DETERMINANTS OF INTERNATIONAL TERRORIST
GROUP FORMATION, 1968-1999

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Terrorism has become a focus of much political thought over the past few years, and with good reason, yet most quantitative studies of terrorism investigate the likelihood of a terrorist incident while ignoring the precursors to terrorist group formation. I examine cases of new terrorist group formations between the years 1968 and 1999 as a function of domestic demographic, geographic, governmental and societal factors. This is done by Poisson regression analysis, which determines the significance of the independent variables on a count of new international terrorist group formations per country year. The results indicate that higher levels of material government capability, high levels of political freedom, the availability of low-cost refuge, and a cultural tradition of terrorism all have a positive impact on the number of new terrorist group formations, while a higher degree of governmental durability has a negative impact.
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A. International Terrorism

Interest in the subject of terrorism in the world of political scientists has waxed and waned over the past few decades, but the attacks on the United States on September 11, 2001 have spurred a renewed focus on the subject.

The US-led “War on Terror” that followed has on a number of occasions been termed a “new kind of war,” one in which the enemies are not directly associated with a particular state or military, are difficult to identify, and legally are not candidates against which a nation can declare war. So too does the phenomenon of terrorism confound the work of those who attempt to study it. Terrorists are themselves secretive by nature, as their success in conducting activities and even their survival demands it. Beyond broad statements to rally around a general purpose or intimidate an intended opponent, there are very few well-kept records or testimonials as to the particular motivations behind the logistical decisions that a terrorist individual or group makes. This sometimes makes investigating terrorism difficult, but given the demand for formulating counter-terrorism strategies, these difficulties must be overcome.

Terrorism itself is a tool employed by a large number of different actors in an equally numerous variety of ways. Every definition of terrorism includes at least two parts: that it is violence or the threat of violence, and that it is a form of political communication. The obvious question that follows is what would cause individuals to band together in order to communicate their political grievances in such a violent way? What are the incentives in doing so, and what are the detriments to the same?
B. The Importance of Studying Terrorist Groups

Many recent studies of terrorism have chosen to primarily examine the incidence of terrorist-related activities and the state-level factors that affect them (Krueger and Malečková, 2003; Li, 2005; Enders and Sandler, 1999). Therefore the broad question examined by these previous studies is “What factors lead to a (more) terrorist attack(s)?” And while there has been a great deal of knowledge obtained from these studies, there has yet to be a quantitative study that looks specifically at the emergence of a new terrorist organization. The analysis presented here aims to fill this gap.

While certainly many of the factors that determine the likelihood of a terrorist incident will also affect the likelihood of terrorist group formation, it is important to specifically investigate terrorist group formation for a number of reasons. First, organized terrorist groups are not the only sources of terrorist activity. Unfortunately, the world will likely never be without its crop of terrorist individuals such as Timothy McVeigh and others of the same ilk. Individual actions such as these are subject to similarly individual-level motivations, making them very difficult to explain by any broad system-level data, much less predict. A terrorist group, on the other hand, is brought together by a unifying ideology, whether that ideology is one of nationalism, racism, radicalized religion, or socialism. This is not to say that an individual terrorist turns to terrorist activity without the guidance of a broader ideology, but it can be expected that state-level factors will either constrain or encourage behavior in such a way to foster the congregation of these like-minded individuals, bringing them together in a larger
organizational form, and concurrently determine that they resort to terrorism to achieve their goals.

Second, a terrorist group or organization, once formed, is more likely to achieve some level of self-sustainability (Janis and Katz, 1959; Crenshaw, 1981; Li, 2005). An individual may sacrifice him/herself in an attack or be apprehended by the police, thus bringing a definite end to any wave of terror he/she hoped to create. Terrorist organizations are much more apt to attain the attributes of a business, interest group, or bureaucratic agency, as once they are created, the organizational structure will institutionalize within it a means and motive for continuation. This can mean a change in tactics, targets, or taking on new grievances as a justification for their perpetual existence, oftentimes leading to the splintering, merging, and reorganization of the group. Simply put, once organized, a terrorist group is not likely to simply choose to “go away,” even if its original intentions were not necessarily long-term.

This introduces the third point: policy relevance. Of course, all terrorist incidents, whether committed by an individual or a group, are worthy of attention and policymakers would hope to eliminate them all. Those attributed to individuals, as indicated above, are more difficult to predict and therefore more difficult to protect against. Because of their ability to unite ideologies beyond borders, to adopt more sophisticated techniques, and their institutionalized desire for self-perpetuation, terrorist groups therefore present a different type of threat to those it targets than does an individual terrorist. Groups can therefore wage a more extended campaign of terrorism, and in using their collective resources, are able to conduct more devastating attacks. The formation of a new terrorist group is more likely to be of primary concern to lawmakers
hoping to maintain a terror-free society in that a group’s attacks will usually be more
damaging to the state and its infrastructure than the attacks of a terrorist individual.

C. Thesis Structure

In order to investigate the question of what leads to the formation of a new international terrorist group, the study is structured as follows. Chapter II lists some of the advances in examining the broad phenomenon of terrorism. This literature is fundamental towards the better understanding the operations of terrorist groups and especially in understanding the difficulties of reaching a universally agreed-upon definition of terrorism itself. The various quantitative work discussed largely examines the precursors of terrorist attacks, and does not in fact address how any of these factors might affect the likelihood of a new terrorist group forming. The previous literature on terrorist groups is largely psychological in nature, examining the characteristics of an individual more likely to join a terrorist group, and the inner psychology of the group itself.

Chapter III introduces the theoretical argument for the factors that are likely to lead to terrorist group formation. A total of eight testable hypotheses are introduced, involving independent variables that cover a number of state-level characteristics, some of which are dynamic in nature. A few control variables are also introduced for interpretative clarity and the overall validity of the study.

All of these hypotheses are tested in Chapter IV using data collected from the Memorial Institute for the Prevention of Terrorism (MIPT) database on terrorist groups between the years 1968 and 2000. The hypotheses are tested against a dependent
variable structured in two different ways: the first being a count variable of the number of new terrorist groups to form by country-year using a Poisson regression, the second being a dichotomous variable of whether any new terrorist group formed by country-year using logit analysis.

In Chapter V, I address the broader implications of the study, and briefly examine some particularly notable cases, both included in the data set and excluded. Following this, I make a few suggestions regarding future research on terrorist groups in light of the information attained in this study.
A. The Definition of Terrorism

One of the most persistent questions that plagues the study of terrorism is “How should terrorism be defined?” There certainly is much disagreement internationally as to what characteristics must be present in order to consider any particular attack an act of terrorism. Some acts could very easily be considered as the work of revolutionaries, or the individual action of a lone lunatic. Still, despite the nuance that surrounds these arguments, an examination of the literature in order to comprise a reasonable definition of terrorism is warranted.

As a phenomenon, terrorism is difficult to define, and the parameters that distinguish it from other violent phenomena are ill-formed. The definitions adopted by the United Nations, the United States Departments of Justice, State, Defense, and the Federal Bureau of Investigation are all markedly different from each other, showing that the confusion over a definition of terrorism is not limited to the realm of scientific study, but extends into areas where a definition would be legally necessary as well. Alex Schmid (1983) asserts that there is no single correct definition of terrorism that can provide a satisfactory guideline for all the uses of the term. The various attempts at defining terrorism have largely been additive, providing if, and, or but conditions to existing definitions. A common baseline for beginning to examine terrorism is developed by Brian Jenkins (1984), who says that terrorism “is the use or threatened use of force designed to bring about political change.”

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Following Jenkins, Walter Laqueur (1987) adds in his definition that the act is “illegitimate” and that it must target innocent people. This of course means that whoever has the power to define “legitimacy” also has the power to define terrorism, which is especially problematic in states where leaders denounce certain groups as terrorists only to alienate them or to garner public support for increases of governmental power during a counterterrorism campaign (White, 1998). In the study of terrorism, however, Laqueur builds on the insights of previous work by Martha Crenshaw (1983) which identifies three components of terrorism that must meet a certain criteria in order for it to be properly identified as illegitimate: act, target, and possibility of success. An attack is defined as terrorism if it is not considered legitimate in any one of these three areas. First, is the attack (act) made through legitimate methods? For example, those denoted as “freedom fighters” generally use more conventional means of attack rather than less discriminate tactics such as bombings. Freedom fighter groups often meet the second condition of legitimacy as well in that they attack a legitimate target (i.e. military or government) rather than targeting civilians, or targeting indiscriminately. Third, is there a legitimate chance for winning an open conflict with the enemy? This means that a group must have a reasonable chance of defeating their targeted enemy militarily in order to be considered legitimate. If any of these three criteria are not met, then the act in question is a terrorist act.

And while Laqueur warns against moving beyond his simple definition, James M. Poland (1988) adds further criteria in his own definition: that the actions must be premeditated, deliberate, and systematic with the purpose of creating an atmosphere of fear and intimidation. Crenshaw has also identified that a key component of any
terrorist attack is the intention to create a “psychological effect,” an atmosphere of fear in the general population that Poland would later echo in his own definition of terrorism. This ability to create an atmosphere of fear is one of the factors identified by Fraser and Fulton (1984) as distinguishing what they call “new terrorism” from “old terrorism,” as the ability of “new” terrorists to do this is due to the advent of a wider-reaching news media, providing terrorists with what Margaret Thatcher called “the oxygen of publicity.”

Peter Chalk (1996) outlines nine features of terrorism that seem to be largely considered appropriate in most studies of terrorism, while certainly the interpretation of these factors varies on a case by case and an author by author basis. The first argument is that terrorism is a political activity. There must always be present an objective towards reaching a political goal, one that goes beyond the intended effects of the physical attack itself. Second, terrorism is a criminal activity, meaning of course that the act itself is in violation of the law. Third, terrorism is a form of psychological warfare. This is of course similar to the arguments made by Crenshaw (1983) and others (Fraser and Fulton, 1984; Schmid, 1983). There must be some intended target beyond the immediate target that a terrorist is attempting to affect by his criminal actions. A crucial element in this is the fourth feature of terrorism: that each terrorist event must be in some way indiscriminate. This of course adds to the expected psychological effect desired by the terrorist(s), as should there be no particular reason for choosing a specific target, then nobody in the general population can be assured that they will not fall victim to subsequent attacks if and when they occur.

Fifth, terrorist attacks must in some way target non-combatant civilians and non-combatant military members. This is similar to Crenshaw’s notion that the target be
illegitimate, and is complimentary to the indiscriminate nature of the act. Sixth, terrorism is systematic. This means that the attack(s) are not used to incite immediate fear, but are an attempt to create a prolonged sense of fear in the hopes of attaining their political objective. This requires that the attacks be repeated, or at least that the threat be made that they might be repeated. The seventh feature is that terrorism is a method of political communication, in that each event is an attempt to convey a particular message regarding the individual political grievance the terrorist group is intending to assuage.

Eighth, terrorism is a tactic employed by sub state actors. This particular distinction is important, as several authors who investigate the topic suggest that state repression should be included in any definition of terrorism (Herman, 1983; Laqueur, 1987; Stohl, 1988). While it is certainly not questioned that many governments can and have used violent repression in order to spread an atmosphere of terror in their respective citizenry, most studies of terrorism reject this argument asserting that while both are similarly horrific, state repression and “terrorism” are not in fact two faces of the same phenomenon. This follows from Laqueur’s own admission that state repression is a long-term political problem with causes that are sufficiently different from sub-state terrorism that choosing to examine both state and sub-state terrorism together is not helpful in trying to gain a clear understanding of the phenomenon. Finally, the ninth feature identified by Chalk is merely that terrorism can be either international or domestic, the focus of this present study being international in nature.

In one way or another, most of the literature on terrorism outlines aspects of terrorism that are consistent with the features listed by Chalk. It is certainly not the intention of this study to develop an altogether new definition of what terrorism is. I do
however acknowledge the debate as ongoing, and recognize that any theory that is
developed to explain terrorism must work from an understanding of what terrorism is,
which makes one better able to logically derive inferences as to the causes of the
phenomenon.

B. The Causes of Terrorism

Most of the studies being conducted on the subject of terrorism are concerned
with the causes of it (Krueger and Malečková, 2003; Li and Schaub, 2004; Li, 2005).
This inclination is of course a reasonable one, as human beings are by nature
fascinated with matters that they do not understand, and the terrorist’s power is drawn
from the fact that we also fear what we do not understand. Thus, investigations of
terrorism are driven by questions such as “What could possibly drive someone to do
such terrible things?” and “How could this be prevented in the future?” A scientific
derivative of these is therefore “What factors determine the likelihood of terrorist
attacks?” – which is one of the most common questions driving current terrorism
research.

One of the most persistent indicators of terrorist activity identified by previous
studies is the level of democracy, although the expected direction of its effects is a point
of contention. The argument that terrorism event levels should be lower in a democratic
state is predicated in the fact that a democracy provides its citizens the opportunity to
express political opinions and thereby resolve grievances without turning to violence (Li
and Schaub, 2004). ¹ This assertion is supported by Krueger and Malečková (2003),

¹ Li and Schaub argued for a negative effect of democracy on terrorist attacks, although their results
suggested that the opposite was true.
who find a statistically significant negative effect on terrorist activities for the presence of high levels of civil liberties. Despite this, there are studies that still assert the opposite argument that higher levels of democracy lead to higher levels of terrorist attacks (Ross, 1993), positing that democracies higher degrees of toleration and support for terrorism, the higher the availability of weapons, and the higher the probability of counterterrorist organization failure (322).

Another argument for the positive effect of democracy on terrorist activity is economic. The findings of Blomberg et al. (2004) indicate that the economy of a democracy is more likely to endure a more prolonged period of contraction following a terrorist attack than are non-democracies. This provides support for the psychological effect argument, making democracies more attractive targets due to the higher benefits of the attack to the terrorist. Historically, democracies are also more likely to be victimized by terrorist attacks due to the state-sponsorship of terrorism by autocratic nations. Evidence suggests that this phenomenon may have been somewhat limited to the Cold War (Enders and Sandler, 1999; O'Brien, 1996), but nonetheless, data from the period could still be inflating the effects of democracy on terrorist attacks. Even still, terrorism in the modern age is associated more with religious ideologies than it has been in the past. Uncompromising ideologies such as these are termed “supreme values” by Bernholz (2004), and offer promises to terrorists of “heavenly rewards” (Sandler and Enders, 2004), which poses a very difficult problem for democracies in that democracies are largely permissive and secular societies. They have relatively few supreme values to counter those invoked to mobilize terrorists against it, which makes it difficult for democracies to accommodate demands based on grievances of this kind.
A feature commonly related to democracy is the presence of a free media. However, despite the debate on the effects of democracy on terrorism, there is little disagreement on the media’s role in increasing the likelihood of a terrorist attack. Most studies acknowledge that the ability to communicate and therefore spread the atmosphere of fear is crucial to the objectives of a terrorist, which is precisely what a free media allows them to do (Crenshaw, 1981; Gambill, 1998; Li, 2005). This of course is done by whatever media outlets are available, whether by television, radio, print, internet, etc. Terrorists are only empowered when their attacks are in fact permitted to terrorize the mass population, and the media is a critical element of this.

Previous research has also examined the effects of a state’s anti-terrorist capabilities on terrorist activity (Sandler and Lapan, 1988; Li and Schaub, 2004; Li, 2005). The assertion is that states that are more capable of controlling and monitoring their populations will be able to more successfully thwart the actions of a terrorist group, and will subsequently provide a deterrent against choosing to adopt a terrorist strategy. Despite the inherent logic of these arguments, the results do not necessarily support them.²

Economics is a driving force behind many international phenomena, and the likelihood of a terrorist attack is no different. While there are of course many economic indicators available to political scientists, some measure for the wealth of the mass population is consistently considered for terrorism just as it is for many other branches of the discipline. The argument presented by previous terrorism studies is an intuitive one: as the economic welfare of a society increases, there is less opportunity for

² Li and Schaub, for example, actually find a significant effect of government capability, but in the opposite direction than theorized.
grievances against the government, and therefore there are less terrorist attacks (Li and Schaub, 2004; Li, 2005); the findings provided in these studies appear to support this claim.

Although political scientists have not made judgments as to whether any particular religion is better or worse than another, the recent Islamic fundamentalist face of terrorism has nonetheless not been ignored. Krueger and Malečková (2003) find a statistically significant and positive effect of the proportion of Muslims in a nation on the number of terrorist events that originated from it. Fearon and Laitin (2003) tell a slightly different story, however. While their analysis is an investigation of civil wars, they find that a larger percentage of fossil fuel exports may be the driving factor behind the violence that is traditionally associated with predominantly Islamic nations, due to their high concentration in the oil-rich Middle East. In addition, their theory informs assertions made concerning economic welfare and terrorism, in that they argue that oil producing countries will be more likely to have inherently weaker state apparatuses than those of similar levels of per capita income because the rulers will require a less diversified governmental and economic structure in order to raise revenue (81).

Fearon and Laitin also find that the higher the proportion of difficult terrain in a nation, the more likely the nation is to experience civil war. Their argument is that rebel groups are able to avoid destruction or capture more easily when they have rough terrain such as mountainous regions available to them, an argument that can certainly be applied to terrorist groups as well, and is consistent with other previous works (Posen, 2001; Arreguín-Toft, 2001). While their study is not an investigation of terrorism, per se, it nonetheless provides insight as to how sub-state actors in need of
training, shelter, and some kind of operational headquarters might be able to provide for all of these in an inexpensive way, which seems to be consistent with the needs of a terrorist group as well.

Several studies have indicated the positive effect a higher population has on the number of terrorist events as well (Krueger and Malečková, 2003; Li and Schaub, 2004; Li, 2005). A higher population allows for terrorist organizations to maintain higher opportunities for recruiting, in that there is always a larger crop of potential converts to the cause at the ready. A larger population is also more likely to increase the difficulty of enforcing anti-terrorism policies of the government (Eyerman, 1998). The more people in a given area means more potential suspects, and more population-dense areas allow terrorists (or criminals of any type for that matter) to be better able to disappear into the huddled masses.

Lastly, almost all studies examining the likelihood of a terrorist attack include some type of indicator of previous levels of attacks. This can be done with the use of a simple lagged variable (Li and Schaub, 2004), which is a measure of the immediate history of terror attacks from the previous year, or it can be a measure indicating a broader historical experience such as the one developed by Li (2005), which is the logged average of terrorist attacks since 1968.

C. The Investigations of Terrorist Groups

There is a variety of ways in which terrorist groups or organizations are examined in the literature. However, there is not a comprehensive quantitative study of the determinants of their emergence. Rather, investigations of groups seem to focus on the
attributes of the members themselves (Crenshaw, 2000; Krueger and Malečková, 2003), classifications of different groups into different typologies (Eriksson et al. 2003); recruiting patterns (Bueno de Mesquita, 2005), or the inner psychological workings of the group itself (Neumann, 1960; Crenshaw, 1981; Weinberg, 1991; Bueno de Mesquita, 2005a).

Among the various lines of research outlined above, not all are inherently applicable to this particular study. It is important to note however, some of the insights provided by this research. First, Krueger and Malečková’s findings suggest that individuals who choose to participate in terrorist group activity are neither impoverished nor ill-educated. This is consistent with the findings of Bueno de Mesquita (2005), which shows that terrorist organizations carefully screen potential candidates in order to maintain a high-quality membership, of which the terrorist leaders within the organization can be reasonably assured to carry out attacks successfully.

This speaks directly to the next vein of research on group psychology which is the most valuable work on groups in the way it informs this present study. Individuals that choose to form a terrorist group are likely to be subject to some of the same processes that determine group formation in a general sense. There is a vast amount of research that examines the dynamics of group formation in a broad sense (Truman, 1951; Olson, 1965; Salisbury, 1969), and perhaps one of the most critical insights into group formation comes from Olson’s assertion that there must be a sufficient incentive structure in place to coax individuals into joining a group, otherwise the no as a result of the “free-rider problem,” wherein individuals who are not willing to pay the costs of attaining any public good can still enjoy the benefits of that good, despite their lack of
action towards attaining it. There must be some benefits provided by the group that corrects for this eventuality, and these are identified by Salisbury as being one of three types: material, solidary, and purposive (1969). Material benefits are those that provide some monetary compensation for group involvement, solidary benefits provide an intrinsic sense of belonging to the individual member of the group, and purposive benefits provide a larger sense of responsibility towards the supra-personal goals of the group.

Beyond the internal workings of a group, the formation of a new terrorist group affects the larger patterns of terrorism as well. Enders and Sandler (1999) asserted that the changes in the international system following the end of the Cold War “have done little to change the underlying dynamic process that determines cycles in terrorist activities” (147). A very large part of this process is group momentum, as “once a terrorist group embarks on a strategy of terrorism… psychological factors make it very difficult to halt” (Crenshaw, 1981, 395-396). Violence therefore begets violence resulting in “contagion effects” (Janis and Katz, 1959); and a sense of collective guilt binds those in the group to their leadership (Neumann, 1960).

Following this, it is in fact clear that “terrorism as a process gathers its own momentum, independent of external events” (Crenshaw, 1981, 396), and the inner workings of terrorist groups themselves are inherently tied to this momentum, both by the psychology of the group and its members as outlined above, and by organizational influences as well. In this way, each individual terrorist group is responsible for its own perpetuation, both in form and in deed. Quantitative studies that examine acts of terrorism in terms of their past incidents, whether by including controls for its more
immediate history or for its culture of terrorism, have largely ignored the dynamics of the
terrorist group itself and the unique relationship they have to the path dependency
argument. This is the oversight that this study hopes to correct.
CHAPTER III
BUILDING AN ARGUMENT FOR TERRORIST GROUPS

In the following theory, I argue how the formation of new terrorist groups is related to many of the determinants of terrorist attacks listed in the literature as described above, although oftentimes these factors have differentiated effects on the formation of the groups than they do on the occurrence of terrorism events themselves. This is due to the fact that conditions which work well for a terrorist attack do not necessarily aid a potential terrorist group in its initial formation. More importantly, groups that engage specifically in international terrorism are able to form and operate in areas that are often separated from the lands that they intend to target by a large distance, and therefore the influences that influence new group formation can be independent from the factors that influence the likelihood of actual terrorist incidents.

There is no singular prescription for the creation of a new terrorist group, and each individual group will have different constraints to overcome in order to form and function successfully. Al Qaeda, for example, formed within the mountainous region of Afghanistan which provided the “perfect hideout” for the group (Posen, 41), while other organizations, such as the Red Army Faction, operated from largely urban areas. Both groups found an appropriate level of protection in these areas despite the differences between a mountain range and a large city. The groups can also vary in their resources and sophistication, ranging from well coordinated attacks such as the September 11th attacks in the United States to low-scale bombings similar to those carried out by many of the short-lived groups based in Greece. Most terrorist organizations do however maintain a similarity to each other in a broader sense, as they usually form with the goal
of redressing some kind of grievance. The nature of the grievance varies greatly from group to group, ranging from religious, ethnic, socialist, or nationalist foundations. International terrorist groups are often brought together by these broader, often lofty goals (Bernholz, 2003), as opposed to domestic terrorist groups which include in their ranks more narrow-focused organizations such as abortion clinic bombers. One of the important distinctions between international and domestic terrorist groups, therefore, is that the source of grievance for the international group can come from across borders, while a domestic group’s source of grievance is by definition local to their respective states of origin. Therefore, the factors that determine the success of a terrorist group should be examined in addition to factors that determine the psychological decision to turn to an extreme form of political violence such as terrorism.

The formation of new terrorist groups should be similar to the formation dynamics of other groups governed by the laws of collective action. Salisbury (1969) contends that the free-rider problem can be solved by providing material, solidary or purposive benefits to members of the group. Given the nature of terrorism, the potential costs of joining and actively participating in a terrorist group are likely to be high, as the consequences for doing so could easily include capture, torture, or death. The incentive structure that terrorist groups adopt is not likely to be a material one, in that while terrorist operations are sometimes well-funded, individual participants are not usually compensated with monetary rewards. While certainly not impossible, terrorist groups are not likely to form with the provision of solidary benefits, either, as individuals searching for a sense of inclusion within a broader group have other, lower-cost options available to them than those provided by terrorist groups. It is most apparent that a
terrorist group is likely to form following the promise of a purposive benefit, which can take many forms (i.e. Basque independence, jihad in defense of Islam, or the success of international communism/socialism). This is consistent with the work of Bernholz (2004), which argues that the presence of “supreme values” is necessary as a basis for terrorist activity. Supreme values provide a group with important incentives towards the recruitment of individuals, and more importantly, the larger success of attaining the goals of the group.

A terrorist group can view success in a variety of ways, whether it is to attack only once (or a few times) in order to make a political statement (i.e. Greek anarchist groups), to sustain operations in order to affect change in the system (i.e. the Irish Republican Army, Basque Fatherland and Freedom, etc.), or to attack in a way consistent with what is believed to be the will of a higher power (i.e. al Qaeda, Hamas, etc.). Whatever the outlook for success may be, a potential terrorist is likely to do a cost-benefit analysis of the prospects for success in his endeavors. The likelihood for success is measured by minimizing the costs (or: risk) of terrorist operations, maximizing the effectiveness of the operations, and at the same time retaining a sufficient level of resources.

One of the important factors affecting these potential costs is the ability of a state to mobilize and conduct anti-terrorist operations, thus deterring group formation. The potential terrorists must consider whether they will be caught before achieving success, and what might happen to them, and their group, after they are caught. Given the option, those considering turning to terrorism are not likely to choose to do so in a state that maintains an aggressive and successful security infrastructure (Sandler and Lapan,
In choosing to operate both in and from weaker states, the group minimizes the costs of operation, and alleviates the risks of group capture or elimination. Of course, not every group will have the resources necessary to choose where they would ideally form and subsequently base their operations. But in these cases, the presence of a strong anti-terror infrastructure is likely to have a deterrent effect on the decision to conduct terrorist activities.

The above argument is not consistent with the findings of previous works (Li and Schaub, 2004; Li, 2005). However, these studies do not investigate the creation of a new terrorist group; rather, they examine terrorist incidents and show that states with a more capable anti-terror infrastructure are actually more likely to be the victim of an attack, but this does not imply that the group itself would be more likely to be formed and base its operations there. Of the luxuries afforded to international terrorist groups, the ability to launch attacks across borders has proven to be extremely valuable, which means groups can attain the benefits of attacking a more capable nation, which, as suggested by earlier studies (Li and Schaub, 2004; Li, 2005), results in wider media coverage and wider group influence, all the while maintaining little risk to the organization itself by conducting operations from abroad in a state that is less capable of conducting anti-terrorist campaigns. Fewer operational costs will be spent in the attempt to avoid government forces, and funds can therefore be spent on group communication, training, and technology used for future attacks.

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3 Hezbollah, for example, has been able to endure in the southern areas of Lebanon and conduct cross-border attacks in part due to the lack of control the Lebanese government has on its southern region.
The state’s ability to seek out a terrorist group and capture or kill its members is likely to be apparent to potential terrorists, and the lack of this ability will certainly be beneficial to the success of the group.

*Hypothesis 1: Terrorist groups are less likely to form in states with stronger anti-terrorist capabilities than in states with weaker ones.*

Even in states with stronger anti-terrorist security in place, terrorists groups will sometimes find ways to successfully form and endure. One way in which to do this is to take advantage of opportunities to remain invisible, which helps to minimize the risk of capture. Places to hide therefore increase the likelihood for the group’s survival as well as their long-term success. Describing terrorism as a weapon used by the weak is hackneyed, but the implication that terrorist groups, at least initially, are inherently weaker than most of the governments that they oppose, is evident by the tactics they choose to adopt. Previous work likens terrorist activity to that of insurgency, and describes how those who adopt such strategies do so as a function of their inherent weakness as compared to their enemies (Arreguín-Toft, 2001; Fearon and Laitin, 2003). Therefore, natural resources that provide cost-free impediments to their capture or destruction are of significant value, and the physical/geographical characteristics of a state are therefore a chief factor in the decision of where terrorist organizations will choose to set up operations for several reasons. The presence of rough terrain such as mountains, swamps, or dense rain forests have been proven invaluable to insurgent and rebel groups in that they foster conditions friendly to guerilla warfare. While some terrorist groups are indeed well-funded, their resources tend to pale in comparison to those of the states in which they base their operations, and guerilla tactics have shown
to render many of the tactical advantages of the state meaningless, by means of frustrating mobilization of air power and other military vehicles, and insulation from high-tech surveillance and weaponry employed by the state as well (Johnson, 1962).

Both the dense trees of jungles and the rocky caves of mountains provide the groups with the means to conceal themselves from the view of government reconnaissance, whether by means of satellite, airborne, or ground-level. The presence of mountainous terrain also offers a terrorist group protection from attacks, as well, which has shown to be the case in the United States' invasion of Afghanistan. The caves that provide protection from view also provide refuge from heavy artillery attacks such as missiles and tactical bombings. Rough terrain also complicates any anti-terror ground incursions staged by government forces as well. The lack of adequate roads, the presence of steep inclines in a mountain range, and the nigh-impenetrable wall of trees in a dense rain forest make mobilizing any government ground troops more difficult, especially the movement of large-scale ground-based military equipment (Desai and Eckstein, 1990; Knorr, 1962; Posen, 2001). The terrorist group is therefore afforded a better chance of survival by the terrain around them taking away many of the technological advantages that would usually be enjoyed by the government forces. Again, this makes anti-terror operations that resemble guerilla warfare more likely, in which case the terrorist organization has a decided advantage in being more familiar with the difficult terrain, allowing them to set up traps, ambushes, and being better informed as to the best areas of protection from attack. Government forces can therefore expect to incur heavier losses in manpower than they might in different conditions. The anti-terror operations will also be slower to mobilize effectively (Knorr,
1962), and the costs of such operations will rise substantially given the use of heavier weaponry to cut through the terrain such as napalm or “bunker-busting” bombs.

Naturally protective terrain such as mountainous regions or rain forests will likely be an attractive destination for new terrorist groups to form, as they provide a cost-free barrier against both anti-terror reconnaissance and military attack. It is therefore expected that the presence of naturally difficult terrain will increase the chances for the creation of a new terrorist organizations.

*Hypothesis 2: Terrorist groups are more likely to form in nations with a higher percentage of difficult terrain.*

Similar to natural terrain, potential terrorists can find similar opportunities for minimizing cost/risk by means of man-made protection. One way to do this would be to limit visibility not only by seeking cover, per se, but by pursuing a higher level invisibility through anonymity. Anonymity, in turn, is better achieved in more urban areas. Similar to the arguments made by previous studies (Krueger and Malečková, 2003; Li and Schaub, 2004; Li, 2005), terrorist organizations are better able to recruit more members into their ranks when there is a larger group from which to draw on. While this can be a function of raw population alone, a higher rate of urbanization allows for other benefits to the terrorist group that a high level of raw population of a state cannot provide by itself. The higher the urbanization of a state, the easier it is for members of a terrorist organization to blend in with the rest of the citizens in the population (Eyerman, 1998). This is the opposite expectation of people living in a small town, where individuals know each other on sight and have daily interactions with each other. In an urban area, members of the general population, as well as law enforcement officers, are more likely
on a daily basis to see individuals they don’t know, and given the deluge of faces present in a given day, are just as likely to forget each one more quickly. Terrorists can therefore expect to be able to move freely about an urban area with less notice, which makes the costs of government antiterrorist campaigns rise substantially. The difficulty in maintaining proper surveillance within the population becomes exceedingly more difficult, as it raises the number of potential suspects for law enforcement to investigate, and wire-tapping and both video and first-hand surveillance are costly endeavors.

There is a trade-off in choosing to set up operations in an urbanized area as opposed to seeking the refuge of more difficult terrain such as rain forests and mountain ranges. In choosing to base operations from a position in a dense rain forest or a mountain cave is likely to cut off a group’s supply lines. Conversely, the more people are concentrated together, the more readily available necessary supplies are to terrorist groups. The strategy ultimately adopted by any particular group will likely depend on the capabilities of the government forces a group is intending to avoid (Knorr, 1962).

In many ways, urban areas provide some of the same protections as naturally difficult terrain offers. Buildings and homes serve the purpose of caves, higher levels of traffic, both vehicular and pedestrian, serve the purpose of complicating government mobilization. Terrorist groups can also be reassured in knowing that in choosing to form in a more urban area, the risk of civilian casualties rises substantially should the government be employing either military or more aggressive policing tactics in their attempts to pursue the terrorist groups. The options for heavy artillery use, which are available when hunting terrorists in naturally rough areas such as jungles or mountains, are a less viable option in urban areas. In addition to the higher civilian casualties,
heavy damage to infrastructure and therefore higher impacts on the economy are the likely result.

When making the decision as to whether to begin a campaign of terrorism, the advantage of having a larger number of potential members close by, and a larger population to disappear into will make success of any potential terrorist group seem more likely.

**Hypothesis 3:** Terrorist groups are more likely to base their operations in nations with a higher rate of urbanization.

As indicated above, freedom of movement is a valuable asset in calculating the success of a potential terrorist group, as it helps to minimize the risk of capture. Another way in which to ensure a higher degree of freedom of movement is to operate in a more democratic society. The ability to move about freely from location to location, and transfer personnel, funds, and information is a great advantage to a terrorist group, allowing them to more efficiently conduct operations in addition to helping them to elude capture. In addition, this freedom of movement will allow for a higher availability of weapons, explosives, and any other supplies needed to conduct future attacks, which substantially lowers the costs of operations for the group.

Any potential group considering pursuing a campaign of terrorism is likely to consider the ramifications of doing so, in particular the government response, which directly affects the likelihood for success. Democracies by definition are governments operating through compromise, and there is a larger number of interests represented whose views will in some way be accommodated. Democratic governments are therefore commonly associated with deadlock, and are institutionally constrained in their
ability to respond to terrorist activity in that democracies are prevented from placing too many restrictions on the civil liberties of its citizens, and therefore less able to conduct broader and more extensive counterterrorist campaigns. As indicated by previous works, launching an effective anti-terrorist strategy often means that the higher levels of freedom of movement and communication enjoyed by terrorists in a democracy will be restricted (Li, 2005). These restrictions are necessarily extended to the society as a whole, in which case, law-abiding citizens are not likely to be so accommodating to these changes. While some democratic populations may be more accepting to limitations placed on civil liberties than others, and there is likely to be variation across democratic governments as to the extent that they are willing to encroach on civil liberties, nonetheless, absent from a major crisis, there still exists a certain line that each democratic will not cross in attempting to thwart terrorism. Conversely, an autocratic regime is not likely to incur the same political costs of action that can be expected of a democratic regime, as an autocratic leader is not at risk of losing support at the ballot box, and therefore is better equipped to enact similar restrictive measures without regard for any political penalty.

Even under existing laws, terrorists maintain an advantage is choosing to form in a democracy. Law enforcement officers are more likely both to have and to abide by legal restrictions set on them in a democracy than in an autocracy. Terrorists are therefore better able to evade capture, and even should they be apprehended there is a lesser likelihood of being tortured or having their other human rights violated. This means that the group can expect less disruption when pursued by the greater law
enforcement apparatus should their presence offend a democratic government rather than an autocratic one.

The opposite argument, that democracy should promote legal change through the process of elections and not violent change by terrorism, is intuitively a plausible one. While the evidence is somewhat mixed, previous studies that focus on terrorist attacks, however, find that the opposite may be true, and that established democracies are more likely to be the target of terrorist attacks (Li and Schaub, 2004; Ross, 1993; Eubank and Weinberg, 1994, 2001). It is also important to keep in mind that the intentions of an international terrorist group are not necessarily consistent with those of a domestic group, and that the source of grievance for the international group may be a foreign state, or any other phenomenon that extends beyond the immediate jurisdiction of a democratic state. Past research also indicates that the grievances of a marginalized group, such as those that turn to terrorism, are often too narrow or absurd to be assuaged by the democratic process, and are often exacerbated by the inaction and deadlock characterizing the democratic system (Li, 2005; Fearon and Laitin, 2003).

For all of the above reasons, it is therefore to be expected that international terrorist groups will prefer to form in democratic states as there is a lower risk of doing so.

*Hypothesis 4: Terrorist groups are more likely to form in a democratic state than in an autocratic one.*

Of the freedoms commonly associated with democracy, perhaps none are as often identified by previous studies to be associated with the phenomenon of terrorism as is the presence of a free press (Crenshaw, 1981; Gambill, 1998; Li, 2005). Potential
terrorist groups usually cannot hope to defeat its opponents militarily; therefore they must aim to influence governments in other ways, either by rallying others to their cause, or by intimidating others to capitulate to their demands. Whatever the specific intent of their message, terrorist organizations rely on the media in order to communicate their agenda, and to help spread the psychological effect of terror, or the umbrella of fear, throughout the intended population, which is a key component to maximizing the effectiveness of a low-cost operation.

The argument is not unlike that of a tree falling with no one present to hear it, as terrorists are not able to make sounds that terrorize in the absence of an audience. A free media is more conducive to spreading the terrorist group’s intended message to that audience, as state controlled media outlets will be more restricted in the degree of coverage allowed for any particular terrorist communication or terrorist incident. In fact, information of this kind could be banned from broadcast entirely; a phenomenon noted in the terrorism literature, as suspicion that terrorism incidents in state-controlled societies are underreported, perhaps marring the validity of terrorist incident data (Sandler, 1995; Li and Schaub, 2004). Furthermore, in the presence of a free media, a terrorist organization can find an unwitting ally in their recruitment efforts, as the newsworthiness of terrorists often leads to media reports that include excessive details, which helps the group to train, educate and recruit new terrorists (Schmid, 1992; Li, 2005).

Hypothesis 5: Terrorist groups are more likely to form in nations with a free media.
This expectation may not be consistent over time, however. It is imperative to understand how technological changes during recent years have affected the decisions of terrorist organizations in where they will choose to base their operations, and how these changes will have resulted in changes regarding the costs of terrorist group operations, and subsequently in the effects on terrorist group formation.

First and foremost, it is important to note that the age of technology has had a profound impact on nearly all facets of international relations is difficult to ignore, so it should therefore not be surprising to realize that the phenomenon of international terrorism has also adapted to these changes as well, in the realms of communications, transportation, banking, satellite reconnaissance, and media. This is part of the reason for Fraser and Fulton’s (1984) distinction of a “new” terrorism eclipsing the “old.” The face of terrorism has in fact changed over time, although it is not merely time itself that is driving the change. Rather, it is that changes in technology over time are having effects on other factors that influence the decisions of terrorist organizations, particularly where to organize.

Terrorist organizations of the past had little choice but to operate in close proximity to their intended targets, as to do otherwise would raise the costs of operation to a level unsustainable by the group. Earlier terrorist groups, however, did not have the luxury of high technology that is readily available to modern terrorists. Much like the trends in modern warfare, in that wars can now be fought over long distances by sufficiently capable nations, so too have changes in technology allowed for terrorist groups to separate themselves from their targets by longer distances. The earlier
terrorist groups simply did not have the tools available to them several decades ago to engage in terrorist activities across such long distances.

Modern terrorists now have less need for the presence of a free media, due in large part to advances in communications technology. A terrorist group is able to communicate with the actors operating in a free media without the need for a direct physical exchange, as they now have the advantage of communication technology which allows them to release information via the internet, or sometimes through local media outlets as seen on regional television such as Al Jazeera, which can be immediately picked up and distributed by free media outlets across the globe instantaneously through satellite technology. Examples of this have been plentiful following the invasion of Iraq in 2003, where terrorist groups have been able to communicate their demands across oceans in a matter of seconds, and oftentimes transfer images on video of the atrocities they commit through roadside bombs, kidnappings, and beheadings. While images such as these shock the citizens of the world, they also bear witness to the fact that while media exposure is still a critical aspect of a terrorist incident; the immediate presence of a free media has become less necessary given technological advancements, perhaps even obsolete.

Whereas terrorist groups at one time had little choice but to operate closely to their targets, as technology has progressed, the groups themselves are now able to physically separate themselves from their targets while reaping the benefits of a free media in the nation that they have targeted. Lower costs of communication technology have rendered the low-cost alternative of free media less essential to the success of terrorist groups, which leads to the following hypothesis.
Hypothesis 6: Over time, terrorist groups are less likely to form in states with a free media.

While the potential success of a potential terrorist group has been examined by factors that minimize the costs of their operations, even the most meager of terrorist groups incur costs nonetheless. Before any level of success for the group can be reasonable assumed, that group must be funded in some way. As indicated by previous studies that focus on attacks (Li and Schaub, 2004; Li, 2005), higher levels of average income tend to lead to a lower incidence of terrorist attacks. The argument is that terrorists are less likely to harbor grievances against a system that provides adequate resources for self-actualization. This does not answer questions of how a new terrorist group will form, however. The expectation for group formation is markedly different, as while the system may provide the opportunity for most people to provide for themselves and their families, it is also true that a society marked by high levels of income will be able to provide new terrorist groups with the resources necessary to conduct international operations.

Terrorist groups, as stated above, are usually weaker than any government they hope to affect. While this weakness may be inherent in terrorist groups, it is not, at least in the minds of the terrorists themselves, desired. Terrorism is not in fact driven only by the motivation of local economic depravity, as it can be driven by injustice observed across borders, hatred informed by racism or religious intolerance, or any myriad of motivations by which disgruntled individuals might band together. In so doing, the
group will require one thing above all in order to carry out attacks and maintain its survival: resources.

Groups that form in areas of higher economic resources will have several advantages at their disposal. First, the groups will have at the ready a higher level of income attained by the membership of the group alone. In addition to this, potential donors in the larger population sympathetic to the cause will also have a larger pocketbook from which to provide the groups with additional funding. This higher level of group income of course will allow for the group to purchase more sophisticated items to conduct their operations, but additionally, terrorists in areas of higher average income will also have the advantage of drawing from a higher preponderance of the latest technology. A wealthy state is more likely to be first in attaining new technology, and will obtain it in greater numbers than in less economically advantaged countries. Communication technology is a key advantage to those engaging in terrorist activity (Knorr, 1962), which means that the more and better cell/satellite phones, computer software, and internet connections are available to a terrorist group, the better are the chances that they will be able to organize successfully. In addition, other items adapted for the purpose of attacks will be at the terrorist groups’ disposal, all of which in tandem with the communications technology will help to even the odds for their survival as the government security forces are likely to keep these items as well. All of these elements together lower the costs of terrorist operations, and make success in the mind of the potential terrorist more likely.

Furthermore, a wealthier nation on average will tend to be a more active trader than a nation lower down on the economic scale. This increase in the exchange of
goods will mean that it will be easier for terrorist groups to attain weapons, as there will simply be more opportunities for them to be attained, and the higher level of international exchange of goods will also mean that it is more difficult for the importing government to maintain a sufficient level of monitoring the goods that are being shipped in and out of its borders. Beginning from a disadvantaged position compared to most government security forces, start-up terrorist groups must be able to supply themselves appropriately in a way that can both sustain the group and give them the tools that will exponentially even out their capabilities compared to the government forces.

Of course a counterargument can be made similar to the one provided for democracy, in that it does seem logical that a government that provides a better economic opportunity for its people should also enjoy a lower level of violence directed towards it from the people it governs. However, similar to the rationale of democracy, international terrorist incidents need not be directed specifically at the host government of the group, and previous research has shown that the members of a terrorist organization are not, in fact, economically disadvantaged (Krueger and Malečková, 2003). Whether the attack is one directed from across borders, or even an international incident that remains within the borders of the host government such as an attack on a foreign dignitary or embassy, the group that initiates this activity is likely to derive a large advantage to having more monetary resources at its disposal. I therefore present the following hypothesis.

Hypothesis 7: Terrorist groups are more likely to form in nations with a higher level of economic affluence.
Thus far, much of what determines the outlook for success in the mind of a potential terrorist group has been identified: the ability to elude capture (by means of terrain, urbanization, and/or counter-terrorist capabilities/political consequences), the ability to communicate their intentions to a broader audience through the media thereby maximizing their effectiveness, and the ability to obtain sufficient resources. As stated above, however, even the presence of all of these does not necessarily lead to the formation of terrorist groups. What is of chief importance is that a state somehow has the underpinnings of a culture of terrorism, whereas the decision made by any individual to employ violence in such a way seems plausible, rational, or even essential towards achieving a particular goal.

Terrorism itself can be self-promoting, in that the groups themselves, once organized, have a tendency to continue their attacks (Li, 2005). The activity of these groups can also inspire others to adopt the same strategy (Midlarsky, Crenshaw, and Yoshida, 1980), whether the newcomers are supportive of the original group or are in fact operating to counter the actions of the other groups, which have been observed in several cases.\(^4\) Terrorist activity can therefore become the norm as opposed to taboo, and the psychological jump to terrorist activity can be considered a smaller one in the minds of those in such a society than it would be considered elsewhere.

A culture of terrorism can also be fostered by the makeup of the society itself. Societies marked with a high level of social cohesion, especially those that consider themselves to be disaffected, are more likely to abide, or even support, terrorist activity. These societies can congeal by several means, including nationalism, religion, or

\(^4\) Examples include the Ulster Volunteer Force’s response to the Irish Republican Army and the Jewish terrorist groups’ response to Palestinian terrorist groups.
ethnicity, although terrorist groups are more likely to arise in the name of an ideology that commands revolutionary action, whether instructed by religious ideas or political ones, as in the case of international communism. Nonetheless, high social cohesion is likely to provide a support network for the group invoking a common bond, and this segment of society that adheres to this same ideology is likely to be more supportive of and encouraging to the actions of those who take up arms. Consistent with Bernholz’s (2004) work, ideologies of this kind provide its adherents with “supreme values” to inspire their goals and to guide their behavior. In addition to being a psychological focal point for those committed to the cause, the presence of these values in the greater society makes it easier for groups committed to terrorism to recruit volunteers for the cause, and to obtain funding from either state or non-state sources.

The most driven, and perhaps the most successful terrorist groups, will be those that reflect the will of a larger disaffected population, including those who choose not to participate in terrorist activities, whether this population resides alongside the group in a particular state or not. This support apparatus is perhaps of more importance in the formation of terrorist groups than any other factor, and is found relatively consistently across the spectrum of successful groups. Those actions of terrorist groups who enjoy this support will appear justified in the eyes of many, perhaps even celebrated, which will in turn reinforce their dedication to the cause. This societal cohesion can also extend into the governmental organization of the state, as it does in several cases with radicalized Islam, which results in de facto government support for terrorism in the name of whatever the proclaimed ideology of the group may be, Islamic or otherwise.

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5 Examples include Irish nationalists and the Irish Republican Army, Basque nationalists and Basque Fatherland and Freedom, and even disaffected African Americans and the Black Panthers.
Terrorists are likely to form their groups in areas that minimize costs, risk, and maximize the likelihood for success. Beyond this, however, it is imperative, perhaps almost necessary, that terrorist groups have a support structure in place amidst their society, and a broader societal history of engaging in terrorist activity. I therefore offer the eighth hypothesis of this study.

_Hypothesis 8: Terrorist groups are more likely to form in nations with a more developed culture of terrorism._
CHAPTER IV
RESEARCH DESIGN: DATA, VARIABLES, AND METHOD

The data set for this study consists of all country years ranging from the years 1968 through 2000. This sample therefore includes a total number of 3115 observations, of which there were a total of 293 country years experiencing the formation of at least one new terrorist group, and a total of 376 international terrorist group formations represented.

A. Dependent Variable

The dependent variable for this study is the total number of new terrorist group formations within any nation in a particular year. Certainly arguments can be made in favor of focusing on the total number of groups operating in a particular year rather than new group formations. The inherent difficulty in this is that terrorist groups are clandestine by nature, and very few announce publicly when they are ending their operations, and even less often do they report when they are choosing to move their base of operations from one state to another. It is quite feasible however to determine the date of group formation, however, given that we do have information as to when a group’s first attacks were conducted, or the first threat of attacks were made, and even sometimes claims as to the date of the group’s formation made by the group itself.

All of the information on terrorist groups used in this study is collected from the Memorial Institute for the Prevention of Terrorism’s Terrorism Knowledge Base (TKB), which is compiled by multiple organizations including the RAND Corporation, who collects the information on particular incidents/attacks, and DeticaDFI, who matches
incident information with information on terrorist groups. This study therefore does not attempt to promote a new definition of terrorism, but rather adopts the definition as given by MIPT which is as follows:

**Terrorism**: violence, or the threat of violence, calculated to create an atmosphere of fear and alarm. These acts are designed to coerce others into actions they would not otherwise undertake, or refrain from actions they desired to take. All terrorist acts are crimes. Many would also be violation of the rules of war if a state of war existed. This violence or threat of violence is generally directed against civilian targets. The motives of all terrorists are political, and terrorist actions are generally carried out in a way that will achieve maximum publicity. Unlike other criminal acts, terrorists often claim credit for their acts. Finally, terrorist acts are intended to produce effects beyond the immediate physical damage of the cause, having long-term psychological repercussions on a particular target audience. The fear created by terrorists may be intended to cause people to exaggerate the strengths of the terrorist and the importance of the cause, to provoke governmental overreaction, to discourage dissent, or simply to intimidate and thereby enforce compliance with their demands.

While MIPT has collected information on international terrorist activity since 1968, MIPT also began to collect data on domestic terrorist incidents in 1998. For the purposes of this study, however, I examine only the onset of a terrorist group that is international in nature and therefore exclude domestic terrorism from the analysis. The definition of how the TKB differentiates international terrorism apart from domestic terrorism is defined below:

**International Terrorism**: Incidents in which terrorists go abroad to strike their targets, select domestic targets associated with a foreign state, or create an international incident by attacking airline passengers, personnel or equipment.
Many of the terrorist groups included in the study participate in activities consistent with both international and domestic terrorism, and these groups can certainly operate within the borders of only one country so long as their targets or attack patterns are consistent with the above definition. The domestic groups that are not included are those made up of “local nationals” who conduct attacks “against a purely domestic target.” These groups include those such as abortion clinic bombers, right-wing extremists, and environmentalist groups, among others.

As a final matter of definitions, this study is concerned with the emergence of a terrorist group within a particular nation. Defining a terrorist organization can sometimes be just as daunting an undertaking as defining terrorism itself, but drawing on the TKB, a proper definition of a terrorist group is therefore assigned to the information collected as well.

**Terrorist Group**: a collection of individuals belonging to an autonomous non-state or subnational revolutionary or anti-governmental movement who are dedicated to the use of violence to achieve their objectives. Such an entity is seen as having at least some structural and command and control apparatus that, no matter how loose or flexible, nonetheless provides an overall organizational framework and general strategic direction. This definition is meant to include contemporary religion-motivated and apocalyptic groups and other movements that seek theological justification or divine sanction for their acts of violence.

There are a few research design concerns that should be addressed when using TKB data. First, there is a concern that the TKB might misreport data due to its drawing on publicly available news sources to gather information, such as newspaper reports, etc. This of course could mean that less developed countries, especially those without an independent media, might be underreported. The data on groups gathered by
DeticaDFI addresses this somewhat by consulting both international and domestic media sources, as well as US government and academic reports, which can be expected to include information that local media failed to disclose, whether by a lack of media presence or by lack of media freedom. However, the group data is matched to the incident data collected by the RAND Corporation, which is drawn from open source materials (i.e. newspaper reports). Efforts to ensure accuracy notwithstanding, it is possible that important information is unavailable/incomplete under a variety of circumstances. It is largely unclear as to how incomplete information in the incident data might affect the accuracy of data on terrorist organizations, but nonetheless it remains unclear as to whether there exists some form of bias in the data used in this study yielding errors in the results.

Another concern is that more information is given by the TKB on certain terrorist organizations than on others, which is not surprising given the clandestine nature of most terrorist organizations. Therefore, in some cases it is difficult to determine many aspects of the group which are considered in this study. Information may not be clearly provided as to the nation of origin of the terrorist group, or to the exact date of its creation. Furthermore, some dates were available but not specific to a particular year (i.e. “1970s,” or “late 1980s”). It therefore becomes problematic to limit these observations so unclearly defined into a particular nation year, but nonetheless a uniform standard for including such cases is adopted. For cases attributed only to a particular decade, the year assigned to it was determined by more extensive independent research on the part of the author. For those listed as early, mid, or late in a particular decade, the years assigned to them are the second, fifth, and eighth year of
that decade respectively (e.g. early 1980s yields 1982, mid-1980s yields 1985, and late 1980s yields 1988). Some groups did not have a date in which the group was actually formed, and instead the date provided of the “first mention” of the group is substituted in place of the date of formation, which usually coincides with the date of the first incident. This is likely to introduce some errors into the analysis, but it is unclear as to whether the decision to include cases in this way will uniformly bias the results in any particular direction. As for cases where the nation of origin was not clear, it seemed too problematic to make only the best guess as to where the group originated, and therefore the decision was made to drop these particular cases from the analysis. This resulted in the removal of 89 potential occurrences of new terrorist groups from the analysis.

The terrorist incident data includes information from 1968 to 2006, but the information provided on groups actually goes back much farther, starting in 1922 with the formation of the Irish Republican Army. However, the data on groups is matched by DeticaDFI to incident information beginning in 1968, therefore only groups that have staged attacks since 1968 have profiles provided on them, meaning that although there is group information previous to this date, only the groups that have survived until at least 1968 are represented. Regardless, since this study is not particularly concerned with the aspects of a terrorist group’s environment or its own attributes that facilitate its

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6 In most cases, the TKB data lists the date of formation, which can sometimes be several years before the first attack or threat of attack. Group formation data is therefore “back-dated” following DeticaDFI’s investigation of a particular group. For example, a group may form in 1975, but not attack any targets until 1985. In this case, the date of 1975 is still used as the dated of formation.

7 These tend to be smaller, less organized and less permanent groups such as several of the Greek terrorist groups, and in most cases the data indicates that it is unlikely that the date of formation is significantly different from the date of the first mention or attack.

8 It should be noted that the location of the first incident of a group was never substituted for the state location of the terrorist group’s formation. Groups were only included if the actual place of formation was discernible.
own permanence, in addition to the fact that the inclusion of such groups at the same
time eliminating others that perhaps formed and disbanded all previous to 1968 might
unacceptably bias the results. In addition, because of data limitations on the
independent variables, expanding the study any earlier than 1968 (with lags
representing levels in 1967) is not feasible. The end result is that all of the cases of
groups that formed previous to 1968 nonetheless had to be eliminated from the analysis
as well. The total number of new groups thus eliminated stands at 36, those of
particular note are the Palestine Liberation Organization, or PLO (1964), Basque
Fatherland and Freedom, or ETA (1959), and the Irish Republican Army, or IRA (1922).
While the exclusion of these groups is particularly unfortunate, they do represent only a
small proportion of groups worldwide, and future studies of terrorist groups, perhaps
specifically studies investigating features that allow for a group to endure in
perpetuation, will be well advised to find ways in which to include these omitted from
this present study.

Furthermore, splinter groups are considered new group formations for the
purposes of this study. Therefore, groups such as the Real Irish Republican Army
(RIRA) and the Continuity Irish Republican Army (CIRA) are represented in the sample
even though the original IRA is not. This splintering represents a critical aspect of the
self-perpetuating dynamic that terrorist group formation perpetuates. This in part
represents the culture of terrorism within a particular state, as every new group
formation is likely to spur others, and a multitude of splinter groups as with the case of
the IRA is an important aspect of this process.
The dependent variable, *group total*, is a yearly count of the number of new terrorist groups that formed within a particular year in each nation, with zero representing no new terrorist group formations and ranging as high as nine new group formations. Again, new groups were included in the analysis only if both their place and year of formation were identifiable.

B. Independent Variables

Hypothesis 1 suggests a negative relationship between a state’s governmental capability for dealing with terrorist activity and the emergence of new terrorist groups. The first variable used to measure this, *military personnel*, represents a resource that the state may activate in order to combat terrorist groups formed within their borders. This variable is constructed by computing the military personnel variable from the Correlates of War National Material Capabilities dataset and dividing it by the total state population from the same dataset. The resulting variable is then multiplied by one hundred so as to represent changes in percentage.

The second variable used to test whether a state’s capabilities affect terrorist group formation is *regime durability*, which comes from Li (2005). This is a proxy measure that indicates the institutionalization of a state, as older government systems will have more developed institutions operating within it, and will therefore be better able to proactively deter the formation of new terrorist groups. The authority of an older government will also be considered more legitimate, so any counterterrorist actions they may take are less likely to meet with popular resistance, so the terrorist group can

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9 “This is defined as a 3-point change in the POLITY score over a period of three years or less, with the end of the transition defined by the lack of stable political institutions, or the year 1900, whichever came last. The variable is log transformed to address skewed distribution.” (Li, 2005)
expect less support in the general population for its formation and continued presence. *Regime durability* is therefore expected to have a negative effect on new group formation.

The next variable of interest is the percentage of difficult terrain in a given nation. Consistent with hypothesis 2, this variable is expected to have a positive effect on the emergence of terrorist organizations. While theoretically, both mountainous terrain as well as rain forests should have similar effects on the formation of new terrorist groups, data on rain forest coverage is not readily available for all nations, perhaps due to the fact that the percentage of rain forests in a given nation is prone to constant flux. The *mountainous terrain* variable is constructed by taking the logged value of percentage of mountainous terrain in the particular nation of interest (Fearon and Laitin, 2003).

The variable *urbanization* is used to test hypothesis 3, and is considered theoretically to have a positive effect on the emergence of terrorist groups. This measure is taken from the National Material Capabilities dataset provided by the Correlates of War project (Singer and Small, 2001) and is logged to address concerns of skewed distribution.

As hypothesis 4 suggests, a democratic nation is more likely to have terrorist groups form within their borders, therefore there is an expected positive effect of level of democracy on the number of new terrorist groups forming. The variable *democracy* adopted for use in this study is taken from POLITY IV (Marshall and Jaggers, 2000), which is derived from the difference between the 10-point democracy index and the 10-point autocracy index. Countries are considered democratic if their score on this scale is equal to or greater than 6.
Hypothesis 5 suggests a positive relationship between the presence of a free press and the emergence of new terrorist groups. For the years 1968-1995, the variable *free media* is a measure developed by Van Belle (1997, 2000) which uses the annual reports of the International Press Institute, other country reports from area experts, and country-specific documentation to create a dichotomous variable in which countries that clearly have a free press are coded as 1 and those without a free press are coded as zero. Unfortunately, as stated above, this variable only covers through the year 1995, so in an effort to expand the scope of the study to the year 1999, the years 1996 through 1999 were coded using the Freedom House score for media freedom which was also converted into a dichotomous variable, with “free” countries being coded a 1 and both “not free” and “partly free” countries coded as zero.

The *free media* variable is also of interest as the effects of a free media on terrorist group formation are expected to change over time. As suggested by hypothesis 6, this variable is expected to have a negative effect on the likelihood of a terrorist group emerging in any particular nation. Therefore, the *free media* variable is interacted with *year*, which is a simple yearly count with the first year covered by the study with 1968 measured as “0,” and each subsequent year incrementally increases by one. The resulting variable is *free media X year*.

The variable *GDP per capita* is a measure capturing the logged real gross domestic product (GDP) per capita, adjusted for purchasing power parity taken from Heston et al. (2002). This variable is taken as a measure to test hypothesis 7, which predicts a positive relationship between a state’s wealth and *group total*.

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10 The lagged dependent variable measures 1967 as year “-1.”
The “culture of terrorism” referred to in hypothesis 8 is difficult to quantify yet is central to the emergence of terrorist groups. As indicated by Midlarsky, Crenshaw, and Yoshida (1980), the psychology of society can be altered by the actions of terrorist groups in a way that inspires others to take similar actions. It is therefore likely that the presence of a terrorist group in any state will pave the way for others to follow. Therefore, in order to test the claim of hypothesis 8 that a “culture of terrorism” will lead to the formation of terrorist groups, certainly it is reasonable to measure the history of terrorism as it will have its own impact within the culture of a given state. I therefore include a one year lag for the dependent variable, past group formation, which has been shown to be the best predictor of many phenomena. This of course indicates the previous year’s number of new terrorist groups to form in a given state, which also helps to control for the presence of a “culture of terror” in a given state, and also helps to nullify the effects of some terrorist “split” groups- those that are new only in that they have left the ranks of a previously existing group.

C. Control Variables

The control variables for this study include the year as an individual component absent its interaction with press freedom, which is consistent with the suggestions made by Braumoeller (2004) that all regressions including interacted variables must also control for each individual component. Again, this variable is constructed by assigning 1968 a level of zero, and for each year following increases by increments of one.

In view of more recent events, it would be suspect to some for this study to move forward without considerations made for the presence of Islam. Although there are
certainly no value judgments assessed here as to whether any religion is “good” or “bad,” that the nature of terrorism has evolved alongside an Islamic fundamentalist strain is difficult to simply set aside without sufficient examination. The changing face of terrorism into a phenomenon identified with Islamic extremism has been an observed trend since the fall of the Shah in Iran in 1979. Since that time, other states dominated by large Muslim majorities have seen a return to a more traditional form of Islam, and with this revolution have come changes that do in fact affect the trends in terrorism across the globe. Consistent with Bernholz’s (2004) work, radical Islam is one of many ideologies that provides its adherents with “supreme values” to inspire their goals and to guide their behavior. In addition to being a psychological focal point for those committed to the cause, the presence of these values in the greater society makes it easier for groups committed to terrorism to recruit volunteers for the cause, and to obtain funding from either state or non-state sources. Furthermore, causal observers will undoubtedly recognize the changing tactics of terrorism, from the bombings of government facilities by the early anarchist groups to the suicide bombings of innocent civilians by the groups associated with fundamentalist Islam. The variable Islam is therefore introduced as another control variable, which is computed by the percentage of Muslims divided by a nation’s total yearly population, and is taken from Fearon and Laitin (2003).

The Islam variable is taken from Fearon and Laitin’s study on civil wars, but their analysis shows that the effects of Islam are nullified once the consideration is made for fossil fuel exports. Their theoretical reason for this is that states with a higher proportion of fossil fuel production per total economic output will have a less developed domestic
infrastructure than states with equally high levels of economic output but lower proportions of fossil fuel production. I do accept the argument that states with a higher proportion of fossil fuel production will in fact have a weaker state infrastructure. Higher levels of income from natural resources will mean a lesser need for development in other areas of the economy, as there will be less need for development in other areas. This will therefore concentrate wealth in the hands of those who control the means of resource extraction. The result of this will be that the more powerful individuals the nation will have such an overwhelming preponderance of that nation’s wealth that it will be difficult for the lower classes to push for reforms and ultimately a more diversified economy. States such as these will be significantly pressured to resist democratization, as the wealthy classes will have both the desire to prevent loss of political power to the lower classes, and they will also have a large amount of resources in which to do so by “buying off” the lower classes with the money acquired through fossil fuel extraction. If the wealth accrued by fossil fuel exports is indeed amassed by a certain privileged group of individuals, whether they are government or private firms, the mass population not advantaged by such luxury will have reason for seeking out instruments of institutional change, and if the economic divide is significant enough, those on the lower end of the spectrum may be more likely to be swayed towards violence as a means to convey their desperation, whether by means of civil war, or terrorism. Given that so many oil exporting states are also primarily Muslim, it seems necessary to control for these exports in order to determine whether Islam is actually having the effects on terrorist group formation that it is expected to have. The control variable oil exporter, is a binary measure that indicates the if the proportion of a country’s export revenues
attained from fossil fuel sales accounts for at least one third of the country’s total revenue; if so, the variable is coded as one, if otherwise, as zero.

All of the independent variables, including their source and their hypothesized expected direction, are listed in Table 1. The study employs count data, group total, as the dependent variable of new terrorist groups ranging from zero to nine across a consistent period of observation time (year). Since this data is constructed as a yearly count, the method used for this test is a Poisson regression.
<table>
<thead>
<tr>
<th>Variable and Expected Effect</th>
<th>Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military Personnel (Negative)</td>
<td>Percentage of military personnel per total population Correlates of War National Material Capabilities (Singer and Small, 2005)</td>
</tr>
<tr>
<td>Regime Durability (Negative)</td>
<td>Number of years since most recent regime change from Li, 2005</td>
</tr>
<tr>
<td>Mountainous Terrain (Positive)</td>
<td>Logged percentage of mountainous territory (Fearon and Laitin, 2003)</td>
</tr>
<tr>
<td>Urbanization (Positive)</td>
<td>Logged Correlates of War Urbanization rate (Singer and Small, 2005)</td>
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<td>Democracy (Positive)</td>
<td>POLITY IV democracy score</td>
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<td>GDP per capita (Positive)</td>
<td>Real GDP per capita adjusted for purchasing power parity (Heston et al., 2002)</td>
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<tr>
<td>Past group formation (Positive)</td>
<td>One year lag of the dependent variable</td>
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<tr>
<td>Islam (Positive)</td>
<td>Percentage of Muslims in the Population (Fearon and Laitin, 2003)</td>
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<td>Oil Exporter (Positive)</td>
<td>Percentage of Export Revenue from Fossil Fuels Fearon and Laitin, 2003)</td>
</tr>
<tr>
<td>Year (Positive)</td>
<td>Yearly increment</td>
</tr>
</tbody>
</table>
CHAPTER V

STATISTICAL RESULTS

Table 2 lists the results of the first test, the Poisson regression. In investigating the independent variables of the study, there are decidedly mixed results.\(^{11}\)

TABLE 2

Poisson Regression for the Formation of New Terrorist Groups

| Variable               | Coefficient | Standard Error | P>|z| |
|------------------------|-------------|----------------|------|
| Military Personnel     | 0.439       | 0.072          | 0.000*** |
| Regime Durability      | -0.167      | 0.056          | 0.003*** |
| Mountainous Terrain    | 0.357       | 0.060          | 0.000*** |
| Urbanization           | 0.249       | 0.042          | 0.000*** |
| Democracy              | 0.023       | 0.013          | 0.067*  |
| Free Media             | -0.134      | 0.305          | 0.661  |
| Free Media X Time      | 0.032       | 0.017          | 0.004*** |
| GDP per Capita         | 0.141       | 0.099          | 0.154  |
| Past Group Formation   | 0.614       | 0.067          | 0.000*** |
| Islam                  | 0.0004      | 0.002          | 0.864  |
| Oil Exporter           | -0.227      | 0.225          | 0.313  |
| Year                   | -0.028      | 0.010          | 0.003*** |
| Constant               | -8.053      | 0.912          | 0.000*** |

n=2994 Pseudo R\(^2\) = 0.1687

\(^{11}\) In addition to the Poisson regression, a negative binomial regression was run on these same data. There was little difference between the two tests, with the exception of the free media X time interaction returning as completely insignificant in the negative binomial test.
Military personnel per capita yielded highly significant results at the 0.001 level, although its effect on the formation of a new terrorist group is actually positive, which is opposite than its theorized direction. Li and Schaub (2004) find similar results in their study on terrorist attacks, whereas a government with a higher level of capability is apt to endure a higher number of terrorist attacks. They argue that the reason for this may be that more capable governments offer terrorists more attractive targets, in that attacks in these states will yield higher levels of media exposure. This explanation could certainly apply to the formation of a new terrorist group as well, in that a state maintaining a large military could present terrorist hopefuls with a large number of attractive targets, and the larger the military, the more newsworthy any potential operations within that state will be. Despite the inherent risks of forming within a state with a large military, a new group is more likely to form in states with more anti-terrorist tools available to the government.

A state’s regime durability has a significant effect on the formation of a new terrorist group at the 0.01 level, and is negative as was theoretically predicted. This suggests that states with an older governmental system, and therefore more developed internal institutions, will be less likely to have a new terrorist group form within its borders. These institutions represent another resource in addition to military personnel that a government can activate in order to thwart the activities of potential terrorists. It can also be argued that an older governmental system will be more legitimate, and therefore the counter-terrorist actions it can take will therefore appear more legitimate in the eyes of the larger population, essentially giving the government the “moral authority” to act against the terrorists in more aggressive ways.
Mountainous terrain returned a coefficient that is positive as was theoretically predicted, and is also significant at the 0.001 level. This strongly supports the claim that nations with a higher degree of difficult terrain will be better suited for the formation of a new terrorist group, and that geographical makeup of a nation can itself be partly to blame for the emergence of such groups by providing them with a low-cost shelter from attack and surveillance. This finding suggests that terrorist groups behave quite similarly to insurgent and rebel groups, who have been shown in previous studies to embrace many of the same tactics (Fearon and Laitin, 2003; Desai and Eckstein, 1990). While the variable used here is only a measure for mountainous territory, it is likely that any terrain that offers similar advantages to terrorist groups will be more attractive areas from which to base their operations, including swampland, rain forests, etc. This is also likely to vary depending on the state's capability to conduct anti-terrorist campaigns, as alluded to above, in that mobilizing a large military across difficult terrain is problematic, and the presence of both difficult terrain and a large military will compound the increase of new terrorist group formations by providing both high profile targets and areas of cover to retreat to.

The results for urbanization returned a coefficient significant at the 0.001 level, and yielded a positive effect on the likelihood of new terrorist group formation, which was theoretically predicted. Previous research has found a positive relationship between population and terrorist incidents (Krueger and Malečková, 2003; Li and Schaub, 2004; Li, 2005), so it is therefore expected as a result of this study that highly concentrated population centers favor the creation of new terrorist groups in some way. This could be the case because a country with a high urbanization rate is more likely to
be heterogeneous, and therefore the chances of a particular segment of the population to feel isolated are increased, resulting in grievances which lead to terrorism (Li and Schaub, 2004). The theoretical claim made in this study is that higher urbanization rate leads to a higher level of invisibility, which is consistent with the theoretical assertions made by Eyerman (1998), who claims that a higher population should hinder the ability of the host government to conduct anti-terror operations. It was expected that a higher rate of urbanization would affect anti-terror enforcement in the same way, and the results indicate that this may in fact be the case.

The democracy level of a state does not significantly affect the formation of new terrorist groups, as the resulting coefficient is not significant at the 0.05 level, which shows that democracy is not likely to affect the formation of a new terrorist group. This adds to the current literature in that international terrorist groups will not necessarily choose to form within a democracy, while they do choose to target democracies for attack. Whereas previous studies indicate that terrorists will attack democracies for the larger and unique psychological effects that follow (Blomberg, 2004), this study indicates that the reasons for a group to form and thereby base its operations in a particular nation may not be influenced by the presence of democracy there. Therefore, the argument that a democracy’s tendency towards deadlock and the government’s inability- or at least their lack of enthusiasm for- restricting the civil liberties of the citizenry in order to more effectively pursue a terrorist group (Li, 2005) does not receive support from this particular test. However, there is no support for the counterargument either, that democracy should alleviate social tension by means of allowing for government participation through the ballot box.
Both of the free media indicators, the interaction of a free media with time and free media alone, yielded rather interesting results. Free media itself was completely insignificant. Therefore it is not determinable from this study whether the presence of a free media is likely to lead to the formation of more terrorist groups. The interactive indicator of free media X year did not affect new group formation as was theoretically predicted. Free media X year is significant at the 0.05 level, but the coefficient is positive, which is the opposite direction than was theorized. Given these findings, one should therefore expect to see new international terrorist groups choosing to form in areas of high media freedom as the years continue to pass. It could be the case however, that communication technology advances had not yet reached a stage where terrorist groups could utilize them effectively given the range of the study. The last observation year of this study is 1999, and in many ways, internet capabilities and cell phone technology were not as readily available even just a few short years ago as they continue to progress now, and as these technologies continue to spread it may be the case that these trends in terrorist group formation may change in a way consistent with theoretical expectations. This is largely conjecture at this point; however, as the findings nonetheless indicate strongly that the opposite is true.

Given that both democracy and free media were insignificant, it should be noted that quite often media freedom is very closely related with the level of democracy, causing problems of collinearity. Democratic government and protection of free media expression could in fact both be measures tapping the same phenomenon, that being the presence of a free-minded and permissive society. To test this, a correlation test was employed for both democracy and free media, which resulted in a correlation
between the two of 0.6954, which is certainly high enough to raise some concern over collinearity. In light of this, the Poisson regression was run twice more, once with both of the media freedom variables removed and again with the democracy variable removed.\textsuperscript{12}

When running the Poisson regression without the media variables, the democracy score does achieve significance at the 0.05 level and shows a positive direction, consistent with theoretical predictions. When the opposite is done, and the regression is run with the media variables absent the democracy score, both also maintain their direction, but free media \textit{X} year loses its significance at the 0.05 level, and free media absent the interaction with time is still insignificant altogether. These tests show that democracy may yet be a significant determinant of new terrorist group formation as was theoretically predicted, and that the inclusion of free media variables might have been too closely correlated to allow for the relationship of democracy and terrorist group formation to be properly identified. This result is understandable, as the two variables could certainly be tapping the same concept to an extent.

It is also possible that the free media indicator is being affected by the inclusion of the interaction of free media with year. To check for this, the Poisson regression was therefore conducted again without the interaction variable included, and the results do in fact lead to some important changes.\textsuperscript{13} While the other variables remain mostly unchanged in both direction and significance, free media, on the other hand, becomes significant at the 0.05 level. Therefore the effect of free media alone is significantly and

\begin{footnotesize}
\textsuperscript{12} Only the changes for the media freedom and democracy results are discussed here. The full results are listed in the appendix.
\textsuperscript{13} While only the free media variable is discussed here in the text, the full results of this test are listed in the appendix.
\end{footnotesize}
positively associated with the formation of new terrorist groups absent any interaction with time, which is consistent with theoretical predictions. Therefore the presence of a free media is shown by this test to be important to the formation of new terrorist groups, but this importance has become more significant as time has passed, which is the theoretical anomaly.

\textit{GDP per capita} does not affect the level of new terrorist groups in any significant way, as the results for it did not achieve significance at the 0.05 level. This allows for some debate as to the actual effects of societal wealth on new terrorist group formation. A significant aspect of the theory explaining \textit{GDP per capita}'s relationship to terrorist group formation is that a higher level of per capita income will mean a higher availability for funding for the group, both from members and from sponsors not directly affiliated by membership in the group. Given these findings, it cannot be asserted with any confidence that this argument is correct.

The levels of past group formation are positive as was theoretically predicted, as well as highly significant at the 0.001 level, lending credence to the argument that terrorist groups may therefore affect the society and its attitudes towards terrorist actions, inspiring others to adopt similar strategies (Midlarsky, Crenshaw, and Yoshida, 1980). This indicates that the arguments that terrorism “gathers its own momentum” (Crenshaw, 1981) and therefore creates “contagion effects” (Janis and Katz, 1959) are well-founded, and this study helps provide further quantitative evidence that this in fact the case.

The first of the controls, \textit{Islam}, was not a significant determinant of new international terrorist group formation. This variable is again, only a proxy for examining
particular cultural effects. It is important at this juncture to discuss the results for the *oil exporter* variable, which are also completely insignificant. Therefore, any indirect effects of oil exports on governmental capability or infrastructure can be considered menial at best. In addition, and more importantly, this finding suggests that Fearon and Laitin’s findings that higher oil exports are more to blame for civil wars and insurgencies do not extend to international terrorism, or at least to the formation of international terrorist groups. Their finding results in a positive and statistically significant result for oil exports in their study, which they claim is responsible for the lack of significance for the variable measuring the proportion of Muslims in a given country. Their subsequent argument therefore is that the “bloody borders” or “bloody innards” argued by Huntington (1996) that are shared within Islamic society can actually be better explained by predominantly Islamic countries finding themselves in the oil-rich Middle East by haphazard coincidence, which implicitly argues against claims that the practice of Islam itself might in fact be a cause of violence. The absence of a similar finding here suggests that neither oil exports nor the presence of a high proportion of Muslims lead to the formation of new groups, providing evidence that the phenomenon of international terrorism is different than the onset of other forms of violence such as civil wars.

As a final remark on the Poisson regression,\(^{14}\) the control variable *year* is both significant and negative. Enders and Sandler (1999) and O’Brien (1996) claim that

\(^{14}\) As another matter of note, the conditions that lead to the creation of one new terrorist group rather than none could be more important than those that lead to five rather than four. To test this, a new regression was performed using logit analysis on a newly transformed dependent variable, which is a binary measure given a value of “1” if any new groups formed in a particular country-year, and zero otherwise. The results for the logit test were largely similar to those of the Poisson regression, with the exception being that the *free media X year* returned as insignificant. To investigate this discrepancy, outlier tests were run on the Poisson regression first by running the Poisson regression again after dropping the obvious outlier of Greece in 1999, which saw a new group total of nine. Another Poisson regression was run after eliminating ten other possible outliers, all of which shared residuals that exceeded a threshold of 1.0. In both tests, the results returned were largely identical to those of the original Poisson regression.
there is still the effect of the Cold War acting on the time variable driving the 
phenomenon of terrorism worldwide, as the fall of the Soviet Union led to the loss of 
state sponsorship of terrorism across the globe, therefore less terrorist activity, and 
perhaps, fewer new terrorist groups as well. While this is certainly an imperfect test of 
those assertions, these findings do suggest that there was a decline in the number of 
new terrorist groups over time.
A. Conclusions and Discussion

This study offers a new opportunity for studying international terrorism and builds on previous terrorism literature in several ways. Several of the factors identified by previous studies (Krueger and Malečková, 2003; Li and Schaub, 2004; Li, 2005) that lead to a higher rate of terrorist incidents also lead to a higher rate of new terrorist group formation. The indicators that show consistent effects as those in literature investigating terrorist attacks are government capability, rough terrain, rates of urbanization, democracy, economic affluence, and social factors that unify the population in support of terrorist activity.\textsuperscript{15} Therefore high levels of government anti-terror capability do not appear to impede the activities of terrorist groups, either in their formation as demonstrated by this study or in their decision to attack as demonstrated by previous work (Li and Schaub, 2004; Li, 2005). This study also provides quantitative evidence that terrorist groups tend to base their operations in areas with difficult terrain, which extends the insights provided by previous studies on civil war and insurgency into the understanding of terrorist activity (Fearon and Laitin, 2003), and a similar effect is seen in the presence of urbanization rates as well. There is some evidence here that democracy does not in fact appear to inspire potential terrorists to seek resolution to political disputes through peaceful, democratic means (Li and Schaub, 2004; Li, 2005), but this is only when the media freedom indicators are removed from the analysis. The

\textsuperscript{15} The consistencies referred to here of course do not refer to all previous literature, in that there are mixed results among the findings between earlier works. Some of these consistencies, specifically government capability and economic affluence, are indeed consistent although they are so against the theoretical expectations outlined in this study.
same is true for freedom of the media as well, in that a free media becomes a more significant indicator of new terrorist group formation when examined alone without an interaction with time and the inclusion of a democracy indicator. This is an important result, in that press freedom is so often examined in the study of terrorism and its effects so widely accepted (Crenshaw, 1981; Gambill, 1998; Li, 2005). The media is a critical component of spreading the atmosphere of terror, and its positive effect on the likelihood of both attacks and terrorist group formation demonstrates this. There also appears to be support for the claim that a culture of terror can indeed be created through various social processes, and once set upon, the cycle may be difficult to break (Crenshaw, 1981; Janis and Katz, 1959; Neumann, 1960).

Quite possibly the most important contribution of this study is that it demonstrates that the phenomenon of international terrorism can be quantitatively understood by examination of terrorist groups. Specifically, it would of course be a false leap to say that this study allows us to predict absolutely new group formation, but the factors outlined above are certainly a place to start. There are two reasons why it is important to study terrorism in terms of the groups rather than the attacks. The first is a path dependency argument, in that as the initiator of the attacks, the groups themselves are the key component in the spread of a culture of terror, and are uniquely tied to the cycle of terror beyond any single attack. They are the human element of terrorism, and the attacks are merely what they do. This leads to the second reason, which is that the policy implications for choosing to study the group in this way are different than studying their attack patterns. In choosing to study attack patterns, the policy implications will likely be defensive in nature. The questions of who will be hit by an attack, and where,
and when, all lead to the natural question of “What can we do to protect ourselves?” By studying the groups, in terms of where they form, as this study does, or perhaps in where they go, and where, and why they persist, policy makers can instead be informed as to how to construct offensive strategies, allowing us to ask the question “How do we find them?” In answering this second question, different policy options emerge than if we focus solely on the first question, including, for example, reconnaissance, surveillance, a variety of military options, etc.

So, where can one expect to find new terrorist groups? Based on these results, what would a state likely to experience a higher number of new terrorist group formations look like? Overall, it is generally logical to say that a nation with a high level of government anti-terror capability, a high level of democracy, a large proportion of difficult terrain, a high rate of urbanization, and a culture that is supportive of terrorist activity or intentions will be more likely to see a new terrorist group emerge in any given year. This particular profile is indeed fairly basic, and it is highly unlikely that any state would have especially high levels of each. To consider these factors more broadly, this study indicates that not all steps towards terrorism deterrence would be successful, as the results for a larger military indicates. What appears to be of greater importance is that a state has the legitimacy or moral authority to combat terrorism, which do not increase the attraction of a potential target as greater military resources do. This study also reinforces the fact that terrorist groups are much more apt to be formed when there exists an opportunity for them to hide, whether by means of having difficult natural terrain close at hand or by having large population centers to disappear into. In addition, the findings for media freedom and democracy suggest that the broader
phenomenon of high levels of political freedom or civil liberties tend to inflame terrorist sensibilities rather than mediate them. This has some important policy implications in that the current US strategy in combating worldwide terrorism involves the spread of democracy, but these results show that it is more important to maintain a stable regime rather than a democratic one when it comes to the prevention of terrorist group formation.

B. Noteworthy Cases

When observing the data collected for this study, however, there are some cases of nations that stand out as being more terror-group prone than others. So, quite specifically, a country that can expect a higher number of terrorist group formations may resemble either Lebanon or Greece. As indicated above, both of these nations had a tendency to show a very high rate of new terrorist group formation. Between the years 1968 and 1999, Lebanon only experienced 17 years of no new terrorist group formation, and Greece experienced only 19.\(^{16}\) Both nations therefore seem to maintain some manner of a “tradition of terrorism.”

In the case of Lebanon, there are several historical factors that have led to turmoil in the country and in turn the formation of groups dedicated to terrorism. Many of the terrorist groups that stage attacks against Israel and the greater western world have formed in Lebanon, as it was historically the location of many Palestinian refugees following the 1967 Arab-Israeli War. In addition, civil war destabilized the nation between 1975 and 1991, marked by foreign interventions by the United States, Syria

\(^{16}\) Even though it stands out as one with a high number of new terrorist groups, the Lebanon cases were not included in the quantitative analysis due to data limitations.
and Israel. Following with the Syrian occupation of the nation until 2005, Lebanon has a history of particular governmental instability. There are also serious divisions among the Lebanese with regard to religious affiliation, so much so that even the makeup of the government reserves particular offices for followers of Christianity, Sunni Islam, and Shi'a Islam. In addition to this, the mountains of Lebanon which were once a refuge for early Christians can now be used as welcome staging grounds for terrorist groups. Over the years, the presence of major enduring terrorist groups such as the Palestinian Liberation Organization and Hezbollah have, in combination with the above factors, contributed towards developing a culture of terrorism in Lebanon, one that, as evidenced by the data gathered here, is generally maintained from year to year. Many of the smaller groups and their membership have in fact folded into the larger ones such as Hezbollah, so while there are a large number of new groups concentrated in the nation, many of them and their members have in fact been recycled into other groups, a phenomenon not specifically addressed by the quantitative aspects of this study. It is unlikely that this tradition will be broken any time soon, either, as even though the Syrian occupation of Lebanon officially ended in 2005, the Syrian government still maintains a great deal of influence over the decisions made by the independent Lebanese government. Furthermore, the Israeli invasion of Lebanon in 2006 again destabilized the nation, causing severe damage to the nation’s infrastructure. While the Israeli operation was somewhat successful in disrupting Hezbollah’s operations in southern Lebanon and killing hundreds of its members, it remains unclear as to whether the resolve of the group was actually damaged enough to stem the tide of terror, at least in the short term. It is also entirely possible that the Israeli military action will actually
enflame latent anti-Jewish sensibilities in the country and thus yield an even higher likelihood of terrorist activity in the future.

The Greek case of terrorism is quite interesting as well. Greek terrorist groups differ from those in Lebanon in that their primary aims are not usually religious in foundation. Greek terrorist groups tend to form around the ideals of anarchism and socialism, even sometimes a combination of the two. Though not as historically tumultuous as Lebanon and despite its membership in both North Atlantic Treaty Organization and the European Union, Greece has experienced its own institutional challenges over the years covered by this study, including a coup d’etat followed by a period of dictatorship in the late 60’s and early 70’s. Even after again establishing a new constitution following a referendum in 1974, the Greek government experienced challenges involving weak coalitions in the parliament and the resignation of a prime minister due to illness. In addition to the mountains present in Greece, the nation is also made geographically difficult to navigate by reason of the multitude of waterways and islands in the country, the latter of which exceeds 1,400 in number. The Greek terrorism tradition appears to be somewhat unique from that of other nations, in that groups tend to form for the purpose of one or a few small-scale attacks and then dissipate. Many of these groups are believed to be connected to others sympathetic to the same ideals (again, usually in the cause of anarchism or socialism), leading researchers to believe that many of the groups may have overlapping and/or recycled membership. This particular aspect of Greek terrorism may result in terrorist trends that are less than generalizable across the entire state system.
In addition to Lebanon, another notable exclusion from the data set used in this study is Iraq. While there are years in which Iraq experienced the formation of new terrorist groups between 1968 and 2000, trends in terrorism following the 2003 US-led invasion of Iraq have nonetheless been staggering when compared to previous years, and also when compared to other nations across the globe. While experiencing a total of seven new groups across all the years covered by this study, which ends in 2000, since the invasion Iraq has seen the formation of a total of 43 new terrorist groups from 2003 to 2006, with a total of 21 in the year 2004 alone,\(^\text{17}\) which is more than double the number from the highest count of new groups in any other nation in any given year.\(^\text{18}\) Obviously Iraq’s exclusion from the dataset used in this study is lamentable, but given the remarkable level of new terrorist groups to emerge during this period of time, the case could be made to exclude the Iraq cases following the US-led invasion as a notable outlier. Still, the Iraq case can certainly be informed by many of the findings in this study. Iraq is a predominantly Muslim nation, and while the frequency of new terrorist groups was low previous to the invasion, it is notable that it was in fact lower during a time of high level of autocracy than in the period following the invasion where a democratic system of government was being put into place. This of course could be the result of the instability introduced into Iraq by the military activity there, so what then would be most telling is if the culture of terrorism there persisted as the instability subsides as the state’s infrastructure is improved.

\(^\text{17}\) Additionally, Iraq saw a total number of 4 new international terrorist groups in 2003, 15 in 2005, and 3 in 2006.

\(^\text{18}\) This refers to Greece in 1999, which saw a total of nine new terrorist group formations. It is important to note that Iraq’s count of 15 new groups in 2005 is significantly higher than Greece’s highest level as well.
C. Future Research

It is the hope of this author that a new vein of quantitative terrorism research focusing on terrorist groups follows from this study. Most quantitative researchers who investigate the phenomenon of international terrorism choose to focus on the number of terrorist incidents, but there is a great deal of importance in quantitatively studying the formation of new terrorist groups themselves. The number of terrorist groups is likely to have a large influence on the number of terrorist attacks worldwide. Groups are likely to remain a higher level of threat than individual terrorists, as the organizational structure of a terrorist group provides for its own endurance, thus self-perpetuation becomes an objective for the group which better enables it to conduct future attacks (Crenshaw, 1981).

Of the various approaches towards studying terrorist groups that might be taken in the future, certainly new factors leading to the formation of new groups can be identified. The important to consider is that terrorist groups are by nature incredibly adaptive, as their survival demands it. Though this study did not find the expected effect for the presence of a free media over time, future study in terrorism would do well to remain as dynamic as possible, taking into account the continuing metamorphosis in which practitioners of terrorism are constantly engaged. This of course makes models constructed around terrorism more difficult to generalize, but temporal changes and adaptations should nonetheless be considered.

Furthermore, there is certainly variation across groups that might also be considered when choosing to investigate terrorism. While all groups are linked in that they employ similar methods towards achieving their respective ends, they vary in their
motives, ideology, size, attack patterns, and endurance. Policy-relevant research can seek to inform policy-makers as to the causal underpinnings that are shared in the various groups each particular nation considers as a threat to its own security. One way to do this might be to investigate the groups that are listed on a particular country's designated terrorist group list, and investigate the particular aspects of these groups, perhaps finding relevant information that is specific to terrorist groups defined by each respective state. 19 It is also possible that the inclusion of several domestic terrorist groups can help inform the broader understanding of the phenomenon of terrorism, or perhaps that significant enough distinctions can be provided which offer explanations of the different causal factors that determine both international and domestic terrorism respectively.

While this study investigates the formation of a new international terrorist group, there is certainly reason to believe that all groups should not be considered simply “new” or “old.” Every group in this study is considered equal, whether the group itself was engaged in only one attack or dozens, operated only in one year or over decades, or whether a group itself was actually a splinter group split from a larger, previously existing terrorist organization. This study makes no distinctions as to the differences of the groups along these lines, and future studies in group activity might do well to consider distinctions of this kind among the sample of groups being investigated.

19 This type of test was actually run for groups listed by the United States Department of State as a designated international terrorist group, whether a foreign terrorist organization (FTO), other terrorist organizations (OTO), a designee of the terrorist exclusion list (TEL), or any combination of the three. This test sample was made up of a total of 45 new terrorist groups as designated by the US State Department using the same independent variables used in other parts of this study. All quantitative results attained, however, were largely insignificant.
Certainly an important distinction between groups might also be group targets, in
that some groups are certainly more violent in nature than others. There may then be
some broad characteristics that determine whether a group will conduct attacks such as
kidnappings or bombings without significant civilian casualties as opposed to suicide
attacks which are aimed to maximize casualties. Researchers could approach these
groups so to better understand the reasons behind the creation of a more violent group,
or perhaps the reasons why a group of the former sort began to adopt the attack
patterns of the latter.

Perhaps one of the most interesting approaches to terrorist groups might be the
investigation of the factors that influence the ability of a terrorist group to endure over
time. The Irish Republican Army, for example, has operated since 1922, while many
other terrorist groups have come and gone following only a few limited attacks in the
same year. The inherent differences between these types of groups would be of
significant importance to those formulating anti-terrorism policy, as the enduring groups
are patently more dangerous over time, and therefore effectively taking action against
them would be more problematic. This type of research would be significantly difficult,
however, in that most terrorist groups are not high-profile enough for information
regarding the date of their formation and their continued existence to be readily
available.
APPENDIX A

THE DEPENDENT VARIABLE
The following list represents a sample of some of the groups included as part of the tested dataset. All countries in the dataset are represented, with up to three international terrorist groups listed as examples from each country. In addition, the indicators of “Dem” and “ND” indicate whether the country was a democracy or non-democracy, respectively, during the year of the group’s formation. Countries are considered democracies if their polity IV democracy-autocracy score is equal to or greater than six. For some countries, there are periods of both democracy and non-democracy represented, and these are marked as such.


Argentina: ND: Che Guevara Brigade, Montoneros, People’s Revolutionary Army (Argentina)

Australia: Dem: Greek Bulgarian Armenian Front.

Austria: Dem: Red Daughters of Rage, Cell for Internationalism.

Belgium: Dem: Communist Combatant Cells, Peace Conquerors, Revolutionary Front for Proletarian Action.


Brazil: ND: Alianca Libertador a Nacional (ALN), Popular Revolutionary Vanguard.

Canada: Dem: Canadian Hungarian Freedom Fighters Federation.

Chad: ND: Chadian People’s Revolutionary Movement, Movement for Democracy and Development (MDD).
Chile: ND: Proletarian Action Group, Manuel Rodriguez Patriotic Front, United Popular Action Movement.

Colombia: Dem: Pedro Leon Arboleda Movement, Simon Bolivar Guerilla Coordinating Board (CGSB), Guevarista Revolutionary Army.

Costa Rica: Dem: Revolutionary Commandos of Solidarity, People’s Vanguard Organization.

Cyprus: Dem: Arab Unionist Nationalist Organization.

Denmark: Dem: Supporters of Horst Ludwig Meyer.

Dominican Republic: ND: United Anti-Reelection Command, Dem: Maximiliano Gomez Revolutionary Brigade, Revolutionary Army of the People.

Ecuador: Dem: Group of Popular Combatants (GPC).

Egypt: ND: Islamic Liberation Organization, al Gama’a al Islamiyya (GAI), Egypt’s Revolution.


Ethiopia: ND: Eritrean People’s Liberation Front, Ethiopian People’s Revolutionary Army, Tigray People’s Liberation Front.

France: Dem: Committee of Coordination, Youth Action Group, Affiche Rouge.

Greece: ND: Greek Anti-Dictatorial Youth (EAN). Dem: International Revolutionary Struggle, Conscientious Arsonists (CA).

Guatemala: ND: Guerilla Army of the Poor, Mano Blanca, Guatemalan National Revolutionary Unity (URNG).

Haiti: ND: Coalition of National Brigades.


Indonesia: ND: Free Aceh Movement (GAM), Front for Defenders of Islam, Komando Jihad (Indonesian).

Iran: ND: Mujahedin-e-Khalq (MeK), Shahin, Fedayeen Khalq (People’s Commandos).
Israel: Dem: Arab Liberation Front (ALF), Democratic Front for the Liberation of Palestine (DFLP), Hamas.


Japan: Dem: Japanese Red Army (JRA), Maruseido (Marxist Youth League), Hotaru (Firefly).


Malaysia: ND: Jemaah Islamiyah (JI).

Mexico: ND: Armed Communist League, 23rd of September Communist League, Commando Internacionalista Simon Bolivar.

Morocco: ND: de Fes.


The Netherlands: Dem: South Moluccan Suicide Commandos, Actiefront Nationistsch Nederland.


Panama: Dem: Omar Torrijos Commando for Latin American Dignity, Sovereign Panama Front (FPS), December 20 Torrijist Patriotic Vanguard (VPT-20).


Sierra Leone: ND: Revolutionary United Front (RUF).

South Africa: Dem: People Against Gangsterism and Drugs (PAGAD), Boere Aanvals Troepe (BAT), Muslims Against Global Oppression (MAGO).


Sweden: Dem: Revolutionary Socialists.


Syria: ND: Arab Communist Organization (ACO).


Turkey: Dem: 28 May Armenian Organization, Black Friday, Kurdish Patriotic Union.


United Kingdom: Dem: Irish National Liberation Army (INLA), Continuity Irish Republican Army (CIRA), Real Irish Republican Army (RIRA).


Uruguay: ND: OPR-33, Raul Sendic International Brigade.

Venezuela: Dem: Red Flag (Venezuela), Venceremos, Bolivarian Liberation Forces (FBL).


APPENDIX B

THE INDEPENDENT VARIABLES
Military Personnel: Total number of military personnel per total population.

Regime Durability: Total number of years since most recent regime change.

Mountainous Territory: Percentage of mountainous territory, logged.

Urbanization Rate: Percentage of population that live in an area of 100,000 people or more, logged.

Democracy: Polity IV democracy/autocracy score, from -10 to 10.

Media Freedom: Coded as “1” if media is considered clearly free, and zero otherwise.

GDP per capita: Country’s total GDP per capita adjusted for purchasing power parity.

Lagged Group Total: The total number of new international terrorist group formations during the previous year.

Islam: Percentage of Muslims per total population.

Oil Exporter: Coded as “1” if a country obtains 1/3 of its revenues from oil exports and zero otherwise.

Year: Yearly count, with 1968 coded as zero, and increasing by increments of 1 annually.

Media Freedom X Year: Media Freedom * Year.
APPENDIX C

POISSON REGRESSION FOR NEW TERRORIST GROUPS

WITHOUT DEMOCRACY SCORE
| Variable               | Coefficient | Standard Error | P>|z| |
|------------------------|-------------|----------------|-----|
| Military Personnel     | 0.425       | 0.071          | 0.000*** |
| Regime Durability      | -0.196      | 0.054          | 0.000*** |
| Mountainous Terrain    | 0.377       | 0.059          | 0.000*** |
| Urbanization           | 0.242       | 0.041          | 0.000*** |
| Free Media             | 0.154       | 0.271          | 0.569 |
| Free Media X Time      | 0.025       | 0.013          | 0.053*  |
| GDP per Capita         | 0.210       | 0.094          | 0.025** |
| Past Group Formation   | 0.611       | 0.066          | 0.000*** |
| Islam                  | 0.0007      | 0.002          | 0.745 |
| Oil Exporter           | -0.304      | 0.224          | 0.175 |
| Year                   | -0.021      | 0.009          | 0.017** |
| Constant               | -8.596      | 0.851          | 0.000*** |

n=3005  Pseudo R² = 0.1660  *p>0.10  **p>0.05  ***p>0.01
APPENDIX D

POISSON REGRESSION FOR NEW TERRORIST GROUPS

WITHOUT MEDIA FREEDOM VARIABLES
| Variable               | Coefficient | Standard Error | P>|z| |
|------------------------|-------------|----------------|-----|
| Military Personnel     | 0.421       | 0.072          | 0.000*** |
| Regime Durability      | -0.134      | 0.050          | 0.007*** |
| Mountainous Terrain    | 0.341       | 0.058          | 0.000*** |
| Urbanization           | 0.246       | 0.041          | 0.000*** |
| Democracy              | 0.022       | 0.011          | 0.045**  |
| GDP per Capita         | 0.235       | 0.098          | 0.016**  |
| Past Group Formation   | 0.617       | 0.066          | 0.000*** |
| Islam                  | 0.0003      | 0.002          | 0.897    |
| Oil Exporter           | -0.300      | 0.224          | 0.182    |
| Year                   | -0.015      | 0.007          | 0.024    |
| Constant               | -8.858      | 0.896          | 0.000*** |

n=3033  Pseudo $R^2 = 0.1657$  *p>0.10 **p>0.05 ***p>0.01
APPENDIX E

POISSON REGRESSION FOR NEW TERRORIST GROUPS

WITHOUT INTERACTIVE VARIABLE

(FREE MEDIA X TIME)
| Variable                | Coefficient | Standard Error | P>|z| |
|-------------------------|-------------|----------------|-----|
| Military Personnel      | 0.428       | 0.071          | 0.000*** |
| Regime Durability       | -0.174      | 0.056          | 0.002*** |
| Mountainous Terrain     | 0.364       | 0.059          | 0.000*** |
| Urbanization            | 0.238       | 0.042          | 0.000*** |
| Democracy               | 0.017       | 0.013          | 0.182 |
| Free Media              | 0.412       | 0.201          | 0.040** |
| GDP per Capita          | 0.164       | 0.100          | 0.103 |
| Past Group Formation    | 0.597       | 0.066          | 0.000*** |
| Islam                   | 0.0005      | 0.002          | 0.820 |
| Oil Exporter            | -0.248      | 0.226          | 0.271 |
| Year                    | -0.012      | 0.007          | 0.072* |
| Constant                | -8.297      | 0.908          | 0.000*** |

n=2994  Pseudo $R^2 = 0.1658$  *p>0.10  **p>0.05  ***p>0.01
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