicts the civilian population rather than its own members. As a baseline, if $c_i - k_i = 0$ then at least 50% of the damage from the forceful response must afflict the civilian population, which is the opposite of the state’s condition on $\alpha_i$. The group is willing to tolerate a smaller (larger) proportion of civilian (group) casualties as the difference between the direct payoff from using tactic $i$, i.e., $c_i - k_i$, versus either tactic $j$ or refraining from carrying out an attack increases. This allows it to be simultaneously optimal for the group to provoke the state and for the state to be provoked. For example, if the relevant comparison to tactic $i$ is no attack, then the group compares $\alpha_i$ to $(c_i - k_i) - 0$. If both tactics are provocative, the baseline level of damage in the comparison between tactics $i$ and $j$ is $\alpha_j$, or the proportion of damage from the state’s response that the group would face if it employed tactic $j$. Finally, if neither tactic provokes a state response, i.e., the final row of the table, the group’s tactical choice is driven solely by the direct payoffs from the attack.

Figure 2 depicts the range of parameters for which provocation is possible in equilibrium.\(^{15}\) State accuracy in targeting group members with force is depicted on the x-axis, while the severity of the group’s attack, $c_i$, is depicted on the y-axis. The area of the plot shaded with black diagonal lines depicts the region where the state would employ forceful response, but the group does not provoke such a response because it is too damaging relative to its payoff. The solid black shaded region depicts the area where the state forcefully responds and the group provocatively attacks. The area shaded by solid grey shows the region for which the group attacks and the state does not forcefully respond, while the remaining white area depicts the range of parameters where no attacks occur and the state would never forcefully respond. The diagonal boundary between the black shaded region and the region where the group does not provocatively attack (shaded with

\(^{15}\)The figure assumes the state plays a conditional strategy, i.e., the path of play in row 2 of table 1, where tactic $i$ is provocative and tactic $j$ is not. The depiction is similar if we assume both tactics elicit forceful response, i.e., row 1. I further assume that $\omega = 0$ in the plot. As $\omega$ increases above zero, the area in which the state employs a forceful response decreases, i.e., the cut-point in state accuracy increases above 0.5.
black-diagonal lines) shows how the group tolerates higher casualty rates, i.e., the x-axis, as its direct payoff to attack increases, i.e., the y-axis. In fact, when state accuracy is greater than 50%, which makes forceful response optimal for the state, the group’s direct payoff from attack has to be positive for provocation to occur.

**Empirical Implications**

Analysis of the model’s equilibrium allows us to develop hypotheses about connections between tactical choice and the provocation of a forceful state response. Using the language of the statistical model, I discuss the actors’ choices probabilistically. Thus, all else equal, if increasing a parameter makes the equilibrium condition for the group’s decision to provoke the state using a guerilla attack easier to satisfy, i.e., less restrictive, I note that this increases the probability that the guerilla tactic is chosen. Finally, I focus primarily on the implications for provocation and avoidance here, as this is the central theoretical focus.

All three inequalities in the second column of table 1 indicate that the state is more likely to respond to an attack that employs either terrorist or guerilla tactics as its precision in targeting group members, i.e., \( \alpha_i \), increases. Accordingly, the probability of a forceful response should increase in \( \alpha_i \) regardless of the tactic chosen. Expectation 1 summarizes the relationship between \( \alpha_i \) and the probability of a forceful state response.

**Expectation 1.** All else equal, the state is more likely to respond forcefully to an attack as the proportion of the damage it inflicts on group members relative to civilians, or \( \alpha_i \), increases.

Given our interest in understanding whether and how state response varies with the tactic chosen, we outline how the probability of a forceful response can vary by tactic. Examination of the state’s equilibrium conditions in table 1 suggest that the state is more likely to employ a forceful response to tactic \( i \) than tactic \( j \) if it can target group members with greater precision following tactic \( i \). For example, the state may be able to more effectively target group members following

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\[16\] It is of course possible to introduce bounded rationality, or a similar assumption, into the theoretical model so that the actions in the theoretical model are also probabilistic. I do not do so to make the exposition of the theory as simple as possible. In general, the direction of our expectations for a particular parameter using SPE will not differ from what would hold under a quantal response equilibrium solution concept (or something similar) unless the error terms are parameterized with the same variables as the utilities. We do not do this as it is not implied by the theory and unnecessarily complicates the analysis.
a terrorist attack than a guerilla attack, i.e., $\alpha_t > \alpha_g$. States need information on the attackers and their whereabouts to precisely use force. Attacks on civilians typically take place in crowded areas where there are a lot of potential witnesses to the attack and its setup. In contrast, attacks on state forces often take place at police barracks, or areas that are less populated with bystanders that can provide information.

**Expectation 2a.** All else equal, if $\alpha_t > \alpha_g$, the probability the state responds forcefully is higher following a terrorist attack than a guerilla attack.

On the other hand, it is quite plausible that states are more effective at responding forcefully to attacks on their own security forces than to attacks on civilians. Attacks on state forces directly threaten state authority. Della Porta (1995) notes that in post-World War II Germany and Italy guerilla attacks against state forces were closely associated with forceful responses. Given that the group directly attacks state forces, it is plausible that the government can more precisely target group members in response to guerilla attacks. Members of the police forces or military actually observe attacks against their own forces and thus do not need to rely as heavily on information from civilian witnesses. This line of argument suggests that the state has better intelligence following guerilla attacks, which facilitates more precise forceful response.

**Expectation 2b.** All else equal, if $\alpha_g > \alpha_t$, the probability the state responds forcefully is higher following a guerilla attack than a terrorist attack.

These expectations are helpful building blocks, as their assessment is essential to understanding whether either guerilla or terrorist tactics are associated with provoking or avoiding forceful state response. Provocation is not a tenable strategy if neither terrorist nor guerilla tactics is likely to provoke a forceful response. We know from the equilibrium conditions in table 1 that a tactic $i$ is provocative to the state if $\alpha_i > \frac{1}{2} + \frac{\omega}{2\pi}$. For groups that want to provoke or avoid state response, anticipation of the state’s propensity to respond forcefully to different tactics is essential.

The state’s ability to discriminate between hurting civilians and group members with its forceful response is also crucial to group strategy. Examination of the group’s equilibrium conditions in table 1 make clear that when a tactic will provoke forceful response, there is a cut-point on $\alpha_i$ that determines whether provocation is optimal for the group. If only tactic $i$ is provocative, while tactic $j$ avoids state response, then $\alpha_i$ must be smaller than the threshold identified in the second
row of table 1, which I denote $\sigma$ for convenience.\footnote{Table 1 lists what $\sigma$ is for each equilibrium path of play. For instance, if only tactic $i$ is provocative, then $\sigma = \min \left\{ \frac{1}{2} + \frac{c_i - k_i}{2\pi}, \frac{1}{2} + \frac{(c_i - k_i) - (c_j - k_j)}{2\pi} \right\}$.} Similarly, if we analyze the group’s comparison of tactics $i$ and $j$ when they are both provocative, i.e., $\alpha_i < \alpha_j + \frac{(c_i - k_i) - (c_j - k_j)}{2\pi}$, we see again that there is a cut-point, $\sigma = \alpha_j + \frac{(c_i - k_i) - (c_j - k_j)}{2\pi}$, after which $\alpha_i$ is too high for provocation using tactic $i$ to be optimal. The upshot is that, all else equal, there will be a cut-point for $\alpha_i$ after which provocation is not optimal because of the high proportion of damage inflicted on the group’s organization and membership.

There are numerous historical examples of terrorist tactics employed as part of a provocation strategy. For instance, fledgling Armenian rebels used a provocation strategy against the Ottomans in the 1890s. Walter Laqueur notes that “...since they could not possibly hope to overthrow the government, their strategy had to be based on provocation. They assumed that their attacks on the Turks would provoke savage retaliation, and that as a result the Armenian population would be radicalized (Laqueur, 1987, 43).” Indeed, the Program of the Armenian Revolutionary Foundation, drafted in an 1892 meeting at Tiflis, stated that rebels were “[t]o stimulate fighting and to terrorize government officials ...” (quoted in Nalbandian (1963, 168)). The Armenian rebels chose to attack civilians connected to the Ottoman state in the expectation that state forces would mercilessly respond and impose a high proportion of collateral civilian damage. Expectation 3a summarizes the idea that terrorist tactics are connected to a strategy of provocation. The expectation applies when provocation is an optimal strategy for the group, meaning that $\alpha_t$ is less than the relevant cut-point identified in the last column of table 1.

**Expectation 3a.** *All else equal, if terrorist tactics are more provocative, meaning $\alpha_t > \alpha_g$, the probability of a terrorist attack is greater than the probability of a guerilla attack until a specific threshold of state-caused damage hurts the group, or $\alpha_t = \sigma$.*

The idea that guerilla tactics are effective in provoking a forceful state response also finds numerous instances of support in the historical record. In a study of the repression of political movements in 19th century Europe, Goldstein notes that states which employed more forceful responses to attacks on its forces also subsequently experienced more violent groups (Goldstein, 1983, 333–343). The violent responses were seen as a means to force the state to disrupt the daily lives of citizens and foster sympathy for the group. Similarly, in post-World War II Germany and
Italy the propensity of the state to forcefully respond to attacks on its security forces were explicitly used as reason to target them. Thus, forceful police responses such as the one in West Berlin that led to the death of activist Benno Ohnesorg and numerous other injuries in 1967 helped make more activists amenable to the use of violence. The public outcry over the death of Ohnesorg (and numerous injuries) demonstrated the effectiveness of this strategy in discrediting the state. In fact, the Brazilian Marxist revolutionary Carlos Marighella explicitly advocated targeting government forces to provoke a draconian response. He argued that following guerilla attacks “[t]he government has no alternative except to intensify repression. The police networks, house searches, arrests of innocent people and of suspects, closing off streets, make life in the city unbearable (Marighella, 1971, 99).” Thus, provocation is quite a plausible strategy via the use of guerilla tactics as well.

Expectation 3b summarizes the idea that guerilla attacks are the preferred tactic in a strategy of provocation. Analogous to Expectation 3a, Expectation 3b applies when provocation via guerilla attack is an optimal strategy for the group, meaning that $\alpha_g$ is less than the relevant cut-point identified in the last column of table 1.

**Expectation 3b.** *All else equal, if guerilla tactics are more provocative, meaning $\alpha_g > \alpha_t$, the probability of a guerilla attack is greater than for a terrorist attack until a specific threshold of state-caused damage hurts the group, or $\alpha_g = \sigma$.*

To summarize, two things must be true to observe provocation. First, the state must find the use of a forceful response to be optimal for at least one tactic. Second, the group must be able to absorb the costs to its membership from a forceful response. In other words, the state must not be so accurate that too large a proportion of the damage from forceful response afflicts group members, i.e., $\alpha_i < \sigma$. For these points to be satisfied it must be true that $\alpha_i \in \left( \frac{1}{2} + \frac{\omega}{2\pi}, \sigma \right)$, where $\sigma$ is the relevant cut-point for the group in the last column of table 1.

On the other hand, if the state’s level of precision is too high for a provocative tactic, i.e., $\alpha_i > \sigma$, then provocation is never an optimal strategy for the group. If this is the case, the group will be significantly less likely to employ a provocative tactic. Thus, if guerilla attacks are provocative and terrorist attacks are not, all else equal, the group will always be less likely to use guerilla tactics relative to terrorist tactics or not attacking. Consequently, neither expectation 3a nor expectation 3b will find support. We summarize the possibility that provocation is never an optimal strategy...
in the following expectation.

**Expectation 4.** If the state’s level of precision in targeting group members with a forceful response is too high for both tactics, meaning that $\sigma < \alpha_g, \alpha_t$, a strategy of provocation is never optimal.

In sum, the theoretical model identifies empirical expectations for state and group behavior. The model suggests the conditions under which we can expect to see a forceful state response to either tactic, as well as identifying a plausible reason why forceful response may be more common following one tactic versus another. Furthermore, the model provides expectations regarding the empirical patterns we should observe if a strategy of provocation via guerilla or terrorist tactics is indeed an optimal strategy for groups.

**An Empirical Approach**

I now develop a statistical version of the theoretical model. Specifically, I derive a statistical model that includes the group’s choice to refrain from attack, to carry out an attack against civilians, or to carry out an attack against state forces, and also includes the state’s choice to respond with force or not to either an attack against civilians or its own security forces. Given that the theory and all of its predictions presume that violent groups choose tactics strategically, development of a model with the same strategic structure as the theoretical model allows unbiased estimation of group and state utilities (Signorino and Yilmaz, 2003). Furthermore, by explicitly modeling how group tactical choice strategically anticipates state response I am able to deal with endogeneity problems in the analysis of group tactical choice that result from strategic interaction.\(^{18}\)

In the theoretical model depicted in figure 1, both the state and the group make no errors in their decision-making, an assumption that I relax to make the theoretical model a statistical model. Specifically, in the statistical model I make the plausible assumption that both the group

\(^{18}\)For example, assume I estimate a non-strategic model of group tactical choice (with or without fixed effects) and found that groups are more likely to target civilians when state accuracy is lower. This might be interpreted as evidence in favor of the idea that terrorism is used to provoke the government. However, if groups choose terrorist or guerilla tactics in anticipation of the likelihood the state will respond forcefully (which also depends on accuracy), and the state is more likely to respond with force to guerilla attacks (both of which I show below to be true), endogeneity makes this a spurious finding. In short, if states are much more likely to respond with force following guerilla attacks because they are able to more accurately target groups, lower state accuracy following terrorist attacks is reflective of the fact that states are not generally provoked following terrorist attacks. Thus, it is not evidence that terrorism is generally associated with a strategy of provocation.
and the state are boundedly rational (Simon, 1997). That is, for each possible choice in the game they randomly err in making the optimal choice. Given a probability distribution for the error terms, I derive a variant of the quantal response equilibrium solution concept (QRE). The subgame perfect equilibrium solution concept used to solve the theoretical model is a special case of the QRE in which neither the state nor the group make errors (Signorino, 1999, 2003). Thus, while the empirical model is structurally consistent with the theoretical model, it is also more general as it accommodates the idea that groups and states at times make errors in decision-making.\textsuperscript{19}

I outline the logic behind the statistical model by first deriving the equations used to estimate the state’s choice probabilities and then those for the group’s choice probabilities. Both the state and the group compare the expected utility of each possible choice in the game and make the optimal choice (with error). The state has two possible choices in the game. First, if the group carries out a terrorist attack, the state decides whether to forcefully respond or not. Similarly, the state also decides to forcefully respond or not following a guerilla attack. Suppose that in observation \(i\), the group carries out a terrorist attack; then, the probability the state forcefully responds depends on a comparison of the expected utilities for forceful responding, denoted \(F\), and not forceful responding, denoted \(\neg F\):\textsuperscript{20}

\[
p_{i,4} = P_r[U_S(Guer F) + \epsilon_4 > U_S(Guer \neg F) + \epsilon_3].
\] (1)

If the group carries out a guerilla attack, the probability the state responds forcefully or not to a guerilla attack is analogously written as:

\[
p_{i,6} = P_r[U_S(Terror F) + \epsilon_6 > U_S(Terror \neg F) + \epsilon_5].
\] (2)

As is central to the theory undergirding the paper, the group strategically anticipates expected government response in deciding to carry out an attack against civilians, against government security forces, or to refrain from attack. Thus, the group makes an expected utility calculation that incorporates the probability the government will respond with force to either tactic. For instance,

\textsuperscript{19}Assuming that the uncertainty is the product of privately held information leads to a very similar probability model (Signorino, 2003).

\textsuperscript{20}Note that the labels for both the state’s and group’s utilities over each outcome correspond to those used in table 2 below. Furthermore, the indexing for the probabilities, e.g., \(p_{i,4}\), correspond to the choice probabilities in figure 3.
the probability it carries out a terrorist attack is written as:

\[ p_{i,1} = Pr[U_V(Terror F) * p_{i,4} + U_V(Terror \neg F) * p_{i,3} + \epsilon_1 > \max\{U_V(Guer F) * p_{i,6} + U_V(Guer \neg F) * p_{i,5} + \epsilon_2, U_V(\neg Attack) + \epsilon_0\}] \]  

(3)

Thus, the probability the group attacks civilians, or \( p_{i,1} \), depends on the comparison of its expected utility for a terrorist attack (expression 3), to both its expected utility for a guerilla attack and its utility for not carrying out an attack (expression 4). The expected utilities incorporate both the group’s utility for each outcome, e.g., \( U_V(Terror F) \), and the probability the state will respond such that the outcome is realized, e.g., \( p_{i,4} \). The probabilities that the group chooses to carry out a guerilla attack (\( p_{i,2} \)) or to refrain from attack (\( p_{i,0} \)) are defined analogously.

I do two things to make statistical estimation of these choice probabilities possible. First, I specify the group and state utilities over outcomes, e.g., \( U_V(Terror F) \), with substantive regressors. Figure 3 shows how the players’ utilities are specified with regressors in the game. I normalize the group’s utility for not carrying out an attack to 0, and also normalize the state’s utilities for not forcefully responding to an attack to 0. This aids in identification of the model and also ensures that the coefficients in the group’s utilities are interpreted relative to no attack, while the coefficients in the state’s utilities are interpreted relative to if it had not forcefully responded to an attack.

Second, I specify a probability distribution for the error terms, which yields a probability model that can be estimated. I assume that the error terms, \( \epsilon_{ij} \), are independently and identically distributed Type 1 Extreme Value, which yields the widely used logit probability expressions.

Thus, the probability the government responds with force to a terrorist attack, i.e., \( p_{i,4} \), is estimated with the following equation:

\[ p_4 = \frac{e^{X_{24}\beta_{24}}}{1 + e^{X_{24}\beta_{24}}} \]  
\[ p_3 = 1 - p_4. \]  

(5)

(6)

21 The estimated utilities for the group are denoted with \( Z\gamma \), where the the variables in the group’s utilities are \( Z \), while the estimated coefficients are denoted with \( \gamma \). The estimated utilities for the state are denoted with \( X\beta \), where the variables in the state’s utilities are denoted with \( X \) and the coefficients are denoted with \( \beta \). The specific regressors used to measure the parameters of the theoretical model are discussed in the data section below.

22 For a substantive justification of this, see the discussion below where I specify the parameters in the model with data.

23 The \( i \) refers to the player where \( i \in \{V,S\} \) and \( j \) refers to the action, where \( j \in \{0,\ldots,6\} \). An assumption of normally distributed errors would lead to probit probabilities.
Equation 5 indicates that a logit model can be used to estimate the probability the state forcefully responds to the group’s attack. The probability the state responds with force or not following a guerilla attack, $p_6$, is analogously defined.

The group’s choice of tactics is more complicated, as it is conditioned on the expected reaction of the state. Given the same distributional assumptions as in equations 5–6, the probabilities the group chooses to directly attack the state via guerilla tactics, $p_2$, chooses to attack civilians, $p_1$, or chooses to refrain from attacking, $p_0$, are

$$p_2 = \frac{e^{(p_5 Z_{15} \gamma_{15} + p_6 Z_{16} \gamma_{16})}}{1 + e^{(p_3 Z_{13} \gamma_{13} + p_4 Z_{14} \gamma_{14})} + e^{(p_5 Z_{15} \gamma_{15} + p_6 Z_{16} \gamma_{16})}}$$

(7)

$$p_1 = \frac{e^{(p_3 Z_{13} \gamma_{13} + p_4 Z_{14} \gamma_{14})}}{1 + e^{(p_3 Z_{13} \gamma_{13} + p_4 Z_{14} \gamma_{14})} + e^{(p_5 Z_{15} \gamma_{15} + p_6 Z_{16} \gamma_{16})}}$$

(8)

$$p_0 = 1 - p_2 - p_1.$$  

(9)

The probability the state responds to a particular tactic with force or not is estimated as outlined above. For example, the probability the state responds with force to a terrorist attack, i.e., $p_4$, is estimated using equation 5. This builds a (game-theoretic) probability model with boundedly rational players.  

Given that I can now estimate the state’s and group’s choice probabilities, I construct a log-likelihood function to maximize. I use data on the observed actions of the group and state to create variables, $d_{i,j}$, that indicate for each observation $i = 1 \ldots n$ which outcome is reached in the model, where the possible outcomes are $j \in \{0, 3, 4, 5, 6\}$.  

$$\ln(L) = \sum_{i=1}^{n} d_{i,0} \ln(p_{i,0}) + d_{i,3} \ln(p_{i,3}) + d_{i,4} \ln(p_{i,4}) + d_{i,5} \ln(p_{i,5}) + d_{i,6} \ln(p_{i,6}).$$

(10)

The log-likelihood is estimated in three steps via statistical backwards induction (SBI). First, I estimate a model for the state’s response to an attack on civilians, i.e., equation 5. Second, I estimate a model for the state’s response to an attack on its security forces. Finally, I estimate a model of the group’s choice of tactics conditional on the expected state response, i.e., equations 7-8, using the probability estimates, i.e., $p_{i,3} - p_{i,6}$, from the first two stages to account for government response. Bas, Signorino and Walker (2007) demonstrate that a method of statistical backwards

\[^{24}\text{For additional details on how the derivation of this type of strategic choice model, see Signorino (2003).}\]

\[^{25}\text{The outcome indicators } j \text{ correspond to the subscripts on the action probabilities in figure 3. For instance, } j = 0 \text{ indicates that the group does not attack, while } j = 4 \text{ indicates that the group targets civilians and the government forcefully responds.}\]
induction (SBI) works well in the estimation of this type of discrete choice game.\textsuperscript{26} Although the SBI technique is employed by separately estimating the appropriate equation for each possible decision in the game rather than simultaneously estimating the full system of equations, this does not at all change the underlying probability model. Assurance of concave likelihood functions and ease of estimation are among the advantages of SBI over simultaneous estimation of the full system of recursive equations. One known issue with the SBI technique that affects the strategic attacks game is that the standard errors for any estimates at stages prior to the final move in the game are biased downwards. The bias results from treating the estimated probabilities as fixed data, when they are estimated with error. In our context, this suggests that the standard errors for the group's utilities are biased if left uncorrected. Following Bas, Signorino and Walker (2007), I bootstrap to correct the standard errors.

**Data**

I utilize data from the Terrorism in Western Europe Event Data (TWEED) project (Engene, 2004). The data include all violent attacks carried out by a domestically based group that occurred in Western Europe from 1950–2004. Importantly, it includes attacks on civilians, attacks on state forces, and contains detailed information on state response to each attack. The unit of analysis is the attack, where for each attack a group decides whether to target civilians or to target state security forces. This formulation is consistent with the observation that many groups mix terrorist and guerilla tactics, as a group can choose to attack civilians today and target state security forces subsequently. The focus on attacks by domestic groups is an important strength given that forceful state response is generally more complicated for groups whose primary bases are on foreign soil (Bapat, 2007; Schultz, 2010). The TWEED data provides unusually good temporal coverage, which allows for variation within countries on key variables. Given the theoretical focus on democratic countries, I only include the observations where a country is democratic in our sample.\textsuperscript{27} Almost 95% of the observations are in democracies.

\textsuperscript{26} A similar approach is outlined in Carrubba, Yuen and Zorn (2007).
\textsuperscript{27} I consider a country democratic if it has at least a Polity score of 6. The alternative measure of Cheibub, Gandhi and Vreeland (2010) does not lead to any different codings in this sample.
rienced a significant amount of political violence. In fact, for three decades out of the five decades in our sample, 1960s–1980s, Western Europe experienced more attacks than any other region in the world (Chalk, 1993). Second, the vast majority of states in post-World War II Western Europe are democratic, which suggests that both provocation and avoidance hypotheses are plausible as such states cannot easily carry out maximally brutal strategies, but remain susceptible to public pressure to respond forcefully. More specifically, during the period of study a number of Western European countries, such as West Germany, France, Spain, the United Kingdom, and Italy passed legislation that granted far greater repressive powers to their security forces to deal with terrorism and also created anti-terrorist assault forces to forcefully target groups. Furthermore, the special anti-terrorist assault forces created during the 1960s and 1970s represented a departure from the principle of “minimum force” to an overriding concern to sustain “minimum losses” to their own personnel. Chalk (1993) notes that militarily trained units, such as Germany’s GSG-9, in practicing the principle of “minimum losses” in effect began to resemble units using “maximum force”. In other words, the key states in question are relatively constrained democracies but also empowered their security forces to deal forcefully with groups, which implies that they had capacity and ability to use force. Finally, the focus on a specific region that a relatively high level of homogeneity in potentially important factors such as regime type or state capacity makes the “all else equal” statements much more plausible in the empirical model. In sum, Western Europe of the post-WWII era has the key characteristics necessary, is perhaps even ideal given our theoretical focus, and affords important inferential advantages relative to a more heterogeneous cross-national sample.

**Dependent Variables**

The model depicted in figure 3 has three dependent variables. The first indicates the group’s choice of tactics, while the second and third indicate whether the state responds forcefully to attacks on civilians or state forces, respectively. I first describe the variable that indicates the group’s choice of tactics, then discuss the coding of the state’s response.

Identification of whether a group attack targets civilians or state security forces is quite straightforward as the TWEED data identify the intended target of the group’s attack. I code an attack target as state security forces if the group targets either military or police forces.\textsuperscript{28} Otherwise, I

\textsuperscript{28}A variable that includes attacks on other state officials or political institutions as attacks against the state
code an attack as targeting civilians. Identifying non-attacks is potentially difficult, as the TWEED data only identify attacks. I use information drawn from the TWEED data on the number of active violent groups in a country to generate observations in which no-attack was chosen by a group. I count a group as being active after it has carried out an attack.\textsuperscript{29} I use the number of active groups to generate two types of non-attack observations. First, in country-years in which no attacks take place, each active group makes one non-attack decision. Second, in country-years in which attacks are observed, we generate a non-attack observation for each active group that does not carry out an attack. This generates 6073 non-attack observations.\textsuperscript{30}

Three pieces of information are necessary to construct dependent variables that indicate state response to an attack. First, I need information on whether the state reacted directly to a given attack or not. Given the structure of interaction assumed in the model, it is essential not to treat state actions that are not directly related to a given attack as responses to that attack simply because the timing of the attack and response coincides. Importantly, the data distinguishes between general state reactions to attacks that are independent of an individual attack and state actions that are a direct and immediate response to a particular attack.\textsuperscript{31} Second, a forceful response requires action by either the state’s military, police, or secret services. Thus, I do not consider reactions from non-security departments such as the judiciary as forceful responses. Third, the data distinguish between “information reactions” (e.g., public pronouncements) and physical force. To ensure that the dependent variable does not include pronouncements as forceful responses, I exclude information reactions and only include responses that entail physical uses of force.

\textsuperscript{29}If no attacks have taken place in a country, which is only true in Luxembourg, I assume that one prospective group decides each year to not attack.

\textsuperscript{30}I also use several alternative criteria to generate non-attack observations. First, I tried using the number of attacks in the previous year as a baseline for the number of expected attacks in the current year. Thus, non-attack observations are generated when there is a decrease in the number of attacks from year to year. Second, I similarly assumed that deviations from prior attack levels implied non-attack decisions using two and three year averages of attacks. Thus, if the number of attacks in year $t$ decreases from the two or three year average by $n$ attacks, I assume that there are $n$ non-attack decisions in year $t$. Third, I used both the number of active groups and the number of attacks to generate the average number of attacks per group, per year. I used this information to generate an alternative set of non-attack observations. This third method is similar to that used in the main analysis. However, I assume that each group that does not attack in a given year generates $n$ non-attack observations, where $n$ is the average number of attacks per active group per country. All of these alternative methods generate results similar to those reported in the main results. Alternative methods that generate a greater number of observations generally decrease the standard errors but do not change the character of the results.

\textsuperscript{31}As a robustness check, I also code more expansive forceful response variables that include immediate and general state responses that occur after an attack. The results are substantively similar and are available in the supplemental appendix. I focus here on immediate responses as they are fully consistent with the theoretical model.
In the modal outcome, the group carries out an attack against civilians and the state does not respond forcefully. While guerilla attacks against state forces are less prevalent than terrorist attacks, forceful responses are much more common in response to guerilla attacks. In short, despite widespread discussion of how states overreact to terrorism with force (e.g., Richardson (2006)), forceful reactions to such attacks are relatively rare. Furthermore, the raw data suggest that states are able to calibrate their response to the use of different tactics.

**Empirical Specification of Utilities**

I specify group and state utilities with regressors that measure variables of importance to the theoretical model. I first discuss the specification of the state’s utilities and then discuss the group’s utilities, which are depicted in figure 3.

**Specification of State Utilities**

I outline here the empirical specification of the state’s utilities, $X\beta$, where $X$ are the variables and $\beta$ are the estimated coefficients. Given that the $X$ are treated as fixed data, when we multiply $X$ by the estimated coefficients $\beta$ we obtain the values of each of the parameters in the model. The state has four utilities:

$$X_{23} = -c_t$$
$$X_{24} = \alpha_t \pi - (1 - \alpha_t) \pi - c_t - \omega$$
$$X_{25} = -c_g$$
$$X_{26} = \alpha_g \pi - (1 - \alpha_g) \pi - c_g - \omega. $$

I normalize both the state’s utility when a terrorist attack is not responded to with force, $X_{23}$, and its utility when a guerilla attack is not responded to forcefully, $X_{25}$, to zero. This is justified by the fact that both of these utilities only contain the $-c_i$ terms in the theoretical model, which cancel out of these two utilities because they are also contained in $X_{24}$ and $X_{26}$, the state’s utilities when it forcefully responds to either tactic.\(^{32}\) In what follows, I outline the measurement of each of the parameters in $X_{24}$ and $X_{26}$.

In the theoretical model, $\pi$ denotes the overall damage that results from a forceful state response, while $\alpha_i$ indicates the proportion of $\pi$ that targets group members following a forceful response to

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\(^{32}\)See the appendix for results that include the $-c_i$ terms in state utilities. The key results reported here are unaffected.
tactic $i$. In the state’s utility functions for forceful response to either a terrorist or guerilla attack, $\alpha_i\pi$ represents the benefits of forceful response, as it measures the number of violent group members that are correctly targeted. In contrast, $(1 - \alpha_i)\pi$ represents the costs of forceful response to either tactic for the state, as it measures the number of civilians that are incorrectly targeted.33 In the tables and figures I also refer to $\alpha_i\pi$ as State-Caused Group Damage, while $(1 - \alpha_i)\pi$ is referred to as State-Caused Civilian Damage. To keep things consistent with the theory, I distinguish between state-caused group damage that follows a terrorist attack $\alpha_t\pi$ and state-caused group damage that follows a guerilla attack $\alpha_g\pi$. The same distinction is made between $(1 - \alpha_t)\pi$ and $(1 - \alpha_g)\pi$ in the measurement of state-caused civilian damage.

I operationalize $\alpha_t\pi$, or State-Caused Group Damage, measuring the number of group member deaths, injuries, and arrests that lead to convictions that result from the government’s forceful response to a terrorist attack. Similarly, $(1 - \alpha_t)\pi$ State-Caused Civilian Damage measures the number of civilian casualties, injuries, and arrests that do not lead to conviction that directly result from the government’s forceful response to a terrorist attack. The variables $\alpha_g\pi$ and $(1 - \alpha_g)\pi$ are measured analogously following guerilla attacks. Forceful responses by the state that lead to civilian deaths and injuries are obviously harmful to the government. Wrongful arrests are also a harmful form of collateral damage to innocent civilians. Jamieson (1989) notes the role that wrongful arrests played in the Italian state’s battle with left-wing terrorists. In response to an “unprecedented series of attacks” carried out by the Red Brigades (BR) in March 1978, “[u]nprepared and unable to identify the sources of spiralling violence, the forces of law and order reacted in an ad hoc, spasmodic fashion, making numerous arrests only to release suspects for lack of evidence (Jamieson, 1989, 99).” This response only served to make the state look incompetent and to add to the grievances of individuals that were plausible BR supporters (see Jamieson (1989) for an excellent treatment). Both variables are coded using information coded in the TWEED data on each forceful state response.34

There are two potential issues with the State-Caused Group Damage and State-Caused Civilian Damage variables that we discuss here. First, inclusion of the raw damage variables in group

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33Note that $\alpha_i\pi$ and $(1 - \alpha_i)\pi$ could be relabeled as $B$ and $C$ to represent a cost and benefit. However, I keep the representation with $\alpha$ and $\pi$ as this is consistent with the theoretical model and highlights the role of government accuracy.

and state utilities suggests that both players precisely know the implications of a government response that has not yet occurred. However, it is more likely that both the state and group know the government’s ability to effectively target group members in response to an attack via prior experience with forceful response. Accordingly, I measure both State-Caused Group Damage and State-Caused Civilian Damage using the damage that resulted from the state’s prior forceful response to the given tactic. Thus, for each attack in the data, the damage from state response is measured as the damage from the prior event.\footnote{This choice does not affect the results, which are similar if with state caused damage from the current response.} Second, since both variables are right-skewed, I include the natural log of both variables.\footnote{Again, the results are similar with the unlogged versions of these two variables.}

In contrast to the measurement of $\alpha_i \pi$ and $(1 - \alpha_i) \pi$, where individual variables that measure state-caused group casualties and state-caused civilian casualties respectively were constructed, here I use several variables to measure $\omega$. I measure the parameter $\omega$, or the cost of forceful response for the state, as the sum of five variables. Specifically, $\omega$ is a function of whether the identity of the attacking group is known or not, whether the stated goals of a known group are territorial or not, the left-right ideological orientation of the government in charge of the state, the logged GDP per capita of the state, i.e., state capacity, and the months since the state last responded with force to the same tactic.

The costs of responding forcefully for the state are higher when the identity of the attacking group is known relative to when the group responsible for an attack is unknown. If the identity of the group is not known, which often indicates “one-hit wonders” or loner attacks, the costs of responding with force are often prohibitive as the state cannot effectively target an unknown group. For 75\% of the attacks in the data, the group is identified. Groups often self-identify when they explicitly take credit for an attack, or alternatively when their methods are well known enough to identify their attacks. Whether a group has territorial goals or not also affects the costs to the state of responding with force. Given that territorial groups contest a specific piece of land, it is often less costly to use force against them as their location is better known, e.g., Corsican separatists in France.\footnote{I thank an anonymous reviewer for pointing this possibility out.} Accordingly, I code a variable that indicates whether a group has territorial goals or not, where groups that have irredentist or separatist goals are coded as territorial, and all other groups are not territorial.
Second, the ideological orientation of the government and relatedly the political orientation of its supporters, or winning coalition, should affect the costs (and political pressure) of responding to an attack forcefully. The extant literature suggests that it is less costly for right-wing governments to respond with force to violent attacks relative to left-wing governments. Right-wing governments’ winning coalitions are generally composed of individuals with more “hawkish” views that place higher value on crushing violent groups (Berrebi and Klor, 2006; Koch and Cranmer, 2007). To measure the left-right orientation of the government and assess these possibilities, I use the measure developed by Kim and Fording (2002) and updated by Kim and Fording (2003). The Kim and Fording measure of ideology is continuous and takes into account both the ideology of the party (or parties) in power and the relative share of cabinet posts each party occupies. Kim and Fording measure party ideology by coding the content of party manifestos on a left-right scale. I scale the measure so that 0 indicates a fully left-leaning government and 1 indicates a fully right-leaning government. Thus, as the government ideology variable increases, the relevant government is increasingly right-wing.

We also include a measure of GDP per capita as a proxy specifically for a state’s fiscal constraints and more generally for a state’s capacity to respond to violent groups. Fearon and Laitin (2003) demonstrate that sub-state groups are much more likely to emerge as serious threats in relatively poor countries, arguing that this is because relatively wealthy countries are better able to combat groups. Thus, I include the logged gross domestic product per capita in thousands of constant US dollars to capture the idea that it is more costly for less wealthy countries to deal with political violence. The GDP per capita measure is from the most recent version of the data described in Gleditsch (2002). Despite the fact that the sample only includes Western European democracies, there is variation, as the minimum GDP per capita is $3256, the maximum is $33,720, and the mean is $15,560. Finally, I also include the time since the state last responded forcefully to each tactic. If the state recently responded forcefully to an attack, this should make it less costly to respond forcefully again, as police or military forces have recently carried out a similar operation.\textsuperscript{38}

In sum, taking into account the different variables that affect \( \omega \), or the costs of responding with

\textsuperscript{38}This variable is calculated separately for responses to guerilla and terrorist attacks, although this is not indicated in the results table to simplify presentation.
force to an attack, we write $\omega$ as

$$\omega = \text{Unknown Group} + \text{Territorial Goals} + \text{Govt Ideology} + \ln\text{GDP}_{pc} + \text{Time Since Last Response}.$$  

It is highly likely that each of these five variables have effects of different magnitude on $\omega$. Accordingly, I include them as separate variables and estimate each of their effects on the probability the state responds to an attack with force separately as well.

**Specification of Violent Group Utilities**

Now, I discuss specification of the violent group’s utilities, $Z\gamma$, where $Z$ are the variables and $\gamma$ are the estimated coefficients. The group utilities that we need to estimate are as follows:

\begin{align*}
Z_{13} &= c_t - k_t \\
Z_{14} &= c_t - k_t - \alpha_t \pi + (1 - \alpha_t) \pi \\
Z_{15} &= c_g - k_g \\
Z_{16} &= c_g - k_g - \alpha_g \pi + (1 - \alpha_g) \pi.
\end{align*}

We normalize the utility for not carrying out an attack to zero, as this is consistent with the theoretical model.\(^{39}\)

My measurement strategy for $\alpha_i \pi$ and $(1 - \alpha_i) \pi$ is the same as in state utilities. Thus, I include the same two variables, *State-Caused Group Damage* ($\alpha_i \pi$), which measures the level of damage inflicted on group members and *State-Caused Civilian Damage* ($(1 - \alpha_i) \pi$), which measures the level of damage inflicted on the civilian population. I include both of these variables in the group’s utility for attacking civilians and eliciting a forceful response, $U_V(Terror\ F)$, and in its utility for attacking state forces and eliciting a forceful response, $U_V(Guer\ F)$.

Measures of the parameters $c_t$ and $c_g$ are relatively straightforward. First, as a measure of $c_t$, which is termed *Group-Caused Civilian Casualties*, I measure the natural log of the number of civilians killed or injured by the group’s attack.\(^{40}\) Second, as a measure of $c_g$, termed *Group-Caused State Casualties*, I measure the logged number of government members killed or injured.

\(^{39}\)A key restriction on specification of group utilities is that one regressor cannot be included in all four estimated utilities. In practice, this only affects the $k_i$ terms. I include each of the variables associated with the costs, $k_i$, in $Z_{14}$, $Z_{15}$, and $Z_{16}$, and leave them out of $Z_{13}$. However, the choice of which group utility to exclude the $k_i$ variables from does not have much effect on the results.

\(^{40}\)I take the natural log of all the casualty variables, as model comparison statistics suggest the logged variables are more appropriate. Additionally, the raw variables are highly right-skewed. However, the raw measures perform similarly in terms of the sign of the coefficients.
by the group’s attack.\footnote{Given the difficulty in generate the counter-factual level of group-caused severity for non-attack observations, I try three different ways to make sure that the results do not depend on how this is done. First, for non-attack observations, I assume the counterfactual is the severity of the group’s last attack. Civilian casualties are produced from the last terrorist attack, while state casualties are produced from the last guerilla attack. This is the approach used to produce the results reported below. The appeal of this approach is that it mirrors the way state-caused damage is treated. Second, I assume the counterfactual is the average severity of the relevant tactic up until time $t$. Thus, for a non-attack observation in 1972, the severity of an attack (if it had occurred) is assumed to be the mean severity of the relevant type of attack prior to 1972. Again, civilian casualties are produced the mean severity of all prior terrorist attacks, and state casualties are produced from prior guerilla attacks. Finally, as a relatively stark test of whether the results are really dependent on how I code non-attacks, I code the severity of all non-attacks as 0. This is obviously an undesirable approach, as the counterfactual severity of all non-attacks is surely not 0. However, the main results regarding state accuracy are robust to this.} Inclusion of these casualty variables builds on the idea that groups are able to systematically plan the severity of their attacks. Thus, I assume that groups are able to choose tactics and calibrate the severity of their attack. Given that groups choose both the target and the mode of attack, i.e., firebomb, direct fire, et cetera, this seems reasonable.\footnote{In fact, examination of variation in casualties by mode of attack is consistent with this idea as the mean and variance within mode of attack are fairly close to each other for each mode of attack. For example, the mean number of state casualties for a direct armed attack against state forces is 0.797, with a variance of 0.796, while the mean number of civilian casualties that results from a direct armed attack against civilians is 0.638, with a variance of 0.636. The variance for a particular mode of attack is at most twice the mean for any mode of attack against a particular target type. The mode of attack with the highest dispersion is also incidentally the least common mode of attack, arson against civilian targets, with only 81 incidents out of over 9700 attacks ($\approx 0.008\%$).} Inclusion of group-caused casualties in the group’s utilities also helps account for group strength, as stronger groups are better able to carry out more severe attacks.

I also include the variable that indicates whether the group has territorial goals or not in the group’s utilities for attacking and receiving forceful response. It is quite plausible that guerilla attacks provide greater payoff to a territorial group, as attacks against state forces can facilitate taking control of contested land from the state. In terms of the model’s parameters, this suggests that whether a group has territorial goals can positively affect $c_g$. Given that attacks against civilians do not have much direct relation to territorial control, it is also plausible that groups with territorial goals receive a lower payoff from terrorist attacks, or $c_t$. I include the \textit{Territorial Goals} variable in the group’s utility for carrying out a terrorist attack that receives forceful response, $U_V(Terror\ F)$, its utility for carrying out a guerilla attack that does not elicit forceful response, $U_V(Guer\ ¬F)$, and in its utility for carrying out a guerilla attack that receives forceful response, $U_V(Guer\ F)$.

I employ three variables to capture the cost to the group for carrying out an attack, $k_i$ in the theoretical model. First, I include a variable that indicates whether the group that carried out the attack is publicly identified. Attacks for which the culprit is not identified are less severe and...)
usually are less costly to carry out. Furthermore, not being identified is a choice, as it is relatively easy for a group to claim an attack. I include a variable indicating whether the attacking group is identified or not in the group’s utilities for carrying out either a guerilla or terrorist attack and experiencing a forceful response as well as the group’s utility for carrying out a guerilla attack that does not elicit forceful response. Additionally, groups that are unknown are typically much weaker than identified groups that often have carried out multiple attacks across time. Thus, Unknown Group group serves as a reasonable proxy for group strength.\textsuperscript{43} Second, I include the left-right ideological orientation of the state in the group’s utility for carrying out a terrorist attack that receives forceful response, $U_V(\text{Terror } F)$, its utility for carrying out a guerilla attack that does not elicit forceful response, $U_V(\text{Guer } \neg F)$, and in its utility for carrying out a guerilla attack that receives forceful response, $U_V(\text{Guer } F)$. Scholars argue that right-wing governments are more costly to attack as they are willing to take measures to enhance security that left-leaning governments do not (e.g., Koch and Cranmer (2007)). I measure left-right orientation using the data developed by Kim and Fording (2002) exactly as described above. Finally, I also include the time since the state last forcefully responded to a given tactic in the same utilities as the Unknown Group and Govt Ideology variables. It is plausible that the time since forceful response to a given tactic could either positively or negatively affect the costs of attack. Recent forceful responses (unless $\alpha_i = 0$) deplete group resources and are often accompanied by stricter security measures, which may make attacks them associated with higher costs to attack. However, recent forceful responses may also put strain on the state’s forces or clarify the state’s methods to the group, which can lower the costs of attacks.

In sum, taking into account the different variables that affect $k_i$, or the costs to the violent group of carrying out an attack with tactic $i$, we write $k_i$ as

$$k_i = \text{Unknown Group} + \text{Govt Ideology} + \text{Time Since Last Response}.$$ 

Since each of these variables are bound to have effects of different magnitude on $k_i$, I include them as separate variables and estimate each of their effects on the probability the group carries out an attack using tactic $i$ separately.\textsuperscript{43}

\textsuperscript{43}I discuss this more substantially below (and in the appendix) when I describe robustness tests.
Results

Before I discuss the estimates of the statistical model, I briefly discuss and show some patterns in the raw data to probe the plausibility of the theoretical expectations relative to provocation and avoidance of state response. States are much more likely to respond to guerilla attacks with force than terrorist attacks, as 10% of guerilla attacks elicit forceful response while only 1% of terrorist attacks elicit forceful response. The theory developed above suggests that variation in how precisely states can respond explains these differences. Specifically, the logic behind Expectation 2b suggests that states are more precise following guerilla attacks than following terrorist attacks. The raw data are consistent with this logic, as the mean proportion of damage the state imposes on groups following guerilla attacks is 53%, while the mean proportion of damage the state is able to impose on groups in response to terrorist attacks is only 22%. This suggests that states are not often provoked into forcefully responding to terrorist attacks because their responses tend to mostly harm civilians.

The graphs in figure 5 further probe the relationship between guerilla attacks, forceful state response, and collateral damage. I focus on the five countries that experience the most violence in the data: United Kingdom, Germany, Spain, Italy, and France. The graphs for each country show 1.) the proportion of attacks that target state security forces across time (the solid black lines) and 2.) the proportion of attacks that receive a damaging forceful response (the dotted black lines). Given what the raw data suggests thus far, we expect to see the two lines track each other across time. In other words, we expect more guerilla attacks to be accompanied by more state responses that result in some collateral damage. In four out of the five high violence cases, this is true. In fact, for the UK, Germany, Spain, and Italy, the spikes in guerilla attacks across time coincide with damaging state responses to a remarkable degree. France is the only exception to the pattern, as it rarely responds forcefully to attacks despite a number of years in which guerilla attacks are prominent. These results suggest at least two things. First, groups are targeting security forces when the state is responding forcefully to attacks and imposing some civilian damage. Second, the

44Furthermore, there are not stark differences across the two tactics in other key variables such as the average severity of terrorist versus guerilla attacks. The average total number of deaths and injuries from guerilla attacks is 1.23, while the average for terrorist attacks is 1.28, a substantively small and statistically insignificant difference.

45To make the small graphs more readable, I focus on the relatively intense decades of conflict for each case. The patterns in no way depend on not showing time periods that are relatively “dormant”.

46Removal of France from the sample has no effect on the key results.
pattern is consistent with all but one of the five high violence cases. These results rely on raw data, so we further explore patterns below with the statistical version of our theoretical model that also controls for other plausible confounding factors.

The estimated utilities for the violent group and targeted state are shown in table 2. Each column contains the estimates for either the group’s utility for an outcome (i.e., columns 1–4) or the state’s utility for an outcome (i.e., columns 5–6). For example, the first column shows how the regressors affect the group’s utility for carrying out an attack against civilians that does not result in a forceful response from the state, or $U_{VT}(\text{Terror } \neg F)$. In what follows, I first discuss the results for the state and then move on to discuss the group’s utilities. Throughout the discussion I refer to predicted probabilities and graphical depictions of the results, as the graphs are more straightforward to interpret than raw coefficients.

State Decision to Respond with Force

The theory suggests that a state’s decision to respond to an attack with force or not depends crucially on its accuracy. I argue that despite the potential downside to forceful response, states make a sensible calculation in responding to violence. This view contrasts with much writing on state response to political violence, which often emphasizes overreaction (e.g., Pillar (2001) or Richardson (2006)). The results corroborate the theory, as I find that the probability of forceful response increases in state accuracy and that forceful response to different tactics is quite nuanced. The graph in figure 5(a) clearly shows that states are more likely to respond with force when they are better able to target group members, which provides support for expectation 1. The solid black line depicts the probability of a forceful response to an attack on state forces, while the dotted line depicts the probability of a forceful response to an attack on civilians. Both probabilities increase sharply after a sizable proportion of the individuals targeted by the state’s response are group members, i.e., as $\alpha_i$ increases. Thus, regardless of tactic, state behavior exhibits the expected relationship between $\alpha_i$ and the probability of a forceful response. We turn next to explore which tactic is more likely to provoke a state response.

The raw data analyzed above suggests support for the idea that the state is more effective at using force to target group members in response to a guerilla attack, meaning that expectation 2b finds support. The graph in figure 5(a) corroborates this. The graph shows that the probability of a
forceful state response following a guerilla attack is uniformly higher than the probability following a terrorist attack. Moreover, the probability of a forceful response to a guerilla attack increases more quickly in the proportion of damage directed towards group members than the probability of a forceful response to a terrorist attack. In fact, the state’s propensity to respond forcefully to a guerilla attack increases as the percentage of damage that targets group members increases above 35–40%. In contrast, the probability of a forceful response to a terrorist attack does not start to increase until over 60% of the damage targets group members, which is not common in the data. In sum, the results strongly suggest two things. First, the results suggest that the logic of the theoretical model is empirically sound as expectation 1 finds strong support regardless of tactic. Second, the results provide support for expectation 2b, as states are uniformly more likely to respond to guerilla attacks with force. Of course, an analysis of group behavior is necessary to obtain a full picture.

Figure 5(a) explores how state response to attacks changes as a function of the benefits and costs of forceful response in terms of who is targeted, i.e. \(\alpha \pi \) versus \(-(1-\alpha)\pi\). However, the additional costs of forceful response, \(\omega\) in the theoretical model, can also affect the state’s propensity to use force following an attack. The estimates in table 2 show that when a group’s identity is unknown, this has a significant and negative effect on the probability of a forceful response to either tactic. This is consistent with expectation, as Unknown Group is thought to increase \(\omega\). In fact, Unknown Group is the only variable included to measure \(\omega\) that is significant when the state experiences a terrorist attack. All else equal, when the identity of the group behind a terrorist attack is unknown, this decreases the probability of forceful response by over 80%.

The cost of forceful response to a guerilla attack is significantly influenced by the government’s ideological orientation as well as whether a group’s identity known. As governments become more right-wing in their overall composition, the probability they respond with force to attacks on their security forces increases considerably. This is consistent with the idea that the costs of using force are lower for right-wing governments as their winning coalitions are more hawkish. Figure 5(b) shows how the probability the state forcefully responds to a guerilla attack is affected by both government ideology and whether the group’s identity is known. First, the graph shows that the effect of whether the group’s identity is known or not has a very large effect on the likelihood of forceful response. When the group’s identity is unknown, the probability of forceful response is
exceedingly low regardless of the government’s ideology. In contrast, when the group’s identity is known, meaning $\omega$ is much smaller, the probability of forceful response is much higher and increases with the right-wing orientation of the government. Specifically, when 47% of cabinet positions are occupied by right-wing party-members, which is the sample mean, the probability of a forceful state response to an attack on security forces is about 0.04. When the government is 65% right-wing, which is one standard deviation increase, the probability of a forceful response increases by over 75%. If the government is around 28% right-wing, which is one standard deviation decrease, the probability decreases by around 75%.

The other variables included to measure $\omega$ are not significant predictors of forceful response. States are not significantly more likely to respond with force to groups with territorial goals. The level of economic wealth measured by GDP per capita is also not a significant predictor of state response, which perhaps reflects the fact that Western European democracies all have ample resources to fight violent groups. Finally, I find that the number of years since the state employed a forceful response to an attack on its security forces is negatively related to its propensity to employ such a response currently. This is consistent with the interpretation that a state pays a lower cost for refraining from a forceful response if it has recently responded with force to a guerilla attack. However, the number of years since a state employed a forceful response to an attack has negligible effect on responses to terrorism, and is below conventional levels of statistical significance following guerilla attacks. In sum, these results suggest that the state’s accuracy in responding forcefully to attacks, i.e., $\alpha_i \pi$ and $(1 - \alpha_i)\pi$, are central to state response, as these two variables are the most consistent statistically and substantively significant predictors of state response.

**Group Tactical Choice and Provocation**

The results for state utilities clearly suggest that states respond quite differently to the use of different tactics. The raw data examined in discussion of state behavior is consistent with the idea that groups at times use guerilla tactics to provoke, while terrorist tactics are associated with avoiding state response. For example, the plots for four of the five high-violence countries in figure 5 show that guerilla attacks closely track damaging state responses. Consistent with the raw data, the results for group utilities suggest that tactical choice is strongly influenced by the expected state response. Furthermore, the results suggest that violent groups can benefit from a
harsh state response and that the provocation dynamic is more relevant to guerilla attacks than to attacks against civilians. Together with the results for the state’s utilities, these results complete a coherent and theoretically consistent empirical picture. In what follows, I rely solely on graphs and predicted probabilities to interpret the results for the group’s utilities, as the coefficients themselves are not easy to interpret.

The results suggest that terrorist attacks are not generally intended to avoid the state rather than provoke it, while guerilla attacks can be part of a provocation strategy. In combination with the results for the state’s propensity to respond, the graph in figure 5(c) provides striking evidence that guerilla attacks are associated with provocation of state response, and terrorist attacks with avoiding state response. On the y-axis the graph plots the probabilities the group carries out a guerilla attack (the solid line), the group carries out a terrorist attack (the dashed line), and the probability the group refrains from attack (the dotted line). The x-axis depicts the proportion of damage from the state response that afflicts group members following an attack, $\alpha$. The graph shows that groups switch tactics as the accuracy of state response changes. At low to moderate levels of state accuracy, the group chooses guerilla tactics. When the state becomes a little bit more than 50% accurate, the group abruptly switches to terrorist tactics. Finally, when the state becomes unusually accurate, targeting over 60% of group members following an attack, the group becomes very likely to refrain from attack.

Examination of figure 5(c) and 5(a) shows how these results are consistent with the idea that guerilla attacks are used to provoke the state. The group is predicted to prefer guerilla attacks in a subset of the range of $\alpha$ in which forceful response is likely. Specifically, in the range where $\alpha$ is between 0.4 and 0.49, the state is likely to respond forcefully to a guerilla attack and the group is likely to carry one out. In figure 5(c), the point at which $\alpha$ is too high for the group for provocation via guerilla attack to be optimal, i.e., $\alpha = \sigma$, is approximately 0.5. The grey vertical lines in figure 5(c) indicate the moderate range of $\alpha$ for which provocation occurs. The graphs provide compelling support for expectation 3b, since guerilla attacks are more provocative than terrorist attacks, i.e., figure 5(a), and the probability of a guerilla attack is greater than that of a terrorist attack up until a specific threshold where $\alpha$ takes a moderate value. The same pattern is not found for terrorist attacks. Rather, terrorist attacks become likely when $\alpha$ is greater than 0.5 but less than about 0.65. The graph in figure 5(a) shows that the the model predicts the state to forcefully respond

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to terrorist attacks only when $\alpha$ is almost 0.70. This provides compelling evidence in favor of the idea that terrorist tactics are associated with avoiding state response as the group switches to not attacking at all when the state becomes accurate enough to favor forceful response to terrorist tactics. In sum, guerrilla attacks are consistent with a provocation strategy, while terrorist attacks are not. Thus, while expectation 3b finds support, expectation 3a does not.

The two graphs in figure 6 nicely illustrate the group’s sensitivity to the number of members damaged from a state response. The two graphs depict the same relationship from two different angles. The two horizontal axis vary the number of civilians adversely affected by state response, or $(1 - \alpha)\pi$ and the number of group members adversely affected by forceful response, or $\alpha\pi$, while the vertical-axis shows the probability of a guerilla attack. Focusing first on state-caused civilian casualties, or $(1 - \alpha)\pi$, the graph clearly shows that groups are increasingly likely to target state security forces as they face states whose crackdowns damage civilians. Together with the finding that states are more likely to respond to guerilla attacks with force, i.e., support for Expectation 2b, these findings suggest that guerilla tactics are used as part of a provocation strategy, i.e., Expectation 3b finds further support.

The graphs in figure 6 suggest that groups quite effectively navigate the positive and negative implications of forceful state response. Strikingly, the graphs show that the strong positive effect of state-caused civilian collateral damage on the group’s propensity to carry out a guerilla attack is highly conditional on state-caused group damage. At low and moderate levels of expected group damage, figure 6(b) shows that as expected civilian damage increases the probability of a guerilla attack also sharply increases. Specifically, increasing expected civilian damage significantly increases the probability of a guerilla attack until the expected number of group casualties is about 3, which corresponds to slightly more than 1 in the graph (which depicts the log number of individuals). However, after the level of group damage increases above this point, the probability of a guerilla attack plummets. In fact, when the state’s forceful response results in a loss of more than a few members of the group, the probability it provocatively attacks state forces is close to 0. This is true regardless of the prior level of civilian collateral damage caused by forceful state response.

In sum, the results for the group’s utilities provide unique and nuanced evidence of how groups plan attacks in anticipation of state response. The results do not provide much evidence that
groups use terrorist tactics to provoke state responses. Rather, terrorist tactics are associated with avoiding forceful state response. However, there is compelling evidence that guerilla tactics are associated with a strategy of provocation. First, basic patterns in the data suggest that guerilla tactics are more likely to provoke the government. Furthermore, as the prior state response is associated with higher levels of civilian collateral damage, groups are increasingly likely to employ guerilla tactics. The increase in the probability of a guerilla attack shown in figures 5(c) and 6 is striking. However, groups are also very sensitive to losing their own members. Thus, the prospect of provoking a state to generate civilian collateral damage quickly loses its appeal to groups as they themselves face the prospect of serious casualties. All in all, these results provide support for Expectation 3b, which together with the support for Expectation 2b in the state’s utilities provides a coherent overall picture of how group attacks relate to state response and strategies of provocation and avoidance.

Finally, I discuss how variation in the payoff from attacks, or $c_i$, and the costs of attacks, or $k_i$, affect the group’s propensity to choose guerilla or terrorist tactics. Note that the signs on civilian casualties following terrorist attacks, or $c_t$, are positive in the relevant group utilities. The same is true for casualties among state security forces following guerilla attacks, or $c_g$. However, the coefficients are only significant for attacks that do not elicit a forceful response. It makes sense that $c_i$ matter more for group utility when the state does not forcefully response, as these are the only potential benefits when the group does not receive $(1 - \alpha)\pi$. Importantly, both $c_t$ and $c_g$ are jointly significant at the 0.05 level. Two variables are used to measure the costs of carrying out attacks for the group: the left-right orientation of the government, Govt Ideology, and whether the group is strong or not, which is proxied with whether the group’s identity is known, Unknown Group. The costs variables generally work as we would expect, as the probability that the group carries out a terrorist attack decreases by almost 50% if we hold the expected number of civilian casualties from an attack at a high level and move the cost variables from their median levels, i.e., a moderate government with 47% of cabinet positions held by right-wing parties and a known group, to high levels, a right-wing government where 75% of cabinet positions are held by right-wing parties and unknown group. Similarly, if an attack is expected to produce a high number of state casualties, meaning $c_g$ is set to be around 7 individuals, increasing costs from their median level to a high level decreases the probability of a guerilla attack by almost 30%. We can also make similar calculations
relative to the probability of no attack. If the expected civilian casualties are moved from a high level of around 20 to a median level of around 1, the probability of no attack increases by over 150%.

**Robustness Tests**

The results of the strategic attacks model are robust to exploration of numerous potential objections. I highlight several of the more important robustness checks here, although the details and results of all robustness checks are contained in the supplemental appendix. First, the idea that direct attacks drive the finding that guerilla attacks are more provocative than terrorist attacks is potentially troublesome. The potential objection is that guerilla attacks are much more likely than terrorist attacks to involve direct attacks in which group members are physically present at the time of the attack, e.g. attacks via direct fire, rocket attacks, or grenade attacks. Second, it is possible that the set of groups that carry out guerilla attacks is distinct from the set of groups that carry out terrorist attacks. If this is the case, modeling the strategic choice between the two tactics would not make much sense. However, over 30% of groups in the sample employ both guerilla and terrorist tactics. Over 65% of groups in the sample exclusively employ terrorist attacks, while only about 6% of groups exclusively employ guerilla attacks against state security forces. In sum, given that almost a third of groups use a mix of tactics, analysis of a *choice* between terrorist and guerilla tactics for groups is merited. Furthermore, the finding that only 6% of groups exclusively use guerilla tactics suggests that the study of guerilla and insurgent groups in isolation is problematic. Third and relatedly, it is possible that tactical choice is very dependent upon group strength in a manner not captured in the main empirical model. Fourth, I address the possibility that the logic of the model does not apply to (very few) groups involved in negotiations with the government. Finally, I estimate several alternative model specifications, including a linear probability model with country fixed effects, to ensure that the results are not too dependent on the specification reported in table 2. The key results survive all of these robustness checks, which are outlined in detail in the appendix.
Are Attacks Strategic? A Comparison of Models

The results in table 2 provide consistent and compelling evidence that groups strategically choose tactics in a manner that anticipates state response. However, is it really appropriate to assume that terrorist groups plan attacks strategically? While policy-makers and the bulk of scholars argue that groups are strategic, so far I have not directly tested the assumption that attacks are strategic. The obvious way to do this is to use comparative model testing methods to compare the strategic model in table 2 to a non-strategic model of attack severity (Clarke, 2001).

In our case, we can rely on a simple likelihood ratio test, which is a well-known and easy to implement test appropriate for nested models. The model of the group’s choice of tactic in table 2 assumes that the group conditions its choice on how it expects the state to react. However, if the group makes a non-strategic decision we do not need to condition its choice on the expected response of the state. Rather, we can just include all of the same substantive regressors included in the group’s utilities without conditioning their influence on the probability of response or the probability of non-response respectively. This simpler model is nested within the strategic estimator as it is technically the same model with the assumption that the probabilities are constants, e.g., equal to 1. As Clarke (2001, 727–728) notes, two models are nested if the “unrestricted” model can be reduced to the “restricted” model by imposing a set of linear restrictions. The restriction here states that the probability the state responds forcefully is irrelevant to the group’s choice of severity. Comparison of the log-likelihoods for the two models suggest that the strategic model of tactical choice is vastly better. The likelihood ratio statistic is far above any statistical threshold with 18 degrees of freedom (for the 18 additional parameters in the strategic model). This indicates that the strategic model of attack severity is easily better than the non-strategic version.

As an additional test, I compare the predictive power of the strategic model of tactical choice and its non-strategic equivalent. The strategic model correctly predicts 91% of group decisions, which is essentially the same as the performance of the full model shown in table 2. In contrast, the non-strategic model of groups’ tactical choice only correctly predicts 65% of observations. This indicates that allowing for the fact that groups anticipate state response improves the predictive power of the model by 40%. In sum, the strategic model of tactical choice clearly outperforms the simpler non-strategic model.
Conclusion

The idea that violent sub-state groups plan their attacks in anticipation of state responses is ubiquitous among scholars and policy-makers. For example, in a description of Basque Homeland and Freedom (ETA) strategy, Zirakzadeh (2002, 73) notes that group members “reasoned that selective attacks against government bullies would provoke the government into excessive and nondiscriminatory retaliation against all Basque residents.” ETA leaders further reasoned that “droves of residents, angered by the state’s random violence, would demonstrate tumultuously (Zirakzadeh, 2002, 73).” Of course, states also recognize that groups are strategic in their use of violence. The preface of the United States government’s initial National Strategy for Homeland Security bluntly states that “[o]ne fact dominates all homeland security threat assessments: terrorists are strategic actors (Department of Homeland Security, 2002, vii).” Despite the importance of the strategic interactions between groups and states in determining groups’ tactical choice and states’ response to the groups, existing literature has not provided us with empirical evidence that groups strategically plan attacks.

This is the first paper to provide broad and direct empirical evidence that groups strategically plan attacks in anticipation of state response. The analysis in this paper is conducted using data on over five decades of violent attacks and state responses to these attacks in Western European democracies. Western Europe is an ideal region to study how group strategy relates to provocation or avoidance of forceful state response. First, this region of the world experienced a significant amount of sub-state violence relative to other regions. Chalk (1993) notes that Western Europe experienced more violence between the 1960s-1980s than any other region. Comparison of the volume of incidents coded by the Global Terrorism Database (GTD) in Western Europe relative to incidents in the Middle East and North Africa from 1970 to the present corroborates that Europe experienced more violence up until the 1990s.47 Second, Western European states are overwhelmingly democratic, an advantage given extant theory which suggests that provocation is most plausible in democracies (Kydd and Walter, 2006) and that attacks in democracies avoid harsh state response due to constraints on the use of overwhelming force by democratic states (Pape, 2003; Li, 2005). Finally, the groups in Western Europe are predominantly urban groups that

47 START 2012.
face significant disadvantages relative to high capacity states, which makes the findings especially striking. From the standpoint of making credible inferences, the relative homogeneity of Western European democracies in terms of important variables like regime type and state capacity is another advantage.

The evidence presented in this paper show that guerilla attacks are much more likely to be part of a strategy of provocation, while terrorist attacks, which are much more common, are associated with groups’ avoidance of forceful state response. I uncover striking evidence that violent groups choose tactics in a way that quite effectively anticipates how precise a potential forceful state response will be in targeting group members. When anticipated damage to group members from a forceful state response is moderately low, groups are increasingly likely to choose provocative guerilla attacks as the anticipated collateral civilian damage imposed by state forces increases. However, after the group anticipates losing a significant number of members, the propensity to carry out provocative attacks disappears. The findings of this paper suggest the need for further empirical work on the strategic decisions of violent non-state groups. Furthermore, the finding that groups’ choice to target state security forces or civilians is strategic suggests that it is problematic to study terrorist attacks or guerilla attacks in isolation, marshaling empirical evidence for a theoretical point made by Bueno de Mesquita (Forthcoming). This is a significant concern, as much work in terrorism and civil war literatures seeks to explain why some countries experience more violence than others. Given that groups strategically substitute terrorist and guerilla attacks, it is important to account for groups’ tactical choices to understand why some countries might experience more terrorist attacks, but have a significantly fewer guerilla attacks, or vice versa.

The results also suggest that integration of tactical choice and state response is important to understanding why the high capacity states of post-World War II Western Europe experienced such high levels of terrorist violence from domestic groups. Despite the noted advantages of the focus on Europe, I acknowledge that the findings for the developed democracies of Western Europe are likely to differ in important ways from conflicts with quite different contexts. Given the findings in this paper, I would expect states with lower capacity to respond to experience more direct attacks on their own state forces relative to attacks on civilians. Although data that explicitly links individual group attacks to state responses is currently unavailable for other geographic regions or countries, raw data on the distribution of guerilla and terrorist attacks suggests that my expectation
is plausible. While there are around 200% more terrorist attacks than guerilla attacks in Western Europe, the patterns are strikingly different in other less developed and democratic regions. For instance, in the Middle East and North Africa from 1970–1990, there are more guerilla attacks than terrorist attacks.\textsuperscript{48} This pattern is present in other regions such as South Asia as well.\textsuperscript{49} The high volume of terrorist violence in Western Europe by primarily anti-state groups is in a sense a product of state success in precisely responding to guerilla attacks.

\textsuperscript{48}This pattern does not change if we exclude the Intifada years in Israel.
\textsuperscript{49}The source for these other regions is START 2012.
References


<table>
<thead>
<tr>
<th>State Action Given Attack</th>
<th>Group Action Given State Response</th>
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<tbody>
<tr>
<td>Always Employ</td>
<td>$\alpha_i, \alpha_j &gt; \frac{1}{2} + \frac{\alpha}{2\pi}$ $\implies$ Attack with Tactic $i$ if $\alpha_i &lt; \min \left{ \frac{1}{2} + \frac{c_i-k_i}{2\pi}, \alpha_j + \frac{(c_i-k_i)-(c_j-k_j)}{2\pi} \right}$</td>
</tr>
<tr>
<td>Forceful Response</td>
<td>$\implies$ No Attack if $\alpha_i &gt; \frac{1}{2} + \frac{c_i-k_i}{2\pi}, \alpha_j &gt; \frac{1}{2} + \frac{c_i-k_i}{2\pi}$</td>
</tr>
<tr>
<td>Employ Forceful Response</td>
<td>$\alpha_i &gt; \frac{1}{2} + \frac{\alpha}{2\pi} &gt; \alpha_j$ $\implies$ Attack to Provoke if $\alpha_i &lt; \min \left{ \frac{1}{2} + \frac{c_i-k_i}{2\pi}, \frac{1}{2} + \frac{(c_i-k_i)-(c_j-k_j)}{2\pi} \right}$</td>
</tr>
<tr>
<td>Conditional on Tactic $i$</td>
<td>$\implies$ Attack to Avoid if $\alpha_i &gt; \frac{1}{2} + \frac{(c_i-k_i)-(c_j-k_j)}{2\pi}, c_i - k_i &gt; 0$</td>
</tr>
<tr>
<td></td>
<td>$\implies$ No Attack if $\alpha_i &gt; \frac{1}{2} + \frac{c_i-k_i}{2\pi}, 0 &gt; c_i - k_i$</td>
</tr>
<tr>
<td>Never Employ</td>
<td>$\frac{1}{2} + \frac{\alpha}{2\pi} &gt; \alpha_i, \alpha_j$ $\implies$ Attack with Tactic $i$ if $c_i - k_i &gt; \max {0, c_j - k_j}$</td>
</tr>
<tr>
<td>Forceful Response</td>
<td>$\implies$ No Attack if $0 &gt; \max {c_i - k_i, c_j - k_j}$</td>
</tr>
</tbody>
</table>
Figure 2: State Accuracy, Group Attack Payoffs, and Provocation
Figure 3: The Strategic Attacks Game

![Game Diagram]

- No Attack
- Target Civilians
  - ¬ Forceful Response
    - $Z_{13}\gamma_{13}$
    - $0$
  - Forceful Response
    - $Z_{14}\gamma_{14}$
    - $X_{24}\beta_{24}$
- Target State
  - ¬ Forceful Response
    - $Z_{15}\gamma_{15}$
    - $0$
  - Forceful Response
    - $Z_{16}\gamma_{16}$
    - $X_{26}\beta_{26}$
Figure 4: Guerilla Attacks and Damaging Forceful Response: Raw Data
Table 2: Results for Strategic Attacks Game

<table>
<thead>
<tr>
<th>Violent Group (V)</th>
<th>State (S)</th>
</tr>
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<tbody>
<tr>
<td>$U_V(Terror \neg F)$</td>
<td>$U_S(Terror F)$</td>
</tr>
<tr>
<td>$Z_{13\gamma13}$</td>
<td>$X_{24\beta24}$</td>
</tr>
<tr>
<td>$U_V(Terror F)$</td>
<td>$U_S(Guer F)$</td>
</tr>
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<td>$Z_{14\gamma14}$</td>
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<tr>
<td>$Z_{15\gamma15}$</td>
<td></td>
</tr>
<tr>
<td>$U_V(Guer F)$</td>
<td></td>
</tr>
<tr>
<td>$Z_{16\gamma16}$</td>
<td></td>
</tr>
</tbody>
</table>

Constant 3.62** -1.48** -1.92 20.34*
(0.05) (0.18) (13.06) (12.07)

Unknown Group -33.14 1.99** -7.47* -1.66** -3.41**
(25.86) (0.12) (4.54) (0.73) (0.78)

Group Caused 0.38** 3.29
(0.11) (11.45)

Group Caused
Civilian Casualties 3.51** 2.57
(0.49) (3.43)

State Caused 8.67** 4.99** 2.33** 1.86**
(3.81) (1.98) (0.50) (0.53)

Civilian Damage 34.12 9.15 3.66** 8.23**
(37.15) (6.05) (0.84) (0.40)

Group Damage

Territorial Goals -4.11 0.86** 2.42** -0.57 0.78
(10.44) (0.12) (0.55) (0.65) (0.69)

Govt Ideology -33.49** 5.14** -6.29** 0.96 3.63**
(2.96) (0.21) (0.43) (1.45) (1.00)

Time Since Response -0.35** -2.08** -0.01 -0.28
(0.14) (0.55) (0.03) (0.19)

Ln GDP per capita -0.38 -2.56
(1.41) (2.30)

Number of Observations 14203
Group Standard Errors Bootstrapped
Government Standard Errors Clustered by Country
** Indicates Significance at 0.05 Level
* Indicates Significance at 0.10 Level
Figure 5: State Response and Group Tactics
Figure 6: Tactical Choice and State-Caused Civilian Casualties