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### A Basic Model Explaining Terrorist Group Organizational Structure

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## A Basic Model Explaining Terrorist Group Organizational Structure

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*Terrorist groups strive to balance efficiency with their need for security. This article examines the factors that affect a group's choice of organizational structure. I classify 254 groups from the Global Terrorism Database into one of four basic structures: market, all-channel, hub-spoke, or bureaucracy. The results of a multinomial logistic regression reveal that as secret organizations, terrorist groups are not just driven by achieving efficiencies in their organization but rather by protecting against infiltration and threats. Internal factors such as target selection, operational pace, ideology, and stated goals shape a group's structure. External environmental factors such as political rights, civil liberties, polity durability, and state wealth also help shape a group's structure.*

In a famous scene from the film *The Battle of Algiers*, Colonel Mathieu, commander of the French paratroop regiment sent to quell the terror campaign in Algeria, sketches out on a blackboard the organizational structure of the *Front de la Liberation Nationale* (FLN).<sup>1</sup> He describes to his soldiers a classic pyramidal cell structure, where each member only has knowledge of two members: the person that recruited them and the person they themselves recruited. The scene is a potent illustration of the importance of a terrorist group achieving security—or lack thereof—through its organizational structure. Through a campaign of torture and brutal reprisal against FLN attacks, Colonel Mathieu's soldiers are able to identify and destroy the FLN leadership. The success of the French would not have been possible without first identifying the FLN's organizational structure and then systematically dismantling it.

Had the FLN adopted a more decentralized structure, one in which no central leader or council exists, where decisions are delegated to the cells themselves, the French could have used any type of torture they wanted but they still would have had great difficulty in dismantling it. This article focuses on a crucial and often misunderstood aspect of the study of terrorism: organizational structure. The question of what affects organizational

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structure is explored here. The structure of any terrorist group is shaped by the group's need to maintain its security in the face of counterterror (CT) efforts and the drive to organize for greater efficiency.<sup>2</sup> As will be detailed below, these two goals are often in competition with one another.

While there has been some previous research on terrorist group structure, most of it is based on single-case studies.<sup>3</sup> Although highly relevant to practitioners, single and within case studies fail to take advantage of the large sample open-source data that exist. Using the Global Terrorism Database (GTD) as a foundation, I code the organizational structures for the 246 most prolific groups active between 1970 and 2007. These groups are responsible for more than 40,000 attacks worldwide.

Both internal and external factors are examined for their affect on a group's structure. Internal factors are those that arise from a group's motivations and the choices it makes while planning and executing attacks. External factors are the forces acting on the group that are beyond its control; they describe the environment in which the group operates. How a group copes with both sets of factors dictates its ability to survive and prosper. This process, in turn, shapes the way the group itself is organized. As detailed below, both internal and external factors have a real and measurable affect on the character and behavior of the organization.

The article is laid out as follows. First is a brief review of the theory underpinning the coding of organizational structure. The four organizational structures are then introduced, along with the methodology of the study. A first attempt at a model describing the factors that influence the type of structure a terrorist group adopts is presented. Discussion of the results is followed by some concluding remarks.

### **Constraints on Terrorist Groups: Balancing Security and Efficiency**

Like any illegal organization, terrorist groups require secrecy to survive. This places constraints on how the group can communicate and conduct its operations.<sup>4</sup> As one scholar observes, "terrorists are constrained materially by the resources that they have and ideologically by the preferences of their supporters."<sup>5</sup> Another constraint facing a group is the strength of their CT opponent. For example, the more effective the CT effort, the more discerning a terrorist group will have to be in recruiting new members.<sup>6</sup>

Baker and Faulkner examine the organizational structures of illegal networks in industry.<sup>7</sup> They find that for groups operating outside of the law, group structure is driven primarily by the need to maximize concealment (to mitigate risk) at the expense of maximizing efficiency. This finding is supported by organizational theorists who argue that for small groups high information-processing requirements are best met by decentralized organizations while low information-processing, such as simple and routine tasks, are performed more efficiently in centralized structures.<sup>8</sup>

Drake posits that the pressures within a terrorist group vary based on the level of clandestinity they must invoke in order to evade capture.<sup>9</sup> For example, secrecy and concealment is less necessary for groups such as Hezbollah who are able to operate overtly in the southern Bekaa Valley of Lebanon—a relative safe haven.<sup>10</sup> For groups that operate in states where the degree and extent of state surveillance is high—such as the Red Army Faction in West Germany or the Red Brigades in Italy in the 1970s—their members live clandestine, isolated lives.<sup>11</sup> The more clandestine a group is forced to become, the less connection there can be with its passive supporters and the general public. Groups that are pushed to the highest levels of secrecy must, in effect, sacrifice some possible organizational changes that could improve efficiency.

The impact of clandestinity on group members' link with the public is observed by Della Porta's study of the process of radicalization in both Germany and Italy during the 1970s.<sup>12</sup> She finds that radicalization is more widespread when environmental factors such as access to open assembly, access to new recruits and the ability to distribute propaganda, are available. In this way, the path to violence, therefore, may have something to do with the robustness of CT efforts. Della Porta also argues that the more open and transparent a terrorist group, the more short-lived.<sup>13</sup> While it may achieve early success and attention from its openness, in the end, state power will shorten the group's lifespan.

Taking these different views into account, two conclusions emerge. First, terrorist groups face unique challenges distinct from more "normal" organizations. Terrorist groups are different in that they often must place security over efficiency. Second, the clandestine nature of some terrorist groups compared to the more overt nature of others is likely due to the permissive or constraining conditions within the group's home country.

### Developing a Typology of Terrorist Group Structure

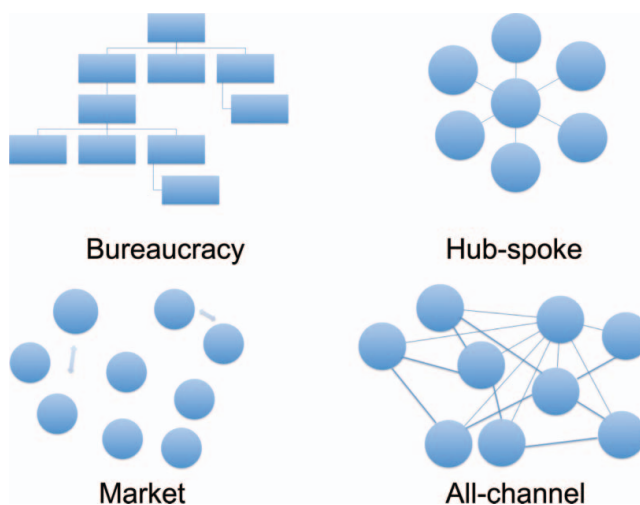
Understanding how violent groups organize themselves is an understudied yet important component of confronting and defeating these groups.<sup>14</sup> The study of legal organizations, especially the study of networks, has been among the most popular topics of study within the past several decades.<sup>15</sup> Early work focuses on the dichotomy between markets and hierarchies.<sup>16</sup> This view was popularized by transaction costs economics which argue that transactions move from markets to hierarchies as knowledge specific to the transaction builds up.<sup>17</sup> Yet between these two poles of organization—one highly ordered and hierarchical, the other with loose, one-off interactions—lie a great deal of organizations not captured by either typology.

To bridge this gap a middle way is proposed, wherein organizations maintain dense interconnections—even with competitors—that "cannot easily be explained by saying that these firms are engaged in market transactions . . . or by suggesting that the [firm] is embedded in the international community."<sup>18</sup> These networks represent a third kind of organization.<sup>19</sup> Networks lack the large span of control and specialization enjoyed by hierarchical groups but enjoy more flexibility. Networks can be further divided into hub-spoke and all-channel (detailed below) each of which possess different characteristics.<sup>20</sup> These groups may lack a clear point of origin for agenda-setting.<sup>21</sup>

Most of the research on organizational structures focuses on licit groups; groups for which efficiency is paramount and for which money, not ideas, are their main motivation.<sup>22</sup> Keck and Sikkink offer a view that fundamentally differs from many of the aforementioned views.<sup>23</sup> Their "transnational advocacy networks" (TANs), unlike firms, are motivated by values, not profit. That TANs are motivated by values make them an attractive theory for application to terrorist groups.<sup>24</sup> However, the most work on the structure of illegal groups comes from RAND Corporation scholars. The current study employs a typology developed by Arquilla and Ronfeldt.<sup>25</sup> They posit that illicit groups face drastically different challenges than their licit counterparts.<sup>26</sup>

### Coding for Organizational Structure

Hierarchical, networked, and market structures all have advantages and disadvantages. This fact is as true of licit organizations such as businesses, nongovernmental organizations, or governments as it is of illicit groups involved in organized crime and terrorism.<sup>27</sup> Figure 1



**Figure 1.** Terrorist group organizational structures. (Color figure available online).

details the four structures used in this article. In decreasing level of centralization they are: bureaucracy, hub-spoke, all-channel, and market.

### ***Bureaucracy***

A bureaucratic structure is the most hierarchical of all the structures. These groups have: “clear departmental boundaries, clean lines of authority, detailed reporting mechanisms, and formal decision making procedures.”<sup>28</sup> The relationship between the agenda-setting leadership and its subordinate units is clearly defined and unidirectional.<sup>29</sup> Child finds that large organizations tend to be more rule-bound and require greater documentation of their efforts.<sup>30</sup> An example of this type of group is Hezbollah; its command structure is dense, elaborate and centrally controlled.<sup>31</sup> Like other large organizations Hezbollah has separate departments, each with its own specialization.

Networks generally lack the large span of control and specialization enjoyed by hierarchical groups but enjoy more flexibility. These networked groups can be further differentiated by their characteristics, each possess different strengths and weaknesses.<sup>32</sup> Overall, networked groups remain smaller and flatter than bureaucracies, yet possess some form of leadership, differentiating a network from a market.

### ***Hub-Spoke***

The hub-spoke structure is like a franchise or a cartel where a set of actors are “tied to a central (but not hierarchical) node or actor, and must go through that node to communicate and coordinate with each other.”<sup>33</sup> These types of groups have a leader and employ functional differentiation but do not have central command and control. Rather, the nodes of this group have more individual autonomy to plan and carry-out attacks. Kenney employs a similar typology in his study comparing narcotics networks and terrorist groups.<sup>34</sup> An example of a hub-spoke network is pre-2001 Al Qaeda.

### ***All-Channel***

This type of network requires “rapid, dense, multidirectional communications to function well and endure.”<sup>35</sup> It is for this reason that all-channel networks require the most multidirectional communication. Arquilla and Ronfeldt posit that the rise of the network form—and in particular, the all-channel network—is tied with the information revolution.<sup>36</sup> Diverse and dispersed actors can now regularly and easily coordinate and take action across great distances where previously this was not possible. All-channel networks do have a leader, but there is little hierarchy, no central control or functional differentiation in these groups. Sageman’s description “small world networks” most closely corresponds to an all-channel structure in the current research.<sup>37</sup> An example of an all-channel network is the Abu Sayyaf Group (ASG). ASG operates in small cells of four or five people. The leadership is loosely coordinated and hydra-headed.

### ***Market***

This term is used for groups with very little organization. Market groups have no discernible leadership, are not centrally controlled and have no functional differentiation.<sup>38</sup> These group types are almost more of a movement than they are a typical organization and membership is essentially open to all; this is the classic leaderless resistance.<sup>39</sup> In this type of group, individual behavior is not dictated by any leader and members lack any real oversight. Because of its highly decentralized nature, a market group is prone to losing sight of the agenda. Furthermore, since these groups lack centralized command, their constituent cells may diverge from the group’s stated goals and may prove to be counterproductive for the cause. While relatively rare, these types of terrorist groups do exist and are characterized by a diverse and decentralized group of individuals sharing little more than common cause and committing acts of violence under the aegis of a particular group. An example of a market structure terrorist group is the Earth Liberation Front (ELF). Under the ELF banner “distributed cells of environmental activists claim acts of sabotage, vandalism, and eco-terrorism.”<sup>40</sup> Table 1 shows a sample of noted terrorist groups and their structures.

## **What Factors Affect Organizational Structure?**

Terrorist groups have agency over their target choices and types of attack for ideological reasons, but they are also constrained by the structure of the counterterrorism environment. Terrorist groups are shaped by the character and capacity of the society and government of the state in which they operate. Groups must therefore successfully cope with the security, communication and environmental challenges they face if they are to succeed.

### ***External Factors***

Gross Domestic Product (GDP) per capita: Since there are no existing time-series databases that assess a state’s counterterror (CT) effectiveness—or even its level of spending, GDP per capita is used as a proxy.<sup>41</sup> States with no previous problem of terrorism will not devote significant resources towards suppressing it. However, using GDP per capita as a lagged measure of counterterror effectiveness overcomes the problem of endogeneity. Should the need arise, states with a high GDP per capita have more resources available to dedicate to counterterror.<sup>42</sup> It is posited that states with low counterterrorism capacity will enable a more rigid, organized terror structure to form because terrorist groups feel less threatened.

**Table 1**  
Sample terrorist group structures

Structure	Notable historical examples*
Market	Action Directe Animal Liberation Front (ALF) Earth Liberation Front (ELF) Real Irish Republican Army (RIRA)
All-Channel	Abu Hafis al-Masri Brigades Al-Qaeda (post 9/11) Kach Muslim Brotherhood Red Army Faction (Baader-Meinhof Group) Weather Underground
Hub-Spoke	Al Qaeda (pre 9/11) Basque Fatherland and Freedom (ETA) Popular Front for the Liberation of Palestine (PFLP) Sendero Luminoso (Shining Path) Zapatista National Liberation Army (EZLN)
Bureaucracy	African National Congress (ANC) Armed Islamic Group (GIA) Hezbollah Irish Republican Army (IRA) Lord's Resistance Army (LRA) Moro Nationali Liberation Front (MILF) Tupamaros

\*These are illustrative examples, not a comprehensive list.

Conversely, states with extensive resources for counterterror policy will lead terrorist groups to adopt more decentralized structures.

H<sub>1</sub>: It is expected that groups operating in a state with a high GDP per capita will be more decentralized in structure. Groups whose home country has a low GDP-per-capita will, conversely, have a bureaucratic structure.

*Freedom House*. This index measures the level of both political rights and civil liberties in a state.<sup>43</sup> It is an important measure of the external constraints put on a terrorist group. The reflexivity of a state's polity is a component not only of the existence of terrorist groups, but also how the group adapts. Some argue that lack of political and civil freedoms are directly linked with the incidence of terrorism.<sup>44</sup>

The literature is unsettled of what affect, if any, citizen rights' and liberties' have on terrorist group organizational structure. On the one hand, when the political and civil rights of a population are diminished, access to decision makers and the ability of citizens to express themselves is reduced. In states classified as "regime not free,"<sup>45</sup> citizens will be more likely to resort to terrorism because they do not have more legitimate access to public debate. With more popular support for dissent, terrorist groups will be inclined to adopt more centralized structures that allow it to organize larger numbers of members.

On the other hand, it should also be noted that a more totalitarian state will be free to use harsher methods when dealing with terrorism.<sup>46</sup> In such a situation, a terrorist group might prefer a more decentralized structure with autonomous cells, which is more resistant to CT pressure. This line of reasoning contradicts the contention of the previous paragraph, and leads to the expectation that terrorist groups will tend to be more decentralized in more autocratic states.<sup>47</sup>

H<sub>2</sub>: Groups with a decentralized structure will be more prevalent in regimes that are free because the greater recruitment potential provides an incentive for terrorist groups to use more centralized organizations that can manage larger memberships.<sup>48</sup>

**Polity durability:** The durability of any polity reflects the level of instability in a state. This variable is a running count of the number of years a polity has held power in a country.<sup>49</sup> The durability of any polity has several implications regarding terrorist group structure. First, any polity—totalitarian, democratic and everything in-between—that has endured for decades is adept at dealing with threats and maintaining power. Second, in states where low durability exists there is an opportunity for change since the ruling polity is relatively new and has therefore wrested power from another polity in recent history. For large political change to occur there must be a high level of support.

H<sub>3</sub>: It is expected that less durable polities will find themselves confronting terrorist groups that are more organized and larger. In less durable polities terrorist groups will not face a strong counterterror threat by the state. Groups will therefore initially adopt more hierarchical structures. By contrast, a group may adopt a more secure structure suited to small membership in more stable states because it knows it is likely facing a capable regime. In more durable polities, therefore, one will find less hierarchically organized groups.

### ***Internal Factors***

While it is certainly true that a group's structure is chosen in part due to external factors acting on the group, forces within the organization also shape its structure. For example, certain targets (such as hard targets) and certain attack types (such as armed assaults) require coordination and a relatively high number of terrorists in order to be successful. Consequently, groups choosing these attack features will only do so if their internal structure permits it; the choices a group makes speaks to the internal forces at work.

***Hard Target Selection.*** A group's target selection will shape the structure it adopts. It can be argued that groups that successfully attack hard targets, defined here as police and military targets, need to possess a more complex set of organizational characteristics.<sup>50</sup> Groups which do not attack hard targets do so for one of two reasons: either their mission does not require attacking hard targets or they do not possess the aptitude to attack them. If a group has a centralized structure then it has the capacity to pull off hard target attacks. But does the group attack hard targets because it can? Or does it want to attack them and therefore develops a structure capable of these attacks? By taking the target choices of the first year only, this variable mitigates the endogeneity problem.

H<sub>4</sub>: Terrorist groups planning on initially attacking hard targets are more likely to adopt more centralized structures.

*Group Goals.* The variation in the goals of terrorist groups vary widely. This variation may affect the chosen structure of the group. Some seek broad goals such as complete social revolution, seeking a new empire, or regime change; others have far more narrow goals such as preserving the status quo, forcing a policy change or securing territorial change.<sup>51</sup> It is argued here that the more esoteric and far-fetched the goal, the more loosely organized the group since there is no operational imperative that selects a more centralized structure. In other words, groups with broad goals simply wish to express their grievances in the most forceful way. Conversely, groups that have narrow goals, such as maintaining the status quo or seeking territorial change, are much more likely to believe that they will achieve their goals and therefore will adopt a more hierarchical structure in anticipation of achieving their goal. In a study about the end of terrorism, Jones and Libicki, conclude that less than 10 percent of all groups ever achieve victory.<sup>52</sup> However, it can be posited that if the goal is narrow, it is more achievable than broad, undefined goals.

H<sub>5</sub>: Since more hierarchical groups have a greater organizational capacity, it is expected that groups with narrow goals will prefer hierarchical structures.

*Terrorist Group Type.* Linked to the goal of an organization is the type of terrorist group. Groups fall into one of four categories: left wing, right wing, religious, and nationalist. While a relatively simplistic categorization, it is informative about the particular features of a group. For example, left-wing groups in Europe in the 1960s and 1970s had a particular character and some common tactics.<sup>53</sup> Nationalist struggles, owing to their large well of potential support, tend to represent the longest lasting groups.<sup>54</sup> Religiously motivated groups are expected to take a structure similar to nationalist groups since they too have a built-in deep pool of potential support.<sup>55</sup>

H<sub>6</sub>: It is expected that nationalist and religious groups will adopt hierarchical structures.

Table 2 shows a summary of all variables used in this study as well as their original source. These variables are all integrated into the GTD dataset. For this article, the GTD data, normally incident-based, is condensed to summarize all incidents perpetrated by one group between 1970 and 2007.<sup>56</sup>

## Global Terrorism Database and Coding Methodology

The GTD is the basis of the dataset used here. With more than 80,000 incidents, it is the largest open-source, incident-based dataset and includes both international and domestic terrorism events. Incidents where the perpetrator is coded as “unknown” are eliminated from the study.<sup>57</sup> For incidents where the perpetrator of the attack was identified, a threshold of ten or more attacks was established. Groups above this threshold demonstrate a particular level of organizational resilience much greater than groups with only a few attacks. This selection criteria left approximately 350 groups remaining. Of these groups, through extensive research and verifying, coding discrepancies were corrected. These errors—such as multiple spellings of the same group or the same group given two names as well as missing information further reduced the number of groups in the sample size to 246.<sup>58</sup> The coding for organizational structure was done by examining government databases on terrorism, news archives, academic databases, court transcripts, group websites and the Terrorist Organization Profile (TOP) dataset maintained by the University of Maryland.<sup>59</sup>

These remaining groups were then coded for several structural characteristics as detailed in Table 3: leadership type, command and control, and functional differentiation. For

**Table 2**  
Variables, operationalization, and sources

Variable	Operationalization	Source
Structures*	Each group is coded based on leadership, command and control and functional differentiation of group	Coded for the current study by the author.
State Sponsor	Dummy variable coded if group enjoys sponsorship (financial, capability, weapons or safe-haven) from a state	Ibid.
GDP per capita	Chain series data for year terrorist group is believed to have begun	Alan Heston et. al. <i>Penn World Table Version 6.3</i> (Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, August 2009).
Freedom House	Average of political rights ('PR') and civil liberties ('CL') indices for terrorist group home country in the year they began	Freedom House. 2009. <i>Annual Freedom in the World 2009</i> , <a href="http://www.freedomhouse.org/report/freedom-world/freedom-world-2009">http://www.freedomhouse.org/report/freedom-world/freedom-world-2009</a> (accessed July 15, 2011).
Polity Durability	Number of years since last change in polity, scored from regime's inception	Monty Marshall et. al. <i>Polity IV Project: Political Regime Characteristics and Transitions, 1800-2010</i> , 30 (2010).
Percent Attacks on Hard Targets	Attacks on police and military targets in group's first year as a % of total attacks	National Consortium for the Study of Terrorism and Responses to Terrorism (START). 2010. <i>Global Terrorism Database</i> , <a href="http://www.start.umd.edu/gtd">http://www.start.umd.edu/gtd</a> (accessed June 1, 2010).
1st Year Attacks	Number of attacks in first year of group activity	Ibid.
Seeks Narrow Goals	Coded for type of the group	Seth G. Jones and Martin Libicki. 2008. <i>How Terrorist Groups End</i> (Santa Monica: RAND Corporation).
Is Nationalist	Coded for primary motivation type of group	Ibid.
Is Religious	Ibid.	Ibid.

\*Indicates dependent variable.

**Table 3**  
Coding for structure

Structure	Leadership?	Functional differentiation?	Central command?
Market	X	X	X
All-Channel	✓	X	X
Hub-Spoke	✓	✓	X
Bureaucracy	✓	✓	✓

a group to be coded as having “leadership” it is required that it possess a clear leader or a leadership structure or council. Where there was no evidence for a leader, the group was coded as “no leader”; if there was no available information, it was coded as missing. For centralized command and control, evidence is required to demonstrate that the group coordinates its actions from a central executive. For a group to be coded as having functional differentiation it is required to have at least one clearly separate department or cell that is dedicated to a specialized function such as a political wing, a bombmaking center or a communications department. Four clear patterns in the results emerged from this coding and these patterns make up the four structures used in the current study.

### Regression Analysis

The dependent variable, structure, takes four forms; in order of least to most formally organized they are: market, all-channel, hub–spoke, and bureaucratic. The goal of this estimation is to determine whether a relationship exists between structure and one or more of the independent variables detailed above. To assess the links between structure and terrorist groups, a multinomial logistic regression is performed.<sup>60</sup> The results are described in Tables 4 and 5. There are nine variables correlated with terrorist group structure; only six of these are statistically significant.<sup>61</sup> For the period between 1970 and 2007, 246 groups are examined.

The variables: GDP per capita, Freedom House, polity durability, and group ideology are all measured in the first year of the group’s existence. Selecting values from the first year of a group’s existence establishes a baseline of the variables that may influence structure; it also helps to mitigate the question of endogeneity.<sup>62</sup>

Testing for the Independence of Irrelevant Alternatives (IIA) assumption was done using the “mlogtest” function in Stata.<sup>63</sup> Results of the Small-Hsiao test indicates that the main model is congruent with the IIA assumption. The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity revealed a low Chi-squared value of 0.12, suggesting no effect on the results. Both models also use robust standard errors; when the robust function is omitted, there is no change. Testing for multicollinearity was also negative; the variance inflation factors were not higher than 1.62. Pairwise correlation was also performed and it too was negative. Some variable pairs have traditionally been seen as highly correlated, especially measures such as Freedom House and political durability. In this study the pairwise correlation for these measures is 0.5284, which is perhaps lower than what is found in other studies due to the nature of the sample used here, which is restricted to cases where terrorist activity has been present. The highest pairwise correlation, between regime durability and GDP per capita (chain series), is 0.5428. Table 5 presents the descriptive statistics for the base model. Outliers were found in the percentage of attacks on hard targets

**Table 4**  
Multinomial logit estimates for determinants of terrorist group organizational structure

DV: Organizational structure (comparator is bureaucratic (4))		
Term	Complete	Base
<b>Market Structure (1)</b>		
GDP per Capita	1.1741*** (0.0538)	1.1879*** (0.0452)
Freedom House	0.6564*** (0.0901)	0.5342*** (0.0592)
Polity Durability	1.0223*** (0.0070)	1.0200*** (0.0068)
Is Nationalist	0.3818+ (0.1923)	0.4391+ (0.2034)
Is Religious	1.0179 (1.1454)	0.9097 (0.8701)
% Attacks on Hard Targets	0.7154* (0.1191)	
1st Year Attacks	1.0043 (0.0074)	
Seeks Narrow Goals	0.3182* (0.1495)	
State Sponsor	0.1327** (0.0952)	
<b>All-Channel Structure (2)</b>		
GDP per Capita	1.0758+ (0.0427)	1.0868* (0.0385)
Freedom House	0.7314** (0.0847)	0.6662*** (0.0664)
Polity Durability	1.0240*** (0.0068)	1.0245*** (0.0068)
Is Nationalist	0.4453+ (0.1891)	0.4876+ (0.1999)
Is Religious	6.0800** (3.9265)	5.7153*** (3.4411)
% Attacks on Hard Targets	1.0347 (0.0215)	
1st Year Attacks	1.0347 (0.0067)	
Seeks Narrow Goals	0.4463* (0.1769)	
State Sponsor	0.5996 (0.2459)	
<b>Hub-Spoke Structure (3)</b>		
GDP per Capita	1.0662 (0.0455)	1.0808* (0.0413)
Freedom House	0.7251* (0.0974)	0.6317*** (0.0713)
Polity Durability	1.0089 (0.0080)	1.0087 (0.0079)
Is Nationalist	1.1241 (0.4971)	1.2988 (0.5342)
Is Religious	8.6673*** (6.0045)	6.8069*** (4.3353)
% Attacks on Hard Targets	0.9511* (0.0713)	
1st Year Attacks	0.9980 (0.0713)	
Seeks Narrow Goals	0.5412 (0.2291)	
State Sponsor	0.6827 (0.3034)	
N	245	245
Pseudo R <sup>2</sup>	0.1612	0.1303

Robust standard errors clustered on country in parentheses.

+ $p < .1$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .005$ .

and number of attacks during the first year. However, when they were removed there was no change to the results and they were subsequently left in.

## Results

### *External Variables*

As shown in Table 4, when GDP per capita increases, market groups become 1.17 times more likely than bureaucratic groups, holding all other variables constant. The higher the

**Table 5**  
Descriptive statistics

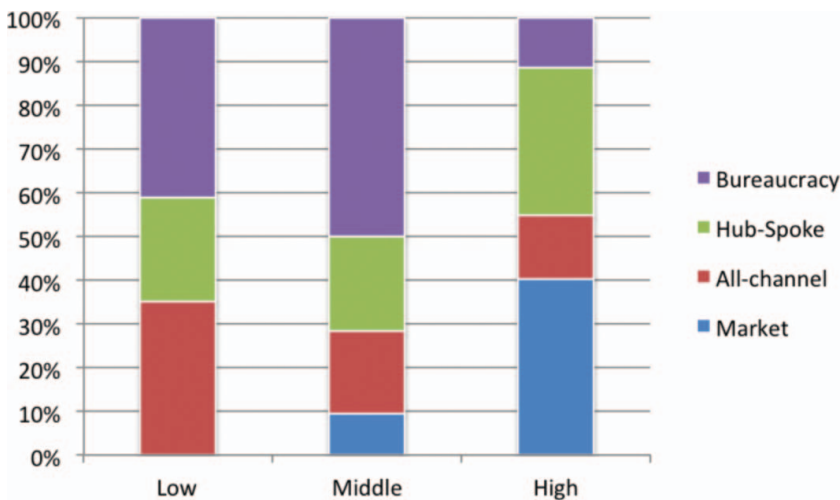
Variable	# Obs.	Mean	Std. dev.	Min	Max
Structure*	246	2.82	1.133476	1	4
GDP Per Capita	249	7675.463	7031.789	306.44	31109.3
Regime Not Free	249	0.157	0.364	0	1
Polity Durability	249	30.193	44.0313	0	183
Freedom House	248	3.831	0.999	1	5
% Attacks on Hard Targets	249	0.959	6.663	0	83.333
1st Year Attacks	249	9.221	21.976	1	207
Seeks Narrow Goals	249	0.329	0.471	0	1
Is Nationalist	249	0.386	0.488	0	1
Is Religious	249	0.145	0.352	0	1

\*Denotes dependent variable.

income of a country, the more likely a terrorist group will be loosely organized.<sup>64</sup> In other words, in rich countries, terrorist groups are more likely to have either a market or one of the two network structures. By extension, one would therefore expect to find bureaucratically structured groups in those countries that have a lower income, holding all other variables equal.<sup>65</sup>

If lagged GDP per capita is taken as a reasonable proxy for state counterterrorism effectiveness, this result suggests that rich countries have more resources available to deal with a terrorist campaign. This counterterror capability results in decentralized groups being found mainly in rich countries. This hypothesis is supported by the simple frequency graph (shown in Figure 2) comparing the terrorist group structure distribution for low-, middle-, and high-income states.<sup>66</sup>

Greater CT resources have the affect of disrupting any existing hierarchically organized groups. More decentralized groups, however, are more difficult to disrupt. In the face of



**Figure 2.** Frequency of organizational structure by country wealth. (Color figure available online).

strong counterterrorist efforts, it is mostly loosely organized groups that are able to survive. It is possible that decentralized groups are best adapted to a strong CT environment because there are fewer targets, communication is sparse and leadership interdiction is less likely to have an effect than with a centralized group; in other words, none of the advantages a modern, well-equipped CT apparatus can be used to good effect.

Conversely, in low-income countries, the capacity for fighting terrorism is low. Hierarchical groups—an organizational type more efficient but at the expense of security, prosper in poor countries. That the relative risk ratio (RRR) of GDP per capita for all-channel nor for hub–spoke structures are not significant suggests that a country’s wealth (by proxy, its CT capability) has less impact over networked groups. It also suggests that there may be a pattern to the set of factors that affect the formation of a market structure that differs from network structures. These patterns are discussed further below. Finally this result also suggests that in terms of counterterror effectiveness, as measured by GDP per capita, there are high income states, and then there are all other states.

As Table 4 shows, for every one point increase in Freedom House, the relative risk for market, all-channel, and hub–spoke structures—when compared to bureaucratic groups—is expected to decline, by a factor of 0.65, 0.73, and 0.72, respectively, holding all other variables constant.<sup>67</sup> The results suggest that, compared to highly centralized bureaucratic groups, all other structures are more likely to be found in free countries. The converse is also true. Bureaucratic groups are more likely to be found in states that are not free. Since, more often than not, political and civil rights are respected only in more wealthy, more stable democratic countries, this finding gives credence to the emerging narrative that decentralized groups are more likely to be found in rich, democratic countries.<sup>68</sup>

For every one year increase in polity durability, the relative risk of either market or all-channel structures, compared to bureaucracies, are expected to increase, both by factors of 1.02, holding all other variables constant. This finding suggests, for every year a polity gets older, the more likely it is that the group will be either market or all channel, as compared to bureaucratic. This result confirms the hypothesis that the more durable a polity, and therefore more entrenched, the more constraints it will put on terrorist group structure. It also confirms the more general hypothesis that terrorist groups are more likely to adopt a decentralized structure in the face of more capable government.

The relative risk for hub–spoke structures, compared to bureaucratic structures, was not statistically significant. It was expected that the more durable the state the more likely it would be to see market and all-channel structures. The base model confirms this hypothesis. That the RRR for hub–spoke structures is also positive (but not significant) may suggest that as a polity becomes unstable, groups adopt a centralized structure.<sup>69</sup>

### *Internal Variables*

For every 1 percent increase of the percentage of attacks on hard targets in the first year the incidence of market structures are expected to decline by a factor of 0.72, holding all other variables constant. This result implies that groups in their first year of operation intent on attacking hardened targets such as police and military installations would need to choose a more complex structure in order to be successful. This is consistent with the hypothesis that loosely organized groups will be less capable, or willing, to attack hard targets.

It is important to emphasize that this equation uses the proportion of hard attacks in a group’s early activities as an indicator of the type of targeting it would prefer to undertake. The inherent difficulties in attacking a target that is prepared for such an attack creates a disincentive for groups to adopt a market structure as their form of organization. Holding

constant the other conditions used in this model as factors affecting the choice of structure, a group that initially plans to attack hard targets will be more likely to choose a more centralized, rather than a market, structure.<sup>70</sup>

For groups seeking narrow goals, compared to bureaucratic groups, both market and all-channel are expected to decline by factors of 0.31 and 0.44, respectively, holding all other variables constant. This result suggests that groups with narrow goals will tend to be more hierarchically organized. These results also support the claim in the literature that groups with narrow, achievable goals will be more likely to have a hierarchical structure because the group expects to achieve their goal.<sup>71</sup> Groups with broad, and therefore more unreasonable goals, are far more likely to take on a decentralized structure and use violence more indiscriminately since their constituency is small and not likely to increase regardless of what they do.<sup>72</sup> The estimated coefficient for the variable first year attacks was not found to be statistically significant for any structures.

For the variable is religious, compared to left- and right-wing ideological groups,<sup>73</sup> the relative risk for all-channel and hub-spoke structures would be expected to increase by a factor of 6.1 or 8.7, respectively, holding all other factors constant. Compared to nationalism, all-channel and hub-spoke structures are 6.1 and 8.7 times more likely to be motivated by religion. This result is unexpected. It was posited that religious groups would take a similar structure to nationalist groups since they both have a large natural pool of supporters to draw from.

One potential explanation for this variance is that ethno-nationalist support may be more geographically centered while religious support may be more global. Moreover, religious groups may have a built-in hierarchy corresponding to the theological structure. Maintaining an organization that is spread all over the world is inherently difficult and risky, all the more so if it is run centrally. Global groups must be more reliant on electronic communication than local groups which represents a security concern. This may help to explain these results. Nationalist groups, by their nature, seek territorial change; a relatively narrow and therefore more achievable goal. Religious groups, on the other hand, can have a myriad of different goals, many of which are very broad and therefore unlikely.<sup>74</sup>

In a robust finding, as detailed in Table 4, for the variable is nationalist, the relative risk of market and all-channel structures, compared to bureaucracies is expected to decline by factors of 0.38 and 0.45, respectively. Compared to the base case of bureaucracies, decentralized structures are less likely to be motivated by nationalism. Moreover, while not a statistically significant result, hub-spoke structures are positively associated with nationalist groups. This result shows a clear progression, from decentralized to centralized; that nationalist groups are far more likely to exist as bureaucracies than market structures.

For the variable state sponsorship the results are rather stark. For groups that are state sponsored, the relative risk for market, all-channel and hub-spoke groups, when compared to bureaucratic groups, are expected to decline by factors of 0.13, 0.59, and 0.69, respectively, holding all other variables constant. This result suggests a clear link between bureaucratic groups and groups that enjoy state sponsorship. In an ordered probit regression (not shown here) the estimated coefficient for state sponsorship was also statistically significant with a large  $z$ -value. This result is also consistent with the hypothesis that groups with state sponsors tend to be hierarchically structured.<sup>75</sup>

## Discussion

A clear story emerges from the above results. Rich, free, durable, democratic states seem to push terrorist groups to adopt a decentralized structure. By contrast, terrorist groups in

poor, not free, unstable, autocratic states tend to be centralized. Groups in their first year that lack the expertise, and perhaps the will, to attack hard targets and are more likely to be decentralized. Those groups that possess the ability to keep a high operational pace going are more likely to have a centralized structure, even in their first year of existence.

The story continues when examining group type and goals. Decentralized groups are more likely to be religious, left wing or right wing and are more likely to have broad goals such as social revolution. Bureaucratic groups are highly likely to be nationalist groups with narrow goals such as territorial change. There are other conclusions beyond those concerning organizational type. First, is the unexpected result with respect to religious groups.

It was posited that religious groups, due to their large potential number of supporters, would organize themselves in a similar manner to nationalist groups. The results, however, do not confirm this hypothesis. Nationalist groups, true to form, are most often bureaucratically organized. Religious groups are more likely to be one of the two networked forms of organization—all-channel and hub-spoke. On the surface, this result could be attributed to the fact that nationalist groups are more likely to have a strong geographic center. While diaspora populations are often important in supporting the nationalist cause there is, more often than not, a geographic center for support. This localized support is not necessarily enjoyed by religious groups. So while a religious group may have a large natural pool of support, it may not have a geographic center. This lack of a center puts religious groups at a disadvantage, in some respects, compared to nationalist groups.<sup>76</sup> Without a geographic center, a religious group may need to operate across long distances—a situation where security concerns arise. Communication is affected. Electronic communication—the modern answer for narrowing distances—is often monitored thus limiting the ability to control the group centrally. In this case, it is better for a group to operate as a decentralized network where local commanders are more free to make decisions and plan attacks.

The unexpected result involving religious groups requires further probing. Upon closer examination, those religious groups that have a bureaucratic structure all possess one or more of the following characteristics: a nationalist element, participation in state politics, or operating in a weak or failed state.<sup>77</sup> These characteristics embody what is expected of nationalist groups. Indeed, simply characterizing a group as either nationalist or religious on occasion can prove to be difficult. For certain groups one must ask: what difference, if any, is there between nationalist and religious motivations? This is a coding limitation. In this article I employ Jones and Libicki's methodology, which assesses the group's main motivation; for some groups this "either-or" choice is too limiting.<sup>78</sup> While these results do highlight the general trend that the more nationalist the group the more hierarchically organized it will be, more fine-grained coding for motivation is an area of future research.<sup>79</sup>

Another possible explanation for the unexpected result of religious group structure comes down to the size of the group. Each of the bureaucratically structured religious groups had, at their peak size, greater than 1,000 members. Generally speaking, the larger the group, the more hierarchical the structure. This finding is consistent with Jones and Libicki's findings that peak size is an important variable.<sup>80</sup> There is one common element between all of the nationalist-religious groups listed above: there is only one constituency, nationalism and religious are used interchangeably as a way to motivate support.

The second surprising conclusion is that states with higher measures of democracy push groups to adopt a smaller size; in democratic states terrorist groups do not, however, become less of a threat. Promoting democracy has long been seen, from a policy perspective, to lead to peace and stability; the current study finds no evidence to reinforce the proposition that an increase in democratic values prevents terror. Rather, measurements of state capacity—and

possibly CT effectiveness—are more accurate predictors. As a simple illustration to the lack of connection between democracy and terror, a count of active terrorist groups in democracies yields 159 while groups active in autocracies number only 87.<sup>81</sup>

This finding is supported by the results of polity durability. As described in Table 4, for every one year increase in polity durability, the relative risk of either market or all-channel—the two most decentralized groups, compared to bureaucratic groups—is expected to increase. This result supports the hypothesis that it is in fact polity effectiveness, not polity type, that is a better predictor of terrorist group structure. Failed or unstable states cannot provide adequate policing and intelligence capability to monitor and prevent the activities of terrorist groups.<sup>82</sup>

Finally, there is evidence of a clear distinction between the network structures: all-channel and hub-spoke. The main model uses a multinomial logit, and thereby assumes that there is no logical ordering of the four structure-types. However, given the discrete variability between the two networked groups as well as the progressive variance of certain variables from decentralized to centralized structures, it can be concluded that not only are there two separate network structures, but that they can, to a large degree, be ordered.<sup>83</sup>

## Conclusion

While basic, this work represents a first attempt at developing a model for explaining the internal and external dynamics affecting terrorist organizational structure. As secret organizations, terrorist groups are not only driven by efficiency, they must also protect themselves from infiltration and threats.

Externally, the results suggest that the CT environment shapes the structure of groups. The more political rights and civil liberties, the more decentralized the organization. A similar relationship is observed in terms of GDP per capita (used here as a proxy for CT effectiveness) as well as polity durability. In some ways GDP per capita as a proxy for CT effectiveness is a simple and intuitive measurement tool; in others, it is rather crude. Nevertheless, I found that GDP per capita to be adequate as a measurement for CT effectiveness in the absence of other methods of comparison. Ideally there would be a measure of CT effectiveness and/or capacity that would allow inter-state (better yet, intra-state) comparison. At present such a measure does not exist. This is an area for future research.

In this article I identified some of the internal forces with the group that shapes the structure it adopts. These internal forces shape the group in complex ways. Groups that select hard targets in their first year are more likely to be centralized. By contrast, the frequency of attacks in a group's first year does not seem to have any affect on the type of structure a group adopts. Achieving a better understanding of these results requires pushing the analysis of a group's behavior beyond simplistic measures of output. Future work will examine more nuanced terrorist group output such as attack type, target type, weapon selection, and the complexity of attack.

This article tried to establish the importance of terrorist group structure, applied four organizational categories to a large number of terrorist groups and to describe the factors that shape the type of structure a group adopts. The policy implications of a model that describes the type of group most likely to be found in a given environment is both obvious and important.

In states with low CT capacity (measured here as low GDP per capita) hierarchical terrorist groups form. These groups are able to enjoy the efficiencies of a bureaucracy without suffering the security disadvantages that come with this structure. States with a high

CT capacity (those with a high GDP per capita) are much more likely to face decentralized groups. These groups, aware of the huge imbalance, have adopted an organizational structure best suited to this environment. Terrorist groups are shaped by: CT effectiveness, polity durability, selection of hard target attacks, group goals and group motivation, among others. This list is by no mean exhaustive—other factors exist that must be addressed in future research.

## Notes

1. *The Battle of Algiers*, DVD, directed by Gillo Pontecorvo (1967; New York: Criterion Collection).

2. Carlo Morselli et al., “The Efficiency/Security Trade-Off in Criminal Networks,” *Social Networks* 29 (2007), pp. 147–153.

3. Peter Neumann et al., “Locating Al Qaeda’s Center of Gravity: The Role of Middle Managers,” *Studies in Conflict and Terrorism* 34(9) (2011), pp. 825–842; Magnus Ranstorp, “Hizbollah’s Command Leadership: Its Structure, Decision-making and Relationship with Iranian Clergy and Institution,” *Terrorism and Political Violence* 6(3) (1994), pp. 303–339.

4. Simmel argues that for secret groups where risk exists—such as terrorist groups—the abiding interest is on trust, not efficiency. The higher the risk to a group’s members, the more valued trust becomes. See Georg Simmel, “The Sociology of Secrecy and of Secret Societies,” *American Journal of Sociology* 11(4) (1906), pp. 441–498; Bonnie Erickson, “Secret Societies and Social Structure,” *Social Forces* 60(1) (1981), pp. 88–210.

5. Luis De la Calle and Ignacio Sánchez-Cuenca, “The Production of Terrorist Violence: Analyzing Target Selection Within the IRA and ETA,” *Centro de Estudios Avanzados en Ciencias Sociales, Instituto Juan March de Estudios e Investigaciones* (2006), p. 1.

6. Erickson, “Secret Societies and Social Structure.”

7. Wayne Baker and Robert Faulkner, “The Social Organization of Conspiracy: Illegal Networks in the Heavy Electrical Equipment Industry,” *American Sociological Review* 58(6) (1993), pp. 837–860.

8. Unlike the work by Coase, Powell, and others, Baker and Faulkner’s work applies only to small groups. See *ibid*; Ronald H. Coase, “The Nature of the Firm,” *Economica* (1937), pp. 386–405; Erving Goffman, *Strategic Interaction* (Philadelphia: University of Pennsylvania Press, 1969); Walter W. Powell, “Hybrid Organizational Arrangements: New Form or Transitional Development,” *California Management Review* 30(1) (1987), pp. 67–87; Susan P. Shapiro, “The Social Control of Impersonal Trust,” *The American Journal of Sociology* 93(3) (1987), pp. 623–658.

9. C. J. M. Drake, *Terrorists’ Target Selection* (London: Palgrave Macmillan, 1998).

10. *Ibid*.

11. *Ibid*; Donatella Della Porta, *Social Movements, Political Violence, and the State* (Cambridge: Cambridge University Press, 1995), p. 197.

12. *Ibid*.

13. *Ibid*.

14. Notable exceptions include: Martha Crenshaw, “How Terrorism Ends,” in Jon Alterman, ed., *How Terrorism Ends* (Washington, DC: United States Institute for Peace, 1999), p. 8; Martha Crenshaw, “How Terrorism Declines,” *Terrorism and Political Violence* 3(1) (1991), pp. 69–87; Seth G. Jones and Martin C. Libicki, *How Terrorist Groups End: Lessons for Countering Al Qa’ida* (Santa Monica, CA: RAND Corporation, 2008); Audrey Kurth Cronin, “How Al-Qaida Ends: The Decline and Demise of Terrorist Groups,” *International Security* 31(1) (2006), pp. 7–48; Audrey Kurth Cronin, *How Terrorism Ends: Understanding the Decline and Demise of Terrorist Campaigns* (Princeton, NJ: Princeton University Press, 2009).

15. See Victor Asal et al., “Terrorism as Transnational Advocacy: An Organizational and Tactical Examination,” *Studies in Conflict & Terrorism* 30(1) (2007), pp. 15–39; Aaron Mannes, “Testing the Snake Head Strategy: Does Killing or Capturing its Leaders Reduce a Terrorist Group’s activity?,” *The Journal of International Policy Solutions* 9 (Spring 2008), pp. 40–49; Jorg Raab and

Brinton Milward, "Dark Networks as Problems," *Journal of Public Administration Research and Theory* 13(4) (2003), pp. 413–439.

16. Coase, "The Nature of the Firm."

17. John Child, "Organizational Structure, Environment and Performance: The Role of Strategic Choice," *Sociology* 6(1) (1972), p. 1; Mark Granovetter, "The Strength of Weak Ties," *American Journal of Sociology* 78(6) (1973), pp. 1360–1380; Walter W. Powell, "Neither Market Nor Hierarchy: Network Forms of Organization," *Research in Organizational Behavior* 12 (1990), p. 297; Oliver E. Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications: A Study in the Economics of Internal Organization* (New York: Free Press, 1975).

18. *Ibid.*, p. 303.

19. Geradine DeSanctis and Janet Fulk, *Shaping Organization Form: Communication, Connection, and Community* (London: Sage, 1999), p. 498; Nittin Nohria and Robert Eccles, *Networks and Organizations: Structure, Form, and Action* (Boston: Harvard, 1992).

20. Valdis Krebs, "Mapping Networks of Terrorist Cells," *Connections* 24(3) (2002), pp. 43–52.

21. Lindsay Heger et al., "Organizing for Resistance: How Group Structure Impacts the Character of Violence" (Paper presented at the 2008 Annual Meeting of the International Study Association.)

22. Victor Asal and R. Karl Rethemeyer ("The Nature of the Beast: Organizational Structures and the Lethality of Terrorist Attacks," *The Journal of Politics* 70(2) (2008), pp. 437–449) have identified the fact that terrorist groups do not fit in with most existing models and instead propose using Keck and Sikkink's transnational advocacy network theory for the study of terrorist groups.

23. Margaret E. Keck and Kathryn Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics* (New York: Cornell Press, 1998).

24. Asal et al., "Terrorism and Transnational Advocacy." This is a promising avenue of exploration but one better suited to a more narrow remit of investigation.

25. John Arquilla and David Ronfeldt, *Networks and Netwars: The Future of Terror, Crime, and Militancy* (Santa Monica, CA: RAND Corporation, 2001).

26. Most of the research on organizational structure focuses on licit groups; groups that seek efficiency.

27. Lyndall Urwick, "The Manager's Span of Control," *Bulletin of the Taylor Society* 7(2) (1922, pp. 39–47).

28. Powell, "Neither Market Nor Hierarchy," p. 303.

29. Heger et al., "Organizing for Resistance."

30. James Child, "Organizational Structure, Environment and Performance: The Role of Strategic Choice," *Sociology* 6(1) (1972), p. 1.

31. Ranstorp, "Hizbollah's Command Leadership."

32. Krebs, "Mapping Networks of Terrorist Cells."

33. John Arquilla and David Ronfeldt, *Networks and Netwars: The Future of Terror, Crime, and Militancy* (Santa Monica, CA: RAND Corporation, 2001).

34. Michael Kenney, "From Pablo to Osama: Counter-Terrorism Lessons From the War on Drugs," *Survival* 45(3) (2003), pp. 187–206; Michael Kenney, *From Pablo to Osama: Trafficking and Terrorist Networks, Government Bureaucracies, and Competitive Adaptation* (State College: Pennsylvania State University Press, 2007).

35. John Arquilla and David Ronfeldt, *The Advent of Netwar* (Santa Monica, CA: RAND Corporation, 1996), p. 287.

36. Arquilla and Ronfeldt, *Networks and Netwar*.

37. Marc Sageman, *Understanding Terror Networks* (Philadelphia: University of Pennsylvania Press, 2004), p. 164.

38. Walter Powell, "Neither Market Nor Hierarchy"; Williamson, *Markets and Hierarchies*.

39. Louis Beam, "Leaderless Resistance," *The Seditonist*, 12 (1992). Available at <http://www.louisbeam.com/leaderless.htm> (accessed 28 May 2008).

40. Jane's World Insurgency and Terrorism, "Earth Liberation Front." Available at <http://www.janes.com/products/janes/security/terrorism-insurgency-intelligence-centre/> (accessed 24 March 2011).

41. This is an area for potential future work. At present it remains difficult, or even impossible, to accurately compare counterterrorism capacity between states. Data exists for most states measuring percentage of GDP devoted to military spending but this is simply too broad. Some, such as Piazza, have used a repression capacity index that uses the total number of armed forces multiplied by the total military budget divided by the population of the state. This measure, of course, leaves out the crucial counterterror components of intelligence and policing. In addition, the resources actually devoted to counterterrorism will reflect the absence or presence of terrorist activity, creating a problem of endogeneity. See James Piazza, "Do Democracy and Free Markets Protect Us from Terrorism?" *International Politics* 45(1) (2008), pp. 72–91.

42. The data for this variable comes from the PENN World Table. Alan Heston et al., *Penn World Table Version 6.3* (Philadelphia: Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, 2009).

43. Both civil liberties and political rights are measured on a scale of 1 to 7. The lower the number, the higher the civil liberties and political rights. This score is averaged for the Freedom House index.

44. James Walsh and James Piazza, "Why Respecting Physical Integrity Rights Reduces Terrorism," *Comparative Political Studies* 43(5) (2010), pp. 551–577.

45. A Freedom House classification when the combined mean of both political rights and civil liberties is between 5.5 and 7.

46. Alberto Abadie, "Poverty, Political Freedom, and the Roots of Terrorism," *The American Economic Review* 96(2) (2006), pp. 50–56.

47. Freedom House data is used here because Polity IV reflects periods of interregnum or transition in a state in an abrupt manner than can distort time-series results; Freedom House data is less prone to shocks.

48. Moreover, competition from alternative licit groups will be much higher. While the hardliners may still prefer violence over peaceful protest, a majority of the population will be more moderate and will prefer to support more peaceful groups.

49. Monty Marshall et al., *Polity IV Project: Political Regime Characteristics and Transitions, 1800–2010*, 30, (2010).

50. This variable is measured as a percentage of attacks on hard targets in a group's first year.

51. Jones and Libicki, *How Terrorist Groups End*, 19.

52. *Ibid.*

53. Rapoport calls this the "New Left" wave of terror. David C. Rapoport, "The Four Waves of Modern Terrorism," in Audrey Kurth Cronin and James M. Ludes, ed., *Attacking Terrorism: Elements of a Grand Strategy* (Washington, DC: Georgetown University Press, 2004), pp. 46–73.

54. These include groups such as the Irish Republican Army, Euskadi Ta Askatasuna, and the Liberation Tigers of Tamil Eelam.

55. Jerrold M. Post, "The Socio-Cultural Underpinnings of Terrorist Psychology: 'When Hatred is Bred in the Bone,'" in Torje Bjorgo, ed., *Root Causes of Terrorism: Myths, Reality and Ways Forward* (London: Routledge, 2005), pp. 54–69.

56. The GTD has since been updated and now includes data from 2008.

57. As is the case whenever terrorism is studied, the data are imperfect. Since the objects of study are terrorist groups, those attacks for which the offender is not known are excluded from this study.

58. For example, Lashkar-e-Taiba, an active Pakistani group, has been known to operate under the alias Al Mansoorian.

59. Unfortunately, it remains an ever-present challenge when conducting research on terrorist groups that information can often be contradictory or missing. While a rigorous coding methodology is used, in cases where ambiguity exists, the researcher ultimately makes a coding judgment. Jane's World Insurgency and Terrorism, "Earth Liberation Front."

60. Not shown here, but an ordered probit was performed. The results suggest that there is a natural ordering, by the level of centralization; however, for maximum robustness, a multinomial logit is used.

61. See the complete model displayed in Table 1. Due to similarities in the results between right- and left-wing ideologies, these are combined and used as the base case.

62. The variables listed in the basic model are chosen because the causality is clear; in the first year of a group's existence, these variables shape the group's structure, not the other way around.

63. J. Scott Long and Jeremy Freese, *Regression Models for Categorical Dependent Variables Using Stata* (College Station, TX: Stata Press, 2005).

64. This relationship is not only found in the relative risk for market structures but, with decreasing strength, in all-channel (a factor of 1.08 to a 90 percent confidence interval and hub/spoke structures (a factor of 1.07 to a 75 percent confidence interval), when compared to the bureaucratic structure.

65. This argument is supported by the results in Table 1 and in Figure 1. Although not displayed—since the comparator is the bureaucratic structure—there is a negative coefficient associated with GDP per capita in bureaucratic structures. While not a significant finding, in the statistical sense, on its own, this result supports the finding that GDP per capita is inversely related to the level of organization of a group.

66. World Bank, *World Development Indicators* (Washington, DC: World Bank, 2009).

67. In the Freedom House scale, the higher the number (between 1 and 7), the less freedom permitted in the state.

68. This result is supported by re-running the multinomial logit with a subset that includes only groups that have a peak size larger than one thousand. While not shown here, this sample suggests that large groups in states with relative civil and political freedoms will tend to be more decentralized. By contrast, in states with low freedoms, large groups will tend to be organized as a bureaucracy.

69. Polity durability is one facet of the Polity IV dataset, which measures the quality and strength of governments. Marshall et al., *Polity IV Project*.

70. As discussed above, this variable is the percentage of all attacks in the first year that are directed toward hard targets; it is intended to be a measure of the organization's initial intention regarding preferred targets. The approach of using attacks in the first year goes some way to neutralize the potential endogeneity that may arise from trying to explain the effect of target selection of group structure.

71. Jones and Libicki, *How Terrorist Groups End*.

72. To push these results further, other goal types were tested within the base model and while the results were not statistically significant, broad goals such as seeking social revolution and seeking an empire were more likely to be positively associated with decentralized groups. Narrow goals such as seeking territorial change, seeking policy change, and maintaining status quo were negatively associated with decentralized groups and positively associated with the bureaucratic type.

73. This variable is both left-wing and right-wing groups combined since there was no variation between the two.

74. Al Qaeda, for example, has narrow goals such as foreigners out of the Arabian Peninsula, but also very broad, existential goals, such as the destruction of Western civilization. See Bruce Lawrence, ed., *Messages to the World: The Statements of Osama Bin Laden* (London: Verso Press, 2005), pp. 15–18.

75. While not included in either the base or the main model due to problems of endogeneity, the relative risk estimate for the variable *peak size* was found to be statistically significant to a 99 percent confidence interval. Since the coefficient of peak size is negative for market structures this result implies that smaller-sized groups, in this case less than ninety-nine members, are more likely to be found in market or networked groups than in hierarchical structures. This result is highly intuitive in the sense that a bureaucratic structure by its nature has multiple layers of management and highly specialized departments. In fact, loosely structured groups will likely never achieve great numbers precisely because they lack adequate leadership structures to control larger numbers of members.

76. Heger et al., "Organizing for Resistance."

77. These bureaucratic religious groups with nationalist goals are: Lashkar-e-Taiba, Armed Islamic Group (GIA), Hezbollah, Hiz'bul Mujahideen (HM), Jama'atul Mujahideen Bangladesh (JMB), Lord's Resistance Army (LRA), and the Moro National Liberation Front (MNLF).

78. Jones and Libicki, *How Terrorist Groups End*.

79. This insight was presented to me by Victor Asal (personal conversation) in 2011. Another element investigated was the difference between the type of religion among groups and if that had an effect on their structure. Unfortunately, the sample size is too small to assess. Of the 35 religious groups included in this study, only three were not Islamic.

80. Jones and Libicki, *How Terrorist Groups End*. They found that peak size is the single most important factor in explaining success. Peak size is not included in the current model due to the endogeneity problem that peak size of a group does not necessarily occur at the start of the group's existence. However, peak size does help explain the unexpected finding of religious group structure and is therefore noted here.

81. This count is accurate to the end of 2007. It may be that the openness of a democracy provides the public space required for terrorist groups to operate. Absolute totalitarian regimes are able to keep this public space closed.

82. Piazza, "Do Democracy and Free Markets Protect Us from Terrorism?"

83. Not shown here but this is also supported by an ordered probit.