TESTING THE BLOWBACK THESIS

Mark D. Noble

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Approved By:

Ken Bollen

Charles Kurzman

Mark Crescenzi

ABSTRACT

MARK D. NOBLE: Testing the Blowback Thesis
(Under the direction of KEN BOLLEN and CHARLES KURZMAN)

Social scientific analyses of anti-American terrorism primarily seek explanations in the political, economic, and social conditions of states where Americans are attacked. A prominent counter-narrative places the focus on U.S. foreign policies positing that anti-American terrorism is "blowback" for them. The few studies that analyze anti-American terrorism as a potential consequence of U.S. actions abroad do not examine *if* there are long-term or cumulative effects of U.S. policies and actions. In order to effectively determine if terror events are truly "blowback" we must integrate an examination of long-term effects. To inject cumulative effects into the discussion, this paper evaluates six methodological approaches to that end and applies them to two replicated studies that are most consistent to the concept of "blowback". The analysis demonstrates that military dependency is integral to explanations of anti-American terrorism and that "blowback" is greater than previously identified when long-term effects are considered.

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I. Introduction

Importance of Topic

The causes of terrorism against America and its allies are not accurately understood today. The social scientific literature still lacks an accounting of the most important causes of anti-Western terrorism. All across the Western world, after a foiled or successful attack, government officials make pronouncements as to the reasons why someone would cause terror, fear, death, and or destruction to their citizens. Commonly, the underlying causes pronounced are that terrorists have a hatred of democratic freedoms and liberties which often come off as disparaging remarks toward others' cultural characteristics.

These statements are met with forceful critiques that it is Western, especially the United States' foreign policies and actions abroad that are important precipitating factors on anti-Western terrorism. These critiques attempt to shift the focus from simplistic explanations based on cultural stereotypes to those that look to U.S. actions as part of the justification for why attackers chose to target the U.S. and its allies. Actions identified as potential causes of anti-American terrorism are the historic support for dictatorial heads of state displayed by the U.S.; the financing given to foreign governments for military equipment, training, and operations; and the stationing of American servicemen in foreign countries. These factors can be summarized in the concept of military dependency (Neumayer & Plümper, 2009).

While currently the battle between these two viewpoints is carried out in the popular media between government officials in response to terrorist actions (see speech by G.W. Bush 2001; Attorney General Eric Holder May 1, 2010), in books by former intelligence officers or government officials with firsthand knowledge of America's actions abroad (see Johnson, 2000,

2004, 2007; Scheuer, 2002, 2004), in descriptive analyses in academic journals by critics of U.S. foreign policies (Eland, 2008), and by sometimes by the statements of the terrorists themselves (see statements made by Osama bin Laden in 1996). What is lacking is an accumulation of scientific research on the structural determinants of terrorism (some attempts toward this are Neumayer & Plümper, 2009; Robison et al. 2006). This previous research has identified military dependency as a partial predictor of terrorism but these studies only examine its potential short-term effects. My research has built upon the existing research and I have found that there is significant evidence of a cumulative effect of at least 10 years for measures of military dependency for all outcomes of terrorism under examination here. Furthermore, these results may not always support the findings made by previous analyses examining only the contemporaneous effects of military dependency on terrorism. In some cases causes that have been previously found to lead to increased terrorism in the short-term do not lead to increased terrorism in the long-term and vise-versa.

Research Questions

While the topic of my research is complex and most likely multidimensional, I plan to focus on the specific aspect of how the degree of military dependency can lead to variation in the number of terrorist attacks. The examination of Western military dependency's impact on terrorism by Robison et al. (2006) and the specific focus on military dependency on the U.S. as precipitants of anti-American terrorism by Neumayer & Plümper (2009) is the only research of which I am aware that places the concept of military dependency in a primary position in terms of its relationship to terrorism. Thus, my strategy is to use these existing studies as starting points for my study of the long-term impacts of military dependency. My primary research question is whether long-term military dependency on the U.S. leads to an increase in anti-American terrorism, holding all other variables constant. Simply stated, I am going to examine

whether long-term military dependency on the U.S. leads to an increase in "blowback" on Americans. This research question will directly engage research findings by Neumayer & Plümper (2009) in their examination of the effects of contemporaneous measures of U.S. military dependency on anti-American terrorism and infuse it with the concept of blowback made famous by Chalmers Johnson in the book of that title (2000). A second research question motivated by Robison et al. (2006) is if the cumulative impact of military dependency on terrorism lends itself to a different interpretation as to the similarities found by Robison et al. of the factors that lead to Islamist and Leftist terrorism. A tertiary research question is to evaluate the combined evidence from these two studies in light of my additional analyses of long-term effects of military dependency and come to a conclusion on whether the long-term and short-term effects of military dependency on terrorism are the same or if they diverge.

Objectives of Research

The primary goal of my research is to examine whether existing studies, focused on short-term consequences of military dependency on terrorism, are accurate portrayals of the long-term consequences of military dependency on terrorism. The lack of existing agreed upon methodologies for the measurement of the long-term impacts will require this paper to examine a variety of strategies in search of the best methodology. Therefore, a second purpose of this study will be to identify a methodology appropriate for assessing long-term effects that could be useful in other social science applications. My third purpose in this study is to infuse two related but distinct sub-fields of social science, international relations and the study of social movements with critiques of U.S. military policy in current affairs literature. These three purposes provide a healthy balance of substantive and methodological aims for this paper. In the sections that follow I will exactly replicate the analyses Robison et al. (2006) and Neumayer & Plümper (2009) and thus establish a foundation upon which I will build my contribution of

analyzing long-term effects of military dependency. Second, I will define the term “blowback” how I will use it in this study and contrast the work of Johnson with the previously mentioned studies. Third, I will propose competing methodological strategies for examining long-term, cumulative effects. Fourth, I will re-analyze the initial replication models with this alternate long-term measure of military dependency. Fifth, these competing measurement strategies will be evaluated and the implications of these strategies will be discussed including, sixth, the comparison of my findings to the findings in the existing studies. Finally, I will identify some unanswered questions which are potential areas for future research in analyzing the link between military dependency and terrorism.

II. Literature Review

The inspiration for my project originates with the work of a Political Scientist, Chalmers Johnson, whose ideas have gained significant prominence in the post-September 11th world. I acknowledge that the main thesis of Johnson (2000) *Blowback: The Costs and Consequences of American Empire* is much more detailed than the portion on which I focus. In *Blowback*, Johnson challenges U.S. policy-makers and the public at large to re-evaluate America's role in a post-Cold War world that operates in a more diffuse manner than the simple polemic template that guided the military policies in the decades after World War II to the early 1990s. Johnson also states that some of the countries that have been recipients of U.S. military aid, grants, arms, and troops are seen by other people in the world as outright or tacit support for the way in which these leaders govern their countries. These various forms of support often can change the balance of domestic political power by the mere appearance that a leader has the full backing of the U.S. government whether real or imaginary. These injections of international support can change the calculations of other members of the government, challengers, and political outsiders. Johnson argues that the potential for anti-American blowback can occur when the resources needed to consolidate the political supremacy come from the U.S. and not from the citizens of the nation-state (Johnson, Chapter 1). I interpret the duration and intensity of military dependency on the U.S. by another country to be a vital part of Johnson's analysis and a potential indicator from where anti-American terrorism will originate.

In work which is consistent with the blowback thesis, Neumayer & Plümper (2009) posit that countries heavily dependent on the U.S. militarily are potential hotbeds for terrorism, especially anti-American terrorism. As the crux of their argument, they describe a set of

processes which are used by politically excluded members of a country's population beginning with the use of anti-American terrorism as a method to win domestic political power. They frame all anti-American terrorism as a consequence of the unbalanced state of domestic governmental affairs due to the over-ridding effect of a country's military dependence on the U.S. Therefore, anti-American terrorism is utilized by domestic challengers in the hopes of driving a wedge between the U.S. and their autocratic leaders and bringing support to their cause to unseat the domestic leaders. Success for the terrorists is identified as when the U.S. government restructures its relationship with their domestic government in response to overwhelming public pressure to minimize American causalities or by the U.S. government's rational calculation of the negative consequences with the status quo relationship. In this scenario, the American public is seen as not having the tolerance for governmental policies that place innocent *Americans* in the crosshairs of the terrorists. This portrayal of Americans is described by Pape[1] as motivation for suicide terrorists today when they are confronting occupying troops. "…Hezbollah's prominent success in compelling the United States, France, and Israel to withdraw military forces from territory that the terrorists view as their homeland has played a major role in encouraging today's most deadly suicide terrorists" (Pape, 2005: p. 129). Eland also states that the deployment of U.S. troops abroad, its support of cruel leaders, and unwavering support of Israel are some of the most frequently heard complaints by those that have and wish to do the U.S. harm. "Retaliation for US interventionism in the Arab-Muslim world is al Qaeda's primary motive for attacking the United States. Specifically, Osama bin

[1] In *Dying to Win: the Strategic Logic of Suicide Terrorism*, Pape specifically points to how the 1983 suicide bombings in Beirut, Lebanon led to the withdrawal of American (in 1984), French, and Israeli militaries from Lebanon after the coordinated attacks of October, 23, 1983. He later goes on to state however; that the U.S. and other democracies have not taken such actions when there has been strategic, economic, or ideological underpinnings for troop deployment (Pape, 2005: p. 76).

Laden's biggest gripes are with US-that is, non-Muslim-occupation of Muslim lands and meddling in their politics by supporting corrupt dictators and Israel" (Eland, 2008, p. 95).

In the sociological literature of social movements, a phenomenon described as the "Boomerang Pattern" is advanced in the discussion of transnational advocacy by Keck and Sikkink (1998). When democratic channels for claims to be made against a government are obstructed and the government is not responsive to public pressure, organizations may reach out to the international arena seeking an outside benefactor to put pressure on their unresponsive leaders. "When channels between the state and its domestic actors are blocked, the boomerang pattern of influence characteristic of transnational networks may occur: domestic NGOs bypass their state and directly search out international allies to try to bring pressure on their states from outside" (Keck and Sikkink, 1998, p. 12). In a similar way challengers' use of terrorist violence against Americans to pressure the U.S., the most militarily powerful nation in the world, to break the pattern of support to their home government and thereby altering the balance of power within the dependent nation. Although this boomerang pattern has been identified with NGOs as the domestic actors parallels to existing studies on the causes of anti-American terrorism have been identified in the international relations literature.

Neumayer & Plümper empirically test whether military dependency on the U.S. has an effect on anti-American terrorism. Here, military dependency is measured with three indicators: 1-the ratio of weapons imported from the U.S. in a given year to the total military expenditures of that country in a given year; 2- the ratio of the amount of U.S. military aid distributed to the total military expenditures of that country in a given year; and 3-the ratio of the number of U.S. servicemen stationed in country to the number of domestic military troops. Two different measurements of anti-American terrorism are used as their dependent variables: 1-the number of terrorist incidents where Americans are the primary target based on the national origin of the

perpetrator(s) and 2-the number of Americans killed by terrorist attacks based on the national origin of the perpetrator(s).

One distinct feature in this study is that Neumayer & Plümper consider the nationality of the terrorists which targeted Americans rather than the location of where the attacks or killings take place. James A. Piazza states that studies which examine the sociopolitical contexts which produce terrorism are thus far, an understudied aspect in terrorism studies. "[W]hat has been curiously understudied by terrorism scholars [is] the general political environment of the country of origin of terrorist perpetrators" (2005: p. 38). He goes on to use the term "supply-side" when examining "the sociopolitical contexts of groups that engage in suicide terrorism" (2008: p. 30). For Neumayer & Plümper, placing the focus on the nationality of the terrorist instead of the location where the terrorist attack occurs allows their theoretical argument, a modified "boomerang pattern", for why Americans will endure more attacks from foreign nationals who are citizens of a military dependency of the U.S., to be consistent with the measurement of their dependent variables.

Through the use of regression based techniques appropriate for count data, Neumayer & Plümper conclude that there is a positive link between increases in military dependency and anti-American terrorism. For the number of terrorist incidents they find military aid and military troop dependency are statistically significant predictors while arms dependency is not a significant predictor. When evaluating the predictors for the number of Americans killed by terrorism all three measures are statistically significant predictors and they rank the three measures from highest to lowest as: aid, arms, and troop dependency.

Neumayer & Plümper's study was specifically examining U.S. military dependency and its potential terrorist repercussions on Americans but there have been similar arguments made for Western military dependency more generally (Robison, Crenshaw, and Jenkins, 2006). The

goal of Robison et al.'s study is a test as to whether the current "fourth wave" (see Shughart 2006) of Islamist terrorism is similar or distinct from the Leftist terrorism witnessed during the 1960s- 1970s. Regression-based techniques suitable for count data, negative binomial regression models, were used in this study. The dependent variable was the number of attacks carried out by those with ideologies determined to be either Islamist or Leftist. The resulting coefficients for a variety of key explanatory variables relating to structural conditions theorized to lead to terrorism were compared between these ideologies to determine the amount of and nature of any similarities. Conceptual theories tested came from prior literature and included theories of social disorganization and strain; theories of political order; theories of global order; and theories which focus on competing identities or civilizations. In this study, the concept of Western military dependence is conceptualized as an indicator of the theoretical perspective of global order. Western military dependency is measured with a dummy indicator variable which represents the presence of arms sales from a Western nation to a less-developed nation. While the main emphasis of this study is on the comparison of the structural characteristics of Islamist and Leftist terrorism, they do find that Western military dependency did have a positive and significant effect in all models of Islamist terrorism and in preliminary models of Leftist terrorism.

These two studies represent the closest examples in the social science literature that link the concepts of military dependency and terrorism. Neumayer & Plümper's focused solely on anti-American terrorist attacks and come closest to the concept of anti-American blowback that Johnson examines in his work. They also use three different measures of military dependency on the U.S. which relate to dependency on arms imports, military troop dependency, and military aid dependency. Robison et al. focus on a less precise measurement of Western military dependency and the replication of this study and extension of it using my

cumulative measures of military dependency is mainly used as a robustness check on the results I obtain from the cumulative extensions of Neumayer & Plümper's study. Robison et al. include a large number of structural theories identified in the current literature that were left out of Neumayer & Plümper's study.

Both studies base their conclusions solely on the short-term consequences of military dependency and leave unexamined the potential cumulative nature that duration or exposure to military dependency's structural arrangements may cause. Any extrapolations based on these findings to longer time horizons may bias or misrepresent the true portrayal of the long-term consequences of military dependency. This is potentially dangerous because past studies of terrorism by social scientists have been used as fodder for the political and foreign policy apparatus in the U.S.[2] In essence, the danger is that important decisions relating to military policy may be made based on assessments of military dependency that are incomplete and may belie the true nature of the total costs or true consequences of distributing military support to foreign governments. Thus, I intend to take the potential long-term nature of military dependency into account to test whether short-term and long-term consequences converge and to better represent the concept of blowback used most famously by Johnson which I use as my theoretical guide for my analyses.

If Johnson's assessment is correct and the U.S. has rung up, in essence, a huge debt of blowback potential of which Americans have only begun to feel the reverberations, then the anachronous foreign military policies of the U.S. lamented by Johnson may need to be altered to decrease the possibility that Americans will be the targets of future blowback. "Throughout the world in the wake of the Cold War, official and unofficial U.S. representatives have been acting,

[2] Robert Pape, a Political Science Professor at the University of Chicago, has testified before Congressional Subcommittees, written op-ed pieces in mainstream U.S. newspapers such as the New York Times, Washington Post, etc., and has made appearances on major news networks such as CNN, related to his work on suicide terrorism.

often in covert ways to prop up repressive regimes or their militaries and police forces, something's against significant segments of their own populaces. Such policies are likely to produce future instances of blowback whose origins, on arrival will seem anything but self-evident to the American public" (Johnson, 2000: 65).

The link between America's arms industry and future potential cases of anti-American blowback explicitly links the work of Neumayer & Plümper and Robison et al. to Johnson's assessments of potential cause of future blowback. "Arms sales are, in sort, a major cause of a developing blowback world whose price we have yet to begin to pay" (89). While neither of these studies that I am replicating and extending here referenced blowback or Chalmers Johnson I feel that this is an important oversight given that Johnson's work eloquently humanizes with historical depth some fascinating and little-known cases (little known in the U.S. that is) that show the consequences of U.S. military policies abroad including those relating to foreign troop deployment[3], military aid (including training), and foreign arms sales which are particularly salient for my analysis.

Most of the examples that Johnson discusses in *Blowback* play out over a much longer time horizon than just one year. One chilling example of blowback used by Johnson (8) is the U.S. government's military alliance with the Afghan mujahedeen rebels fighting against the Soviet Union in Afghanistan, especially fighters aligned with Osama bin Laden. Although this working relationship was formed in the Cold War of the mid to late 1980s, Johnson cites that one of the unintended consequences of this relationship was an increase in the standing of bin Laden amongst his fellow fighters and ultimately may have contributed to the anti-American terrorist attacks simultaneously at U.S. Embassies in Nairobi, Kenya and Dar es Salaam, Tanzania

[3] I found chapter 2 "Okinawa: Asia's Last Colony" on Okinawa, Japan to be perhaps the most egregious case of anachronous military policies may lead to future incidents of blowback on Americans.

on August 7, 1998[4]. If actions of military support by the U.S. are hypothesized to lead to anti-American terrorist blowback then I would like to attempt to integrate current social science studies of military dependency's effect on terrorism with the theoretical underpinning of Johnson's blowback thesis in my study.

However, before going any further in my work I would be remiss if I failed to introduce an important disclaimer and a couple of problems that I wrestle with concerning Johnson's blowback thesis and the related scholarly work (and my unique contributions that follow). First, although the title of Chalmers Johnson's first book of three on the imperialist tendencies of the U.S. was entitled *Blowback: the Costs and Consequences of American Empire*, I fully acknowledge that Johnson's thesis and many of his main descriptions and insights went far beyond simply blowback, or the unintended consequences of U.S. actions abroad. It would be a gross simplification and disservice to this fine work if I were to fail to at least make an attempt to acknowledge what I believe to be the main emphasis of this book. If I were to hazard to give a two line summation of this book I would say that it is a sobering warning to all Americans of the potential consequences of an institutionalized American military apparatus which uses seemingly benign ideology, like the support of democracy and freedom abroad, to support often anachronous Cold War policies. These policies have the potential to lead the U.S. into a situation of imperial overstretch, retaliation from people around the world, and possibly to collapse.

As a Sociologist I feel obligated to point out what astute students of Sociology will no doubly see as a repackaging of a classic sociological debate between the two opposing approaches to dividing human actions: the role that social structures play in constraining and facilitating human behaviors and attitudes and the role that humans have on shaping the social conditions in which they live (Kivisto, 1998: p. 146). I would argue that that Johnson's blowback

[4] Blowback was written before the terrorist attacks on U.S. soil on September 11th, 2001 and thus is not cited as an example of blowback from Osama bin Laden or al Qaida.

thesis could be identified as part of the structuralist approach by the way in which military dependency alters for both the power-holders and challengers the political opportunity structure (POS) within a political regime[5]. In terms of POS I rely on the Tilly and Tarrow's definition as "features of regimes and institutions that facilitate or inhibit a political actor's collective action"[6] (Tilly and Tarrow, 2007: p. 203). I acknowledge this debate and view the analysis here as but one of many potential factors that lead to human actions. This analysis necessarily neglects, without much discussion, the multitude ways in which the citizens of militarily dependent countries can shape their realities, identities, cultures, and processes such as framing that lie between the structure and the ultimate actions under analysis.

Another issue in this current debate on blowback is one in which I will call the self-prophetic feel that the blowback thesis has in my opinion and is another source of my interest in this work and the topic in general. In essence, an attempted terrorist attack regardless of its success could be construed as evidence for the blowback thesis whether the "true" unknown cause of the attack has anything to do with military dependency. This situation is even further exasperated when there is no specific time horizon given as guidance in theoretical statements on blowback. An extreme example to illustrate my point would be of a terrorist attack against American citizens by Panamanian citizens which takes place today in 2010. Using the idea of the blowback thesis, I could argue that this attack was retribution for the humiliation suffered by the Panamanians for the loss of complete sovereignty to the U.S. of the Panama Canal due to the joint Panama-U.S control over the canal for the two decades proceeding the year 2000. Clearly,

[5] According to Tilly and Tarrow, political regimes are defined as "regular relations among governments, established political actors, challengers, and outside political actors including other governments" (2007, p. 203).

[6] According to Tilly and Tarrow, they are often seen as six properties of regimes: "(1) the multiplicity of independent centers of power within it; (2) its openness to new actors; (3) the instability of current political alignments; (4) the availability of influential allies or supporters for the challengers; (5) the extent to which the regime represses or facilitates collective claim making; (6) Decisive changes in items 1 to 5" (2007: p. 205)

this example may appear ridiculous but it illustrates the difficulty one would have in delineating the boundaries of the blowback thesis. Regardless of these troubling issues, I will proceed with my analyses in much the same way as my predecessors have but I will challenge the reader to keep in mind my objections and to devise clever ways which blowback could be better specified.

As a preliminary step in my analysis, I applied the theoretical insights by Johnson's blowback thesis to Neumayer & Plümper's data by re-examining some of the qualitative descriptions given in the paper. Specifically, I re-ranked the countries examined by Neumayer & Plümper from the perspective of a potential long-term effect of military dependency. First, as can be seen in Table 1.1., I made a list of the countries that had produced anti-American terrorist attacks in all of the years in their original analysis, 1968 to 2005. In this table I also listed where the country ranked in terms of the three key dependent variables in the original analysis. In the table the smaller number in the rank of aid, arms, and troops equates there to be a higher degree of dependency on the U.S. for these variables. In Table 1.2 I show the rankings of the top 15 countries which produced terrorists who killed greater number of Americans in the period 1978-2005 along with the number of attacks produced by that country and the rankings aid, arms, and troops.[7] In both of these tables I have indicated with boldface, italicized, boxed numbers, the instances where a country who made the list also had a corresponding ranking of aid, arms, or troop's dependency in the top 15.

Initially, this led me to have some different interpretations than those offered in the analysis by Neumayer & Plümper (2009, p. 21). I find that this preliminary evidence does not support the theoretical claims as to why Americans would be the targets of attacks and fatal attacks in the long-term. Similarly, it is not clear to me from Tables 1.1 and 1.2 that there is a clear pattern that suppliers of anti-American terrorism are more militarily dependent than other

[7] The Iterate data set did not specifically begin keeping track of the number of Americans killed by terrorist attacks until 1978 while the number of terrorist attacks began to be recorded in 1978.

countries. This may be preliminary evidence that the short-term and long-term effects of military dependency on the U.S. are divergent. This initial descriptive analysis provides further

Table 1.1 Top 15 Countries that Produce Anti-American Terrorism 1968-2005

Rank	Country	# Attacks	Rank Aid	Rank Arms	Rank Troops
1	Colombia	188	35	25	81
2	Philippines	85	18	24	***5***
3	Greece	59	16	***10***	22
4	Turkey	58	***11***	***7***	31
5	El Salvador	51	37	67	65
5	Lebanon	51	***9***	19	48
7	Peru	45	74	52	96
8	Iran	43	65	***11***	73
9	Germany	41	172	69	***3***
10	Pakistan	39	41	45	107
11	Somalia	34	27	82	93
12	South Korea	32	***4***	***8***	***8***
13	Cuba	29	148	167	23
14	Chile	26	72	55	84
15	Iraq	25	134	124	***10***

Table 1.2 Top 15 Countries that Produce Terrorists who Kill Americans 1978-2005

Rank	Country	# Killed (since '78)	# Attacks (since '68)	Rank Aid	Rank Arms	Rank Troops
1	Lebanon	272	51	***9***	19	48
2	Germany	202	41	172	69	***3***
3	Saudi Arabia	57	24	71	29	18
4	Iraq	36	25	134	124	***10***
5	El Salvador	20	51	37	67	65
6	Philippines	19	85	18	24	***5***
7	Egypt	13	16	***5***	***4***	52
8	Colombia	12	188	35	25	81
8	Pakistan	12	39	41	45	107
8	Turkey	12	58	***11***	***7***	31
11	Jordan	10	17	***8***	***2***	100
12	Iran	9	43	65	***11***	73
12	Indonesia	9	12	41	53	106
14	India	8	14	97	97	133
15	Afghanistan	7	8	81	.	***15***
15	Somalia	7	34	27	82	93

evidence, along with theoretical statements, that better identifying the long-term effects of military dependency is an important undertaking to pursue in this paper. Before continuing any further in this endeavor I will next discuss the concept of long-term effects and identify and briefly describe the multiple methodologies I use to attempt to capture these duration effects.

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III. Long-Term or Cumulative Effects

The theoretical literature from Johnson yields the insight of the potential effects of military dependency to differ due to the duration or intensity in which the dependency is experienced. However, the theoretical literature does not hint to any specific type of empirical model which could capture the ideas of duration and intensity of military dependency. To capture these ideas appropriated from Johnson, I will use the six methods shown in Table 3.1 to formulate the long-term nature of the relationship between military dependency and terrorism. I formally define long-term or cumulative effects as a situation where an explanatory variable's effect is experienced for a duration lasting between 5 and 30 years. Although this definition allows for a large variance in potential duration, I hypothesize that I will find that the largest effects of military dependency to lie between 10 to 20 years. My justification of this range is that there is face validity to the idea that this would be the amount of time it would take a child who could comprehend potential influences of military dependency either directly or from stories by an elder to the time where the adult could act on this stimulus. A time span of shorter than that may not be enough to allow for enough young children to grow up and act on these feelings in numbers large enough to be seen as statistically significant. Similarly, a time span larger than 20 years would reach into one's late twenties to early thirties when most likely they have adopted a more conservative nature and have responsibilities such as families and careers that may not be desirable to cast aside to act on long-held grievances. Therefore, I would hypothesize that any radical behavior leading to terrorism would have manifested itself before a lag of thirty years. In the sections which follow, I will briefly describe each method I use to capture duration.[8]

[8] More detailed descriptions of these methodologies are located in the appendices.

Table 3.1 Methodologies Capturing Long-Term Effects

Methodology
Running Sum Model
Unrestricted DL Model
Arithmetic DL Model
Polynomial DL Model
Long-Term Interaction
Growth Curve Model

Running Sum Model

This method consists of creating a new explanatory variable for each existing measure of military dependency that is a running sum of each of its previous values. These three cumulative variables are essentially a running sum from the first year of data given in the data set. Missing values for a given year were dealt with by carrying forward the value from the previous year[9]. All other variables in the model are held at the same level as all previous models. This method has the potential drawback in that it does not include measures of military dependency which occurred prior to the first year contained in a dataset. If my theory of cumulating effects is correct, influence from unmeasured prior years will likely influence my estimates in ways that are not known. The following is the equation used for creating the running sum X'_p (i.e., X prime sub-p). Each predictor variable is denoted X_p, the subscript *0* refers to the current value of the predictor variable, *k* is the number of lags being tested, and *p* refers to the number of explanatory variables which are all shown in Equation 1.1.

$$Cumulative\ Predictor\ Variable = X'_p = \sum_0^k x_t \qquad \textbf{(1.1)}$$

[9] I also replicated the models by replacing the running sum variable with a missing value when its corresponding independent variable was missing. The results, although for slightly fewer cases did not change the interpretation of the models in any case.

Distributed Lag (DL) Models – Unrestricted/Restricted and Infinite/Finite Variations

I will briefly define the term distributed lag (DL) and discuss two general types of divisions that can be imposed on DL models which will lay the foundation for several of the methods used below. Rao and Miller state that "[In a] causal relation-in which the influence of a change in the independent variable is spread over a long stretch of time periods [it] is called the distributed lag effect" (Rao and Miller, 1971: p. 160). DLs are common in the study of econometrics in such evaluations of the link between changes in the money supply and consumer prices, the lag between research and development expenditures and their impact on productivity, in the relationship between the balance of trade among nations and a currency's depreciation, etc. (Gujarati, 2004: pp. 660-661). One dimension of DL Models can be viewed as the distinction between two types: 1-Unrestricted and 2-Restricted. The term restricted refers to whether there is any type of shape or pattern that is introduced into the coefficients on the variables being examined. By introducing a pattern into the time profile of the lagged values, the coefficients for each of the values (present and lagged) have to be restricted to a pre-defined value. The unrestricted variants of these models are straight forward and include additional terms of the right-hand side (RHS) of the equation which correspond to past values of the independent variable(s) being examined. Often in practice, these unrestricted models break down and are generally not practical as the number of lagged variables increases. Another disadvantage of these models is that for each additional lagged value included in the model there is a cost of one degree of freedom that is imposed. As the number of degrees of freedom decrease, the ability to detect the desired effect of the independent variable decreases. This is equivalent to stating that the statistical power of the test is decreasing with each additional lagged value. An additional problem is of the unrestricted DLs is that the collinearity between lags can often be a source of estimation problems.

A Restricted Distributed Lag Model is one where the coefficients on the lagged values of the independent variables on the RHS of the equation follow some sort of predefined pattern. These

patterns are possible for two reasons. The X-variables are linearly transformed into Z-variables and the beta coefficients are not directly estimated but indirectly estimated through gamma coefficient of the Z-variables. The number of gamma parameters estimated varies depending on the type of finite DL model being estimated. An advantage of these models is that substantial increases in degrees of freedom can be achieved through the need to estimate only a few gamma parameters from which the beta parameters can be computed by the functional form of the time profile chosen a priori.

Another way in which DL models can be conceptually categorized is by whether they are finite or infinite. Finite lags refer to the situation where the researcher specifies a priori the number of lagged values to include in the statistical model. Infinite DL models are usually estimated via the Koyck transformation. My theoretical guidance does not suggest these models may be appropriate so I will not elaborate on them here (see a standard econometric text such as Gujarati, 2004: pp. 665-667, for the exact details of the Koyck transformation).

Unrestricted Distributed Lag Model

The unrestricted distributed lag model is described as an ad hoc estimation practice of DLs (Gujarti, 2004: p. 663). This type of DL model is what is often used by researchers in social sciences, applied econometrics, advertising, environmental studies amongst other disciplines, especially when the suspected lag length is small. One way to employ this method is to use an iterative strategy for the determination of the number of lagged values of the independent variable to include on the RHS of the model. This procedure is discussed further in Appendix B. Equation 2.1 is the general DL regression equation for a single predictor *X*.

$$Y_t = \alpha + \beta_0 X_t + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \beta_3 X_{t-3} + \beta_4 X_{t-4} + \cdots + \varepsilon_t \qquad \textbf{(2.1)}$$

Context of Restricted Distributed Lag Models

As stated above, restricted DL models estimate a smaller number of gamma coefficients for Z-variables which are linear transformations of the X-variables. Along with the gamma coefficients the

coefficient pattern linking the time profile to the beta parameters can be used to recover the individual beta coefficient. The Arithmetic DL (ArDL) model requires the estimation of only one gamma coefficient regardless of the number of lagged values included in the model. Higher order functional forms require additional gamma parameters.

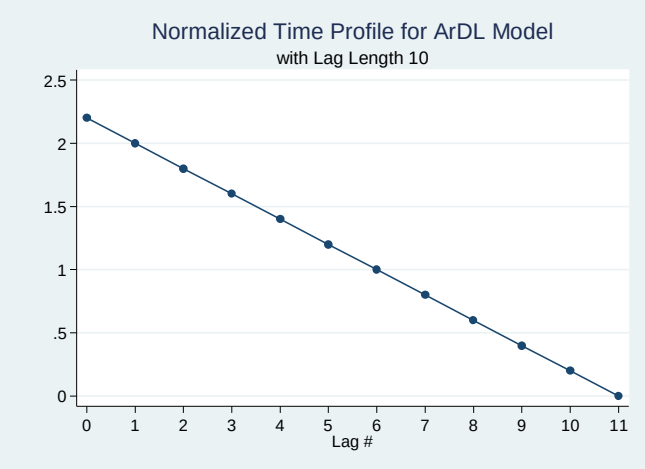
Arithmetic Distributed Lag (ArDL) Model

The structure of the lags is linearly decreasing beginning with the current value of the X-variable through the first lag to the k^{th} lag. The estimation of this type of finite lag structure requires that the researcher start with a pre-determined lag length that they would like to explore (k) and from this known value of k only one unknown parameter gamma (γ) is needed to compute the values for all of the betas (β) for each of the lagged X-variables. The intercept term and disturbance are estimated as alpha (α) and epsilon (ε) respectively.

$$Y_t = \alpha + \gamma Z_t + \varepsilon_t \qquad \textbf{(3.1)}$$

For illustration purposes, assume a lag length of 10 and an estimated value of gamma of 0.2 from Equation 3.1 above. This results in a graphical representation of the size of the effect for each lagged value of the X-variable, a time profile. The hypothetical values suggested above result in the time profile shown in Graph 3.1. On a time profile, the number of lags is displayed on the x-axis while the values of the lagged X-variables are shown on the y-axis. Through the use of a time profile it is easy to see that each X-variable has more influence on the current outcome than the previous lagged values. The influence of these lags decreases in a linear manner until a point where the k^{th} +1 lag has no effect on the current value of the outcome variable. Appendix D. and provides a detailed step-by-step explanation on how to estimate this type of model is provided in Appendix D.

Graph 3.1 Normalized Time Profile for ArDL Model



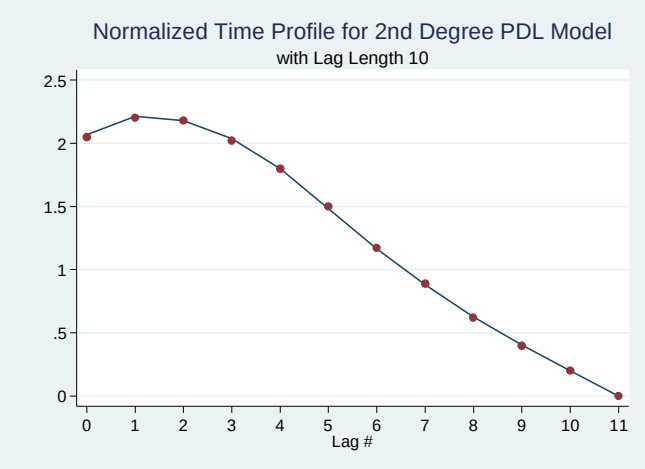
Polynomial Distributed Lag (PDL) Models

The finite restricted DL model known as the Almon or Polynomial Distributed Lag (PDL) models allows for more influence of some past explanatory variables than others. In the PDL models, the coefficients on the lags are still related to each other but in a different way than in the arithmetic lag models which is not uniform. This lag structure is often used when the linearly decreasing structure in the arithmetic lags is too restrictive. The additional second and third gamma parameters are used to estimate the slope of the time profile and the apex, or the lag which has the maximum effect on the current outcome variable. In the visual representation of a PDL2 model shown in Graph 4.1, the distributed lags has a time profile that increases initially and then begins to decrease to 0 producing what can be identified as a hump shape with a maximum at lag one. Equation, 4.1, is solved for the alpha (α) and gamma parameters (γ) in a way which is similar to the ArDL model.

$$Y_t = \alpha + \gamma_0 Z_{0t} + \gamma_1 Z_{1t} + \gamma_2 Z_{2t} + \varepsilon_t \qquad \textbf{(4.1)}$$

Then, as in the ArDL model, the estimated parameters are used to recover the beta coefficients for each lagged value of the X-variable following Table E.1 in Appendix E as well as the details of a step-by-step example of the bivariate regression case.

Graph 4.1 Normalized Time Profile for Second Degree PDL Model



The PDL model can be extended to an even more nuanced function form, the PDL3 model, having four unknown gamma parameters. The additional parameter is used to give an additional bend or change of direction in the time profile of the lagged X-values. The following equation produces the gamma coefficients which can be used to recover the individual beta coefficients following the steps outlined in Appendix F.

$$Y_t = \alpha + \gamma_0 Z_{0t} + \gamma_1 Z_{1t} + \gamma_2 Z_{2t} + \gamma_3 Z_{3t} + \varepsilon_t \qquad \textbf{(4.2)}$$

Long-Term Interaction (LTI) Model

Another potential method for estimating long-term effects is to include an interaction with a variable that measures long-term military dependency on the U.S. I constructed a dichotomous indicator variable with a value of one when a country hosted 100 or more U.S. servicemen in a given year and zero when it did not. The impetus for using this measure was taken from Johnson's second book in the Blowback trilogy, *Nemesis: The Last Days of the American Republic.* In *Nemesis*, Johnson discusses that the annual BSR prepared by the U.S. DoD lists each domestic and overseas property that the DoD owns or leases each year. These listing by themselves give us only a partial indication as to the size of the U.S. footprint in that country. These records describe in detail the real-estate holdings and list characteristics such as square feet. It does not however, give a real indication as to the American military presence in

that country. The installation listed could be just a listening post with one or two personnel working there or a larger military installation. Johnson suggested that looking at installations that house 100 or more troops would give an accurate depiction as to whether that facility represented an American military presence. Since the BSR does list the number of servicemen and women that occupy that facility in any given year I used a data set prepared by a fellow at the Heritage Foundation Timothy Kane. He prepared a data set that takes official DoD records and created time series variable for the number of troops in a country each year. From this data I created a dichotomous indicator variable with a value of one when a country hosted 100 or more U.S. servicemen in a given year and taking a value of zero when the country hosted less than 100.

From this dichotomous indicator variable I then created a variable containing the running sum variable, a variable that holds the value of the number of years since 1968 that there have been 100 or more U.S. troops stationed in country. This variable was then included in the NBRM by itself and also interacted with each of the three military dependency variables, in the first analysis and with the lone measure of military dependency in the second analysis.

Growth Curve Model (GCM)

For this study I will use GCMs in the SEM framework called Latent Curve Models (LCMs) (Bollen and Curran, 2006: p. xi).There are several advantages of LCMs for estimating GCMs: 1-their ability to deal with imperfectly measured variables through the incorporation of measurement models (see Blozis, 2004; Hancock, Kuo, & Lawrence, 2001; McArdle, 1988); 2-their ability to deal with missing data on the outcome and the predictor variables by using direct maximum likelihood (see McArdle, Grimm, Hamagami, Bowles, & Meredith, 2009; McArdle & Hamagami, 2004); 3-overall fit statistics that can be used to judge differences between estimated models and function as stand-alone measures of overall model fit (e.g., CFI, TLI, IFI, RMSEA); and 4-group models can be estimated with a priori or posteriori

(mixture models) grouping variables (Ram & Grimm, 2009); and 5-making the leap from unconditional to conditional growth models follow directly (Grimm & Ram, 2009).

IV. Replications and Testing Cumulative Effects

My first task in building on the existing studies indicating that military dependency is a significant predictor of terrorism is to replicate the two studies that I will be using as a starting point for my original analysis. I will first replicate and discuss Neumayer & Plümper's (2009), "Foreign Terrorism on Americans". Next, I will replicate and briefly discuss Robison, Crenshaw, and Jenkins's (2006), "Ideologies of Violence: The Social Origins of Islamist and Leftist Transnational Terrorism". Once I have established that my replication analyses produce the exact results by their original authors I will change only one aspect of each of these works, namely, substituting new measures that I will create utilizing the methods outlined above for the existing measures of military dependency. This procedure will be the source of the evidence that I will use to make my conclusions.

Replication: "Foreign Terrorism on Americans"

Neumayer & Plümper frame the argument as to why the U.S. is frequently the target of international terrorism as attacks on Americans are strategic actions. This means that a group or network of subjects from a country militarily dependent on the U.S. comes to the conclusion that attacking Americans is of more strategic value than pursuing some other course of action with the goal of obtaining some political power. The real value for the terrorists is in the damage that their attack may ultimately inflict on the nature of the relationship with their dependent government and the U.S. In this study they use the country-level as the unit of analysis. I use in my replication the exact same variables that were used by Neumayer & Plümper in their original work and I present them concisely in Table 4.01 below along with their relevant statistical summaries presented in Table 4.02.[10] The dependent variables are the number of attacks on Americans and the number of Americans killed in terrorist incidents

[10] A full description on these variables is found on pages 17-19 of the original work.

outside the U.S. The key independent variables are U.S. military aid expressed as a % of total domestic military expenditures, military weaponry purchased from the U.S. expressed as a % of total domestic military expenditures, the ratio of U.S. military troops to domestic military troops. The remainder of the variables in the table population, distance between capital cities, GDP per capita, and level of democracy are used as control variables.

Table 4.01 Description of Variables Used and Sources in Neumayer & Plümper Replication Models

Variable	Description of Variable	Source(s)
Number of Anti-American Attacks	the # of attacks on Americans outside of the U.S.	Iterate
Number of Americans Killed	the # of Americans killed in terrorist incidents outside the U.S.	Iterate
LN Population	Natural Log of the size of the population	World Bank
LN Distance	Natural Log of the distance between Capital City and Washington D.C.	Bennett & Stam (2005)
LN GDP/per capita	Natural Log of GDP/per capita	World Bank
Democracy	Level of Democracy ranging from -10 to 10	Polity IV, Marshall, Jaggers & Gurr (2006)
Military Aid Dependency	U.S. military aid expressed as a % of total military expenditures	USAID Greenbook, COW-Military Capabilities
Military Arms Dependency	Military Weaponry Purchased from the U.S. expressed as a % of total military expenditures	SIPRI, COW-Military Capabilities
Military Troops Dependency	Ratio of U.S. military troops to domestic military troops	Kane, DoD, COW-Military Capabilities

Table 4.02 Descriptive Statistics and Variables in the Replication Model

Variable	N	Mean	S.D.	Min.	Max.
Number of Anti-American Attacks	3341	0.31	2.01	0.00	90.00
Number of Americans Killed	3341	0.07	0.66	0.00	19.00
LN Population	3341	16.09	1.47	12.72	20.99
LN Distance	3341	8.39	1.15	0.00	9.15
LN GDP/per capita	3341	7.40	1.59	3.80	10.75
Democracy	3341	1.63	7.35	-10.00	10.00
Military Aid Dependency	3341	3.23	15.57	0.00	646.46
Military Arms Dependency	3341	2.67	9.53	0.00	305.89
Military Troops Dependency	3341	1.42	7.66	0.00	114.33

Dependent Variable: Anti-American Attacks

The results from my replication models of the number of anti-American terrorist attacks are shown in Table 4.03. Following the original work, four models are estimated with the dependent variable anti-American attacks.[11] In the full model with all of the predictors, model 4, only military aid dependency and troop dependency are statistically significant predictors of the number of anti-American terrorist attacks. Although the variable arms dependency is significant in preliminary model 2, it is not significant in the full model. I will report here both the unstandardized value appearing in the table above with their standard errors in parentheses and the standardized coefficients to be consistent with later models since time profiles of different variables can be compared directly if they are normalized (Rao and Miller, 1971, p. 163). The coefficient for aid dependency is .038 (.0138) and for troops dependency is 0.027 (0.0058). The standardized coefficient for aid dependency is 1.165 (0.597) the standardized coefficient for arms dependency is 1.615 (1.05) and for troops dependency is 1.48 (0.312). The conclusion is that increases in military aid and troop dependency lead to increases in anti-American attacks. Taking this finding as my starting point, I then proceeded to estimate these same four models but substituting three cumulative, long-term measures of military dependency for the three contemporaneous measures of military dependency in the original models. Listed in Appendix G are the descriptive summary statistics for all of the variables that I created to use in each of the long-term models.

Based on the long-term models that I analyzed I have come to some conclusions based when examining the number of anti-American attacks. These observations are summarized in table 4.05 below. The running sum model presents evidence that appears to be contradictory to the replication model as well as other long-term models. It suggests that only military arms dependency is a significant

[11] Each of the first three models includes the control variables and one of the key IVs (aid in model one, arms in model two, and troops in model three). The full model is the fourth model which includes all three military dependency measures along with the control variables.

predictor of the outcome. Due to its contradictory analysis I tend to think that this model does not present an accurate representation of the long-term effects of military dependency. The unrestricted DL model appears to break down when attempting to include only two lagged values of the military

Table 4.03 Neumayer & Plümper NBRM Replication of Anti-American Terrorist Incidents, 1968-2005

	(1)	(2)	(3)	(4)
LN Population	0.668***	0.617***	0.645***	0.677***
	(5.13)	(4.43)	(4.52)	(5.18)
LN Distance	-0.103	-0.188	-0.215	-0.058
	(-0.23)	(-0.32)	(-0.35)	(-0.17)
LN GDP per capita	0.154	0.066	0.076	0.083
	(1.48)	(0.61)	(0.67)	(0.75)
Democracy	-0.001	0.010	0.006	0.002
	(-0.06)	(0.42)	(0.27)	(0.08)
Aid	0.044***			0.038***
	(3.26)			(2.76)
Arms		0.044***		0.024
		(2.73)		(1.54)
Troops			0.027***	0.027***
			(3.15)	(4.74)
Intercept	-12.766***	-10.522**	-10.743**	-12.899***
	(-3.48)	(-2.29)	(-2.19)	(-4.17)
Dispersion Parameter	2.219***	2.269***	2.269***	2.178***
	(16.98)	(17.78)	(16.91)	(16.03)
N	3360	3360	3483	3341
chi2	47.48***	40.91***	38.63***	84.79***
n2ll	1765.98	1779.53	1802.06	1749.39

* p<0.10, ** p<0.05, *** p<0.01

dependency explanatory variables. I followed the procedures suggested by Gujarti for ad hoc estimation of this model and found the ideal lag length for each explanatory variable independently. However, the full model led to inconsistent results in terms of the coefficients and the sign of the coefficients when two or more lagged values of the military dependency variable were included in the model despite the fact that in individual models a lag length of two was appropriate. This is indeed one of the weaknesses of this methodology and I took it as a suggestion to move forward to restricted lag models.

Having been unimpressed with the results from either the running sum or the unrestricted DL models I turned to the estimation of restricted lag models. I first started with arithmetic distributed lag

models (ArDL) and began the examination to find the proper length of lagged explanatory variables to include in the model. The analytical procedures call for estimating several lengths of lags and rely on empirical fit statistics to assess a potential length of lag to use. I found this procedure to produce inconclusive results at times and realized quickly some limitations with this approach. Beyond the fact that this felt like exploratory modeling the amount of available data appears to be a major limitation of this approach, as it is for other DL models I examine below. I found that overall fit measures consistently identified 20-years as the most appropriate lag length when the variables were assessed individually. However, when all three explanatory variables were included in the model the 10-year lag lengths led to the outcome that had the largest overall effect on the number of anti-American terrorist attacks. Each of the measures of military dependency was statistically significant and the gamma coefficients were as follows: aid dependency was 0.058, for arms dependency 0.104, and 0.045 for military troop dependency. To clarify, these gamma coefficients estimated in the model are not directly comparable to typical standardized beta coefficients in regression-based methods which by convention are usually denoted X-variables. These gamma coefficients are for newly created Z-Variables which are linear combinations of the original X-variables based on the lag scheme specific to the method being used here, the ArDL approach for working with DLs. After the model is estimated the resulting gamma coefficients are used to recover the familiar standardized beta coefficients for the X-variables and each of the 10 lagged values used in this model to compute the total effect of the explanatory variable. Once I recovered these standardized beta coefficients using Table D.1 in Appendix D I determined the total effect of each of the military dependency variables over the 10-year period identified as the most appropriate length of lag which were: 3.828 for aid, 6.824 for arms, and 2.97 for military troop dependency. Having found this method to produce the best results they are listed in Table 4.04.

The coefficients of the long-term model compared to the original short-term model are approximately 228% larger for military aid dependency and 107.6% larger for military troop

dependency. From the procedure described above and outlined explicitly in Appendix D, the resulting exponential of the long-term effects for the significant effects of aid is 45.97, for arms is 957.19, and for troops is 19.49. Military arms dependency was not a significant predictor of anti-American terrorism in

Table 4.04 10-Year ArDL for Anti-American Attacks

	(1)	(2)	(3)	(4)
LN Population	0.637***	0.570***	0.604***	0.635***
	(4.77)	(4.08)	(4.12)	(4.71)
LN Distance	-0.075	-0.127	-0.172	-0.055
	(-0.20)	(-0.28)	(-0.31)	(-0.18)
LN GDP per capita	0.124	-0.044	0.071	-0.011
	(1.18)	(-0.39)	(0.64)	(-0.10)
Democracy	0.004	0.028	0.008	0.016
	(0.15)	(1.16)	(0.35)	(0.62)
10-Year Z for Std. Military Aid	0.100***			0.058**
	(3.13)			(2.17)
10-Year Z for Std. Military Arms		0.142***		0.104***
		(3.88)		(2.95)
10-Year Z for Std. Military Troops			0.045**	0.045***
			(2.51)	(4.35)
Intercept	-12.347***	-9.718**	-10.362**	-11.771***
	(-3.69)	(-2.52)	(-2.33)	(-3.96)
Dispersion Parameter	2.185***	2.180***	2.235***	2.102***
	(16.18)	(16.39)	(16.76)	(14.62)
N	2902	2902	3179	2867
chi2	34.63***	33.16***	28.76***	69.71***
n2ll	1633.30	1634.59	1756.09	1606.43

* p<0.10, ** p<0.05, *** p<0.01

the short-term but in the long-term it is a quite strong predictor. Clearly, the long-term effects are divergent from the short-term effects especially considering the long-term effect of military arms dependency. This suggests that a failure to consider the long-term impacts of military dependency would lead to an inaccurate understanding of the causes of anti-American attacks in the long-term.

When I examined the PDL2 or Almon models for anti-American terrorist attacks, the length of lags that appeared to produce the largest effects were those of 5-year lags. However, only the standardized military aid dependency variable had a statistically significant coefficient of 0.043. This is a

much smaller effect than found in the ArDL model and is not consistent with that model's findings. The third degree PDL model had 10-year lags as the most appropriate length but again, their effects were smaller than the ArDL models but larger than the PDL2 models. Of the restricted DL models the ArDL model with a 10-year length of lag has the largest effect on the number of anti-American terrorist attacks.

The next model that I evaluated was that of the long-term interaction with a substantial number of U.S. troops stationed in a foreign country. Johnson suggested that looking at installations that house 100 or more troops would give an accurate depiction as to whether that facility represented an American military presence. From this dichotomous indicator variable I then created a variable containing the running sum variable, a variable that holds the value of the number of years since 1968 that there were a substantial number of U.S. troops stationed in country. The results from these models do have statistically significant effects for aid 0.026, arms 0.034, and troops, 0.028 but they do not show evidence of an interaction effect with the number of years in which there is a substantial number of U.S. troops stationed in a foreign country. Therefore, in my opinion these results are inferior to those found in the 10-Year ArDL models.

I found the growth curve model to be inappropriate when examining the long-term effects of military dependency on anti-American terrorist attacks. This model did not have a statistically significant amount of variation about the mean of the number of attacks and thus had a flat latent trajectory. This conclusion was established by examining the estimated means of the number of attacks in the model and by the lack of significance variance of the mean in the output.

Overall, I conclude that there is evidence of a long-term effect of military dependency of approximately ten years that lead to an increase in the likelihood of anti-American terrorist attacks over the short-term effects. I suspect that the running sum model, the long-term interaction model, and the GCM evaluated lengths of time much longer than 10-years and may have obscured the impact of the 10-

year ArDL in much the same way that the short-term models have. To summarize, there is evidence of a 10-year cumulative long-term effect which is more pronounced than the short-term effect and found on all three indicators of military dependency than the original replication model using the dependent variable of anti-American attacks.

Table 4.05 Summary Table of Conclusions: Anti-American Terrorist Attacks

Description of model with abbreviation used	Best-fitting model description of this type	Results from best-fitting model of this type	Key substantive interpretation from the identified best-fitting model of this type
Replication Model	Neumayer & Plümper's original model specification	There is evidence of an effect of ***aid*** and ***troop*** military dependency on the outcome.	Military dependent countries are more likely to have citizens which attack Americans using terrorism especially when the ratio of aid and troop dependency increases.
Running Sum Model (RS)	Running Sum Model	There is evidence of an effect of only ***arms*** military dependency on the outcome.	In contrast to the replication model, dependency on military arms is the only significant predictor of the outcome. These results suggest that in the long-term the most important predictor of anti-American attacks is arms and military aid and U.S. troops are not significant predictors of anti-American attacks.
Unrestricted DL Model (UDL)	2-Year Lags	Inconsistent due to the modeling procedure breaking down.	This method appeared to present inconsistent results in terms of the coefficients and the sign of the coefficients when two or more lagged values of the military dependency variable were included in the model despite the fact that in individual models a lag length of two was appropriate. Suggests moving to restricted lag models.
Restricted DL Models Analyzed			
Arithmetic Distributed Lag Model (ArDL)	**10-Year Lag Length**	There is evidence of an effect of all military dependency variables ***aid, arms,*** and ***troops.***	Ranking the measures of military dependency from this method in terms of their largest impact on the outcome, Arms sales, Military Aid, and U.S. troop dependency. The replication model had **troops** and **aid** as **the two most important predictors** while the running sum model had only arms as a predictor, but here arms is by far the largest predictor but not the only statistically significant predictor.
Polynomial DL Model (PDL)	None	Only the 5-year PDL has any statistically significant measures of military dependency and that is ***aid***	Although there was evidence of statistically significant positive effects of military dependency in the long-term when considered individually, when all of the military dependency variables are included in the model there is no evidence of a long-term effect with the second degree polynomial distributed lag models.

Polynomial DL 3 Model (PDL3M)	Inconsistent	Based on empirical standards, the 10-Year lags appear to be appropriate.	There is a positive effect of **aid** and **troops** in the long-term but this effect is smaller than is found in the ArDL models rendering these models to be inferior to those and suggesting that the shape of the impulse response function to not be complex.
Other Models Analyzed			
Short-Term Interaction Model (STIM)	Short-Term Interaction Model	There is evidence of an effect of ***troops*** and ***aid*** military dependency on the outcome and there is no evidence of an interaction effect with a short-term U.S. military presence.	Consistent with the replication model in that **troops** and **aid** are the most important predictors of anti-American attacks. However, arms dependency is found to have a slightly negative effect on the outcome whereas in the replication model it was not significant. There is not a short-term interaction with having a U.S. military presence and any of our key predictors.
Long-Term Interaction Model (LTIM)	Long-Term Interaction Model	There is evidence of an effect of ***troops*** and ***aid*** on the outcome but no indication of an interaction with having a long-term U.S. military presence.	Consistent with the replication model in that **troops** and **aid** are the most important predictors of anti-American attacks. However, arms dependency is found to have a slightly negative effect on the outcome whereas in the replication model it was not significant.
Growth Curve Model (GCM)	Latent Curve Model	Proved inappropriate for the attack data.	Model is not appropriate for the data at hand due to the non-significant variation around the mean of the number of Americans killed

Dependent Variable: Americans Killed in Terrorist Attacks

The first step in examining potential long-term effects of military dependency on the number of Americans killed in terrorist attacks was to undertake an exact replication with the exact variables as were used in the original analysis. Notice from Table 4.06 that all three measures of military dependency are statistically significant predictors of the number of American killed in terrorist attacks. Listing these variables with the larger coefficients (along with their standard errors) of military dependency first is aid at 0.049 (0.2303), next is arms at 0.039 (0.0213), and finally troops with an effect of 0.034 (0.0058). I will also include, as I did above, the standardized coefficients which will be used for comparison with the DL models: aid 2.115 (0.8802), arms 2.616 (1.436), and troops 1.855 (0.3120).

Once the replication was established to be identical, I then proceeded with the long-term models of the number of Americans killed as I had done above, summarizing my findings in Table 4.07.

To cut to the gist of my findings, the running sum model, the unrestricted DL models, the Long-term interaction models and the growth curve models appear to have limitations

Table 4.06 Neumayer & Plümper NBRM Replication of Americans Killed in Terrorist Attacks, 1978-2005

	(1)	(2)	(3)	(4)
LN Population	0.707***	0.612***	0.645***	0.746***
	(4.64)	(4.20)	(4.18)	(4.89)
LN Distance	0.098	0.028	-0.034	0.126
	(0.73)	(0.12)	(-0.10)	(1.05)
LN GDP per capita	0.177	0.064	0.112	0.102
	(0.99)	(0.39)	(0.67)	(0.55)
Democracy	-0.078**	-0.061*	-0.071**	-0.087**
	(-2.25)	(-1.87)	(-2.26)	(-2.50)
Aid	0.055***			0.049**
	(2.97)			(2.40)
Arms		0.078***		0.039*
		(2.72)		(1.82)
Troops			0.029***	0.034***
			(3.25)	(5.95)
Intercept	-16.811***	-13.810***	-13.962***	-17.347***
	(-4.24)	(-3.33)	(-2.67)	(-4.26)
Dispersion Parameter	3.561***	3.657***	3.695***	3.540***
	(12.78)	(13.55)	(12.87)	(12.98)
N	3360	3360	3483	3341
chi2	30.32***	38.80***	25.32***	60.97***
n2ll	549.05	554.45	563.96	539.39

* p<0.10, ** p<0.05, *** p<0.01

which prevent them from being considered as the best depictions of the long-term effects of military dependency in this circumstance. Also, both the second and third degree PDL models do not appear appropriate for this data. This leaves the analysis with the ArDL model of 20-year lag length which is the most appropriate for modeling the outcome which are presented in Table 4.08. The gamma coefficients for these effects are 0.019 for aid, 0.001 but not significant for arms, and 0.012 for troop dependency. Remember that these are not standardized beta coefficients on the actual variables but gamma coefficients on Z-variables which are linear combinations of the X- variables. Therefore, these estimated gamma coefficients have to be used to recover the corresponding standardized beta coefficients and then these are summed over the 21-year span to assess their total effects using Table D.1 in Appendix D. This procedure yields the total of the 21 standardized beta coefficients to equal an effect of 4.389 for aid, 0.231 for arms that is not significant, and troops has a total effect of 2.772.

Table 4.07 Summary Table of Results Dependent Variable: Americans Killed by Terrorist Attacks

Description of model with abbreviation used	Best-fitting model description of this type	Results from best-fitting model of this type	Key substantive interpretation from the identified best-fitting model of this type
Replication Model	Neumayer & Plümper 's original model specification	There is evidence of an effect of all three military dependency variables on the outcome.	Military dependent countries are more likely to have citizens which attack Americans using terrorism especially when the ratio of **aid, arms,** and **troop** dependency increases.
Running Sum Model (RSM)	Running Sum Model	There is evidence of an effect of only **arms** military dependency on the outcome.	Dependency on military arms is a significant predictor of Americans killed in terrorist attacks in the short-term and long-term. These results suggest that in the long-term arms and military aid and U.S. troops are not significant predictors.
Unrestricted DL Model (UDL)	2-Year Lags	Inconsistent	This method appeared to present inconsistent results in terms of the coefficients and the sign of the coefficients when two or more lagged values of the military dependency variable were included in the model despite the fact that in individual models a lag length of two was appropriate. Suggests moving to restricted lag models.
Restricted DL Models Analyzed			
Arithmetic Distributed Lag Model (ArDL)	20-Year lags	There is evidence for military **aid** and U.S. **troops** being significant predictors of the number of Americans killed by terrorist attacks.	This model is not consistent with the replication model, or the short term model because the level of arms exports is not statistically significant
Polynomial DL Model (PDL)	10-Year	Only evidence of ***aid*** at the 10-year lag length.	This model does not appear to fit the data that well.
Polynomial DL 3 Model (PDL3)	15-Year	Only evidence of ***aid*** at the 15-year lag length.	This model does not appear to fit the data that well.
Other Models Analyzed			
Short-Term Interaction Model (STIM)	Short-Term Interaction Model	There is evidence of an effect of only **troops** on the outcome, no real short-term interaction with having a U.S. military presence.	This finding is inconsistent with the replication model in that only troops is an important predictor of Americans killed in terrorist attacks. There is no evidence of a short-term interaction with having a presence of U.S. troops.

Long-Term Interaction Model (LTIM)	Long-Term Interaction Model	There is evidence of an effect of all three military dependency variables on the outcome.	Arms have the largest effect but it is conditional on the number of years that there has been a U.S. military presence because its interaction is negative. In cases with many years of a U.S. military presence this effect can be completely attenuated and troops and aid have the greatest effect. **Troops** have a very larger potential for affecting the number of Americans killed. Conclude that troops are the key variable here and that this is consistent with Johnson's thesis on blowback due to military footprint
Growth Curve Model (GCM)	Latent Curve Model	N/A	Model is not appropriate for the data at hand due to the non-significant variation around the mean of the number of Americans killed

Table 4.08 20-Year ArDL Models for Americans Killed in Terrorist Attacks

	(1)	(2)	(3)	(4)
LN Population	0.736***	0.519***	0.650***	0.874***
	(3.40)	(2.81)	(3.56)	(4.71)
LN Distance	0.287	0.179	0.152	0.374
	(1.31)	(0.91)	(0.66)	(1.24)
LN GDP per capita	0.205	-0.084	0.027	0.139
	(1.20)	(-0.43)	(0.13)	(0.71)
Democracy	-0.119***	-0.091**	-0.096**	-0.137***
	-2.62)	(-2.14)	(-2.37)	(-3.01)
20-Year Std. Military Aid	0.018***			0.019***
	(3.07)			(3.11)
20-Year Std. Military Arms		0.043**		0.001
		(2.00)		(0.05)
20-Year Std. Military Troops			0.010***	0.012***
			(3.49)	(4.07)
		-	-	-
Intercept	18.647***	11.944***	14.829***	21.197***
	(-3.76)	(-2.65)	(-3.04)	(-4.26)
Dispersion Parameter	3.572***	3.723***	3.769***	3.521***
	11.77)	(11.60)	(11.39)	(11.88)
N	1540	1540	1733	1505
chi2	17.28***	18.31***	22.15***	36.85***
n2ll	270.80	275.21	289.62	266.36

* p<0.10, ** p<0.05, *** p<0.01

When I compare the long-term effects of military dependency from the 20-Year ArDL models to those of the original models I come to the following conclusions. First, the coefficient for aid dependency is approximately 107.5% larger than its coefficient in the original model (4.389 compared to 2.115). The measure of arms dependency is not a significant predictor of the number of Americans killed in the long-term, but it was a sizeable predictor in the short-term possessing a coefficient of 2.616. The effect of troop dependency, like aid dependency, is larger in the long-term than in the short-term with the long-term standardized coefficient being 49.4% larger (2.772 compared to 1.855). I find that the long-term effects of military dependency on the number of Americans killed by terrorist attacks produced by a military dependency of the U.S. are markedly different than the short-term effects reported previously. While the effects of military arms dependency may increase the likelihood of having Americans killed in terrorist attacks in the short-term they do not have an effect on whether Americans are killed in the long-term. The effect of military aid dependency appears to be much more harmful in the long-term than in the short-term. The effect of U.S. troops dependency is larger in the long-term than in the short-term but it is not as harmful as military aid dependency.

Overall, evaluating both dependent variables from Neumayer & Plümper's original analysis led me to the following conclusions. It is clear that the long-term effects of both military aid and troop dependency are larger in the long-term than in the short-term. In fact, these effects increase most when modeling the number of anti-American terrorist attacks. Using both of the dependent variables, the increase is twice as much for the long-term effects of aid than the increase in the long-term effects of troops and these effects manifest themselves in approximately half the time for attacks as compared to kills. What is unclear in these analyses is the role that military arms dependency has on both of the outcomes. In the short-term it is a statistically significant predictor of the number of Americans killed but it does not have a significant long-term effect. Conversely with the number of anti-American attacks, this variable is not a significant predictor in the short-term but is quite a large one in the long-term. On

this point the long-term processes appear to operate in the opposite direction. I find evidence that the long-term effects of both military aid and troop dependency accumulate in the long-term. This finding suggests that use of existing studies, which examine only the short-term effects of military dependency, for the extrapolation of long-term effects run a serious risk of misstating the nature of military dependency on the U.S.

Replication: "Ideologies of Violence"

Robison, Crenshaw, and Jenkins (2006) utilize 12 models in their study comparing the structural contexts of two types of ideological terrorism, Islamist and Leftist, from 1973-2002. As with the previous study, the unit of analysis here is country. The main emphasis of their paper is to compare the social origins of Islamist and Leftist terrorism by incorporating in their statistical models several major theoretical explanations of transnational terrorism. Their thesis is that Islamist terrorism represents a distinctive wave of terrorism that although it may be related to Leftist terrorism, it is something distinct. They use the comparison of estimated coefficients from their statistical models as their evidence to support their conclusion that ideological Islamist terrorism is a distinctive yet related type of terrorism.

Each of their models incorporates in a stepwise manner, operationalizations of a different theoretical approach used to explain transnational terrorism. By the end of these six modeling steps, the authors have built a statistical model incorporating many major theoretical approaches which is subsequently used to compare these two ideological types of terrorism. Models 1-6 are the models associated with Islamist ideological transnational terrorism and models 7-12 are those associated with Leftist ideological transnational terrorism. The variable that holds particular value for my project is that of Western military dependency. Here, this theoretical construct is measured with a dichotomous indicator symbolizing that a Western national sold military arms to a less-developed country in a given year. A full list of the variables used in the original analysis and my replication are given in Table 4.09 and their relevant summary statistics are given in Table 4.10 below.

Table 4.09 Description of Variables Used and Sources for Robison et al. (2006) Replication Models

Variable	Description of Variable	Source(s)
Islamist Terrorist Attacks	Number of all terrorist attacks perpetrated by Islamist Groups	Iterate, Robison et al. (2006)
Leftist Terrorist Attacks	Number of all terrorist attacks perpetrated by Leftist Groups	Iterate, Robison et al. (2006)
Population Logged	Natural Log of the total population	World Bank
% Urban	Percept of the population living in urban areas	World Bank
GDP/per capita	Gross Domestic Product divided by the size of the population	World Bank
GDP/per capita Square	Gross Domestic Product divided by the size of the population - Square	World Bank
Political Rights	Measure of political rights coded 1 to 7 with 1 being least and 7 most	Freedom House
Civil Liberties	Measure of civil liberties coded 1 to 7 with 1 being least and 7 most	Freedom House
Trade/GDP	Amount of Trade divided by a country's GDP	World Bank
Foreign Investment/GDP	Amount of Foreign investment in a country divided by a country's GDP	World Bank
Western Military Dependency	Dummy Variable indicating a Western country selling arms to an underdeveloped country	US ACDA 2003
Iranian Revolution (> 1979)	Dummy Variable indicating if the year was greater than the date of the Iranian Revolution	Author
Cold War (<1991)	Dummy Variable indicating if a year was during the cold war, before 1991	Author
Government Consumption/GDP	Measure of Government consumption divided by GDP	World Bank
Log of % Muslim	Natural Log of the percent of the population that is Muslim	Barrett et al. 2001
Log of % Muslim Square	Natural Log of the percent of the population that is Muslim-Square	Barrett et al. 2001
Female Labor Force (%)	Percent of the female population that is active in the labor force	World Bank
Female Labor Force X Govt. Cons.	Interaction of the percent of female in the labor force and measure of government consumption	World Bank

The most pertinent finding for my study is that of the effect of Western Military Dependency on transnational terrorism. Table 4.11 presents the replication results and the short-term conclusions that Western military dependency is statistically significant for Islamist terrorist attacks but not for Leftist terrorist attacks when all of the predictor variables are included in the models. The size of the effect for Western military dependency on Islamist attacks from model five is 1.262[12]. If a country is dependent on the West for their military arms supplies then they are more likely to be a producer nation of Islamist attacks by a factor of 3.53 in the short-term. Although there are some preliminary models that show

[12] Models 6 and 12 are the same as models 5 and 11 except they incorporate a time trend used to check robustness.

that Western military dependency is a significant predictor of Leftist terrorism, when all the independent variables are include in the model the short-term effect is not significant.

Table 4.10 Descriptive Statistics and Variables in the Replication Model

Variable	N	Mean	S.D.	Min.	Max.
Islamist Terrorist Attacks	3006	0.11	0.81	0.00	27.00
Leftist Terrorist Attacks	3006	0.36	1.83	0.00	33.00
Population Logged	3006	15.94	1.67	12.02	20.97
% Urban	3006	50.18	23.86	4.13	97.39
GDP/per capita	3006	7.60	1.56	4.44	10.76
GDP/per capita Square	3006	6.21	24.44	19.71	115.68
Political Rights (Freedom House)	3006	4.53	2.16	1.00	7.00
Civil Liberties (Freedom House)	3006	4.41	1.84	1.00	7.00
Trade/GDP	3006	70.99	38.61	6.32	282.40
Foreign Investment/GDP	3006	2.93	5.36	0.00	145.20
Western Military Dependency	3006	0.47	0.50	0.00	1.00
Iranian Revolution (> 1979)	3006	0.91	0.28	0.00	1.00
Cold War (<1991)	3006	0.54	0.50	0.00	1.00
Government Consumption/GDP	3006	16.30	6.79	2.98	64.39
Log of % Muslim	3006	1.89	1.70	0.00	4.61
Log of % Muslim Square	3006	6.45	7.89	0.00	21.27
Female Labor Force (%)	3006	37.44	9.07	5.52	52.72
Female Labor Force X Govt. Consumption	3006	610.49	309.88	57.41	2930.50

Dependent Variable: Islamist Attacks

To incorporate the theory of the variation of terrorism with variation in duration of military dependency I then evaluate these same models using the six selected approaches for measuring long-term effects described above. A summary table of my findings for Islamist attacks can be found in Table 4.12 above. I found that a 15-Year PDL2 model produced the largest effect of Western military dependency on Islamist attacks. The results from this model are reported in Table 4.13 and contain the relevant variables that make this model comparable to model five in the replication models, the model without the time trend. The gamma coefficients for the three Z-variables needed to describe a polynomial impulse function of lagged values were -0.428 (0.2246) for Z0, 0.254 (0.0585) for Z1, and -0.015 (0.0036) for Z2. These gamma coefficients were then used to recover the standardized beta

Table 4.11 Negative Binomial General Linear Model with AR1 of Military Dependency for Islamist and Leftist Terrorist Attacks, 1973-2002

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Islamist Attacks						**Leftist Attacks**					
Population (logged)	0.126	0.501**	0.764***	0.723***	0.802***	0.850***	0.514***	0.266**	0.296**	0.329**	0.331**	0.315**
	(0.60)	(2.43)	(3.91)	(3.59)	(3.90)	(4.38)	(5.26)	(2.29)	(2.20)	(2.34)	(2.32)	(2.19)
GDP/per capita	0.469	-2.321	0.988	2.838	4.128*	4.236*	5.790***	4.876***	4.456**	3.921**	3.968**	3.947**
	(0.40)	(-0.83)	(0.48)	(1.45)	(1.93)	(1.95)	(3.13)	(2.88)	(2.41)	(1.97)	(2.03)	(2.03)
GDP/per capita Square	-0.059	0.137	-0.085	-0.194*	-0.279**	-0.291**	-0.352***	-0.283***	-0.271**	-0.242*	-0.246**	-0.242**
	(-0.86)	(0.73)	(-0.65)	(-1.65)	(-2.14)	(-2.19)	(-3.03)	(-2.82)	(-2.37)	(-1.94)	(-1.99)	(-1.99)
% Urban	0.083***	0.071***	0.051***	0.073***	0.078***	0.088***	0.001	0.001	0.001	0.007	0.009	0.005
	(2.89)	(3.46)	(2.72)	(5.47)	(5.27)	(4.08)	(0.07)	(0.04)	(0.08)	(0.41)	(0.51)	(0.31)
Trade % GDP		0.020***	0.006	-0.009	-0.007	-0.007		-0.019**	-0.016*	-0.014	-0.014	-0.015
		(3.96)	(0.90)	(-1.40)	(-1.10)	(-1.01)		(-2.03)	(-1.69)	(-1.34)	(-1.37)	(-1.44)
Foreign Direct Investment % GDP		-0.360***	-0.184**	-0.045	-0.041	-0.021		-0.225***	-0.224***	-0.152**	-0.151**	-0.163**
		(-3.20)	(-2.41)	(-0.52)	(-0.50)	(-0.28)		(-2.91)	(-2.89)	(-2.35)	(-2.43)	(-2.49)
Western Military Dependency (1=yes)		2.061*	1.633***	1.499***	1.262***	1.191***		0.627*	0.709*	0.539	0.620	0.645
		(1.65)	(2.59)	(2.99)	(2.83)	(2.68)		(1.77)	(1.84)	(1.24)	(1.48)	(1.57)
Political Rights			0.430***	0.394***	0.365**	0.376**			0.298*	0.370**	0.351**	0.341**
			(2.75)	(2.83)	(2.39)	(2.55)			(1.87)	(2.44)	(2.23)	(2.13)
Civil Liberties			-0.535***	-0.158	-0.216	-0.265			-0.017	-0.140	-0.072	-0.057
			(-2.86)	(-0.73)	(-0.96)	(-1.17)			(-0.09)	(-0.74)	(-0.38)	(-0.30)
Govt. Consumption (% GDP)			0.160***	0.070**	-0.155***	-0.172***			-0.004	-0.004	0.129	0.127
			(6.15)	(2.29)	(-2.90)	(-3.27)			(-0.07)	(-0.07)	(1.17)	(1.13)
Log of % Muslim				4.287***	4.511***	4.664***						
				(5.42)	(5.99)	(5.76)						

Log of % Muslim Square				-0.644***	-0.700***	-0.722***						
				(-4.29)	(-4.85)	(-4.74)						
Female Workers (% Labor Force)				-0.069***	-0.229***	-0.229***				-0.018	0.054	0.043
				(-2.92)	(-5.59)	(-5.53)				(-0.71)	(0.70)	(0.54)
Iranian Revolution (1 if year > 1979)				-0.308	-0.305	0.070						
				(-1.07)	(-0.92)	(0.16)						
Female Workers X Govt. Consumption					0.007***	0.007***					-0.004	-0.004
					(4.58)	(4.66)					(-1.10)	(-1.03)
Year-count						-0.034						0.027
						(-0.93)						(1.05)
Cold War Dummy (1 if year < 1991)										0.890***	0.927***	1.117***
										(3.03)	(3.17)	(3.27)
Constant	-8.792*	-6.828	-23.688**	-33.567***	-34.443***	-35.591***	-32.719***	-24.683***	-24.287***	-22.627**	-25.502***	-25.380***
	(-1.82)	(-0.62)	(-2.56)	(-3.06)	(-2.99)	(-3.13)	(-4.01)	(-3.48)	(-2.79)	(-2.40)	(-2.92)	(-2.93)
Observations	2884	2884	2884	2675	2675	2675	2884	2884	2884	2884	2884	2884
Number of Countries	139	139	139	138	138	138	139	139	139	139	139	139
Prob. Chi2	0	0	0	0	0	0	0	0	0	0	0	0

* p<0.10, ** p<0.05, *** p<0.01

coefficients for the 15 lagged values and the current value of Western military dependency using Table E.1 in Appendix E. These resulting standardized beta coefficients were then summed and equaled 4.67. The size of this coefficient for the 15-Year Lagged PDL2 model is 270% larger than the short-term effect reported in the original model. This leads to the conclusion that reporting only the short-term effect of Western military dependency grossly underestimates the total effect that this variable may have in the long-term.

Dependent Variable: Leftist Attacks

The same type of analysis was carried out on the dependent variable Leftist terrorist attacks and the summary table of my findings is reported in Table 4.14. I found that a 15-Year ArDL model was the most appropriate model for portraying the long-term effects of Western military dependency on Leftist terrorist attacks. The results from this individual model are displayed in Table 4.15. There is only one Z-variable in the ArDL model and it has a gamma coefficient of 0.02 (0.006). Using the procedures described in Appendix D., the total standardized beta coefficient was 2.86 and statistically significant compared with a non-significant short-term effect of Western military dependency on Leftist terrorism. Here we see that the short-term and long-term effects diverge and hold with it the potential that conclusions based only on the short-term effect may yield a false impression of the potential influence of Western military dependency on Leftist terrorism.

Overall, some conclusions can be drawn from these long-term extensions of Robison et al.'s models. First I find that Western military dependency, which basically stands for the concept of arms sales to the developing world, is found to be consistently statistically significant in the long-term for both Islamist and Leftist terrorism. This result is divergent from the short-term findings of this data in that Western military dependency was not a significant predictor of Leftist terrorism in the short-term. Another interesting finding from my extension is that there is consistent evidence that the time lag of 15-years is most appropriate in both sets of these models. This long-term time horizon is completely

missed when only contemporaneous causes of terrorism are examined. Also, there was a much wider range of other potential explanations of terrorism explored in Robison et al.'s compared to Neumayer & Plümper's analysis. This fact is good preliminary evidence that the long-term effect of arms sales is robust in the presence of several other prominent explanations of terrorism. Further, the analysis undertaken here is suggestive that a much wider range of ideological terrorism may have long-term outlays in their explanations.

Table 4.12 Summary Table of Results Dependent Variable: Islamist Terrorist Attacks

Description of Model with abbreviation used	Best-Fitting Model Description	Results from Best-Fitting Model	Key Substantive Interpretation from the Identified Best-Fitting Model
Replication Model	Robison et al.'s original model specification	Yes, arms sales Western Military Dependency is statistically significant in all models. In the full model without the time trend (Model 5), the effect of the binary variable is 1.191 (2.68)	Arms sales dependency is a statistically significant predictor of all Islamist Terrorist attacks from 1973 to 2002.
Running Sum Model (RSM)	Running Sum Model	Yes, arms sales Western Military Dependency is statistically significant in all models except the full model without the time trend. In the full model with the time trend (Model 6), the effect of the binary variable is 1.03.	Arms sales dependency is a statistically significant predictor of all Islamist Terrorist attacks from 1973 to 2002.
Unrestricted DL Model (UDLM)	2-Year Lags	Inconsistent	This method appeared to present inconsistent results in terms of the coefficients and the sign of the coefficients when two or more lagged values of the military dependency variable were included Suggests moving to restricted lag models.
Restricted DL Models			
Arithmetic Distributed Lag Model (ArDL)	10 or 15 Years	There is evidence for Western Military Dependency at both the 10 and 15 year lag lengths.	The total effect for the 10 year is 3.14014 with 2375=N, and with 15 year 3.89832 with 1971=N. The 20 year lag is a very small increase and for the cost of a loss of 25% of the data.

Polynomial DL Model (PDLM)	15 of 20 Year	There is evidence for Western Military Dependency at both the 15 and 20 year lag lengths.	The 20-Year PDL2 fits the model best and has the largest effect. The effect of the betas summed is 5.245. The 15-year model fits almost as well and the sum of its betas is 4.6653. It is clear that there the Almon Second Degree DL fits the data well for 20 years.
Polynomial DL 3 Model (PDL3M)	None	There is no evidence for any of the PDL3 models having an effect on Islamist terrorism	None of the PDL3 DL models fit the data good for Islamist attacks. None of the gamma parameter estimates were statistically significant.
Other Models			
Long-Term Interaction Model (LTIM)	None	The Western Military dependency variable is not significant, the interaction is statistically significant, but the substantial presence of U.S. troops is not significant	The model does not appear to fit the data well. This is not too surprising considering it is more appropriate for U.S. not Western Military Interaction.
Growth Curve Model (GCM)	Latent Curve Model	Left for future research	The use of Latent Curve Models would be a more appropriate method to use for Robison et al.'s original research question. Thus this research question requires attention in its own research project.

Table 4.13 Negative Binomial 15-Year PDL2 with AR1 of Military Dependency for Islamist Terrorist Attacks, 1973-2002

	Islamist Attacks
Population (logged)	0.423***
	(0.1409)
GDP/per capita	8.995***
	(2.3901)
GDP/per capita Square	-0.612***
	(0.1547)
% Urban	0.067***
	(0.0148)
Trade % GDP	-0.006
	(0.0053)
Foreign Direct Investment % GDP	0.003
	(0.052)
15-Year "Z0-Variable" Military Dependency	-0.428**
	(0.2246)
15-Year "Z1-Variable" Military Dependency	0.254***
	(0.0585)
15-Year "Z2-Variable" Military Dependency	-0.015***
	(0.0036)
Political Rights	0.231
	(0.1503)
Civil Liberties	-0.178
	(0.249)
Govt. Consumption (% GDP)	-0.473***
	(0.1356)
Log of % Muslim	5.289***
	(0.7549)
Log of % Muslim Square	-0.883***
	(0.1541)
Female Workers (% Labor Force)	-0.431***
	(0.1005)
Female Workers X Govt. Consumption	0.017***
	(0.0042)
Constant	-41.643***
	(10.238)
Observations	1971
Number of Countries	118
Prob. Chi2	0

* p<0.10, ** p<0.05, *** p<0.01

Table 4.14 Summary Table of Results Dependent Variable: Leftist Terrorist Attacks

Description of Model with abbreviation used	Best-Fitting Model Description	Results from Best-Fitting Model	Key Substantive Interpretation from the Identified Best-Fitting Model
Replication Model	Robison et al.'s original model specification	No, arms sales Western Military dependency is not statistically significant. In the full model but it is in two preliminary models. The size of the coefficients in these preliminary models is range from approx. 1/3 to 1/2 as much as the effect in the comparative Islamist models.	Arms sales dependency is a not a statistically significant predictor of all Leftist Terrorist attacks from 1973 to 2002.
Running Sum Model (RSM)	Running Sum Model	Yes, arms sales Western Military dependency is statistically significant in all models. In the full model with the time trend (Model 11), the effect of the binary variable is 0.083, in the full model with time trend the coefficient is 0.144.	Arms sales dependency is a statistically significant predictor of all Leftist Terrorist attacks from 1973 to 2002.
Unrestricted DL Model (UDLM)	2-Year Lags	Inconsistent	This method appeared to present inconsistent results in terms of the coefficients and the sign of the coefficients when two or more lagged values of the military dependency variable were included in the model despite the fact that in individual models a lag length of two was appropriate. Suggests moving to restricted lag models.
Restricted DL Models			
Arithmetic Distributed Lag Model (ArDL)	10 or 15 Year Lags	There is evidence for Western Military Dependency at both the 10 and 15 year lag lengths.	This model is not consistent with the replication model, or the short term model because the level of arms exports is not statistically significant
Polynomial DL Model (PDLM)	None	None of the PDL2 DL models fit the data good for leftist attacks. None of the gamma parameter estimates were statistically significant.	This model does not appear to fit the data that well.
Polynomial DL 3 Model (PDL3M)	None	None of the PDL3 DL models fit the data good for leftist attacks. None of the gamma parameter estimates were statistically significant.	This model does not appear to fit the data that well.
Other Models			
Long-Term Interaction Model (LTIM)	None	The Western Military dependency variable is statistically significant but neither the interaction nor the substantial presence of U.S. troops is significant.	This model does not appear to fit the data that well. This is not too surprising considering it is more appropriate for U.S. not Western Military Interaction.

Growth Curve Model (GCM)	Latent Curve Model	Left for future research	The use of Latent Curve Models would be a more appropriate method to use for Robison et al.'s original research question. Thus this research question requires attention in its own research project.

Table 4.15 Negative Binomial 15-Year ArDL AR1 of Military Dependency for Leftist Terrorist Attacks, 1973-2002

	Leftist Attacks
Population (logged)	-0.039
	(0.126)
GDP/per capita	1.23
	(2.538)
GDP/per capita Square	-0.11
	(0.174)
% Urban	0.03
	(0.021)
Trade % GDP	-0.01
	(0.012)
Foreign Direct Investment % GDP	-0.18**
	(0.074)
15-Year "Z-Variable" Military Dependency	0.02***
	(0.006)
Political Rights	0.55***
	(0.102)
Civil Liberties	-0.28**
	(0.123)
Govt. Consumption (% GDP)	0.19
	(0.128)
Female Workers (% Labor Force)	0.15*
	(0.089)
Female Workers X Govt. Consumption	-0.01
	(0.004)
Cold War Dummy (1 if year < 1991)	1.03***
	(0.273)
Constant	-12.87
	(10.925)
Observations	2057
Number of Countries	118
Prob. Chi2	0

* p<0.10, ** p<0.05, *** p<0.01

V. Discussion and Conclusion

In conclusion, the extensions that I present above point to contributions not only in the substantive literature on terrorism but also in the methodological literature on cumulative, long-term effects. Below I will summarize the most important substantive results from my study followed by a summary of the methodological findings. Lastly, I will point to implications that these results may hold for future studies of terrorism.

Summary of Substantive Findings

I draw attention to five main substantive findings from my preceding analysis on the nature of the long-term impacts of military dependency on terrorism. A country's dependent position in the procurement of military resources such as aid, arms, and troops holds serious implications for a variety of terrorist outcomes in both the short and long-term. In some cases the long-term consequences of military dependency were isomorphic with the short-term consequences, for example in the impact of U.S. military aid and troop deployment on anti-American terrorist attacks. In other cases, such in the case Western military dependency's effect on Leftist terrorist attacks, there are divergent findings in the long-term from those established in the short term but none-the-less there is evidence of significant long-term effects. A second key finding is the fact that the long-term effects of military dependency are substantially larger than those of short-term effects. These impacts were reported above to be ranging from 49% to 270% larger in the long-term than in the short-term. This makes it clear that in many cases the long-term effects of military dependency can be far more serious than have previously been reported. Third, the time frame in which statistically significant long-term effects of military dependency were found was consistently between 10 to 15 years. A potential reason for this

length of lag was only briefly elaborated upon above. Fourth, the long-term effects do lend partial support to what I have identified as Johnson's "Blowback Thesis", the largest effects have not stemmed from placement of U.S. troops abroad but rather the from lending of military aid to military dependencies. Fifth, apparent from my preceding replications and extensions is that there are significant long-term effects of military dependency that have been overlooked in the literature.

Summary of Methodological Findings

In this study I proposed a variety of methodologies to evaluate the long-term effects of military dependency on terrorism including the following models: 1-Running Sum; 2-Ad Hoc Distributed Lags; 3-Arithmetic DLs; 4-Polynomial DLs; 5-Long-Term Interactions; and 6-Growth Curve Models. From these methods I found evidence that the Running Sum, Ad Hoc DL, and Long-Term Interaction models all had limitations which prevented them from giving me a clear signal that they were appropriate for my analysis. The methodologies that I found most applicable to the present analyses were the Arithmetic DL and Second Degree Polynomial DL models. These DL methodologies are not as commonly utilized in the disciplines of Sociology and Political Science as they are in specific applications of Econometrics. These methodologies are also not built-in parts of canned statistical software programs such as the one I utilized for my analysis, Stata.

Distributed Lag models such as the ArDL and the PDL which I utilized allowed for the incorporation of multiple lagged-values of the independent variables of military dependency without the penalty of one degree of freedom for each lag, leading to estimation problems, nor producing inconsistent results due to complications posed by multicollinearity in the way that including unrestricted and unstructured distributed lags did in my analyses. Further these

models are relatively straight forward after a moderate learning curve is achieved. Overall, I suspect that they could play a larger role in the social sciences in a growing number of areas.

While I did not utilize with much satisfaction Growth Curve models, specifically the SEM framework's LCMs I believe still possess a tremendous amount of potential in future analyses of long-term effects. An obvious reason for this potential is the growing realization that the SEM framework is in fact a more general framework which encompasses, with the proper restrictions, the regression-based methods that are currently viewed as alternate models. Also, LCMs are continuing to be extended to incorporate more complicated topics such as limited dependent variables, such as counts, and this knowledge is not currently universal in the way that regression-based methodologies are.

Implications for Future Research

This project has engendered a number of questions for future research. A primary question from the above analysis is why the lengths of lags are nearly twice as long for the outcome of anti-American attacks as for the outcome of Americans killed? I suspect that the answer might have more to do with the indigenous resources of terrorist movements than with the political opportunity structure in which these terrorist movements operate. This suspicion naturally is in part motivated by my study of the literature on social movements and the debates in the literature on approaches for explaining social movement mobilizations. A second question is how to square the contradictory effects of the short and long-term consequences of military arms dependency on the two outcomes found in the re-analysis of Neumayer & Plümper's work? Is there something inherent in the nature of these two outcomes that could play a confounding role in how arms dependency impacts them? Third, I think it would be a useful exercise to scrutinize the concept of military dependency by examining the dimensionality of

this concept. Both of these analyses have made assumptions about the concept in terms of its dimensionality and in terms of the most important indicators of it.

Neither of these studies analyzed here, make any reference to Boswell and Dixon's important work which in essence argued that the concept of dependency itself was multidimensional and had a separate political dimension beyond the economic one that had been previously assumed. "Our thesis is that economic and political dependency independently contribute to rebellious violence through their deleterious effects on internal economic and state structure" (Boswell and Dixon 1990, p. 541). I would argue against Boswell and Dixon and hypothesize that there is a military dimension to dependency that is analytically distinct from both economic and political dependency. "Military dependency comprise the value of foreign military penetration (imports of weapons and supplies) and the diversity of comparable options (alternate suppliers and the capability for self-reliance). This is a direct government to government dependence that is analytically and substantively independent of economic dependency"(Boswell and Dixon 1990: 543). These are just part of the conjectures that they make about military dependency.

This project has shown that, on average, the blowback of long-term military dependency is even greater than the short-term blowback which has been captured in the previous work of Neumayer and Plumper and Robison et al. However, this finding is contrary, for most cases, than the little relationship shown in my preliminary bivariate analyses (see Tables 1.1 and 1.2). This observation leads me to ask why this might be the case. I suspect that there are a number of reasons for this anomaly. First, the bivariate models belie certain distorting influences caused by the covariates included in the multiple regression models. This is a general issue realized when moving from bivariate models to multiple covariate models (Lewis-Beck, 1980, p. 47). A second general reason also applicable here is that there is the possibility of specification error.

This problem really boils down to a problem at the level of model building (Berry and Feldman, 1985, pp. 25-26) and may have been present in my analysis here. I started my project by replicating two existing studies which were the best examples of research on the influence of military dependency on terrorism and thus, made the assumption that both previous studies had identified the best model for the data. My goal was to change one aspect of these existing models, the short-term nature of military dependency to long-term military dependency, and not to build the "best" model of terrorism. A third potential reason for this incongruity between the bivariate and multiple covariate models is that there was not much discussion in the original analyses about the impact of outlying observations. Bollen and Jackman (1985) have outlined multiple consequences of unusual observations in cross-national studies and these issues may have not been adequately addressed in the existing research.

Further, I call for more attention in current transnational terrorism research to be paid to an earlier generation of cross-national research that focused on the role of international forces in domestic rebellion (e.g., Chase-Dunn, 1975; Robinson, 1976; Evans and Timberlake, 1980; Deloacroix and Ragin, 1981; London and Robinson, 1989; Boswell and Dixon, 1990) and on the work of dependency theorists themselves (e.g., Frank, 1967, 1979; Cardoso, 1977). There is the potential for better analysis if the parallel debates of an earlier generation of research are incorporated into the research on terrorism especially when transnational terrorism is framed as a battle for control of domestic political power.

I conclude by restating that there is a vast research potential relating transitional terrorism to forms of dependency including military dependency. I have consistently found that the long-term effects of military dependency on several terrorist outcomes are often stronger than the short-term effects and not always consistent with them. Research that fails to consider

long-term effects when providing public statements or policy recommendations runs the risk of relating an inaccurate nature of the total effects of military dependency on terrorism.

APPENDIX A: CORRELATION TABLES

Table A.1 Correlation Table from Neumayer & Plümper (2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Anti-American attacks	1.000								
Number of Americans killed	0.143	1.000							
Natural Log of Population	0.113	0.009	1.000						
Natural Log of Distance b/t Capitals	-0.013	0.007	-0.076	1.000					
Natural Log of GDP/per capita	0.016	0.010	-0.085	-0.289	1.000				
Polity IV Democracy Measure	0.040	-0.005	0.112	-0.212	0.489	1.000			
Military Aid Dependency on U.S.	0.038	0.029	-0.048	-0.005	-0.039	0.016	1.000		
Military Arms Dependency on U.S.	0.002	0.002	-0.047	-0.011	0.020	-0.004	0.013	1.000	
Military Troop Dependency on U.S.	0.005	0.003	-0.055	-0.013	0.078	0.079	0.003	0.024	1.000

Table A.2 Correlation Table from Robison et al. (2006)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Islamist Terrorist Attacks	1									
Leftist Terrorist Attacks	0.082	1								
Population Logged	0.007	0.117	1							
GDP/per capita	0.082	0.051	-0.032	1						
GDP/per capita Square	0.079	0.042	-0.014	0.995	1					
% Urban	0.128	0.075	0.023	0.83	0.815	1				
Trade/GDP	0.025	-0.132	-0.614	0.133	0.108	0.103	1			
Foreign Investment/GDP	-0.037	-0.062	-0.164	0.15	0.151	0.147	0.353	1		
Western Mil. Dependency	0.095	0.144	0.429	0.414	0.415	0.352	-0.226	-0.035	1	
Political Rights	0.035	0.083	-0.03	0.653	0.653	0.544	0.078	0.1	0.205	1
Civil Liberties	0.017	0.042	-0.091	0.687	0.692	0.561	0.107	0.129	0.186	0.917
Government Cons./GDP	0.214	-0.077	-0.315	0.309	0.314	0.239	0.382	0.151	0.07	0.126
Log of % Muslim	0.077	-0.095	0.047	-0.438	-0.433	-0.355	-0.023	-0.118	-0.066	-0.522
Log of % Muslim Square	0.051	-0.084	0.031	-0.392	-0.394	-0.304	-0.015	-0.127	-0.031	-0.512
Female Labor Force (%)	-0.077	-0.104	0.034	-0.153	-0.113	-0.226	-0.074	0.051	-0.209	0.044
Fem Labor Force X Govt. Cons.	0.12	-0.1	-0.234	0.191	0.214	0.097	0.264	0.159	-0.042	0.182
Iranian Revolution (> 1979)	-0.063	-0.021	0.016	-0.05	-0.048	0.02	0.061	0.068	-0.114	0.005
Cold War (<1991)	0.048	0.1	-0.058	-0.025	-0.025	-0.145	-0.155	-0.265	0.153	-0.116

Table A.2 (cont.)

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Islamist Terrorist Attacks								
Leftist Terrorist Attacks								
Population Logged								
GDP/per capita								
GDP/per capita Square								
% Urban								
Trade/GDP								
Foreign Investment/GDP								
Western Mil. Dependency								
Political Rights								
Civil Liberties	1							
Government Cons./GDP	0.157	1						
Log of % Muslim	-0.533	-0.018	1					
Log of % Muslim Square	-0.521	0.003	0.968	1				
Female Labor Force (%)	0.061	0.004	-0.222	-0.296	1			
Fem Labor Force X Govt. Cons.	0.217	0.816	-0.19	-0.204	0.533	1		
Iranian Revolution (> 1979)	-0.048	-0.008	0.029	0.014	0.13	0.059	1	
Cold War (<1991)	-0.088	0.036	0.062	0.078	-0.204	-0.074	-0.286	1

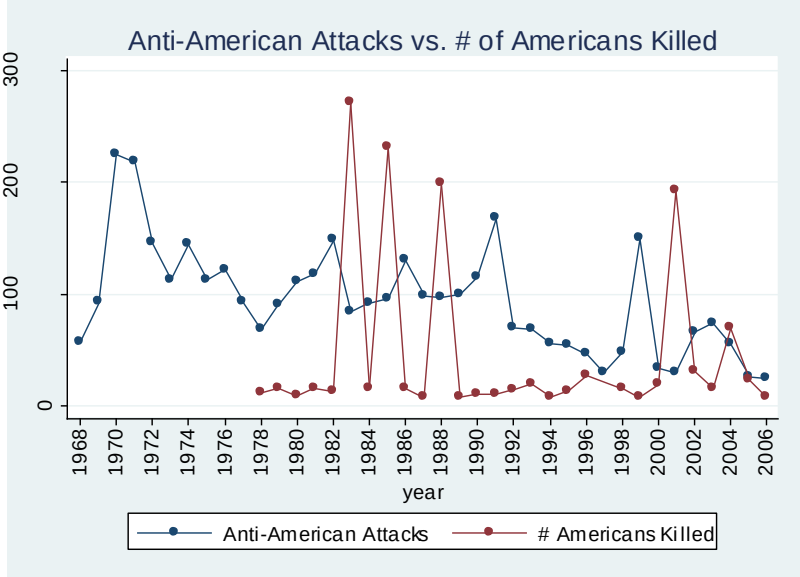
APPENDIX B: DEPENDENT VARIABLES

Table B.1. Counts of Dependent Variables Used in Analysis by Year

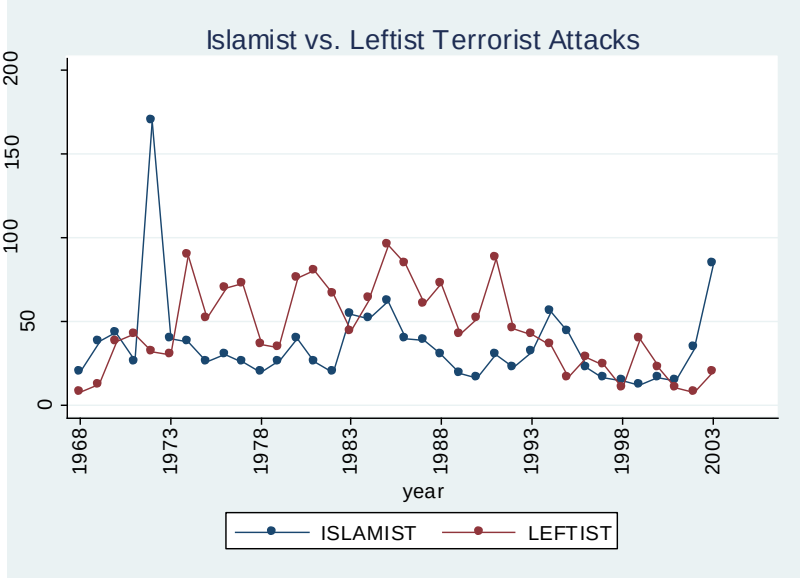
Year	Anti-American Attacks	Americans Killed	Islamist Attacks	Leftist Attacks
1968	57	.	20	8
1969	93	.	38	12
1970	225	.	43	38
1971	218	.	26	42
1972	146	.	170	32
1973	112	.	40	30
1974	145	.	38	90
1975	112	.	26	52
1976	121	.	30	70
1977	93	.	26	72
1978	69	12	20	36
1979	90	16	26	34
1980	111	9	40	76
1981	117	16	26	80
1982	148	13	20	66
1983	84	271	54	44
1984	92	16	52	64
1985	95	231	62	96
1986	131	15	40	84
1987	98	7	39	60
1988	97	199	30	72
1989	100	7	19	42
1990	115	10	16	52
1991	168	10	30	88
1992	70	14	22	46
1993	69	19	32	42
1994	56	8	56	36
1995	54	13	44	16
1996	46	27	22	28
1997	30	.	16	24
1998	48	15	15	10
1999	150	8	12	40
2000	33	19	16	22
2001	29	193	15	10
2002	66	31	34	8
2003	73	16	84	20
2004	56	70	.	.
2005	26	23	.	.
2006	25	7	.	.
Total	3668	1295	1299	1642

APPENDIX C: GRAPHS OF DEPENDENT VARIABLES

Graph C.1 Anti-American Attacks VS. Number of Americans Killed in Terrorist Attacks, 1978-2006



Graph C.2 Islamist Terrorist Attacks VS. Leftist Terrorist Attacks, 1968-2003



APPENDIX D: ARITHMETIC DL

The following steps outline the simple bivariate estimation process of the Arithmetic Lag Model[13]. Begin with the general DL model shown below and also used in the estimation of unrestricted, finite lag models, as described in method one.

$$Y_t = \alpha + \beta_0 X_t + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \cdots + \beta_k X_{t-k} + \varepsilon_t \quad \textbf{(D1)}$$

1. Impose the linearly declining structure on the beta coefficients as computed from the following table and substitute into equation D1 to form equation D2.

$$Y_t = \alpha + (k+1)\gamma X_t + k\gamma X_{t-1} + (k-1)\gamma X_{t-2} + \cdots + \gamma X_{t-k} + \varepsilon_t \quad \textbf{(D2)}$$

2. Factor out the parameter to be estimated, gamma, to form equation D3.

$$Y_t = \alpha + \gamma[(k+1)X_t + kX_{t-1} + (k-1)X_{t-2} + \cdots + X_{t-k}] + \varepsilon_t \quad \textbf{(D3)}$$

3. Simplify the equation by defining the vector *Z* as $[(k+1)X_t + kX_{t-1} + (k-1)X_{t-2} + \cdots + X_{t-k}]$ and subsitutiing it into equation D4.

$$Z = [(k+1)X_t + kX_{t-1} + (k-1)X_{t-2} + \cdots + X_{t-k}] \quad \textbf{(D4)}$$

4. Estimate the equation using the equation D5.

$$Y_t = \alpha + \gamma Z_t + \varepsilon_t \quad \textbf{(D5)}$$

5. The estimated coefficient gamma (*γ*), can then be used with the known parameters, *i* and *k* to solve for each of the β_k coefficients using Table D.1.

Table D.1 Arithmetic DL Beta Coefficient Pattern

Lag #	Beta	(k-i + 1)γ
0	β_0	(*k* + 1)γ
1	β_1	*k* γ
2	β_2	(*k* – 1)γ
3	β_3	(*k* – 2)γ
…	…	…
k-2	β_{k-2}	3γ
k-1	β_{k-1}	2γ
k	β_k	γ

[13] Multiple regression of the ArDL Model is a straight-forward extension of the general bivariate case.

APPENDIX E: SECOND DEGREE PDL

The following abbreviated steps outline the simple bivariate estimation process of the Second Degree Polynomial DL Model. Begin with the general DL model shown below and also used in the estimation of unrestricted, finite lag models, as described in method one.

$$Y_t = \alpha + \beta_0 X_t + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \cdots + \beta_k X_{t-k} + \varepsilon_t \quad \textbf{(E1)}$$

1. Substitute the beta coefficients (β_0-β_k) for three new coefficients (Z_{0t}, Z_{1t}, Z_{2t}) that in combination will represent a second degree polynomial lag structure. Here only three unknown parameters Z_0, Z_1, and Z_2 have to be estimated instead of having to estimate *k*+1 unknown parameters, $\beta_0$to β_k.

$$Z_{0t} = \sum_{i=0}^{k} X_{t-i} = (X_t + X_{t-1} + X_{t-2} + \cdots + X_{t-k}) \quad \textbf{(E2)}$$

$$Z_{1t} = \sum_{i=0}^{k} kX_{t-i} = (X_{t-1} + 2X_{t-2} + \cdots + kX_{t-k}) \quad \textbf{(E3)}$$

$$Z_{2t} = \sum_{i=0}^{k} k^2 X_{t-i} = (X_{t-1} + 4X_{t-2} + \cdots + k^2 X_{t-k}) \quad \textbf{(E4)}$$

2. Next the equation is solved for the alpha (α) and gamma parameters (γ) using equation E.5.

$$Y_t = \alpha + \gamma_0 Z_{0t} + \gamma_1 Z_{1t} + \gamma_2 Z_{2t} + \varepsilon_t \quad \textbf{(E5)}$$

3. Recover the individual beta parameters using the estimated values for α, γ_0 , γ_1 , and γ_3 and the known values for *i* and *k* while using Table E.1.

Table E.1 Second Degree PDL Beta Coefficient Pattern

Lag #	Beta	$\gamma_0 + \gamma_1 k + \ldots + \gamma_p k^2$
0	β_0	γ_0
1	β_1	$\gamma_0+\gamma_1+\gamma_2$
2	β_2	$\gamma_0+2\gamma_1+4\gamma_2$
3	β_3	$\gamma_0+3\gamma_1+9\gamma_2$
…	…	…
k-2	β_{k-2}	$\gamma_0+(k-2)\gamma_1+(k-2)^2\gamma_2$
k-1	β_{k-1}	$\gamma_0+(k-1)\gamma_1+(k-1)^2\gamma_2$
k	β_k	$\gamma_0+k\gamma_1+k^2\gamma_2$

APPENDIX F: THIRD DEGREE PDL

The following abbreviated steps outline the simple bivariate estimation process of the Third Degree Polynomial DL Model. Begin with the general DL model shown below and also used in the estimation of unrestricted, finite lag models, as described in method one.

$$Y_t = \alpha + \beta_0 X_t + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \cdots + \beta_k X_{t-k} + \varepsilon_t \quad \textbf{(F1)}$$

1. Substitute the beta coefficients (β_0-β_k) for three new coefficients (Z_{0t}, Z_{1t}, Z_{2t}) that in combination will represent a second degree polynomial lag structure. Here three unknown parameters Z_0, Z_1, and Z_2 have to be estimated instead of having to estimate *k*+1 unknown parameters, $\beta_0$to β_k.

$$Z_{0t} = \sum_{i=0}^{k} X_{t-i} = (X_t + X_{t-1} + X_{t-2} + \cdots + X_{t-k}) \quad \textbf{(F2)}$$

$$Z_{1t} = \sum_{i=0}^{k} kX_{t-i} = (X_{t-1} + 2X_{t-2} + \cdots + kX_{t-k}) \quad \textbf{(F3)}$$

$$Z_{2t} = \sum_{i=0}^{k} k^2 X_{t-i} = (X_{t-1} + 4X_{t-2} + \cdots + k^2 X_{t-k}) \quad \textbf{(F4)}$$

$$Z_{2t} = \sum_{i=0}^{k} k^3 X_{t-i} = (X_{t-1} + 8X_{t-2} + \cdots + k^3 X_{t-k}) \quad \textbf{(F5)}$$

2. Next the equation is solved for the alpha (α)and gamma parameters (γ)using equation F.5.

$$Y_t = \alpha + \gamma_0 Z_{0t} + \gamma_1 Z_{1t} + \gamma_2 Z_{2t} + \gamma_3 Z_{3t} + \varepsilon_t \quad \textbf{(F6)}$$

3. Recover the individual beta parameters using the estimated values for α, γ_0, γ_1, γ_2, and γ_3 and the known values for *i* and *k* while using Table F.1.

Table F.1 Third Degree PDL Beta Coefficient Pattern

Lag #	Beta	$\gamma_0 + \gamma_1 k + \ldots + \gamma_p k^3$
0	β_0	γ_0
1	β_1	$\gamma_0 + \gamma_1 + \gamma_2 + \gamma_3$
2	β_2	$\gamma_0 + 2\gamma_1 + 4\gamma_2 + 16\gamma_3$
3	β_3	$\gamma_0 + 3\gamma_1 + 9\gamma_2 + 64\gamma_3$
…	…	…
k-2	β_{k-2}	$\gamma_0 + (k-2)\gamma_1 + (k-2)^2\gamma_2 + (k-2)^3\gamma_3$
k-1	β_{k-1}	$\gamma_0 + (k-1)\gamma_1 + (k-1)^2\gamma_2 + (k-1)^3\gamma_3$
k	β_k	$\gamma_0 + k\gamma_1 + k^2\gamma_2 + k^3\gamma_3$

APPENDIX G

Variables Used in Long-Term Models -Neumayer & Plümper

Core Vars. Used in All Models	N	Mean	S.D.	Min.	Max.
Number of Anti-American Attacks	3341	0.31	2.01	0.00	90.00
Number of Americans Killed	3341	0.07	0.66	0.00	19.00
LN Population	3341	16.09	1.47	12.72	20.99
LN Distance	3341	8.39	1.15	0.00	9.15
LN GDP/per capita	3341	7.40	1.59	3.80	10.75
Democracy	3341	1.63	7.35	-10.00	10.00
Additional Vars.in Original Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
Mil. Aid Dep.	3341	3.23	15.57	0.00	646.46
Mil. Arms Dep.	3341	2.67	9.53	0.00	305.89
Mil. Troops Dep.	3341	1.42	7.66	0.00	114.33
Additional Vars. in Running Sum Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
Running Sum Mil. Aid Dep.	3963	119.48	448.57	0.00	5410.03
Running Sum Mil. Arms Dep.	3963	89.86	188.63	0.00	4761.03
Running Sum Mil. Troop Dep.	4148	34.23	214.26	0.00	7899.06
Additional Vars. in Unrestricted Lag Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
1-Year Lagged Mil. Aid Dep.	4097	3.08	15.28	0.00	646.46
2-Year Lagged Mil. Aid Dep.	4110	3.12	15.31	0.00	646.46
1-Year Lagged Mil. Arms Dep.	4097	3.66	75.01	0.00	4761.03
2-Year Mil. Arms Dep.	4110	3.79	74.92	0.00	4761.03
1-Year Lagged Mil. Troops Dep.	4286	3.13	60.72	0.00	2007.54
2-Year Mil. Troops Dep.	4264	3.10	60.84	0.00	2007.54
Additional Vars. in Short-Term Interaction Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
Substantial U.S. Troop Presence (1=yes 0=no)	4842	0.15	0.35	0.00	1.00
Substantial. U.S. Troop Presence X Mil. Aid Dep.	3909	0.87	5.98	0.00	97.11
Substantial. U.S. Troop Presence X Mil. Arms Dep.	3909	1.10	5.84	0.00	179.28
Substantial. U.S. Troop Presence X Mil. Troops Dep.	4093	2.99	62.08	0.00	2007.54
Additional Vars. in Long-Term Interaction Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
Running Sum of the # of Years with Substantial. U.S. Troop Presence	5396	3.23	7.82	0.00	38.00
Running Sum with Substantial. U.S. Troop Presence X Mil. Aid Dep.	3963	12.55	80.42	0.00	1551.87
Running Sum with Substantial. U.S. Troop Presence X Mil. Arms Dep.	3963	19.83	92.51	0.00	2057.14
Running Sum with Substantial. U.S. Troop Presence X Mil. Troop Dep.	4148	84.44	2122.59	0.00	72271.44
Additional Vars. in Arithmetic DL Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
5-Year "Z" Variable Mil. Aid Dep.	3572	68.91	210.67	0.00	3907.02
10-Year "Z" Variable Mil. Aid Dep.	3261	241.15	877.06	0.00	26066.38
15-Year "Z" Variable Mil. Aid Dep.	2493	462.70	1139.25	0.00	10451.43
20-Year "Z" Variable Mil. Aid Dep.	1840	782.41	1862.65	0.00	13724.38
25-Year "Z" Variable Mil. Aid Dep.	1239	1165.06	2708.61	0.00	17203.25
30-Year "Z" Variable Mil. Aid Dep.	685	1576.77	3549.26	0.00	23226.10
5-Year "Z" Variable Mil. Arms Dep.	3572	60.72	140.35	0.00	1835.36
10-Year "Z" Variable Mil. Arms Dep.	3261	214.19	406.34	0.00	3476.63
15-Year "Z" Variable Mil. Arms Dep.	2493	435.50	740.74	0.00	5632.35
20-Year "Z" Variable Mil. Arms Dep.	1840	730.35	1186.34	0.00	8601.07
25-Year "Z" Variable Mil. Arms Dep.	1239	1097.58	1733.44	0.00	11617.28
30-Year "Z" Variable Mil. Arms Dep.	685	1548.28	2336.36	0.00	15009.25

5-Year "Z" Variable Mil. Troop Dep.	3932	27.44	144.99	0.00	1985.90
10-Year "Z" Variable Mil. Troop Dep.	3704	89.21	453.49	0.00	6072.65
15-Year "Z" Variable Mil. Troop Dep.	2917	194.59	968.54	0.00	12305.92
20-Year "Z" Variable Mil. Troop Dep.	2201	338.70	1652.21	0.00	19228.61
25-Year "Z" Variable Mil. Troop Dep.	1502	513.25	2419.17	0.00	26448.05
30-Year "Z" Variable Mil. Troop Dep.	835	708.52	3097.72	0.00	33375.89
Additional Vars. in PDL Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
5-Year "Z0" Variable Mil. Aid Dep. Std.	4179	-0.06	4.40	-0.73	117.10
5-Year "Z1" Variable Mil. Aid Dep. Std.	4376	-0.07	12.38	-1.83	386.15
5-Year "Z2" Variable Mil. Aid Dep. Std.	4376	-0.27	47.12	-6.70	1519.86
5-Year "Z3" Variable Mil. Aid Dep. Std.	4376	-1.19	198.24	-27.40	6700.83
10-Year "Z0" Variable Mil. Aid Dep. Std.	3261	-0.33	4.57	-1.34	123.11
10-Year "Z1" Variable Mil. Aid Dep. Std.	3431	-1.09	33.84	-6.70	907.25
10-Year "Z2" Variable Mil. Aid Dep. Std.	3431	-6.04	270.42	-46.89	7989.30
10-Year "Z3" Variable Mil. Aid Dep. Std.	3431	-41.61	2270.36	-368.40	71095.38
15-Year "Z0" Variable Mil. Aid Dep. Std.	2493	-0.65	2.95	-1.95	26.71
15-Year "Z1" Variable Mil. Aid Dep. Std.	2632	-4.58	24.25	-14.61	327.11
15-Year "Z2" Variable Mil. Aid Dep. Std.	2632	-44.71	272.41	-151.01	4120.27
15-Year "Z3" Variable Mil. Aid Dep. Std.	2632	-497.95	3369.97	-1753.70	53142.68
20-Year "Z0" Variable Mil. Aid Dep. Std.	1840	-0.84	3.71	-2.56	26.42
20-Year "Z1" Variable Mil. Aid Dep. Std.	1966	-7.61	40.78	-25.57	460.43
20-Year "Z2" Variable Mil. Aid Dep. Std.	1966	-98.68	610.49	-349.52	8058.75
20-Year "Z3" Variable Mil. Aid Dep. Std.	1966	-1463.21	10076.50	-5370.70	142818.00
25-Year "Z0" Variable Mil. Aid Dep. Std.	1239	-1.07	4.38	-3.17	25.81
25-Year "Z1" Variable Mil. Aid Dep. Std.	1354	-12.12	59.98	-39.58	591.31
25-Year "Z2" Variable Mil. Aid Dep. Std.	1354	-199.12	1111.46	-672.86	13319.92
25-Year "Z3" Variable Mil. Aid Dep. Std.	1354	-3747.08	22840.88	-12863.50	301522.00
30-Year "Z0" Variable Mil. Aid Dep. Std.	685	-1.26	5.01	-3.78	25.20
30-Year "Z1" Variable Mil. Aid Dep. Std.	794	-15.90	84.61	-56.63	719.15
30-Year "Z2" Variable Mil. Aid Dep. Std.	794	-294.17	1923.63	-1151.47	19874.70
30-Year "Z3" Variable Mil. Aid Dep. Std.	794	-6270.91	48533.58	-26332.88	548883.60
5-Year "Z0" Variable Mil. Arms Dep. Std.	4179	-0.07	0.68	-0.37	9.34
5-Year "Z1" Variable Mil. Arms Dep. Std.	4376	-0.16	2.02	-0.93	47.63
5-Year "Z2" Variable Mil. Arms Dep. Std.	4376	-0.55	8.31	-3.39	239.37
5-Year "Z3" Variable Mil. Arms Dep. Std.	4376	-2.15	37.35	-13.89	1199.93
10-Year "Z0" Variable Mil. Arms Dep. Std.	3261	-0.12	1.04	-0.68	10.28
10-Year "Z1" Variable Mil. Arms Dep. Std.	3431	-0.44	6.22	-3.39	93.71
10-Year "Z2" Variable Mil. Arms Dep. Std.	3431	-2.44	49.15	-23.76	947.29
10-Year "Z3" Variable Mil. Arms Dep. Std.	3431	-16.22	424.34	-186.72	9523.82
15-Year "Z0" Variable Mil. Arms Dep. Std.	2493	-0.15	1.35	-0.99	10.14
15-Year "Z1" Variable Mil. Arms Dep. Std.	2632	-0.62	12.22	-7.41	138.25
15-Year "Z2" Variable Mil. Arms Dep. Std.	2632	-3.25	143.98	-76.54	2108.33
15-Year "Z3" Variable Mil. Arms Dep. Std.	2632	-14.61	1849.67	-888.84	31884.23
20-Year "Z0" Variable Mil. Arms Dep. Std.	1840	-0.19	1.65	-1.30	9.96
20-Year "Z1" Variable Mil. Arms Dep. Std.	1966	-0.68	19.64	-12.96	181.25
20-Year "Z2" Variable Mil. Arms Dep. Std.	1966	-0.04	308.22	-177.15	3707.07
20-Year "Z3" Variable Mil. Arms Dep. Std.	1966	86.14	5275.99	-2722.07	74962.24
25-Year "Z0" Variable Mil. Arms Dep. Std.	1239	-0.20	1.95	-1.60	9.72
25-Year "Z1" Variable Mil. Arms Dep. Std.	1354	-0.13	29.27	-20.06	227.74
25-Year "Z2" Variable Mil. Arms Dep. Std.	1354	21.44	581.81	-341.03	5728.06
25-Year "Z3" Variable Mil. Arms Dep. Std.	1354	697.28	12578.83	-6519.71	145207.50
30-Year "Z0" Variable Mil. Arms Dep. Std.	685	-0.20	2.27	-1.91	9.48
30-Year "Z1" Variable Mil. Arms Dep. Std.	794	1.18	41.95	-28.70	275.78

30-Year "Z2" Variable Mil. Arms Dep. Std.	794	73.11	1017.53	-583.61	8155.88
30-Year "Z3" Variable Mil. Arms Dep. Std.	794	2393.25	26685.72	-13346.49	248838.10
5-Year "Z0" Variable Mil. Troops Dep. Std.	4544	-0.16	0.74	-0.31	10.26
5-Year "Z1" Variable Mil. Troops Dep. Std.	4715	-0.41	1.88	-0.77	27.64
5-Year "Z2" Variable Mil. Troops Dep. Std.	4715	-1.48	7.00	-2.83	104.86
5-Year "Z3" Variable Mil. Troops Dep. Std.	4715	-6.04	28.94	-11.57	438.79
10-Year "Z0" Variable Mil. Troops Dep. Std.	3704	-0.29	1.38	-0.57	18.28
10-Year "Z1" Variable Mil. Troops Dep. Std.	3870	-1.45	7.04	-2.83	93.51
10-Year "Z2" Variable Mil. Troops Dep. Std.	3870	-10.08	50.25	-19.79	678.13
10-Year "Z3" Variable Mil. Troops Dep. Std.	3870	-78.88	400.45	-155.50	5489.55
15-Year "Z0" Variable Mil. Troops Dep. Std.	2917	-0.40	2.05	-0.82	25.97
15-Year "Z1" Variable Mil. Troops Dep. Std.	3062	-3.04	15.62	-6.17	201.33
15-Year "Z2" Variable Mil. Troops Dep. Std.	3062	-31.46	163.24	-63.74	2119.31
15-Year "Z3" Variable Mil. Troops Dep. Std.	3062	-365.12	1909.24	-740.21	25122.41
20-Year "Z0" Variable Mil. Troops Dep. Std.	2201	-0.52	2.65	-1.08	28.22
20-Year "Z1" Variable Mil. Troops Dep. Std.	2343	-5.25	26.78	-10.79	338.48
20-Year "Z2" Variable Mil. Troops Dep. Std.	2343	-72.80	363.91	-147.53	4806.39
20-Year "Z3" Variable Mil. Troops Dep. Std.	2343	-1130.97	5560.98	-2266.89	75344.45
25-Year "Z0" Variable Mil. Troops Dep. Std.	1502	-0.64	3.11	-1.34	27.99
25-Year "Z1" Variable Mil. Troops Dep. Std.	1639	-8.18	38.71	-16.71	449.86
25-Year "Z2" Variable Mil. Troops Dep. Std.	1639	-143.24	633.10	-284.00	7935.67
25-Year "Z3" Variable Mil. Troops Dep. Std.	1639	-2804.78	11722.22	-5429.48	150340.90
30-Year "Z0" Variable Mil. Troops Dep. Std.	835	-0.77	3.41	-1.59	27.77
30-Year "Z1" Variable Mil. Troops Dep. Std.	966	-11.70	51.08	-23.90	443.42
30-Year "Z2" Variable Mil. Troops Dep. Std.	966	-244.77	982.06	-486.02	7755.25
30-Year "Z3" Variable Mil. Troops Dep. Std.	966	-5726.81	21606.01	-11114.69	176316.50

Variables Used in Long-Term Models –Robison et al.

Core Vars. Used in All Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
Islamist Terrorist Attacks	3006	0.11	0.81	0	27
Leftist Terrorist Attacks	3006	0.36	1.83	0	33
Population Logged	3006	15.94	1.67	12.02	20.97
% Urban	3006	50.18	23.86	4.13	97.39
GDP/per capita	3006	7.6	1.56	4.44	10.76
GDP/per capita Square	3006	6.21	24.44	19.71	115.68
Political Rights (Freedom House)	3006	4.53	2.16	1	7
Civil Liberties (Freedom House)	3006	4.41	1.84	1	7
Trade/GDP	3006	70.99	38.61	6.32	282.4
Foreign Investment/GDP	3006	2.93	5.36	0	145.2
Western Military Dependency	**3006**	**0.47**	**0.5**	**0**	**1**
Iranian Revolution (> 1979)	3006	0.91	0.28	0	1
Cold War (<1991)	3006	0.54	0.5	0	1
Government Consumption/GDP	3006	16.3	6.79	2.98	64.39
Log of % Muslim	3006	1.89	1.7	0	4.61
Log of % Muslim Square	3006	6.45	7.89	0	21.27
Female Labor Force (%)	3006	37.44	9.07	5.52	52.72
Female Labor Force X Govt. Consumption	3006	610.49	309.88	57.41	2930.5
Additional Vars. in Running Sum Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
Running Sum Mil. Arms Dep.	6450	5.568527	10.18951	0	39
Additional Vars. in Unrestricted Lag Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
1-Year Lagged Mil. Arms Dep.	2855	0.5684764	0.4953756	0	1

2-Year Mil. Arms Dep.	2705	0.5752311	0.4943993	0	1
Additional Vars. in Short-Term Interaction Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
Substantial U.S. Troop Presence (1=yes 0=no)	5767	0.1503381	0.3574335	0	1
Substantial. U.S. Troop Presence X Mil. Arms Dep.	2976	0.055435	0.228882	0	1
Additional Vars. in Long-Term Interaction Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
Running Sum of the # of Years with Substantial. U.S. Troop Presence	5814	3.375817	7.882326	0	39
Running Sum with Substantial. U.S. Troop Presence X Mil. Arms Dep.	3006	1.180639	4.403028	0	33
Additional Vars. in Arithmetic DL Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
5-Year "Z" Variable Mil. Arms Dep.	5474	9.935331	9.035479	0	21
10-Year "Z" Variable Mil. Arms Dep.	4515	31.85028	27.48374	0	66
15-Year "Z" Variable Mil. Arms Dep.	3578	66.92202	55.53467	0	136
20-Year "Z" Variable Mil. Arms Dep.	2761	113.8957	92.84257	0	231
25-Year "Z" Variable Mil. Arms Dep.	1977	173.9433	138.9562	0	351
30-Year "Z" Variable Mil. Arms Dep.	1221	250.5283	193.5302	0	496
Additional Vars. in PDL Models	**N**	**Mean**	**S.D.**	**Min.**	**Max.**
5-Year "Z0" Variable Mil. Arms Dep. Std.	2959	3.456235	2.447424	0	6
5-Year "Z1" Variable Mil. Arms Dep. Std.	2959	8.698209	6.269945	0	15
5-Year "Z2" Variable Mil. Arms Dep. Std.	2959	31.94863	23.52853	0	55
5-Year "Z3" Variable Mil. Arms Dep. Std.	2959	130.8192	98.37289	0	225
10-Year "Z0" Variable Mil. Arms Dep. Std.	2650	6.5	4.259269	0	11
10-Year "Z1" Variable Mil. Arms Dep. Std.	2650	32.83019	21.60309	0	55
10-Year "Z2" Variable Mil. Arms Dep. Std.	2650	230.4558	153.9636	0	385
10-Year "Z3" Variable Mil. Arms Dep. Std.	2650	1813.118	1230.496	0	3025
15-Year "Z0" Variable Mil. Arms Dep. Std.	2131	9.555138	6.040795	0	16
15-Year "Z1" Variable Mil. Arms Dep. Std.	2131	73.09573	45.52833	0	120
15-Year "Z2" Variable Mil. Arms Dep. Std.	2131	759.8747	476.9143	0	1240
15-Year "Z3" Variable Mil. Arms Dep. Std.	2131	8846.915	5617.696	0	14400
20-Year "Z0" Variable Mil. Arms Dep. Std.	1592	12.55214	7.855214	0	21
20-Year "Z1" Variable Mil. Arms Dep. Std.	1592	129.4001	78.30763	0	210
20-Year "Z2" Variable Mil. Arms Dep. Std.	1592	1785.433	1081.171	0	2870
20-Year "Z3" Variable Mil. Arms Dep. Std.	1592	27539.07	16816.26	0	44100
25-Year "Z0" Variable Mil. Arms Dep. Std.	1041	15.54179	9.699744	0	26
25-Year "Z1" Variable Mil. Arms Dep. Std.	1041	201.6744	120.0546	0	325
25-Year "Z2" Variable Mil. Arms Dep. Std.	1041	3465.411	2055.128	0	5525
25-Year "Z3" Variable Mil. Arms Dep. Std.	1041	66429.38	39720.08	0	105625
30-Year "Z0" Variable Mil. Arms Dep. Std.	495	18.6303	11.52689	0	31
30-Year "Z1" Variable Mil. Arms Dep. Std.	495	289.8687	170.7282	0	465
30-Year "Z2" Variable Mil. Arms Dep. Std.	495	5954.826	3486.427	0	9455
30-Year "Z3" Variable Mil. Arms Dep. Std.	495	136347.2	80507.77	0	216225

REFERENCES

Alexander, Jeffrey C. 2004. “From the Depths of Despair: Performance, Counterperformance, and September 11.” *Sociological Theory*, Vol. 22, Issue 1: 88-105.

Amenta, E and Caren, N and Olasky, SJ. 2005. “Age For Leisure? Political Mediation and The Impact Of The Pension Movement On Us Old-Age Policy.” American *Sociological Review,* 70:516-538.

Banks, Arthur S. 2007. *Cross-National Time-Series Data Archive*. Distributed by Databanks International, Jerusalem, Israel.

Benford, Robert D. and David A. Snow. 2000. “Framing Processes and Social Movements: An Overview and Assessment.” *Annual Review of Sociology*, Vol. 26, pp. 611-639.

Bergesen, Albert J. and Omar Lizardo. 2004. “International Terrorism and the World-System.” *Sociological Theory*, Vol. 22, No. 1, pp. 38-52.

Berry, W. D. and S. Feldman (1985). Multiple Regression in practice. London: Sage.

Black, Donald. 2004. “The Geometry of Terrorism.” *Sociological Theory*, Vol. 22, Issue 1, Pp. 14-25.

Bloom, Mia. 2005. *Dying to Kill*. New York: Columbia University Press.

Bollen, K. A. 1989. *Structural Equations with Latent Variables.* Wiley Series in Probability and Mathematical Statistics. New York: Wiley.

Bollen, K.A. 1998. “Cross National Indicators of Liberal Democracy, 1950-1990.” (ICPSR Study No. 2532).

Bollen, K.A. and Kwok-fai Ting. 2000. "A Tetrad Test for Causal Indicators." *Psychological Methods*, 5:3-22.

Bollen, K. A. and R. W. Jackman (1985). "Regression diagnostics: An expository treatment of outliers and influential cases." *Sociological Methods & Research,* Vol. 13, No. 4, pp. 510-542.

Bollen, K.A. and Patrick Curran. 2006. *Latent Curve Models: A Structural Equation Perspective*, Hoboken, N.J.: John Wiley & Sons, Inc.

Bollen, K.A. 2007. “Liberal Democracy Series I, 1972-1988: Definition, Measurement, and Trajectories.” conference at University of Oxford, Oxford, England, November 9-10, 2007.

Bollen, K.A. 2010. “Class Lecture.” *Latent Trajectory/Growth Curve Analysis: A Structural Equation Modeling Approach*, ICPSR Summer Program 2009, 2010, Chapel Hill, NC.

Boswell, Terry and William J. Dixon. 1990. “Dependency and Rebellion: A Cross-National Analysis.” *American Sociological Review*, Vol. 55, No. 4. Pp. 540-559

Callaway, Rhonda L. 2001. “Is the Road to Hell Paved with Good Intentions? The Effect of U.S Foreign Assistance and Economic Policy on Human Rights” *University of North Texas Doctoral Dissertation*.

Collier, David and Steven Levitsky. 1997. “Democracy with Adjectives: Conceptual Innovation in Comparative Research.” *World Politics*, Vol. 49, No. 3, pp. 430-451.

Combs, Cindy. 2003. *Terrorism in the Twenty-First Century*. Upper Saddle River, NJ: Prentice Hall.

CNN. http://archives.cnn.com/2001/US/09/20/gen.bush.transcript/

Cress, DM and Snow, DA. 2000. “The Outcomes Of Homeless Mobilization: The Influence Of Organization, Disruption, Political Mediation, and Framing.” *American Journal Of Sociology*, 105:1063-1104.

Curran, Patrick. 2010. “Class Lecture.” *PSYC 845: Latent Curve Modeling,* University of North Carolina, Spring 2010.

Curran, Patrick; Khawla Obeidat, and Diane Losardo. In Press. “Twelve Frequently Asked Questions about Growth Curve Modeling”, *Journal of Cognition and Development*.

De La Roche, Roberta. 2004. “Toward a Scientific Theory of Terrorism.” *Sociological Theory*, Vol. 22, Issue 1, Pp. 1-4.

Della Porta, Donatella. 2008. “Research on Social Movements and Political Violence.” *Qualitative Sociology*, Vol. 31, No. 3, pp. 221-230.

Dunteman, George H. 1989. *Principal Components Analysis*. Newbury Park: Sage Publications, Inc.

Earl, Jennifer, Andrew Martin, John D. McCarthy, and Sarah Soule. 2004. “The Use of Newspaper Data in the Study of Collective Action.” *Annual Review of Sociology*, Vol. 30, pp. 65-80.

Eland, Ivan. 2008. Back to the Future: Rediscovering America’s Foreign Policy Traditions, *Mediterranean Quarterly*, Volume 19, Number 3, pp. 88-98.

Engene, Jan Oskar. 2007. “Five Decades of Terrorism in Europe: The TWEED Dataset.” *Journal of Peace Research*, Vol. 44, Issue 109, Pp. 109-121.

Gleditsch, Nils Petter, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg, and Havard Strand. 2002. “Armed Conflict 1946-2001: A New Dataset.” *Journal of Peace Research, Vol.* 39, pp. 615-637.

Goodwin, Jeff. 2006. “A Theory of Categorical Terrorism.” *Social Forces*, Vol. 84, No. 4, pp. 2027-2046.

Goodwin, Jeff. 2007. “The Struggle Made Me a Nonracialist: Why There Was So Little Terrorism in the Antiapartheid Struggle.” *Mobilization*, Vol. 12.

Grimmett, Richard F. 2009. “Conventional Arms Transfers to Developing Nations, 2001-2008,” *Congressional Research Service*.

Hagelin, Bjorn. 1988. “Military Dependence: Thailand and the Philippines.” *Journal of Peace Research*, Vol. 25, No. 4, pp. 431-448.

Jarecki, Eugene, dir. 2005. *Why We Fight*. Sony Pictures Classic.

Jenkins, J. Craig and Kurt Schock. 1992. “Global Structures and Political Processes in the Study of Domestic Political Conflict.” *Annual Review of Sociology* ,Vol. 18, pp. 161-185.

Johnson, Chalmers. 2000. *Blowback: The Cost and Consequences of American Empire*. New York: Henry Holt and Company, LLC.

Johnson, Chalmers. 2006. *Nemesis: The Last Days of the American Republic*. New York: Henry Holt and Company, LLC.

Kane, Timothy. “Global U.S. Troop Deployment, 1950-2003.” *Center for Data Analysis Report #04-11*

Keck, Margaret E. and Kathryn Sikkink. 1998. *Activists Beyond Borders: Advocacy Networks in International Politics*, Ithaca, NY: Cornell University Press.

Keck, Margaret E. and Kathryn Sikkink. 1999. Transnational Advocacy Networks in International and Regional Politics, *International Social Science Journal*, Vol. 59, No. 159, pp. 89-101.

Lewis-Beck, M. S. (1980). Applied Regression: An Introduction. Beverly Hills, Calif.:Sage Publications.

London, Bruce and Thomas D. Robinson. 1989. “The Effect of International Dependence on Income Inequality and Political Violence.” *American Sociological Review*, Vol. 54, No. 2, pp. 305-308.

Maney, Gregory M. 2001. “Transnational Structures and Protest: Linking Theories and Assessing Evidence.” *Mobilization*, Vol. , No.1., pp. 83-100.

McAdam, Doug. 1999. *Political Process and the Development of Black Insurgency, 1930-1970.* University of Chicago Press.

Meernik, James. 2008. “A Supply and Demand Theory of US Military Policy.” *Conflict Management and Peace Science*, 25, pp. 33-48.

Minkoff, Debra C. 1997. “The Sequencing of Social Movements.” *American Sociological Review*, Vol. 62, No. 5, pp. 779-799.

Moaddel, Mansoor. 1994. “Political Conflict in the World Economy: A Cross-National Analysis of Modernization and World-System Theories.” *American Sociological Review*, Vol. 59, No. 2, pp. 276-303.

Morris, Aldon. 1993. “Birmingham Confrontation Reconsidered: An Analysis of the Dynamics and Tactics of Mobilization.” *American Sociological Review*, Vol. 58, pp. 621-636.

North American Treaty Organization website. http://www.nato.int

Neumayer, Eric and Thomas Plümper. 2009. “Foreign Terror on Americans.” *forthcoming in Journal of Peace Research*

Oberschall, Anthony. “Explaining Terrorism: The Contribution of Collective Action Theory.” *Sociological Theory*. Vol. 22, Issue 1: 26-37.

Pape, Robert A. 2003. “The Strategic Logic of Suicide Terrorism.” *American Political Science Review*, Vol. 97, No. 3: 1-19.

Piazza, James A. 2008. “A Supply –Side View of Suicide Terrorism: A Cross-National Study.” *The Journal of Politics*, Vol. 70, No. 1, Pp. 28-39.

Shughart II, William F. 2005. “An Analytical History of Terrorism, 1945-2000.” *Public Choice*, Vol. 128, pp. 7-39.

Snow, D.A., Byrd, S.C. 2007. “Ideology, Framing Processes, and Islamic Terrorist Movements.” *Mobilization*. 12(2), Pp. 119-136.

Tilly, Charles. 2004. “Terror, Terrorism, Terrorists.” *Sociological Theory*, Vol. 22, Issue 1, Pp. 5-16.

Turk, Austin T. 2004. “Sociology of Terrorism”. *Annual Review of Sociology,* 30: 271-86.

Van Rossem, Ronan. 1996. “The World System Paradigm as General Theory of Development: A Cross National Test.” *American Sociological Review*, Vol. 61, No. 3, pp. 508-527.