What We Have Learned about Terrorism since 9/11[†]

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This overview examines critically the post-9/11 empirical literature on terrorism. Major contributions by both economists and political scientists are included. We focus on five main themes: the changing nature of terrorism, the organization of terrorist groups, the effectiveness of counterterrorism policies, modern drivers or causes of terrorism, and the economic consequences of terrorism. In so doing, we investigate a host of questions that include: How do terrorist groups attract and retain members? What determines the survival of terrorist groups? Is poverty a root cause of terrorism? What counterterrorism measures work best? In the latter regard, we find that many counterterrorism policies have unintended negative consequences owing to attack transference and terrorist backlash. This suggests the need for novel policies such as service provision to counter some terrorist groups' efforts to provide such services. Despite terrorists' concerted efforts to damage targeted countries' economies, the empirical literature shows that terrorism has had little or no effect on economic growth or GDP except in small terrorism-plagued countries. At the sectoral level, terrorism can adversely affect tourism and foreign direct investment, but these effects are rather transient and create transference of activities to other sectors, thus cushioning the consequences. (JEL F21, F52, H56, K42, Z31)

1. Introduction

The unprecedented four hijackings on September 11, 2001 (henceforth, 9/11) killed almost 3,000 people and injured over twice that number. These hijackings profoundly affected security throughout the world and marked a watershed terrorist event. The deaths tied to 9/11 equaled those from all transnational terrorist attacks from the start of 1988 through the end of 2000 (Sandler 2003). In addition, 9/11 gave rise to civil freedoms being traded away for security (see, e.g., Davis and Silver 2004 and Viscusi and Zeckhauser 2003), large-scale (short-run) losses to global stock exchanges, and significant reallocations of resources to counterterrorism measures (Chen and Siems 2004 and Sandler, Arce, and Enders 2009). During October 2001, the Bush administration launched a War on Terror that involved

US allies and that primarily focused on Africa, the Middle East, and Asia. These proactive measures, combined with actions to limit terrorist financing, initially stressed al-Qaida and its loose network of affiliated groups (Sageman 2004, 2008). However, within a relatively short time frame, terrorist groups developed new sources of funding (e.g. ransom payments from kidnappings)[1] and exploited other means for transferring funds (e.g. the *hawala* system or money transfers through bank balances). Subsequent terrorist bombings in the United Kingdom, Indonesia, Morocco, the Netherlands, Saudi Arabia, Spain, Tunisia, Turkey, and elsewhere made the world acutely aware of the mounting terrorist threat.

Following 9/11, the US government also channeled tens of billions of dollars into the newly created Department of Homeland Security (DHS), whose budget increased by almost 9 percent annually when averaged from 2003 to 2011 in nominal terms (Enders and Sandler 2012, pp. 328–29). In more recent years, this increase is much more modest, (DHS 2016, p. 8). Other industrial countries also increased their security at home following 9/11, because their interests were also targeted by the same religious fundamentalist terrorist organizations. The rise of al-Qaida in the Maghreb (AQIM), al-Qaida in the Arabian Peninsula (AQAP), al-Shabaab, al-Qaida in Iraq, Lashkar-e-Taiba, and the Islamic State of Iraq and Syria (ISIS) presents a dire threat to people worldwide as these Islamic extremist groups exploit modern technology for propaganda purposes and to radicalize followers. ISIS poses a particularly poignant threat, as underscored by recent high-profile attacks: suicide bombings, armed attacks, and truck rammings in Paris, Brussels, Nice, Stockholm, London, and elsewhere.

With a few notable exceptions,[2] economists took little research interest in applying theoretical and empirical tools to study terrorism prior to 9/11. Most academic interest in terrorism was displayed by political scientists, sociologists, and psychologists before 9/11. These disciplines primarily contributed historical and descriptive studies on terrorism, counterterrorism, and terrorist groups. After 9/11, the terrorism literature changed drastically. Economists took a greater interest and applied econometric methods to analyze whether terrorism has had significant consequences on macroeconomic aggregates, such as growth, income, and investment. This is an essential issue because today's terrorists are intent on damaging targeted countries' economies, including key sectors such as tourism and foreign direct investment (FDI) (Sageman 2008).[3] Economists also examined the effectiveness of counterterrorism policy and the root causes of terrorism.[4] After 9/11, political scientists changed their terrorism focus away from descriptive analyses to greater application of rational choice models and econometric estimation.[5] In the post-9/11 study of terrorism, the lines between

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[1] Brandt, George, and Sandler (2016) indicate some recent levels of these ransom payments.

[2] A notable exception: Landes (1978), who applies Gary Becker's economic theory of crime to investigate the effectiveness of metal detectors, sky marshals, and other deterrents on US skyjackings, based on FAA data for 1961–76.

[3] Drakos and Kutan (2003); Enders, Sandler, and Parise (1992); and Sloboda (2003) are a few articles that examine the influence of terrorism on tourism. The relationship between terrorism and trade is investigated by Blomberg and Hess (2006) and Nitsch and Schumacher (2004), whereas the adverse impact of terrorism on FDI is studied by Abadie and Gardeazabal (2008) and Enders and Sandler (1996).

[4] For example, see Berman (2000, 2009); Berman and Laitin (2008); Enders, Hoover, and Sandler (2016); Krueger (2007, 2008); Krueger and Malečková (2003); and Kunreuther and Heal (2003).

[5] For example, Bueno de Mesquita (2013), Carter (2010, 2015b, 2016), and Findley and Young (2012) explore the relationship between terrorism and insurgencies, while Benmelech, Berrebi, and Klor (2012); Dreher and Fischer (2010); Kurrild-Klitgaard, Justesen, and Klemmensen (2006); Li (2005); and Piazza (2008, 2011) investigate causes of terrorism.

economics and political science became blurred, in which economists accounted for the importance of institutions, politics, and context in their terrorism analyses, while political scientists applied economic methods to their terrorism investigations.

Terrorism remains a very active field of research as it continues to capture headlines through its horrific attacks visited on the general public. The post-9/11 literature contributes answers to the following questions: How has terrorism changed over the last half century? How do terrorist groups attract and retain members? What determines the survival of terrorist groups? What counterterrorism measures work best against terrorism? Should new counterterrorism approaches be devised? Is poverty a root cause of terrorism? Have terrorists had damaging influence on targeted economies as intended? Many of these questions were raised by the media or government leaders after 9/11 as a means of discovering a way forward to address terrorism.

The primary purpose of this paper is to evaluate critically the post-9/11 empirical literature on the political economy of terrorism. To keep our evaluation manageable and focused, we consider five primary issues: (i) the evolving nature of terrorism, (ii) the role of terrorist groups, (iii) the effectiveness of counterterrorism policies, (iv) some root causes of terrorism, and (v) the economic consequences of terrorism. In so doing, we provide specific answers to the questions raised above.

There are five general themes or insights that guide our analysis of these primary issues. First, terrorism has altered in form after the rising dominance of religious fundamentalist terrorism in the 1990s and the augmented security measures in the West after 9/11. These considerations have changed the lethality, location, and nature of terrorism over time, giving rise to the need for new counterterrorism strategies. Second,

terrorist groups respond rationally to their environment to ensure their survivability and visibility. In so doing, they adopt novel institutional forms and adjust their attack portfolios in response to counterterrorism actions. Third, counterterrorism policies have had mixed success. Targeted governments often work at cross-purposes, relying too much on attack-deflecting defensive measures and too little on proactive offensive measures, especially when the same terrorist group targets multiple countries. Frequently, well-intentioned counterterrorism policies may have unintended consequences as terrorists or governments strategically react to one another's actions. More thought needs to be given to countermeasures that offset terrorists' actions, such as service provision, that win them a constituency. Fourth, terrorism has myriad causes. The alleged relationships between terrorism and globalization, terrorism and poverty, and terrorism and regime type are much more nuanced than believed after 9/11. Fifth, as a general rule, terrorism has had little direct negative impact on the economic growth or GDP of targeted industrial countries, despite some large-scale attacks.[6] Any impact is felt by a few terrorism-fragile sectors, and this impact is transitory and small relative to the economy. Larger macroeconomic effects may plague small terrorism-ridden countries. Throughout our analysis, the underlying theoretical framework is rational choice and strategic rational choice (or game theory).

The remainder of the paper contains seven sections. Section 2 offers some background preliminaries, along with an empirical overview of terrorism since 1968. In section 3, terrorist groups' goals, recruitment, longevity, organizational structure, and effectiveness are analyzed. Section 4 presents some relevant game-theoretic notions that inform

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[6]There is, of course, an indirect effect on security expenditures, some of which may augment GDP.

some post-9/11 empirical studies of terrorism. The effectiveness of counterterrorism policies is taken up in section 5, followed by some select hypothesized causes and facilitators of terrorism in section 6. Macroeconomic and sectoral consequences of terrorism are analyzed in section 7. Concluding remarks are presented in section 8.

2. *The Evolving Threat of Terrorism since 1968*

To address this issue, we must first be clear on a few definitions. Terrorism is the premeditated use or threat to use violence against noncombatants by individuals or subnational groups to obtain a political objective through the intimidation of a large audience beyond that of the immediate victims (Enders and Sandler 2012, p. 4). This definition underlies the terrorist event datasets, from which we draw our data for the subsequent graphs and tables. In the above definition, there are two essential ingredients: the presence or threat of violence and a political motive. Without such a motive, the violent act is a crime but not terrorism. Terrorist perpetrators apply their violence in the hopes of cajoling a targeted government to concede to their political demands. By making their acts appear to be random, the terrorists broaden their audience way beyond the unfortunate victims to create an atmosphere of general anxiety. This anxiety is meant to induce a country's constituency (i.e., the audience) to apply pressures on the government to concede to terrorist demands in order to restore safety. In other instances, the terrorists seek a liberal democracy's overreaction that undermines its legitimacy (Hoffman 2006 and Wilkinson 2001). Owing to the perpetrator's subnational nature, standard terrorism definitions rule out state terror, but do not rule out state-sponsored terrorism in which a state aids a terrorist group with intelligence, logistical support, a safe haven, or resources.

Terrorism comes in two varieties that are germane to our study. Domestic terrorism is homegrown and home directed, for which the victims and perpetrators are citizens of the venue country, where the attack occurs. For instance, the bombing of the Alfred P. Murrah Federal Building in Oklahoma City by Timothy McVeigh, an American, was an act of domestic terrorism that took place on April 19, 1995. The Unabomber, Theodore Kaczynski's package bombing campaign on universities and airline companies during 1978–95 was domestic terrorism. By contrast, transnational terrorism involves two or more countries owing to the nationalities of the victims and perpetrators, or the venue country sustaining the attack. If a terrorist incident commences in one country but concludes in another, then it is a transnational terrorist event, as is true for some hijackings, letter bombings, and assassinations. When the terrorists cross a border to engage in their attack, the incident is transnational in nature. If one or more of the victims or perpetrators are not from the venue country (e.g., the hijackings on 9/11), the terrorist attack is classified as transnational. Transnational terrorist events often result in transnational externalities as countries' policies become interdependent. Increased defensive counterterrorism measures, deployed by the United States and other targeted industrial countries after 9/11 (Bush 2002 and Enders and Sandler 2005a, b), may displace planned terrorist attacks against these countries to other less secure countries (see sections 4 and 5). Additionally, US proactive measures to weaken al-Qaida, an Islamic fundamentalist group engaged in transnational and domestic terrorist attacks, limit the group's effectiveness against all potential targeted countries, thereby conferring a public benefit on such countries (Sandler 2005 and Sandler and Lapan 1988).

Prior to the 1990s, most terrorist groups were left wing or nationalist/separatist (Blomberg, Engel, and Sawyer 2010; Cronin

TABLE 1
DISTRIBUTION OF TERRORIST GROUPS BY IDEOLOGY AND BASE COUNTRY OF OPERATION'S CHARACTERISTICS:
BEFORE AND AFTER 2001

Ideology	Average number	Number	Base country's economy			Base country's regime type		
			Low income	Middle income	High income	Not free	Partly free	Free
Groups started before 2001								
Left wing	5.5	198 (38)	26 (21)	102 (43)	69 (44)	21 (20)	64 (39)	113 (45)
Nationalist	5.1	192 (37)	56 (46)	78 (33)	58 (37)	44 (42)	60 (37)	88 (35)
Religious	2.6	90 (17)	35 (29)	47 (20)	8 (5)	36 (34)	34 (21)	20 (8)
Right wing	1.1	38 (7)	4 (3)	13 (5)	21 (13)	5 (5)	5 (3)	28 (11)
Total	14.3	518 (100)	121 (100)	240 (100)	156 (100)	106 (100)	163 (100)	249 (100)
Groups started during 2001–06								
Left wing	6.0	36 (28)	2 (9)	18 (23)	16 (57)	0 (0)	13 (35)	23 (52)
Nationalist	6.3	38 (29)	6 (27)	25 (31)	7 (25)	11 (22)	13 (35)	14 (32)
Religious	8.7	52 (40)	14 (64)	34 (43)	4 (14)	38 (78)	9 (24)	5 (11)
Right wing	0.7	4 (3)	0 (0)	3 (4)	1 (4)	0 (0)	2 (5)	2 (5)
Total	21.7	130 (100)	22 (100)	80 (100)	28 (100)	49 (100)	37 (100)	44 (100)

Notes: All data come from Jones and Libicki (2008). Numbers in parentheses are percentages; e.g. out of 518 groups started before 2001, 38 percent are left wing. The average annual number of groups for pre-2001 period is computed using number of groups that started during 1968–2000 and dividing by 33. Therefore, we exclude 47 groups that started sometime before 1968 in the average column calculation.

2006; Hoffman 2006; and Rapoport 2004). The rapid rise of religious fundamentalist terrorist groups started in the 1990s with al-Qaida and its Islamic extremist affiliated groups (Berman 2009; Gaibulloev and Sandler 2014; Phillips 2014, 2015; and section 3). Unlike the leftists who generally wanted to limit casualties and collateral damage, the religious fundamentalists wanted to maximize carnage, as 9/11 and the March 11, 2004 Madrid commuter bombings demonstrate. During the 1990s, the religious fundamentalists assumed a dominant influence among terrorist groups.

Table 1 is based on Jones and Libicki's (2008) list of 648 terrorist groups that started before 2007.[7] We list some characteristics of these groups before and after 2001 in the top and bottom portions of the table. For the two periods, we distinguish groups by their ideology, e.g. left-wing indicates an underlying Marxist or socialist ideology, and nationalist denotes nationalist/separatist groups. By resident country, we indicate two characteristics of the base country: its income class and regime type. We also present the average annual number of groups launched during 1968–2000 and 2001–06. Using 2001 as the dividing line, we can draw some interesting contrasts between left-wing and religious fundamentalist (denoted by religious in table 1) terrorist groups. First, religious fundamentalist terrorist groups represent the greatest percentage of new groups started after 2001. This trend starts in the beginning of the 1990s; in our sample, 14 percent (44) of the groups formed before 1990 are religious fundamentalists, whereas 30 percent

[7] A more up-to-date list of terrorist groups that is matched to a terrorist event data set is not currently available.

TABLE 2
REGIONAL DISTRIBUTION OF TERRORIST GROUPS BY IDEOLOGY: BEFORE AND AFTER 2002

Ideology	EAP	ECA	LAC	MENA	NA	SA	SSA	Total
Groups started before 2002								
Left wing	13	73	75	12	10	6	10	199
Nationalist	12	69	6	49	11	38	21	206
Religious	16	10	1	34	4	24	7	96
Right wing	2	9	10	0	2	0	3	26
Total	43	161	92	95	27	68	41	527
Groups started during 2002–06								
Left wing	1	12	13	0	1	2	0	29
Nationalist	2	12	0	12	0	5	1	32
Religious	0	3	0	28	0	10	0	41
Right wing	1	0	1	0	0	0	1	3
Total	4	27	14	40	1	17	2	105

Notes: Terrorist group data come from Jones and Libicki (2008). Regions are defined following World Bank classification: East Asia and Pacific, EAP; Europe and Central Asia, ECA; Latin America and the Caribbean, LAC; Middle East and North Africa, MENA; North America, NA; South Asia, SA; and sub-Saharan Africa, SSA. There are 586 terrorist groups but the total number of observations is 633; some groups have multiple bases of operation in different regions.

(98) of the groups formed after 1990 are religious fundamentalists. On average, a slightly higher annual number of leftist and nationalist/separatist groups are created during the post-2001 period compared to the pre-2001 period. However, the average annual number of newly created religious fundamentalist terrorist groups more than tripled during the period after 2001. Second, prior to 2001, leftist groups are heavily represented in middle- and high-income democracies, while the religious fundamentalist groups are heavily represented in low- and middle-income autocracies and partly free democracies. Third, after 2001, these relative distributions of leftist and religious fundamentalist groups remain essentially the same.

Because we do not have terrorist group data by the type of religion, we examine the names of 52 religious fundamentalist groups that appeared during 2001–06 and find that more than 61 percent of those names contain words related to Islam. Out of fifty-two religious extremist groups, twenty-three emerged in Iraq following the Iraq invasion, three began in Afghanistan, and six started in Pakistan.

Table 2 displays regional distribution of the base of operations of 586 terrorist groups—from Jones and Libicki's list—that formed before 2002 and during 2002–06. Groups are distinguished by ideology. Some groups have multiple bases of operation in different regions, so that the number of observations is greater than 586. We apply the World Bank regional classifications: East Asia and Pacific, EAP; Europe and Central Asia, ECA; Latin America and the Caribbean, LAC; Middle East and North Africa, MENA; North America, NA; South Asia, SA; and sub-Saharan Africa, SSA. Overall, leftist terrorist groups are mostly concentrated in ECA and LAC. Prior to 2002, nationalist terrorist groups appeared across all regions

TABLE 3
DISTRIBUTION OF TERRORIST INCIDENTS BY GROUP IDEOLOGY: 2002–07

Ideology	Number of groups	Number of groups ended by 2007	Number of incidents	Number of casualties	Number of incidents per group	Number of casualties per group
Left wing	29	13	322	919	11.1	31.7
Nationalist	30	13	124	2,415	4.1	80.5
Religious	41	12	216	3,482	5.3	84.9
Right wing	3	2	12	11	4.0	3.7
Total	103	40	674	6,827	6.5	68.3

Notes: Terrorist group data come from Jones and Libicki (2008). Data on terrorist (both transnational and domestic) incidents come from RAND (2012).

with large numbers located in ECA, MENA, SA, and SSA. During 2002–06, nationalist groups mostly emerged in ECA and MENA. The religious fundamentalist groups started before 2002 located in EAP, ECA, MENA, and SA. In the post-2001 period, the new religious fundamentalist groups are based almost exclusively in MENA and SA. Comparing the base location of terrorist groups that started before 2002 and during 2002–06, the share of groups based in ECA and LAC decreased in the post-2001 period, whereas the share of groups located in MENA and SA increased in the same period. In particular, this share dropped from 31 percent to 26 percent in ECA, but soared from 18 percent to 38 percent in MENA. Given that groups prefer to locate closer to the place of their attacks (Gaibulloev 2015), this change is expected to raise the share of attacks in MENA.

Next, using the data from RAND (1968–2009) and Jones and Libicki (2008), we track 103 terrorist groups that emerged after 2001—see table 3. By the end of 2006, almost 44 percent of the leftist and nationalist/separatist terrorist groups ceased to exist. In contrast, 70 percent of the religious fundamentalist groups remained active in 2007. Leftist terrorist groups in the sample account for the greatest number of terrorist (domestic and transnational) attacks during 2002–07. However, attacks by the religious fundamentalist and nationalist/separatist terrorist groups are far deadlier. The religious fundamentalist groups increased their activities and accounted for more casualties (deaths or injuries) after 1993 (Berman and Laitin 2008 and Enders and Sandler 2000). Unlike the leftists, some Islamic fundamentalist groups employed suicide bombings, which have much higher death and injury tolls than conventional bombings.[8] Sageman (2004, 2008) attributes the increased lethality of religious fundamentalist terrorists, in part, to a "leaderless jihad," for which individuals can become radicalized and pose a home-grown threat that traditional border protection is powerless to address. The Orlando nightclub massacre by an American-born terrorist on June 12, 2016 is an example of this leaderless jihad.

Figure 1 takes its data from two terrorist event datasets: *International Terrorism: Attributes of Terrorist Events* (ITERATE)

[8] On suicide bombings, see Benmelech and Berrebi (2007), Pape (2003, 2005), Rosendorff and Sandler (2010), and Santifort-Jordan and Sandler (2014). A few nationalist/separatist groups—most notably, the Tamil Tigers and the Kurdish Workers Party—use suicide bombings.
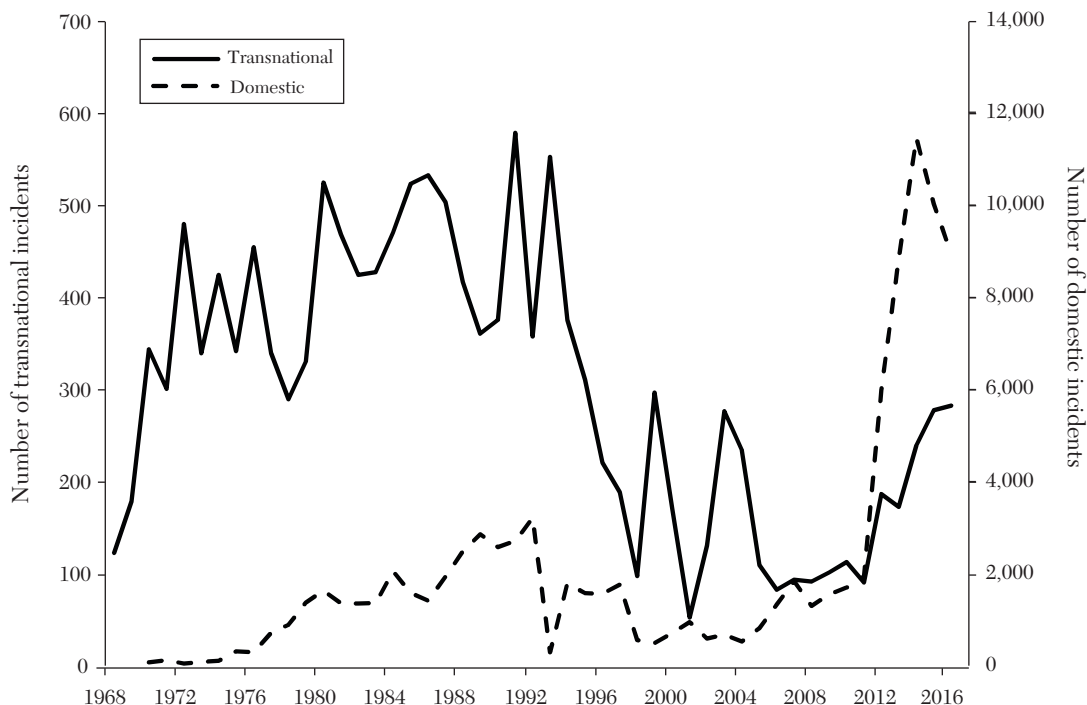
Figure 1. Number of Transnational and Domestic Terrorist Incidents

and the *Global Terrorism Database* (GTD).[9] Both data sets draw their observations from the news media. ITERATE only records transnational terrorist incidents for 1968–2016; GTD records domestic and transnational terrorist incidents for 1970–2016. We use Enders, Sandler, and Gaibulloev's (2011) method for splitting GTD into domestic and transnational terrorist incidents. For all of our data displays, we rely on ITERATE for transnational terrorist incidents and GTD for domestic terrorist incidents.

In figure 1, the number of transnational terrorist incidents is measured on the left-hand vertical axis, while the number of domestic incidents is measured on the right-hand vertical axis. The units on the right axis are quite compressed because domestic terrorist incidents outnumber their transnational counterpart, depending on the time period. Transnational terrorism displays a marked decline starting in 1994, as the religious fundamentalist groups grew in their dominance. Following the end of the Cold War, some important European leftist terrorist groups disappeared. Also, the start of the 1990s witnessed much less state sponsorship of terrorism (Enders and Sandler 1999 and Hoffman 2006). In figure 1, domestic terrorism far exceeds transnational terrorism since 1977, with the exception of 1993.
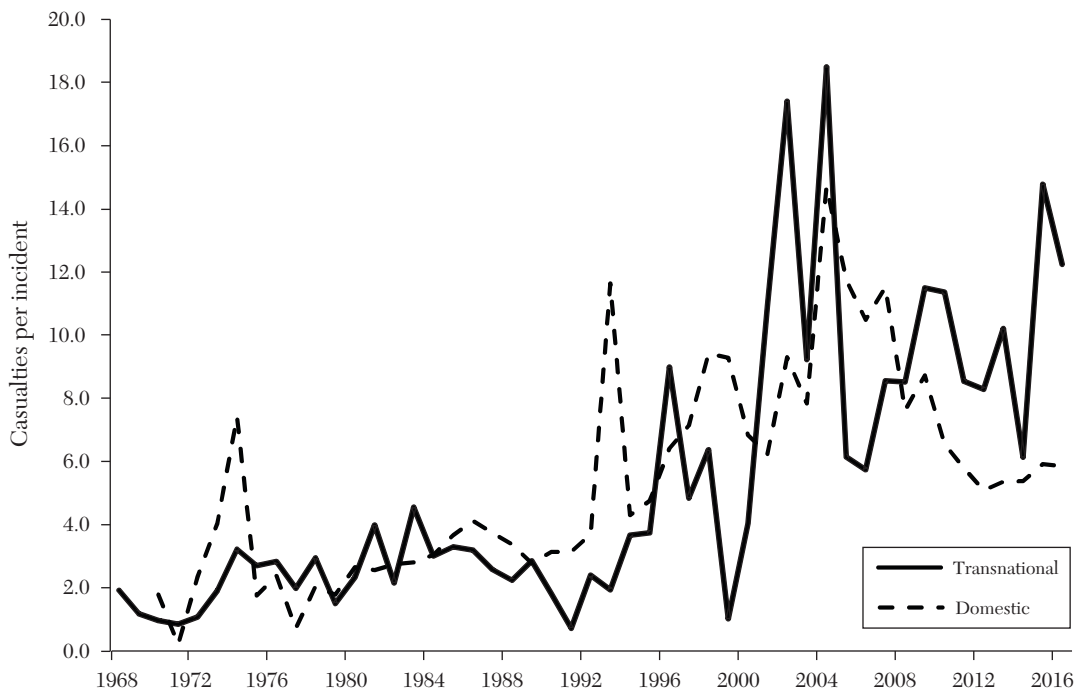
Figure 2. Number of Casualties per Incident

The one-year displayed decline in domestic incidents in 1993 is the result of the GTD data for this year falling off of a truck during a Pinkerton Global Intelligence Services (PGIS) office move.[10] Since 2012, there is an ominous rise in transnational terrorism due, in part, to many new Islamic terrorist groups such as ISIS, al-Shabaab, Boko Haram, and others increasing their campaigns of terror. Domestic terrorism increased during 1975–92 and 2008–16. Some of the recent surge is due to more generous coding of domestic incidents by GTD, especially since 2013 and a change in coders.

Figure 2 presents the number of casualties per terrorist incident. Overall, the casu-

alties per attack increased for both domestic and transnational terrorism since the 1990s. Although, there is a decline in the casualties after 2004, the numbers are still higher than those prior to 1990. The average numbers of casualties per transnational incident for the pre- and the post-1990 periods are two and eight, respectively. The average number of casualties per domestic incident is three before 1990 and seven since 1990. The casualties per transnational terrorist incident continually exceed the casualties per domestic terrorist incident after 2008.

In figure 3, the proportions of transnational and domestic terrorist incidents with casualties (i.e., deaths or injuries) are displayed. For the entire period, domestic terrorism is associated with a greater proportion of incidents with casualties than transnational

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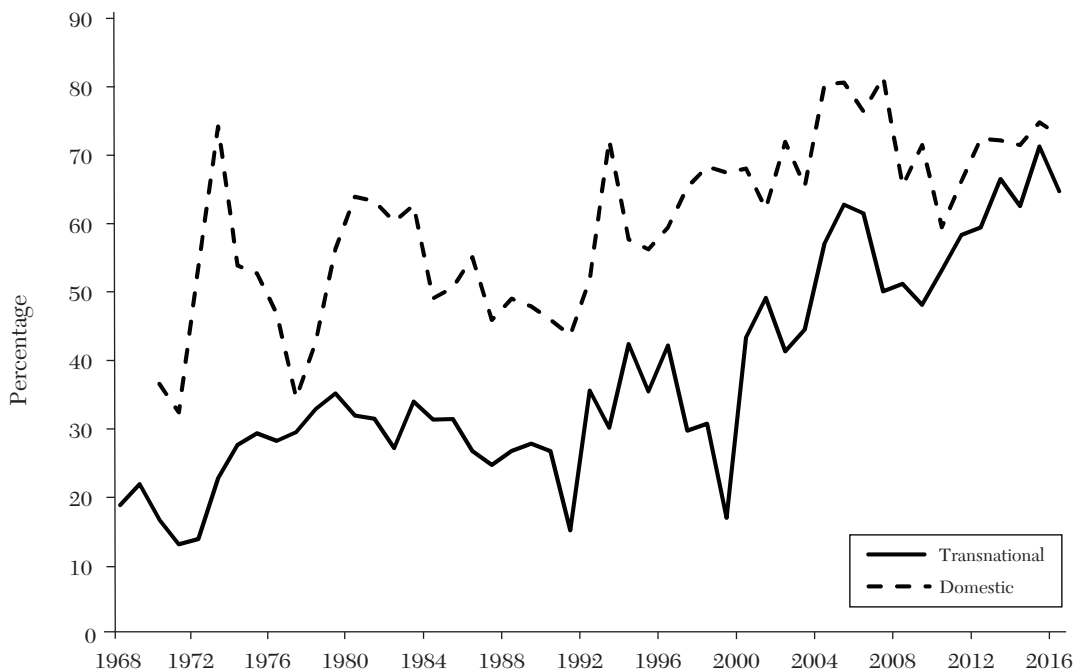[10] PGIS originally collected GTD, which they gave to START (1970–2017) to update and maintain.

Figure 3. Proportion of Transnational and Domestic Terrorist Events with Casualties

terrorism, but this difference has been closing since 2009. From 1999 on, there is a general upward trend in the proportion of transnational terrorist incidents with casualties. This finding supports the notion that the rising dominance of religious fundamentalist terrorism is associated with greater carnage. Before 1990, on average, 26 percent of transnational terrorist incidents resulted in casualties, while, from 1990 on, 46 percent of transnational terrorist incidents ended in casualties. This same casualty percentage calculation for domestic terrorism gives 51 percent before 1990 and 67 percent for 1990 on. Since the early 1990s, the declining number of transnational terrorist attacks and the rising carnage per attack strongly suggest that religious fundamentalist terrorists are getting more terror from each of their attacks.

Figure 4 displays the number and proportion of transnational terrorist attacks directed at US people or property. One must remember that relatively few transnational terrorist attacks occur on US soil, so that the bulk of these attacks are abroad. Since 2003, figure 4 shows that attacks against US interests are way down, given post-9/11 US defensive measures and US proactive counterterrorism measures in the Middle East, Afghanistan, and the Philippines. During 1968–2001, 32 percent of all transnational terrorist attacks were against US interests; during 2002–16, 27.4 percent of all transnational terrorist attacks were against US interests. Just 15.3 percent of transnational terrorist incidents were directed at US interests during 2013–16. There is a marked downward trend in this percentage after 2001, suggesting that counterterrorism
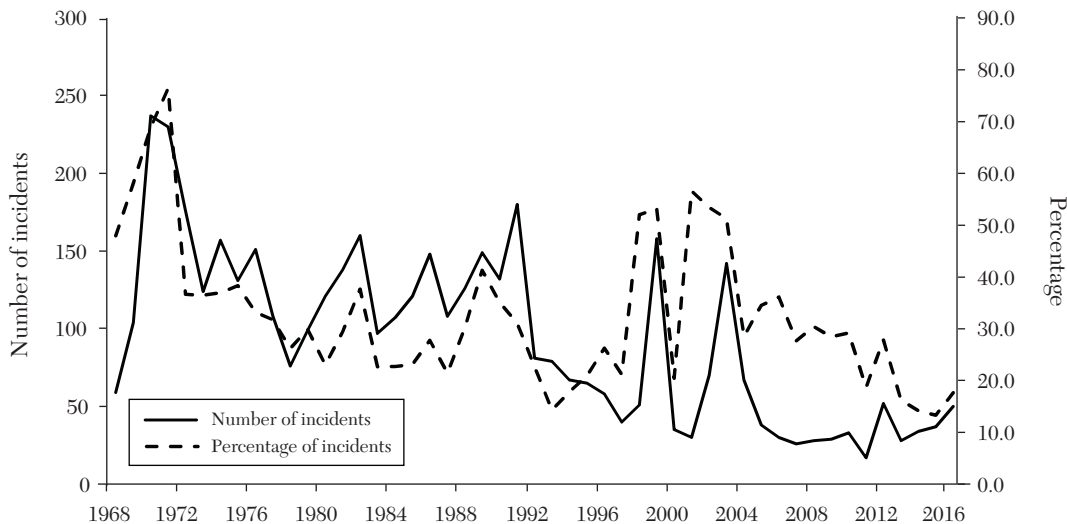
Figure 4. Number and Percentage of Transnational Attacks against US Interests per Year

measures have kept US interests somewhat safer at home and abroad.

Table 4 breaks down transnational terrorism and resulting casualties by its four major modes of attacks—bombing, hostage taking, armed attack, and assassination. Bombings include explosive, incendiary, letter, car, and suicide bombs, while hostage taking includes kidnapping, skyjacking, barricade and hostage taking, and non-aerial hijacking. Other modes of attacks are combined into one column under "Others." As a general rule of thumb, bombings account for about half of the total number of incidents and represent terrorists' favorite type of attack. Most kinds of bombings are logistically simple, requiring few resources. In table 4, we distinguish incident types for two periods: 1968–2001 and 2002–16. In addition, we display the average annual number of events, which dropped from 358 to 165, or by more than half, after 9/11, and the average number of casualties per year, which surged from 957 to 1,825. Table 5 provides the same breakdown of incident types and time periods for domestic

terrorist events. A noteworthy feature is the increase in the average annual number of such incidents and casualties in the post-9/11 period, indicative of a rising threat of domestic terrorism (Gaibulloev, Sandler, and Santifort 2012). For 1970–2001, domestic terrorist attacks outnumbered transnational terrorist attacks by almost 4 to 1. This ratio is far greater in recent years. Similarly, the annual number of casualties from domestic incidents greatly exceeds the annual number of transnational attack casualties.

The changing patterns of terrorist modes of attacks before and after 9/11 are captured by figures 5 and 6, which display the percentage of transnational and domestic incidents by attack type, respectively, for 1968–2001 and 2002–16. For transnational incidents, there is a marked drop in bombings and a pronounced increase in hostage taking (primarily kidnappings for ransoms)[11]

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[11] See Brandt, George, and Sandler (2016); Brandt and Sandler (2009); and Gaibulloev and Sandler (2009a) on the composition of hostage-taking incidents.

TABLE 4
DISTRIBUTION OF TRANSNATIONAL INCIDENTS AND CASUALTIES BY TYPE OF ATTACKS

	Bombing	Hostage	Armed attack	Assassination	Others	Total
Number of incidents						
1968–2001	5,506	1,772	1,462	1,049	2,388	12,177
2002–16	849	590	628	197	213	2,477
Average number of incidents per year						
1968–2001	161.9	52.1	43.0	30.9	70.2	358
2002–16	56.6	39.3	41.9	13.1	14.2	165
Number of casualties						
1968–2001	21,103	3,581	5,600	1,877	387	32,548
2002–16	18,367	2,464	5,495	849	197	27,372
Average number of casualties per year						
1968–2001	620.7	105.3	164.7	55.2	11.4	957
2002–16	1,224.5	164.3	366.3	56.6	13.1	1,825

TABLE 5
DISTRIBUTION OF DOMESTIC INCIDENTS AND CASUALTIES BY TYPE OF ATTACKS

	Bombing	Hostage	Armed attack	Assassination	Others	Total
Number of incidents						
1970–2001	19,942	210	8,273	7,365	4,769	40,559
2002–16	31,715	4,326	13,342	4,558	3,737	57,678
Average number of incidents per year						
1970–2001	623.2	6.6	258.5	230.2	149.0	1,267
2002–16	2,114.3	288.4	889.5	303.9	249.1	3,845
Number of casualties						
1970–2001	79,728.0	503	50,262	13,092	12,413.0	155,998
2002–16	255,581.9	17,530.5	69,959.3	11,830.2	6,803.8	361,706
Average number of casualties per year						
1970–2001	2,491.5	15.7	1,570.7	409.1	387.9	4,875
2002–16	17,038.8	1,168.7	4,664.0	788.7	453.6	24,114

and armed attacks after 9/11. Hostage taking rose as terrorists sought new sources of funding since targeted governments went after terrorist-supporting charities and other means of terrorist financing (Basile 2004, Bush 2002, and Enders and Sandler 2012). Armed attacks in public places in major cities grew and, in so doing, allowed religious fundamentalist terrorists to maximize carnage. A somewhat different picture emerges from domestic terrorist attacks for these two periods in figure 6. The proportion of bombings increased slightly after 9/11 and remained well above 50 percent.
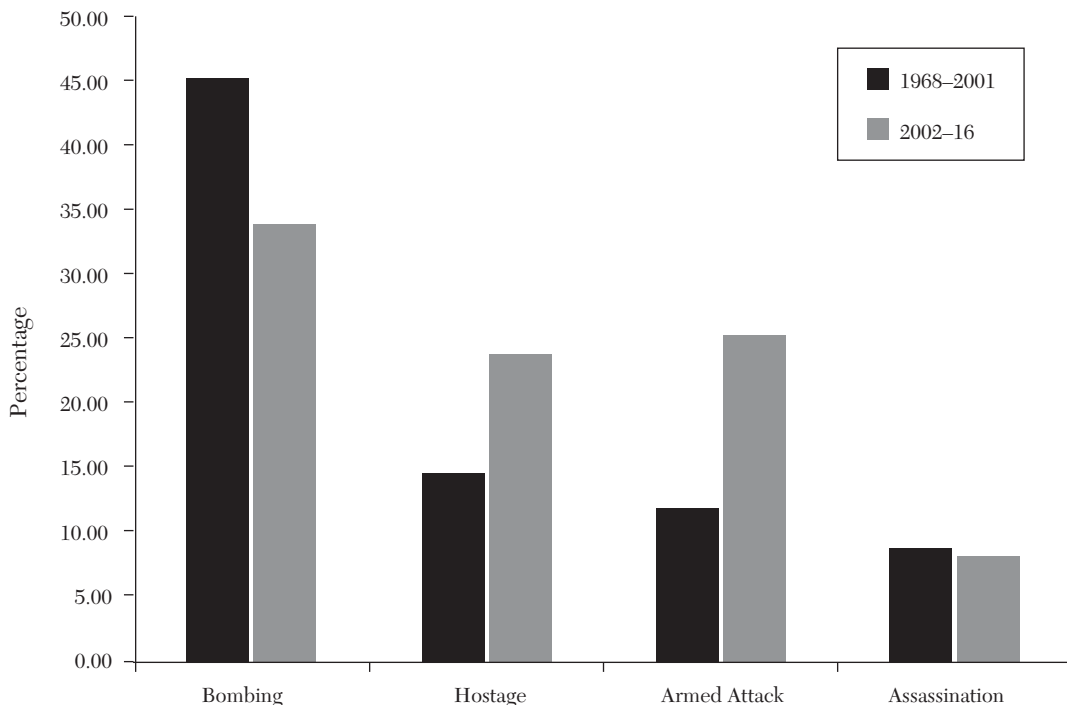
Figure 5. Distribution of Transnational Incidents by Type of Attacks for 1968–2001 and 2002–16

Armed attacks also rose slightly and assassinations dropped as a proportion of domestic terrorism. There was a noteworthy post-9/11 increase in hostage taking, again indicative of terrorists seeking alternative funding sources.[12]

Next, we turn to the pie charts in figures 7A and 7B that show the changing regional patterns of transnational terrorism attacks for the pre- and the post-9/11 periods. Following 9/11, figures 7A and 7B indicate that the share of transnational terror-ist attacks decreased in ECA and LAC and increased in MENA, SA, and SSA. This is due, in part, to the decline of the share of leftist terrorists, who were heavily represented in ECA and LAC before 9/11, and the increase in religious fundamentalist terrorists, who were heavily represented in MENA, SA, and SSA after 9/11. This switch in regional shares is also due to the increased security in NA and ECA after 9/11 and instabilities in MENA. We should also note that failed or weak states tend to be located in the regions experiencing the post-9/11 increased proportion of transnational terrorist events.[13]

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[12] Some of the reason for the low pre-9/11 hostage-taking percentage is due to GTD undercounting these incidents—PGIS customers' were foreign corporations that cared little about the abduction of domestic individuals. This undercounting changed once START took over the maintenance of the database.

[13] On failed states and terrorism, see George (2018), Lai (2007), and Piazza (2008).
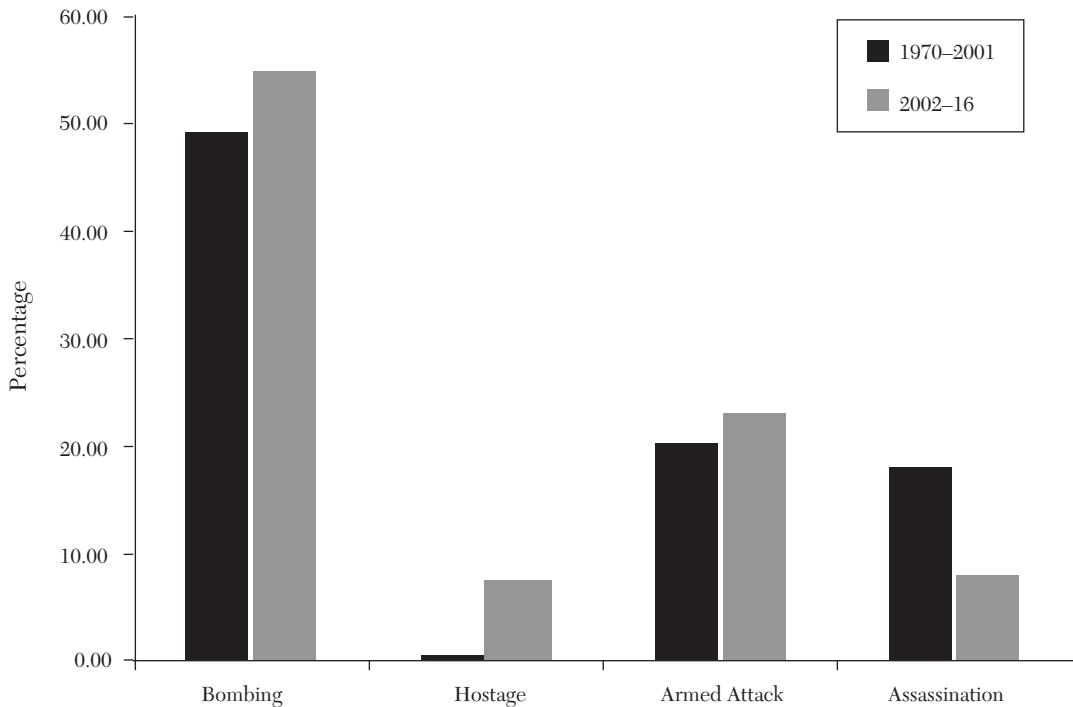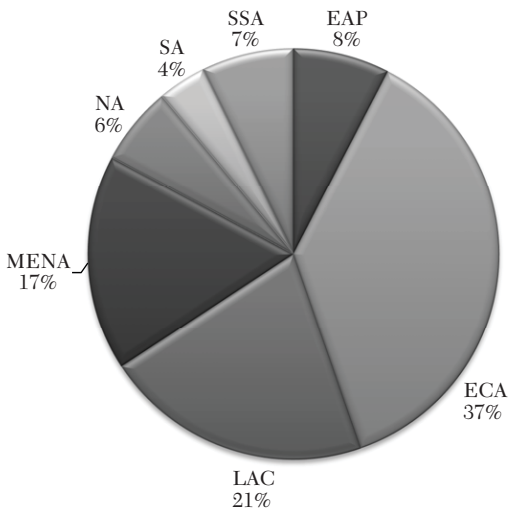
Figure 6. Distribution of Domestic Incidents by Type of Attacks for 1970–2001 and 2002–16

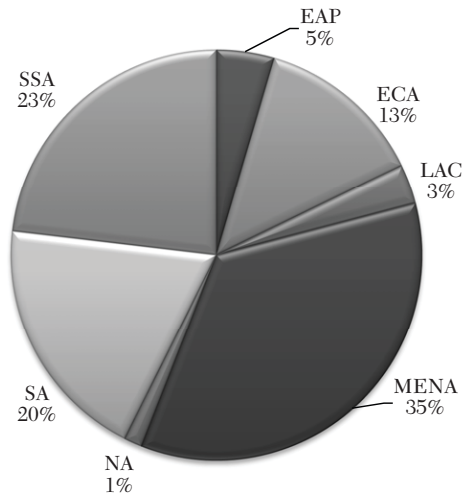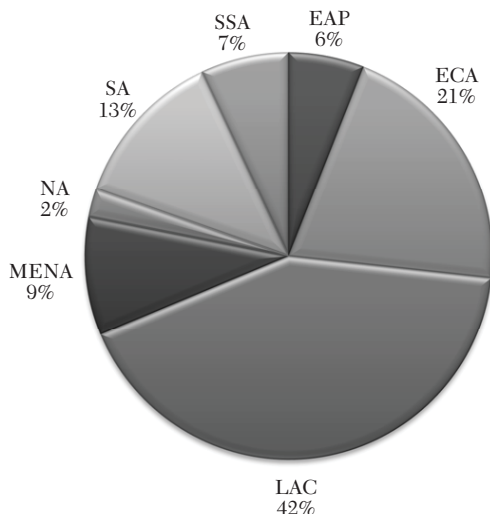Panel A. 1968–2001

Panel B. 2002–16

Figure 7. Distribution of Transnational Incidents by Regions
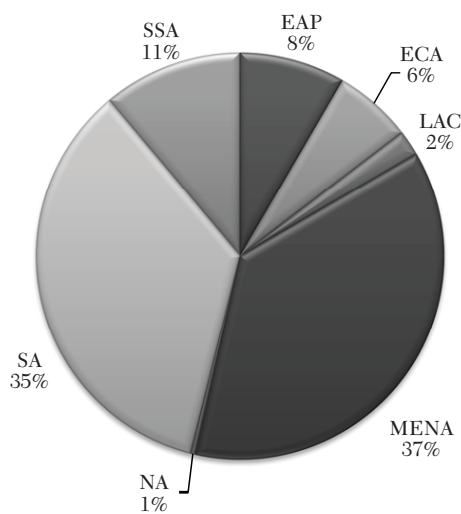
Panel A. 1970–2001

Panel B. 2002–16

Figure 8. Distribution of Domestic Incidents by Regions

A somewhat similar regional transition of the share of domestic terrorist attacks in the pre- and post-9/11 periods is seen in figures 8A and 8B. In the pre-9/11 era, domestic terrorism was most concentrated in LAC and ECA; in the post-9/11 era, domestic terrorism was most prevalent in MENA, SA, and SSA. Except for MENA, the post-9/11 percentages are different between transnational and domestic terrorism. Many of the likely drivers for the regional transition of domestic terrorism are the same as those for the regional transition of transnational terrorism. One different driver concerns the location of civil wars, which can fuel domestic terrorism (Findley and Young 2012).

We also construct similar figures for the regional distribution of attack casualties, where the shifting patterns for casualties are similar to those of incidents. For transnational terrorism, the share of casualties dropped markedly in ECA and LAC and rose in MENA, SA, and SSA for the period after 9/11—see figures 9A and 9B.

With regard to domestic terrorism—see figures 10A and 10B—the share of casualties fell significantly in ECA and LAC and grew sharply in MENA in the post-9/11 era, which is consistent with figures 8A and 8B. However, the share of casualties for domestic terrorist incidents remained constant between the two periods for SA and SSA, even though both SA and SSA experienced an increase in the absolute number of casualties in the post-9/11 period. The post-9/11 percentage declined in EAP. These are due to a dramatic increase in the share of casualties in MENA resulting from recent conflicts and instabilities in the region; MENA accounts for a half of all domestic incident casualties after 9/11.

3. *Terrorist Groups: Choices, Survival, Organization, and Effectiveness*

A terrorist group is a subnational collective consisting of members who use

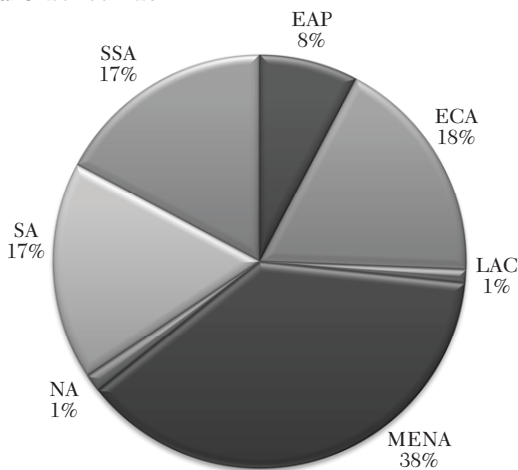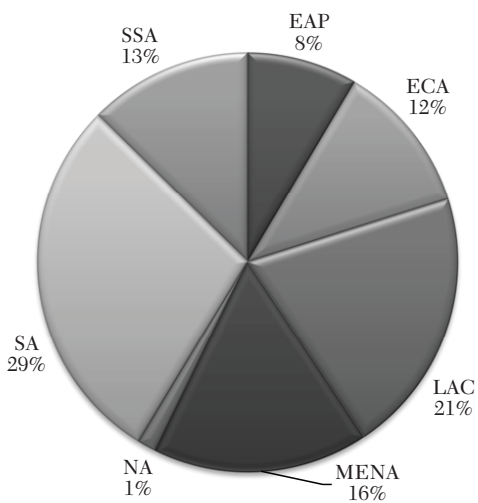Panel A. 1968–2001
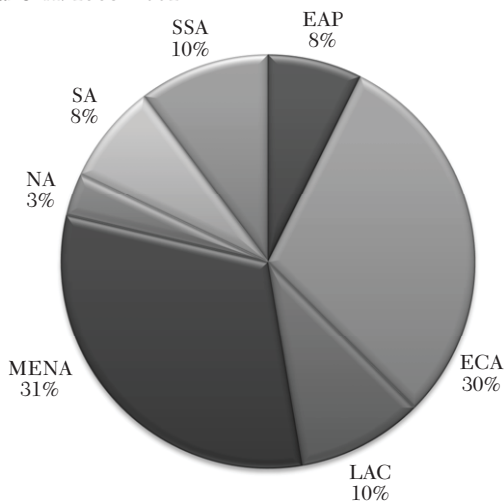
Panel B. 2002–16

Figure 9. Distribution of Transnational Incident Casualties by Regions

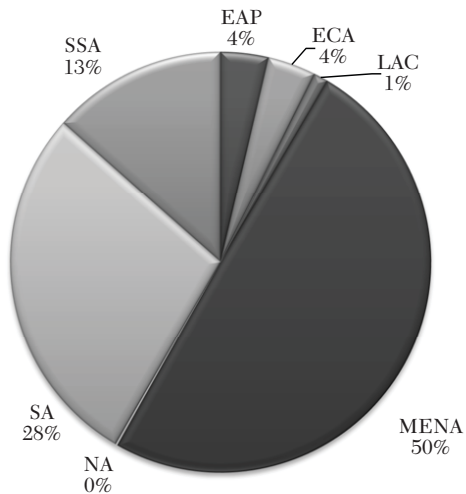Panel A. 1970–2001

Panel B. 2002–16

Figure 10. Distribution of Domestic Incident Casualties by Regions

terrorism to achieve a political objective (Phillips 2015). Some terrorist groups—e.g. ISIS, Boko Haram, and Fuerzas Armadas Revolucionarias de Colombia (FARC)—control territory, while most terrorist groups—Italian Red Brigades, Direct Action, Black September, and Red Army Faction—do not. In addition, some terrorist groups use a mix of terrorist and guerrilla attacks, in which the latter are directed at military forces. Terrorist groups are often classified on the basis of four ideologies: left wing, religious fundamentalist, nationalist/separatist, and right wing (Cronin 2006; Gaibulloev and Sandler 2013, 2014; and Jones and Libicki 2008). Issue-specific groups are often labeled as left wing—e.g. groups promoting animal rights, seeking reduced economic discrimination, or working for an end to the Vietnam War. If a particular terrorist group adopts a Marxist orientation, then it is placed with the left-wing groups unless its primary goal is the pursuit of national autonomy—Abu Sayyaf and Popular Front for the Liberation of Palestine (PFLP)—in which case it is classified as nationalist/separatist. As shown in section 2, religious fundamentalist terrorist groups pose an increasing threat in terms of their growing numbers and the lethality of their operations (see especially table 3). Within these four ideologically based terrorist groups, goals can differ greatly. Some groups aim for modest policy changes, while others seek grandiose political transformations. In the latter case, Jemaah Islamiyah campaigns for a Pan-Islamic state in Southeast Asia. Other terrorist groups want to maintain the status quo over a proposed policy change. In numerous instances, terrorist groups pursue territorial change, especially among nationalist/separatist organizations.

3.1 *Terrorism, Insurgency, and Civil War*

Prior to analyzing terrorist choices, we must distinguish among three concepts of political violence. An insurrection is a "politically based uprising intended to overthrow the established system of governance and to bring about a redistribution of income" (Sandler and Hartley 1995, p. 307). Unlike terrorism, insurrections involve a large sector of the population that throws its support behind rebel leaders. By contrast, guerrilla warfare is a tactic that relies on mobile rebel forces to engage in irregular warfare against larger governmental forces. Like guerrilla warfare, terrorism is a tactic that may or may not be employed in an insurrection.

Civil wars, also known as intrastate wars, consist of an armed conflict between a *sovereign state* and organized domestic groups that engage a government's military forces (Sambanis 2008). Civil wars must surpass some threshold of deaths, which is not true for terrorism. Findley and Young (2012) highlight a few specific instances wherein terrorist tactics were deployed before, during, or after civil wars.[14] Although terrorism may be used by rebel forces, terrorism need not be associated with civil war and most frequently is applied in the absence of such war—e.g., Italian Red Brigade, 17 November, Euskadi ta Askatasuma (ETA), and Combatant Communist Cells (CCC) sought political goals without generating or being involved in a civil war. During civil wars, rebel attacks against government forces are not counted in terrorist event data sets because attacks against combatants are excluded. When these attacks are directed against civilians or passive military targets (e.g. the 1983 suicide bombing of the US Marine barracks in Lebanon) and are intended to influence an audience, the attacks are considered to be terrorism. Most of the bombings in Afghanistan and Iraq following 9/11 are not included in the standard event data sets. For

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[14]Also see Berman, Shapiro, and Felter (2011); Bueno de Mesquita (2013); Carter (2010, 2015a, 2015b); and Kalyvas and Balcells (2010).

1970–2012, Gaibulloev, Piazza, and Sandler (2017) indicate that 70 percent of all terrorist attacks occurred in countries that did not experience a civil conflict.

Thus, there is a strong practice in the terrorism literature to treat terrorism, insurgencies, and civil wars as distinct concepts or in isolation. However, the rise of ISIS, Boko Haram, al-Shabaab, and AQIM, which control territory, means that the choice between guerrilla warfare and terrorism tactics is relevant for a select number of terrorist groups.[15] Consequently, we next consider this choice along with other more commonly studied terrorist choices.

3.2 *Terrorist Group Choices*

Given the rise of some territory-controlling terrorist groups, there is increased theoretical and empirical interest in explaining their choice between conventional war and irregular tactics—guerrilla warfare and terrorism.[16] If this choice is endogenous, then empirical models that treat civil wars as an independent variable when explaining the determinants of terrorism are likely misspecified. Bueno de Mesquita (2013) puts forward a two-stage game of this choice involving a rebel group and a potential population of supporters, where the government is passive and outside options are exogenous. Moreover, rebels must choose between conventional conflict and irregular tactics—they cannot engage in both at a given time. Among other interesting results, he shows that "the use of irregular tactics is highest in societies in which nonviolent opportunity is at moderate levels, such that mobilization is low, but extremists are still willing to fight" (Bueno de Mesquita 2013, p. 234). Thus, the use of terrorism and guerrilla tactics may not necessarily increase monotonically as nonviolent opportunities decline, contrary to conventional wisdom. We will see in various other places the prevalence of nonlinearities associated with terrorist behavior.

In an alternative, but somewhat similar exercise, Carter (2016) puts forward a game-theoretic model in which terrorists choose between guerrilla attacks and terrorism in an effort to provoke a violent response from the government.[17] In the model, the terrorist group goes first and decides the type of attack, followed by the government's choice of the forcefulness of its response. An implication of his model is that the government's response is likely to be stringent if it can inflict greater damage on group members than on civilians. The terrorist group's choice of attack type depends on how provocative it intends the attack to be. Generally, guerrilla attacks are anticipated to cause more damages, thereby evoking a greater state response. When confronting weak states, terrorist groups are more inclined to choose guerrilla tactics because the concomitant state's forceful response is less feared. To test his hypotheses, Carter (2016) draws his data from Terrorism in Western Europe Event Data (TWEED) (Engene 2007). Carter classifies attacks against passive military targets (e.g. the National Guard) and police as guerrilla warfare and classifies attacks against other targets as terrorism. During the 1950–2004 period of his study, almost all Western European terrorist groups, with the exception of the Irish Republican Army (IRA), did not control territory. Moreover, attacks directed at passive military targets and police are not instances of civil wars or guerrilla warfare in the sense discussed in

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[15] According to Jones and Libicki (2008, p. 98), most terrorist groups are not engaged in an insurgency.

[16] Works on this topic include Berman, Shapiro, and Felter (2011); Carter (2015a, 2015b, 2016); de la Calle and Sánchez-Cuenca (2012); Kalyvas and Balcells (2010); and Laitin and Shapiro (2008).

[17] On terrorists provoking a violent response, see Arce and Sandler (2007, 2010), Carter (2012), Jacobson and Kaplan (2007), Jaeger and Paserman (2008), Kydd and Walter (2002), and Merari (1993).

the theoretical literature. Since most terrorist event data sets exclude attacks against combatants, there is a paucity of data that can test the endogenous choice between terrorism and civil wars. Also, as stated previously, most terrorist groups do not control territory or engage in civil wars.

Another terrorist choice involves resource allocation between legal activities (e.g., running for office or engaging in protests) and terrorist attacks. In the literature, this choice is examined with standard choice-theoretic models (Anderton and Carter 2005, Enders and Sandler 2004, and Frey and Luechinger 2003).[18] These articles focus on substitution and income effects associated with governments' action to alter the prices of legitimate protest or illegitimate terrorist attacks. The result of such government-engineered price changes on protests and terrorism may be ambiguous for normal goods as substitution and income effects oppose one another. To date, this choice is not studied empirically, primarily because there is no data set that tracks terrorist groups' legitimate activities. The Jones and Libicki (2008) data indicate which terrorist groups gave up terrorism and joined the political process (see the next subsection), but this is an all-or-none choice. Terrorist groups' choice between legitimate and illegitimate activities is certainly worth studying and would limit some of the underlying exogeneity of many empirical investigations of terrorist groups' behavior.

A more studied choice of terrorist groups involves their campaign composition among alternative modes of attacks in reaction to counterterrorism measures. Enders and Sandler (1993) investigate this choice in terms of a characteristics model of consumption in which terrorist modes of attack that provide the same characteristics (e.g., ransoms) are substitutes. When attack modes must be combined to produce a basic commodity or characteristic (e.g., an atmosphere of public anxiety), these modes are complements. Among other results, these authors argue that airport metal detectors should result in fewer hijackings but more kidnappings. Given that these detectors were later deployed in embassies, these detectors are also expected to reduce terrorist attacks on embassy grounds. These hypotheses are borne out by their empirical tests (see section 5). Their study cautions against looking at policy choices in isolation, since one barrier may affect other modes of attack not initially intended to be affected.

Terrorist groups are more likely to locate in states that are politically unstable or are in closer proximity to the venues of (planned) attacks (Bapat 2007 and Gaibulloev 2015).[19] Failed and weak states enlarge the pool of likely recruits, create a favorable environment for groups to operate freely, and limit government—domestic and foreign—responses. Venue distance affects the cost related to supplying terrorist assets from the groups' home base. In an empirical study, Gaibulloev (2015) investigates terrorist groups' locational choice by applying a conditional logit model with a rich set of controls and some heed paid to endogeneity concerns. He shows that terrorist groups were more inclined to locate in countries where incumbent terrorist groups shared a similar ideology to that of the entrant. This was especially true for left-wing terrorist groups. Apparently, a greater number of groups improve their productivity and resourcefulness through collaboration. Group clustering also forces the resident government to dilute counterterrorism assets, which bolsters groups' productivity.

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[18] Other choice-theoretic articles on this topic include Sandler (2010) and Siqueira and Sandler (2010).

[19] Bapat (2007) also finds that groups choose to locate in a foreign country that is more militarily capable than the target country and has a lower political affinity to the target country.

Another terrorist choice involves the venue country. Large-scale efforts to secure borders following 9/11 appears to have transferred attacks away from industrial countries' soil in North America and Europe (see figures 7–10; Enders and Sandler 2006). The transference of attacks may also concern a terrorist group's choice of target type as select targets within countries are fortified. Figure 11 displays the cumulative number of transnational terrorist attacks by the four target types (i.e., officials, business, private parties, and military) for 1968–2016.[20] In the late 1960s and 1970s, terrorists directed most of their attacks against official targets. As these targets became more protected, terrorists redirected their attacks, in part, to business targets. By the start of the 1980s, businesses deployed increased protection for their people and property, thereby leading transnational terrorists to increasingly target private parties as seen in figure 11. By 1999, cumulative attacks against private civilians surpassed those against officials. Terrorists display a rational transference of targets with the hardest-to-protect targets becoming the most vulnerable today (Brandt and Sandler 2012). This is in keeping with our recurring theme that well-intentioned policies may have undesirable consequences. A similar diagram, not displayed, applies to domestic attacks with the same sequence of transference, in which target substitution is much faster as domestic groups learn more quickly from one another (Gaibulloev, Sandler, and Santifort 2012).

3.3 *Determinants of Terrorist Groups' Survival*

Recently, an empirical literature of the duration of terrorist organizations is emerging.[21] In an initial study of groups' longevity, Jones and Libicki (2008) examine 648 terrorist groups that were active between 1968 and 2006.[22] Blomberg, Engel, and Sawyer (2010) later apply survival or duration models to ascertain the empirical determinants of terrorist group longevity. Among their findings, survival in the ensuing period increases as the group ages and its lethality increases, especially after 1990. This pioneering study suffers from numerous concerns: the sole reliance on transnational terrorist attacks, the use of targeted countries' socioeconomic variables, no good measure of the groups' endpoint, and the absence of tactical controls (e.g. groups' diversity of attacks and their share of transnational attacks).

These particular shortfalls are addressed by Blomberg, Gaibulloev, and Sandler (2011) and Gaibulloev and Sandler (2013). First, these studies provide a theoretic foundation in terms of a terrorist-choice model among tactics and other considerations. Second, they include both domestic and transnational terrorist attacks because most terrorist groups engage in both kinds of attacks. Third, these studies use terrorists' base-country, socioeconomic variables since groups' survival more likely hinges on conditions where they train and seek refuge. Fourth, measures of groups' tactics are included. Fifth, the group data are carefully cleaned to eliminate duplicates and other concerns (e.g., generic designations). Using continuous- and discrete-time survival regressions, these studies confirm Jones and Libicki's findings that religious ideology and group size are positively associated

[21] Systematic data sets on terrorist groups were not available until recently. Therefore, earlier studies on survivability of terrorist organizations are mostly qualitative. For example, Cronin (2006) examines survivability of al-Qaida based on historical lessons on evolution and demise of modern terrorist groups.

[22] The data set includes groups that started before 1968 but did not end before 1968. Jones and Libicki (2008) identify the end year of a terrorist group as the year when the group either stops using terrorism or ceases to exist.

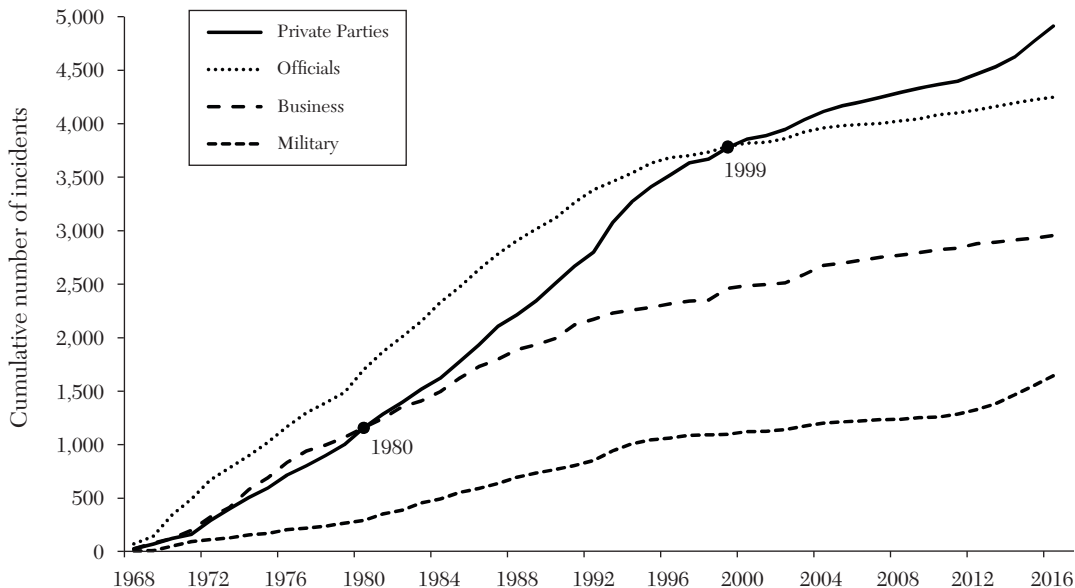[20] This figure updates one in Brandt and Sandler (2010).

Figure 11. Cumulative Number of Transnational Terrorist Attacks by Target Type

with terrorist groups' duration. Greater size improves longevity by helping terrorist groups stage more successful attacks and endure the loss of leadership. Terrorist organizations choose large-scale attacks only when they grow sufficiently in size (Feinstein and Kaplan 2010). Findings also suggest that groups that rely more on transnational terrorist attacks are more likely to fail because such attacks put a terrorist group in greater peril when borders have to be crossed. Furthermore, targeted foreign countries may either retaliate against terrorists or provide counterterrorism assistance to governments combating the terrorist group. Finally, a group's cooperative ties with other terrorist organizations are found to improve the group's survival prospects, especially in strong or less democratic states (Phillips 2014).[23]

Terrorist groups end for a variety of reasons. Some groups exit through political negotiations and integrate into society, whereas others are defeated through military force. Understanding what factors lead groups to end in alternative ways is important for effective counterterrorism policy. Gaibulloev and Sandler (2014) use a competing-risk approach to distinguish the determinants of three types of endings— internal splintering, forceful elimination, and joining the political process or achieving victory (e.g., achieving some of the goals). Three important findings emerge. First, religiously motivated terrorist groups are less likely to join the political process or end victoriously, compared to nationalist/separatist, left-wing, and right-wing groups. Second, terrorist organizations seeking grandiose goals—i.e., empire, regime change, or social revolution—and pursuing territorial change are also less likely to end through political process or victory. Such goals leave very

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[23] See, e.g., Gaibulloev and Sandler (2013) and Phillips (2014) for other potential determinants of groups' longevity.

little room for compromise between parties. Third, having multiple bases of operation reduces the probability of ending by military force or splintering; eliminating such groups requires collective action by multiple countries, which seldom occurs. Furthermore, multiple home bases allow for accommodating various viewpoints, which deters splintering and increases resilience. Some Islamic terrorist groups, such as ISIS and al-Qaida, possess multiple bases. When Gaibulloev and Sandler (2014) partition the data for groups starting before and after 1990, the data are too thin for a competing-risk analysis.

Safe haven and groups' age are also important. Surprisingly, when a terrorist group is provided safe haven by a foreign supporter, the likelihood of military defeat increases (Carter 2012). This follows because a host government must balance between its support to terrorists and the risk of military confrontation with a targeted country. Terrorist groups are at high risk for ending internally in their infancy; the probability of internal dissolution, however, reduces significantly when a group lasts for ten years (Carter 2012). Repression may improve groups' survival prospect in democracies by weakening counterterrorism cooperation from local communities, expanding popular support and potential recruits, and diminishing a government's overall effectiveness in fighting terrorism (Daxecker and Hess 2013). In nondemocracies, however, repression may worsen groups' duration insofar as the governments are less constrained in their efforts to combat terrorism, exercise more control over the media, and are less concerned about perceived legitimacy of their counterterrorism measures. Daxecker and Hess (2013) empirically confirm that repression has a negative effect on groups' demise in democracies and a positive influence on groups' failure in nondemocracies. Additionally, government repression

improves the chance of victory for groups in democracies and reduces the chance of victory in nondemocracies.

Several empirical challenges require attention for the further study of group demise. First, the quality of data on terrorist groups is a concern. The clandestine nature of terrorism makes it difficult to collect reliable data on groups, thus raising measurement errors and omitted variables concerns. Information on groups' characteristics over time, which are important for understanding groups' dynamics, is lacking; e.g., Jones and Libicki's data set ends in 2006 and all group-specific information is time-invariant. Second, additional studies are needed to tackle causality issues. For example, groups' size is found to be one of the most robust correlates of survivability. However, the information on group's size is based on estimates of a group's peak size and does not vary over time. The time-invariance of group size does not allow controlling for fixed effects. In addition, the effect of size on longevity may capture the influences of other group-specific variables—e.g., group's financial resources—not available to researchers. These concerns raise potential endogeneity issues. Third, an expanded data set on groups, which is carefully cleaned and merged with an up-to-date terrorist event data set, is needed. The creation of the requisite global group data set that goes to the present day and can be merged with GTD is a large undertaking. Such data would allow researchers to contrast the changing nature of terrorist groups before and after 9/11 and focus better on Islamic terrorist groups.

3.4 *Terrorist Recruitment and Group Organization*

During the reign of leftist terrorists in the 1960s, 1970s, and 1980s, groups attracted members with strongly held political views. These members were prepared to engage in violent acts, at great peril to themselves,

for the cause (Crenshaw 1981 and Hoffman 2006). This political-based membership motivation is still true for left-wing, right-wing, and nationalist/separatist terrorist groups, but is less descriptive of religious fundamentalist terrorists. Based on interviews and terrorist profiles, Sageman (2004, 2008) concludes that the latter terrorist groups rely on kinship, long-term friendships, and worship for recruiting purposes. Such ties are very tight and make it extremely difficult for the authorities to infiltrate these groups. Additionally, these ties provide a sense of camaraderie among members that facilitates volunteers for dangerous and even deadly operations (Wintrobe 2006).

By drawing on the theory of clubs (Cornes and Sandler 1996), the sociology of religion, and the political science of insurgencies, Berman and Laitin (2008) provide an insightful analysis on religious terrorist groups' recruitment, effectiveness, and organization. Their analysis indicates how Islamic extremist groups limit defections, execute suicide missions, and recruit committed members. Such groups include Hamas, Hezbollah, Muqtada al Sadr's Mahdi Army, the Taliban, the Egyptian Muslim Brotherhood, and the Palestinian Muslim Brotherhood. At the foundation of their theory is the groups' provision of excludable social services or club goods to their members and members' families.

This club model of religious fundamentalist groups is inspired by the work of Iannaccone (1992), who argues that Christian denominations attempted to limit choices and resources among their members to obtain members' loyalty in exchange for excludable social services. The acceptance of the religious sects' mandated prohibitions and sacrifices translates into a "costly signal of commitment" by their members (Berman and Laitin 2008, p. 1943). By organizational design, sect members have limited outside opportunities and are isolated from the outside world. With more stringent prohibitions and sacrifices, these religious groups must offer even larger levels of club goods to their ever-more dependent members. These club goods serve an essential recruitment and retention purpose. Berman (2000) extends this club theory to ultra-orthodox Jews, while Berman (2009) tailors it to radical Islamic terrorist groups. In keeping with Iannaccone, Berman (2009) also indicates how religious fundamentalist groups induce such sacrifices from members by sending "their children to religious schools that provide poor training for employment after graduation" (p. 22).[24] In so doing, group members have little or no economic opportunities outside the club when asked to make the ultimate sacrifice. Members' religious training also limits outside contact, thus curbing potential leaks prior to an operation.

Berman and Laitin (2008) go on to argue that group solidarity and *altruism* may motivate these club members to commit suicide terrorist attacks against hardened targets, for which suicide operations may be the sole means to wreak havoc. In his interview-based analysis of failed suicide terrorists, Merari (2004) also characterizes terrorists as altruists, who are not driven by heavenly rewards, depression, or revenge, contrary to some conventional wisdom (Hronick 2004).[25] The better equipped the terrorist group's adversary, the greater is the group's need for suicide missions to penetrate defensive perimeters. A suicide operation provides the added benefit that the perpetrator of successful missions cannot later offer intelligence on the group. Mission success is fostered through the commitment of its member operatives, who benefit from group-provided club

[24]This view is more fully developed by the seminal works of Berman (2000), Iannaccone (1992), and Iannaccone and Berman (2006).

[25]Azam (2005) also views suicide terrorists as altruists, making the ultimate sacrifice for the good of future generations.

goods. As Berman and Laitin point out, suicide missions were deployed against hard targets during the Second Intifada in Israel, the Iraqi insurgency against coalition forces, the Chechen rebellion against Russia, and other hard-target scenarios. Often, but not always, the targets of these attacks were hardened military or official targets rather than softer civilian ones. Members' or operatives' commitments are stronger for devout individuals with low wages. To achieve this type of membership, these religious terrorist organizations exclude less religious, high-wage individuals from their club-provided goods (Berman and Laitin 2008, p. 1952).

These authors maintain that service provision and poor market opportunities allow these Islamic terrorist groups to motivate their members for effective missions. This leads to two policy recommendations. First, governments should provide these social services to break these groups' monopoly provision. Second, better labor market opportunities are needed to discourage youths from joining these organizations. In section 5.4, we briefly discuss empirical support that these authors provide for some of their hypotheses—e.g. service-providing terrorist groups are associated with more lethal attacks and suicide attacks are directed at hard targets.

In other situations, terrorist recruitment can be motivated by backlash to harsh governmental proactive measures leveled against a terrorist group.[26] In fact, terrorists seek to push governments to overreact to a brutal terrorist attack in order to recruit more members through terrorist supporters' backlash (Enders and Sandler 2012 and Hoffman 2006). This tactic applies to all types of terrorist groups. Recruitment increases following successful terrorist attacks[27] or failed, highly visible attacks (e.g., the 1972 Munich Olympics kidnapping and murder of Israeli athletes by Black September).

A somewhat related recruitment method concerns an "outbidding" strategy among rival terrorist groups for attracting operatives and constituency support. Bloom (2005, pp. 94–7) views the ratcheting up of violence among competitive groups to be greater when there are more rival groups. Suicide terrorist attacks may, in particular, be used for outbidding purposes. To support her hypothesis, Bloom presents some data plots of terrorist attacks for Hamas, PFLP, Fatah, and the Palestinian Islamic Jihad (PIJ) during 2000–2002 for the Palestinian–Israeli conflict. She also discusses the rise of the Tamil Tigers over its rival groups in Sri Lanka once the Tigers resorted to suicide attacks. Bloom's outbidding hypothesis generated some subsequent empirical tests. For example, Nemeth (2014) finds weak evidence in support of this hypothesis when he examines domestic terrorist incidents during 1970–97. Group competition is captured by the inverse of the Herfindahl–Hirschman index of market shares. In Nemeth (2014), group competition is negative and significant, which is consistent with terrorist group free riding rather than outbidding. When he examines a narrower sample of groups with similar ideologies, and focuses on the interaction term capturing intergroup competition and society's acceptance of violence, there is weak evidence of outbidding. Subsequently, Conrad and Greene (2015) investigate the severity of attacks, rather than the quantity of attacks. Severity increases as terrorists target civilians rather than infrastructure or official targets. Their outbidding evidence is weak, with significance at only the 0.10 level.

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[26] On backlash, see Arce and Sandler (2010), Dugan and Chenoweth (2012), Rosendorff and Sandler (2004, 2010), and Siqueira and Sandler (2007).

[27] See Faria (2003) and Faria and Arce (2005) for a purely theoretical analysis of recruitment in a dynamic model.

To date, the most convincing evidence of outbidding is associated with the micro-level study of the Second Intifada and competition within religious groups (Hamas and PIJ) and within secular groups (Fatah and PFLP) (Jaeger et al. 2015). These authors present a multinomial logit choice model where Palestinians indicate their support among rival factions. There is some evidence that violence increases support within Islamist or secular factions, so that outbidding is ideology specific. Unlike earlier outbidding articles, Jaeger et al. (2015) provide an identification strategy using district dummies, time dummies, and district time-varying characteristics.

Since the rise of Islamic extremist terrorism in the 1990s, there have been noteworthy instances (London, Manchester, Paris, and San Bernardino) of first and second generation Muslim immigrants attacking domestic targets after undergoing radicalization. Krueger (2008) examines sixty-three alleged homegrown Islamic terrorists in the United States. He finds that these terrorists were younger and better educated than a representative sample of over 1,000 Muslim Americans. Notably, Krueger (2008, p. 295) does not uncover persuasive evidence that sample homegrown terrorists had been recent converts to Islam. However, his analysis does not consider the factors behind radicalization. Hegghammer (2013) builds an original data set of jihadists in North America, Western Europe, and Australia for 1990–2010. His sample of 401 terrorism plotters includes domestic and foreign fighters, the latter of which had acquired experience in a foreign theater. The largest proportion of sample Western jihadists favored fighting abroad over engaging in domestic terrorist attacks. Hegghammer (2013, p. 6) hypothesizes that this choice reflected jihadists' preference, smaller barriers, and training opportunities associated with fighting abroad. When jihadists return from a foreign theater, they are more adept at domestic terrorist attacks. Hegghammer only displays simple percentages and provides no statistical inference. The determinants of radicalization and, thus, recruitment are not analyzed. To address the radicalization question, more data are required that include demographic and socioeconomic characteristics of the jihadists.

3.5 Control within Terrorist Group

With few exceptions,[28] the literature treats terrorist groups as a unitary entity, which, among other things, facilitates game-theoretic and empirical analysis. Arce and Siqueira (2014), Shapiro and Siegel (2007), and Shapiro (2007, 2013) examine the control problem within terrorist groups wherein a leader (the principal) must delegate attack planning, funds solicitation, and recruitment to middlemen (agents), who may hold different views than leaders with respect to the organization's goals. According to Shapiro

> The terrorist's dilemma is simple: leaders need to control how violence is executed and how finances are managed, but the tools to do so create some measure of operational vulnerabilities and therefore increase the likelihood of operatives being caught and a group compromised (Shapiro 2013, p. 4).

Control problems involve at least two trade-offs: (1) operational security and financial efficiency and (2) operational security and logistical efficiency (Shapiro 2013, p. 8). To achieve greater resource efficiency, the groups must institute greater audits, but this compromises the group's secrecy. Agency problems also plague tactical aspects,

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[28] A noteworthy exception is Siqueira (2005), who investigates conflict and cooperation between the military and political wings of terrorist groups. Another important exception is Bueno de Mesquita (2005a), who distinguishes moderate and hardline factions and their implications for attacks following government concessions.

as agents may work at cross-purposes with leaders. Shapiro (2007, 2013) highlights adverse-selection and moral-hazard issues. In terms of adverse selection, terrorist operatives who survive long enough to become middlemen may be less committed and less inclined to assume risks. Moral hazard arises because agents can profit from information asymmetries at the expense of the organization. Given security concerns, an optimal incentive-compatible contract would be ill-advised. Such organizational concerns mean that terrorist groups are less formidable than in the absence of such incentive and informational considerations. This, in turn, limits somewhat the required level of counterterrorism.

A final organizational issue involves terrorist network structure, which creates a trade-off between vulnerability and operational capability (Enders and Jindapon 2010 and Enders and Su 2007). After 9/11, terrorist groups relied more heavily on loosely linked networks, where a minimal number of operatives are linked, so that group infiltration compromises only a few operatives (Memon et al. 2009). This loosely linked structure limits the group's ability to perform complex, large-scale missions, which is good for the targeted public. Tighter linked groups tend to reside in failed states where, since 9/11, more complex missions occur (George 2018).

To date, the control problem within terrorist groups is not subject to empirical tests owing to data issues.

3.6 *When Are Terrorist Groups Effective?*

To judge terrorist groups' effectiveness, one must devise a definition of this effectiveness. Abrahms (2006, p. 46) specifies two potential effectiveness measures. Combat effectiveness refers to the group's induced level of damages, which increases the group's visibility with its audience. Such presence can raise the public's awareness of the group's political goals or grievances, and can induce the public to pressure the government to grant concessions. By contrast, strategic effectiveness refers to the group's ability to partially or wholly obtain its policy objective(s)—e.g., Hamas' or the PIJ's objective of an autonomous Palestinian state. Combat effectiveness may ultimately influence strategic effectiveness, but the few effectiveness studies concentrate on the latter.

To date, the evidence on strategic effectiveness is mixed. Abrahms (2006) examines twenty-eight terrorist groups on the US list of foreign terrorist organizations and finds that these groups obtained their policy objectives only 7 percent of the time. In his study, limited success—e.g. al-Qaida's demand for the removal of US troops from Saudi Arabia—is not counted as a success.[29] Because sample terrorist groups seldom achieved their stated policy goal in his study, Abrahms (2008) subsequently questions these groups' rationality. Clearly, Abrahms (2006, 2008) raises an issue of considerable importance; however, his analysis is not complete and offers no statistical inference. His sample is small and rather selective; it includes only contemporary groups that the United States designated as terrorist groups. Additionally, Abrahms's measure of success is very stringent.

In earlier studies of suicide terrorist campaigns, Pape (2003, 2005) shows that six of eleven sample campaigns achieved some significant policy concessions, usually resulting in the withdrawal of foreign forces. The successful cases included concessions granted by democracies—e.g. the United States, France, Turkey, and India—to terrorist groups. As Abrahms (2006) points out, the findings from suicide campaigns cannot necessarily be generalized to all terrorist campaigns. By focusing on one type of campaign, Pape's (2003) study has a worrisome selection bias (Ashworth et al. 2008).

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[29] Al-Qaida demanded the removal of US troops from the Persian Gulf area, including Saudi Arabia.

Using many of Jones and Libicki's sample groups, Gaibulloev and Sandler (2014, p. 33) indicate that 23 percent joined the political process or achieved victory—see section 3.3.[30] In the former category, these groups obtained a legal avenue to pursue their political agenda and, in the latter category, they achieved their goal. This success rate may be small, but it is not nil.

Currently, Gould and Klor (2010) offer the most comprehensive study of terrorism effectiveness with respect to achieving a group's political goals. For Israel during 1988–2006, these authors utilize geographic variation in terror attacks and local voters' attitudes to show that Israeli voters in attack-prone areas were more apt to favor granting territorial concessions to the Palestinians. The authors estimate a nonlinear relationship between the level of local attacks and Israeli support for such concessions. Up to an attack threshold, an increase in localized terrorism augmented voters' willingness to grant concessions; past the attack threshold, further increases in terrorism inhibited voters' willingness to grant concessions. These authors also find that as terrorism rose, voters increased their support of right-wing parties that were gravitating leftward with attacks.[31] Gould and Klor (2010) exercise care with their identification strategy. By examining only attacks in Israel, these authors do not have to control for numerous country-specific factors among heterogeneous countries that make causal inference difficult for large *n*-country studies concerning terrorism effectiveness. In addition, these authors show that reverse causality, wherein voters' attitudes influence local terrorist attacks, does not hold. Their reliance on subnational micro-level data over nineteen years gives a great deal of variation.[32] Unlike some terrorist campaigns, the goals of the Palestinian terrorists are very clear, which also fosters inference.

Although the question of terrorist groups' effectiveness is by no means settled, there is mounting evidence that these groups, at times, do achieve some of their goals, particularly when these goals are not too grandiose.

4. *Game Theory and Empirical Studies of Terrorism*

Game theory or strategic rational choice has been applied to the study of terrorism. Early contributions include Selten's (1977) study of kidnapping and Sandler, Tschirhart, and Cauley's (1983) study of terrorist-government negotiations. Noncooperative game theory is particularly ideal for analyzing counterterrorism because targeted governments and terrorists must employ actions to foster their self-interest subject to constraints, whose parameters are, in part, determined by the response of their counterparts. For example, a targeted government's actions against a common threat from a terrorist group hinge on the actions being taken by other targeted governments. Additionally, a terrorist group's resource constraint depends on the government's proactive measures leveled at the group's personnel and assets. Our intent is to indicate, in select instances, how game theory informs policy and empirical studies of terrorism.[33]

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[30] In Jones and Libicki (2008), 132 of 648 terrorist groups are in this combined category.

[31] Also see Berrebi and Klor (2006) and Gassebner, Jong-A-Pin, and Mierau (2011) on terrorism and elections.

[32] Jaeger et al. (2012) also use micro-level data of opinion polls to investigate how Israeli violence against Palestinians bolstered more political support for Palestinian terrorist groups. This support provided the necessary resources for a sustained terror campaign that pressured Israel to make concessions.

[33] Sandler and Arce (2003) and Sandler and Siqueira (2009) offer surveys on game theory and terrorism. Also see Schneider, Brück, and Meierrieks (2015).

4.1 *Making Concessions to Terrorist Hostage Takers*

Grim images of ISIS hostages in orange jumpsuits stoically waiting to be beheaded after their American and British governments refused to bargain for their release raises a heart-rending policy issue about paying ransoms. This issue is even more poignant when hostages from Spain, France, Belgium, Italy, and elsewhere have been released after ransom payments to ISIS (Brandt, George, and Sandler 2016).[34]

The proper reaction to hostage-taking terrorists raises a strategic move on the part of a government. If terrorists are solely motivated to abduct hostages to gain funding or the release of their comrades in order to support their terrorist campaign, then a credible threat by a government never to concede to terrorist hostage takers may dissuade terrorists from abducting that government's citizens. Lapan and Sandler (1988) investigate the time inconsistency of such a pledge in which the abduction of a sufficiently valuable hostage (e.g., a soldier, diplomat, or government official) may cause the government to renege on its pledge. The no-concession pledge may fail to deter hostage taking if terrorists' net gains from logistical failure (i.e., not securing intended hostages) or negotiation failure (i.e., failing to receive a concession) are positive. Martyrdom may yield a positive gain for a logistical failure, while kidnap-generated publicity or induced societal fear may offer a positive payoff for negotiation failure. ISIS internet-posted beheadings have produced such fear and have resulted in the recruitment of fighters in Iraq and Syria. A government's no-concession pledge only ends all such hostage taking if all of the following holds: the pledge is credible and irreversible, the terrorists only benefit from concessions, and the no-concession consequences for the government is known (Lapan and Sandler 1988). Because the identity and, thus, value of the hostage cannot be known beforehand, the consequences from not conceding are necessarily uncertain. Thus, the efficacy of this strategic move is open to empirical observation.

Based on transnational terrorist hostage incidents during 1968–2005, Brandt and Sandler (2009) apply refined time series estimating procedures to test the conventional wisdom about the efficacy of a no-concession policy. Based on monthly and quarterly hostage data, their event count method reduces bias and augments consistency when estimating cyclical and structural components of the hostage-taking series, compared to standard forecasting or linear regression methods. To establish the necessary baseline, their analysis first identifies changepoints to the hostage-taking data that arise from exogenous factors (e.g., the deployment of metal detectors to airports in 1973 and the end of the Cold War) for each of the hostage-taking series (i.e., skyjackings, kidnappings, and other hostage events).

Brandt and Sandler (2009) identify the lag structure of the three (monthly and quarterly) hostage-taking series. In so doing, they estimate the short- and long-run impact multipliers associated with an additional negotiation success for the terrorists. For kidnappings, the long-run multiplier is 2.62 additional incidents; for skyjackings, the long-run multiplier is 0.59 additional incidents. The long-run multiplier for other hostage incidents is insignificant (Brandt and Sandler 2009, p. 770). Hence, for kidnappings and skyjackings, the conventional wisdom is deemed valid: giving in to terrorist demands results in more such incidents.

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[34] On empirical studies on hostage negotiations, also see Atkinson, Sandler, and Tschirhart (1987); Gaibulloev and Sandler (2009a); and Santifort and Sandler (2013). Bueno de Mesquita (2005a) investigates negotiations between terrorists and a government over general demands not involving hostages.

Moreover, these concessions can fund other operations of the terrorists.

For the period studied by Brandt and Sandler (2009), there were fewer religious fundamentalist terrorist groups than after 2005. Also, the United States was much less consistent in maintaining its no-concession pledge prior to 2001 than after 2001. During 1978–2000, the United States gave concessions to kidnappers 23.1 percent of the time, whereas during 2001–13, it gave concessions to kidnappers 10.7 percent of the time (Brandt, George, and Sandler 2016, p. 46). ISIS and al-Qaida in Iraq, which used beheadings, surfaced during 2001–13. Brandt, George, and Sandler (2016) apply their earlier methodology to three samples: (i) the United States and United Kingdom that generally stood by their no-concession pledge; (ii) ten concessionaire countries that less frequently stood by their no-concession pledge; and (iii) the EU countries, less the United Kingdom, that less frequently stood by their no-concession pledge. These authors find that making a concession increased the median baseline kidnappings by 64 to 87 percent, depending on the cohort of countries and the particular changepoint regime. Once again, the message is unmistakable: making concessions increased the level of kidnappings. For this second study, these authors only examined kidnappings, which became the lion's share of hostage incidents after 9/11.

4.2 *On US Military Aid, Negotiations, and Moral Hazard*

Our second example not only indicates how game theory can inform counterterrorism policy, but also shows how strategic factors can result in perverse incentives as in the previous case. In particular, we examine Bapat's (2011) provocative analysis of US military aid to countries hosting terrorist groups. In his underlying game-theoretic model, there are three players: the United States, the recipient (host) country, and the

host's resident terrorist group. The United States first chooses its level of aid. The host country then decides whether to negotiate with the terrorists, to defend against them, or to mount an offensive to defeat them. If there is a negotiation, the terrorists must accept or reject the host country's offer. When the offer is accepted, the United States must decide whether or not to continue its aid. The game can conclude in three ways: the host government loses in a battle with the terrorists; the host government and the terrorists reach an accommodation; or the terrorists are defeated in an offensive or a failed attempt to seize power. Bapat (2011) solves for the solution to this infinitely repeated game with incomplete information.

This solution displays the moral hazard problem associated with US military aid to a government hosting a terrorist group. Ideally, this aid is intended to assist the host country in defeating the terrorists, thereby stabilizing its regime while limiting the risks of terrorist attacks on US interests. However, the aid sets up a perverse incentive to the host country not to defeat the resident terrorist group in order to keep the aid coming. As Bapat (2011) points out, large military aid flows to the Musharraf regime in Pakistan after 9/11 resulted in little Pakistani action against the Taliban. Similar scenarios were true in post-9/11 Afghanistan and Yemen where little were done by recipient governments to defeat their resident terrorists. Despite this moral hazard concern, Bapat's (2011) solution shows that the United States still profits from the aid because it inhibits an accommodation between the host and the terrorists, thereby maintaining the US-favored regime status quo.

Bapat (2011) provides an empirical test of his model based on a hazard model, corresponding to the duration until the resident terrorists are defeated. His data set contains 184 terrorist campaigns against 48

host countries during 1997–2006. He finds that US military assistance increases the duration of a resident terrorist group in an aid-recipient host country from a mean of 4.69 to 7.82 years, a 67 percent increase! This is another example of an unintended negative consequence from well-intended counterterrorism policy. He also shows that host countries with a larger affinity to the United States (i.e., a voting record on the UN General Assembly more closely matched with US-held positions) display further increases in the duration of their resident terrorist groups to 13.38 years. This follows because the United States is more motivated to keep its military aid flowing to these supportive countries even if the terrorist threat remains. Cutting off aid may result in a host terrorist accommodation that ends support of US policy positions. Bapat's (2011) theory-based empirical test explains the often-observed failure of military aid to eliminate resident terrorist groups.

4.3 *Game Theory and Counterterrorism Effectiveness*

Game theory informs the empirical analysis of counterterrorism practice by indicating the likely choice of defensive and proactive measures by commonly targeted governments.[35] In other instances, the game involves the endogenous interaction among targeted government(s) and the terrorist organization (Cárceles-Poveda and Tauman 2011, Jindapon and Neilson 2009, Powell 2007, Siqueira and Sandler 2006, and Zhuang and Bier 2007). Moreover, the players may be uninformed about their adversaries' type or resources (Arce

and Sandler 2007; Bier, Oliveros, and Samuelson 2007; Lapan and Sandler 1993; and Overgaard 1994). And in still other instances, players include a targeted government, a terrorist organization, potential terrorist recruits, and/or voters (Bueno de Mesquita 2005b, 2007 and Siqueira and Sandler 2007, 2010).

Our intention is not to review the game-theoretic literature on counterterrorism, but rather to discuss briefly strategic aspects of defensive and proactive measures by commonly targeted countries. This model explains overspending on such measures as governments attempting to transfer transnational terrorist attacks to foreign venues. Among targeted countries, this regional transference of terrorist attacks shows up before and after 9/11 in figures 7 and 9 in terms of incidents and casualties, respectively. Enders and Sandler (2006, 2012) show the geographical transference of transnational terrorist attacks from the Western Hemisphere and Europe to Africa, Asia, and the Middle East. Because there is no requisite panel defense data, researchers must infer this transference after a watershed event, such as 9/11, that is believed associated with greater defensive spending in the West. Among target types, an analogous transference is evident in figure 11, as official and business targets are hardened.

Consider a scenario in which two countries are targeted by the same terrorist group that can strike either country's interests at home or abroad. It is reasonable to assume that the same magnitude attack is more devastating to a country's interests at home than abroad. At home, defensive measures against transnational terrorism attacks not only limit the consequences of such an attack, but also decrease its likelihood. The latter arises as the terrorist group seeks a softer target abroad. Greater defense in either country may deflect an attack abroad where both countries' assets are harmed to

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[35] Key theoretical articles include Arce and Sandler (2005), Kunreuther and Heal (2003), Sandler and Lapan (1988), and Sandler and Siqueira (2006). The latter forms the basis for the described model in the text. Propositions from some of this literature are tested in the laboratory—see Arce, Croson, and Eckel (2011).

varying degrees.[36] Such defensive counter-measures imply at least two opposing externalities. The more important one is the negative consequences of transferring a terrorist planned attack abroad to a less protected country (Sandler and Lapan 1988 and Sandler and Siqueira 2006). A smaller positive externality from home defense is the protection afforded to foreign-held assets.

Given the dominant transference externality, each of the two targeted countries' Nash reaction paths, relating the country's own defense choice to that of the other country, is positively sloped, consistent with strategic complements and a defensive race. The latter leads to overprovision of defense compared to the social optimum level.[37] To some extent, the protecting country's foreign interests curb the motive to transfer attacks abroad through a fortification race (Bandyopadhyay and Sandler 2011, 2014), but this curbing is attenuated, given that a country's home interests are more important than its foreign interests. The presence of transference externalities indicates the need for international cooperation regarding the choice of defensive countermeasures against a common terrorist threat.

Next, we consider proactive measures (e.g., retaliatory raids, drone attacks, or group infiltration) by either targeted country against the common terrorist threat. Such actions decrease the likelihood and consequences of a transnational terrorist attack at home and abroad. As such, proactive measures against this common threat give rise to positive externalities to the other targeted country, given the purely public nature of these actions. Now, the associated Nash reaction paths are negatively sloped, consistent with strategic substitutes for which too few measures are provided by the targeted countries.

If many countries are in the terrorist group's crosshairs, then the country sustaining the greatest losses is the likely one to confront the terrorists proactively, as the United States did against the Taliban and al-Qaida following 9/11 (Arce and Sandler 2005). Nevertheless, the proactive country is not anticipated to internalize fully the positive externality that its offensive confers on other at-risk countries. If we evaluate the cooperative solution at the Nash equilibrium level of proactive measures, underprovision is implied. Once again, there is a clear role for international cooperation.

Other factors can enrich the game-theoretic analysis of counterterrorism. First, we can allow for leader-follower behavior, which worsens proactive under-provision but limits defensive overprovision (Sandler and Siqueira 2006). Second, for proactive measures, backlash can be included in which these actions create new grievances that can offset benefits derived from weakening the terrorist group (Das 2008; Rosendorff and Sandler 2004, 2010; and Siqueira and Sandler 2007). Third, both defensive and proactive measures can be chosen together (Bandyopadhyay and Sandler 2011). Fourth, more agents (e.g., voters, terrorists, and supporters) can be included in the analysis. Fifth, we can account for more political considerations when investigating counterterrorism policy (Bueno de Mesquita 2007). Sixth, these game-theoretic choices can be viewed solely within a country besieged with domestic terrorism and needing to protect alternative targets or venues, leading to transference among target types as empirically documented by Brandt and Sandler (2010, 2012).

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[36] Conceptually, the terrorist group is a passive agent that seeks out the most vulnerable country with the highest anticipated payoff. Cárceles-Poveda and Tauman (2011) allow the terrorist group to be an active agent. The transference result still holds with an active terrorist group as targeted countries work at cross-purposes.

[37] This analysis can be readily extended to more targeted countries (Cárceles-Poveda and Tauman 2011).

A central government can internalize these externalities.

5. *The Effectiveness of Counterterrorism Policies*

To fight terrorism effectively, the world must learn from experience what countermeasures work and what ones do not. Even before 9/11, there were some noteworthy investigations on this issue. In a seminal study, Landes (1978) applies a Becker-inspired crime deterrence model to investigate what best deters skyjackings in the United States. His study was motivated, in part, by the observed sharp decline in US skyjackings following the installation of metal detectors in US airports on January 5, 1973. Using Federal Aviation Administration (FAA) skyjacking data for 1961–76, Landes (1978) first presents a linear regression on the number of US hijackings per quarter based on some potential deterrent measures and opportunity cost variables (e.g., unemployment rate and GDP per capita). Significant deterrents included the probability of apprehension and the average sentence of convicted hijackers. Perhaps surprisingly, neither the presence of sky marshals nor the death of the hijacker deterred skyjackings.[38] In addition, Landes examines what considerations increased the time interval between hijackings and shows that this interval increased with the probability of apprehension, the conditional likelihood of incarceration, and the length of the sentence. Greater income per capita and reduced unemployment increased the interval between skyjackings (Landes 1978). Based on his estimated model, Landes (1978, p. 21) computes a counterfactual to show that in the absence of metal detectors there would have been over 2.7 additional US skyjackings per quarter. Given the deployment cost of these metal detectors and the estimated benefit from fewer hijackings, Landes (1978, pp. 21–22) indicates that these metal detectors had a large benefit–cost ratio. This landmark study indicates that technological-based defensive measures work well against specific attack modes; however, such barriers can induce terrorists to substitute to other unprotected attack modes (Enders and Sandler 2004).

Following up on Landes (1978), Enders and Sandler (1993) utilize a vector-autoregression-intervention (VAR-I) analysis to investigate the substitution-induced consequences of the installation of metal detectors in airports worldwide during the first quarter of 1973. Their VAR model allows for interaction among the various hostage-taking and other attack mode time series, thereby permitting substitution and complement relationships as terrorists react to these barriers by seeking softer targets. This method allows for the endogenous choice among modes of attacks and is used by some post-9/11 articles (e.g., Brandt and Sandler 2009). In the short run, these metal detectors reduced skyjackings by just over twelve incidents per quarter but increased other hostage-taking incidents by about four per quarter (Enders and Sandler 2012). In the longer run, these other hostage-taking incidents rose by just over five incidents per quarter. Even more disturbing, an updated study shows that the introduction of metal detectors increased terrorist incidents with casualties by 8.83 and 12.38 incidents per quarter in the short and long run, respectively, as terrorists substituted out of skyjackings, which generally had few casualties before 9/11, into more casualty-rich incidents to capture headlines (Enders and Sandler 2012, p. 91). Such unintended downsides of metal detectors are not recognized by Landes (1978).

Enders and Sandler's (1993) methodology is applied to other defensive measures

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[38] Sky marshals did not make themselves known for fear that discharging their gun would pierce the fuselage and bring down the plane.

to illustrate unintended consequences. For example, the fortification of US embassies resulted in increased assassinations of diplomatic personnel outside of secured embassy compounds. The effectiveness of technological barriers fades with time as terrorists devise means to circumvent them, such as massive truck bombs to get beyond embassy walls or plastic guns and containers with flammable liquids to get past metal detectors (Enders, Sandler, and Cauley 1990).

The effectiveness of retaliatory raids against alleged state sponsors of terrorism prior to 9/11 has been analyzed. Enders and Sandler (1993, 2012) apply their VAR-I method to ascertain the effectiveness of the US retaliatory bombing raid on Libya on April 15, 1986 (a response to Gaddafi's alleged involvement in the La Belle discotheque bombing in West Berlin on April 4, 1986 that killed 3 and wounded 231 including 62 Americans) (Mickolus, Sandler, and Murdock 1989, pp. 365–7). Once again, their VAR method permits multiple time series (e.g., attacks against US and UK interests and attacks against other countries' interests) to be examined to account for substitution and complementarity. Also, the timing of reactions is captured. Enders and Sandler (1993) find that terrorist attacks against US and UK interests skyrocketed following the raid, as terrorists moved planned future attacks into the present to display their outrage. UK interests were targeted, since US warplanes had taken off from British airbases. Within a few quarters, such attacks dropped precipitously as terrorists had to replenish their spent resources. The overall mean of terrorist incidents did not change owing to the raid. In a similar study of Israeli retaliatory raids following Palestinian terrorist attacks, Brophy-Baermann and Conybeare (1994) uncover the same sine-wave pattern, indicative of terrorists' intertemporal substitution (Berrebi and Lakdawalla 2007 and Enders and Sandler 2002), in which these raids did

not curb Palestinian terrorism in the medium term.

After 9/11, the sustained War on Terror is seen to have apparently little long-term effect on global terrorism. This is suggested by the plots of the transnational terrorism incidents and casualties per incident in figures 1 and 2 after 2006 and is further supported by the rising proportion of casualty incidents in figure 3. A similar message that post-9/11 proactive measures have a poor payback comes from the counterfactual-based study of Sandler, Arce, and Enders (2009), where the return to the War on Terror was pennies on the dollar. Furthermore, enhanced border security since 9/11 caused transference of attacks from North America and Europe to the Middle East, Africa, and Asia, consistent with the earlier defensive game theory model (Drakos and Gofas 2006 and Enders and Sandler 2006).

5.1 *Drones and Targeted Killings*

After 9/11, drones were used by the United States to target terrorist assets and Islamic terrorist groups' leadership in Afghanistan, Pakistan, Yemen, and elsewhere. In Pakistan, these drones were dispatched to seven agencies or districts in the Federally Administered Tribal Areas (FATA) (Fair 2010). Opponents argue that drones are locally unpopular and create backlash that fosters terrorist recruitment (Bloom 2005 and Rosendorff and Sandler 2004). Proponents view effective drone attacks as disrupting and degrading targeted terrorist groups, thus reducing the incidence and lethality of their attacks (Jaeger and Siddique 2011 and Johnston and Sarbahi 2016).

The evidence supports both viewpoints, with somewhat more support for limiting terrorist attacks in the short run following a successful drone strike, especially in Pakistan. For example, Jaeger and Siddique (2011) apply a multiple time series method, similar to Enders and Sandler (1993), to

show that drone attacks had no significant effect in Afghanistan, but did serve as a short-term deterrent effect in Pakistan. For Pakistan, Jaeger and Siddique (2011) find an increase in the vengeance or backlash effect during the first week following a successful drone strike on Taliban and al-Qaida assets. The short-term reduction in terrorist attacks came during the second week after the drone strike, consistent with an intertemporal transference of attacks. In a subsequent study, Johnston and Sarbahi (2016) used geocoded data on drone strikes and terrorist attacks in Pakistan. Their empirical method is a spatial panel, where the unit of analysis is the district-week. These authors find that terrorist incidents and casualties decreased by 5 and 25 percentage points, respectively, in the week of the drone strike. However, the killing of militant leaders by drones did not reduce terrorist attacks or their consequences in a significant fashion. A very interesting additional finding was that there was no apparent transference externality; namely, the short-term decrease in terrorism did not increase terrorism in neighboring regions. Moreover, the drone attacks reduced selected assassinations of tribal elders by Islamic extremists. Long-term permanent disruptive impacts of drone attacks are not addressed. The dynamics of the effectiveness of drone strikes warrant further investigation.

A related proactive policy is the use of targeted killings of terrorist operatives and leaders without the use of drones. Once again, such killings may incite more violence through backlash and recruitment, or alternatively they may limit violence through disruption and deterrence. Tests of these opposing forces are investigated for the Second Intifada (2000–2005) and beyond. Palestinian violence often assumed the form of suicide bombings of Israeli civilians, while Israeli violence took the form of targeted killings. These assassinations were often directed at Palestinian targets where the attacks originated. Jaeger and Paserman (2008) investigate the causality of the violence, showing that Palestinian suicide attacks incited Israeli retaliation but that Israeli violence apparently did not induce a Palestinian response in terms of additional Israeli fatalities. As such, this evidence does not support a tit-for-tat cycle of violence as hypothesized by Bloom (2005). There is a short-term deterrent outcome in terms of reduced Palestinian violence coming from Israeli targeted killings.

In a follow-up study, Jaeger and Paserman (2009) examine further the dynamics of suicide attacks and targeted killings during the Second Intifada. This study treats both sides to the conflict in a symmetric fashion. Moreover, their data not only account for the location of the attack, but also the origin location of the perpetrators. These location data better allow for an assessment of the vengeance versus disruption effect of Israeli targeted killings. These authors find that a successful suicide attack by Palestinian terrorists resulted in 6.7 more Palestinian deaths in the following week. Israel reacted to actual, but not planned, suicide attacks. Based on geocoded data, Jaeger and Paserman (2009) show that targeted killings in the origin district of the attack reduced subsequent attacks in the short run from that district, consistent with the disruption hypothesis.

5.2 *Thinking Outside the Box*

Typically, defensive and proactive measures are put forward as the best ways to counter the threat of terrorism. Some proactive policies in terms of foiling plots or infiltrating groups can be quite effective, but there is no global data set that records such actions so that knowledge of these efforts is episodic and not subject to rigorous tests.

With respect to extremist religious terrorist groups, Berman (2009) puts forward

increases in state-provided social services as an effective means to loosen the grip that these groups exercise over their operatives and supporters. These radical groups use their "club-provided" services to elicit sacrifices from adherents (see section 3.4). In some cases, members are willing to commit suicide terrorist acts so that their families continue to receive these excludable services. Berman and Laitin (2008) show empirically that service-providing terrorist groups (e.g., Hamas and Hezbollah) were associated with more lethal attacks than their non-service-providing counterparts. Moreover, they find that service-providing terrorist groups engaged in a higher proportion of suicide attacks. Additionally, these groups used suicide attacks against hard targets inside the Green Line (pre-1967 borders) in Israel. By eliminating the radical group as the sole provider of these services, the government can break the hold that these groups weigh over members. This is an interesting proposal that is worthy of empirical testing beyond that of Berman and Laitin (2008) as appropriate data become available.

Dugan and Chenoweth (2012) also think innovatively by investigating whether retaliatory or conciliatory actions during three violent periods—the First Intifada (1987–93), the Oslo Lull (1993–2000), and the Second Intifada—involving Israel and the Palestinians served to ease or exacerbate terrorism. By raising the expected utility of non-terrorism through rewards, conciliatory acts may reduce terrorism;[39] by lowering the expected utility of terrorism through punishment, retaliatory acts may reduce terrorism. Which policy works best to curb terrorism is an empirical question. During these violent periods, these authors use a text-reading program applied to Reuter's archives to code four types of Israeli actions:

discriminate retaliation, indiscriminate retaliation, discriminate conciliation, and indiscriminate conciliation. Based on a negative binomial regression, Dugan and Chenoweth (2012, pp. 614–15) offer evidence that relatively large numbers of conciliatory acts (i.e., more than eight) and indiscriminate conciliatory acts reduced terrorism.[40] However, they uncover no evidence that indiscriminate retaliatory acts lowered terrorism. In fact, such repression either had no effect or raised terrorism, consistent with the notion of backlash. Thus, conciliatory acts—even indiscriminate types—are more effective than indiscriminate retaliatory acts.

In an innovative exercise, Berman, Shapiro, and Felter (2011) investigate whether service provision during the Iraq insurgency reduced attacks against occupying forces. For small-scale reconstruction projects between March 2003 and December 2007, these authors show that services and counterinsurgency are complements. In fact, the local community helped counterinsurgency efforts by providing useful strategic information on insurgents' location. This information flow increased as more small-scale reconstruction projects were built. Berman, Shapiro, and Felter (2011) rely on a unique geocoded data set on violence against US and Iraqi forces and the location of these reconstruction projects. Once again, the message is that community projects directed at potential terrorist supporters may curb violence and reduce the effectiveness of terrorists' and insurgents' propaganda (also, see Berman 2009 and Siqueira and Sandler 2007).

As a deterrent to suicide terrorism during the Second Intifada, Benmelech, Berrebi, and Klor (2015) examine house demolitions.

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[39] Also, see theoretical pieces by Anderton and Carter (2005), Frey and Luechinger (2003), and Sandler (2010).

[40] This is in keeping with the notion that kind acts by a terrorism-besieged government may win back the hearts and minds of terrorist supporters—see Jaeger et al. (2012) and Laitin and Shapiro (2008).

Punitive demolitions are leveled against the houses of the family of a suicide terrorist or operatives involved in a suicide attack, while precautionary demolitions are directed against a region from which a suicide attack may emanate. Unlike precautionary house demolitions, punitive demolitions are discriminatory. To test the effectiveness of each type of demolition, the authors join longitudinal micro-level data for 2000–2005 collected by Israeli authorities on demolitions with data on suicide attacks against Israeli targets. Their analysis shows that punitive demolitions are effective—a one standard deviation increase in these demolitions resulted in an 11.7 percent fall in suicide attacks. In contrast, precautionary demolitions resulted in backlash for which a one standard deviation increase in these demolitions ignited a 48.7 percent increase in suicide attacks! The message is similar to that in Fearon and Laitin (2003) that countermeasures must be discriminate to be effective (Jacobson and Kaplan 2007 and Rosendorff and Sandler 2004).[41]

5.3 *Foreign Aid and Counterterrorism*

Following 9/11, academic interest grew in ascertaining how foreign aid influenced transnational terrorism and how the War on Terror affected foreign aid. Because many transnational terrorist groups, which target Western interests, reside in developing countries, foreign aid can be used by targeted donor countries to ameliorate a terror threat (Bandyopadhyay, Sandler, and Younas 2011, 2014 and Azam and Delacroix 2006). In evaluating the evidence, one must not lose sight of the moral hazard problem shown by Bapat (2011) (section 4.2). Fleck and Kilby (2010) document changes in US bilateral aid allo-

cations before and after 9/11. According to these authors (p. 185), US aid rose during the Bush administration; however, need-driven aid fell relative to other motives. In particular, Fleck and Kilby (2010, pp. 187–8) find that a recipient's military budget was a significant determinant of increases in US bilateral aid, suggesting US interest in supporting countries that addressed a resident terrorist threat. In an expanded panel study of twenty-two donor countries, Dreher and Fuchs (2011) show that official development assistance (ODA) increased, but not monotonically, during the War on Terror. These authors do not discern a significant relationship between aid flows and terrorist incidents. Based on their aid allocation estimations, Dreher and Fuchs (2011, p. 337) show "that countries where terror originates are not more likely to receive aid as a consequence, but if they are selected, they receive larger amounts of aid." Thus, the War on Terror affected aid flows somewhat, but other factors—e.g. voting records in the UN General Assembly and sponsoring terror—had a more profound influence.

The more interesting question is the effectiveness of aid in ameliorating terrorism or its negative consequences. Most studies focus on aid and transnational terrorism (see, e.g., Azam and Delacroix 2006 and Azam and Thelen 2008, 2010). This effectiveness question is intrinsically difficult to identify since terrorism can attract foreign aid and foreign aid may or may not limit terrorism. Azam and Thelen (2010) exercise care to address this endogeneity and, by so doing, conclude that foreign aid had a significant effect in curbing transnational terrorist incidents originating from aid-recipient countries. However, they also find that US military intervention increases such terrorist incidents. In a follow-up study, Young and Findley (2011) disaggregate foreign aid by sectors—education, health, conflict prevention, governance, and civil society—based on

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[41] This finding is similar to that of Zussman and Zussman (2006) in which Israeli assassination of Palestinian military personnel resulted in little backlash, in contrast to Israeli assassination of senior Palestinian political leaders.

AidData. They employ a couple of methods to address endogeneity concerns, including dynamic generalized method of moments (GMM) models. Young and Findley (2011) find that education, health, civil-society, and conflict-prevention aid reduced the incidence of transnational terrorism originating from the aid-recipient country. Conflict-prevention aid had the greatest terrorism-reducing effect, while governance aid did not have a significant effect. We believe that it is worth returning to his question to get more robust results as more panel data sectoral aid in terrorism-plagued countries become available.

5.4 *International Cooperation and Counterterrorism*

For transnational terrorism, the game theory in section 4 indicates that defensive measures tend to be overprovided, while proactive measures tend to be underprovided. Thus, there is a need for international cooperation when addressing common terrorist threats. After 9/11, select countries joined US-led actions to attack the Taliban and al-Qaida in Afghanistan. More recently, some NATO allies joined US bombing missions against ISIS targets in Syria—e.g., French bombing raids on Raqqa, days following the November 13, 2015 ISIS attacks on Paris. On occasion, targeted countries share intelligence. Nonetheless, most countries address their transnational terrorist threats independently and, for the most part, international cooperation has not been very prevalent.

The United Nations and the international community enacted a host of conventions and resolutions against terrorism and its practices—e.g., taking hostages, skyjackings, and downing airliners. A recent instance is the International Convention for the Suppression of Terrorist Bombings, signed in December 1997 and entered into US law in May 2001. Based on time series intervention analysis, no such UN conventions changed the mean of the outlawed mode of attack after ratification (Enders and Sandler 2012 and Enders, Sandler, and Cauley 1990), thus calling into question the effectiveness of such international actions that have no enforcement mechanism.

Similarly, efforts to cut off terrorist financing through guidance from international organizations, such as the International Monetary Fund and the Financial Action Task Force on Money Laundering (FATF), have met with mixed success (Basile 2004). This follows because terrorists have found ways to circumvent these efforts. Only a few noncompliant banking institutions can spoil the collective action of compliant banking institutions, since curbing terrorist financing is a weakest-link public good for all targeted countries (Sandler 2005).

After 9/11, an International Criminal Police Organization (INTERPOL) surveillance system to secure ports of entry against terrorists has yielded a large apparent payoff at a small cost (Sandler, Arce, and Enders 2011).[42] Based on terrorist arrest data provided by INTERPOL, these authors calculated, under various counterfactual scenarios, the value saved through INTERPOL-surveillance-assisted arrests. These savings were in terms of fewer terrorist incidents and the concomitant reduced deaths, injuries, and property losses. Sandler, Arce, and Enders (2011) build their counterfactuals based on the casualties and losses associated with an average transnational terrorism incident during the years prior to the surveillance system being deployed. Value-of-life computations translate avoided

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[42] See Enders and Sandler (2011) on the factors that influence countries' decisions to install INTERPOL's MIND/FIND surveillance system and Gardeazabal and Sandler (2015) on the role of this system in the fight against terrorism.

deaths and injuries into a dollar value. In addition, INTERPOL provided these authors with the cost for the components of the surveillance system. Their exercise shows that every dollar of INTERPOL's surveillance expense returned $40 to $200, depending on twelve alternative counterfactual scenarios. The large return is indicative of the network externality that this system provides. Thus, countries may reap gains from cooperation that mandate little expense or loss of autonomy. This example highlights that there are instances of low-hanging fruit with respect to coordinated efforts to curb transnational terrorism.

6. *Three Alleged Causes of Terrorism*

After 9/11, the news media and political leaders speculated on the causes of these unprecedented attacks (Li and Schaub 2004). Three potential causes for transnational terrorism were put forward: globalization (Sageman 2008 and Schneider, Brück, and Meierrieks 2015, p. 131), world poverty (Krueger and Malečková 2003), and democracy (Eubank and Weinberg 1994, 2001). We examine each cause in seriatim from the lens of the literature that each generated.

6.1 *Globalization and Transnational Terrorism*

Economic globalization captures the increased flows of transactions across international borders. These flows encompass goods, services, financial capital, virtual transmissions, productive factors, and externalities as countries' economies become more integrated. Li and Schaub (2004) indicate that globalization may foster transnational terrorism by curbing the cost of illegal activities, providing greater cover for transiting terrorists, offering greater financing for terrorism (e.g., enhanced remittances), supplying transmission channels for terrorist propaganda, and augmenting

grievances through greater income disparity. Globalization may also foster transnational terrorism through a demonstration effect as increased transactions, real and virtual, bind countries closer together. Grievance in one country can spill over to another through the media, the internet, and exchanges. By contrast, globalization may inhibit transnational terrorism by improving economic development, thereby reducing potential grievances. In a dynamic panel study of 112 countries for 1975–97, Li and Schaub (2004) use trade, FDI, and portfolio investments as proxies for globalization. Notably, none of the authors' sample years are near 9/11. They find no direct linkage between globalization and transnational terrorism. This initial study on the alleged globalization cause of transnational terrorism never really addressed the obvious endogeneity concern that transnational terrorism may influence the authors' three proxies for globalization (see section 7). The globalization–terrorism linkage poses a difficult empirical exercise. Although the Li and Schaub (2004) study is well-cited, it does not put the question to rest.

In a general study of the causes of terrorism, Gassebner and Luechinger (2011) apply a modified extreme bound analysis (EBA) to a host of possible determinants of transnational terrorism, including globalization, based on Dreher's (2006) KOF index of globalization. Among other things, they show that globalization is not a robust determinant of transnational terrorism in the various runs based on venue country, victim country, or perpetrators' origin. Their globalization finding agrees with other panel studies.[43] Many subsequent articles rely on Gassebner and Luechinger's (2011) "robust" variables from their EBA study to come up with a set of controls when investigating

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[43] See Drakos and Gofas (2006); Kurrild-Klitgaard, Justesen, and Klemmensen (2006); and Gaibulloev, Piazza, and Sandler (2017).

other determinants of terrorism. Thus, it is important that some essential issues with EBA are raised. Brock, Durlauf, and West (2003) indicate some important concerns with EBA that include, among others, insensitivity to the relative goodness of fit of different models, so that a misspecified model may determine the robustness of a variable. In addition, they indicate that EBA requires an excessively strong standard for robustness. As recognized by Gassebner and Luechinger (2011), their modified EBA requires linear estimates. Moreover, their exercise cannot account for structural relations, omitted variable biases, or simultaneity concerns. The linearity issue is particularly germane for the alleged determinants of terrorism because the next two subsections indicate that nonlinear estimations best capture the relationship between GDP per capita and terrorism and the relationship between regime type and terrorism.

In summary, there is little convincing evidence supporting globalization as a cause of transnational terrorism; however, there is room for a better methodology to address this cause. For the present, we must look elsewhere for a cause.

6.2 *Poverty and Transnational Terrorism*

An initial influential study on the potential relationship between poverty and terrorism is by Krueger and Malečková (2003), who first present evidence from Palestinian opinion polls that show that a large majority of highly educated, and presumably better off, Palestinians support the use of terrorism. Next, these authors examine the biographical information of 129 members of Hezbollah's military wing, whose 28 percent poverty rate was five percent lower than that of the host population. Moreover, these fighters' education attainment was statistically greater than that of the general public. Their final bit of evidence comes from a negative binomial cross-country analysis of 129 to 148 countries during 1997–2002, for which they find a marginal negative relationship ($p = 0.11$) between transnational terrorism and GDP per capita. However, when they control for civil liberties, the poverty link vanishes, leading Krueger and Malečková (2003) to conclude that lack of civil liberties, and not poverty, drives transnational terrorism. This finding is similar in spirit to that of Krueger and Laitin (2008) who demonstrate that political repression, not GDP per capita, correlated with transnational terrorist incidents in the perpetrators' home countries.

The literature offers a wide variety of results on the relationship between GDP per capita and terrorism. Some articles display a positive relationship, (e.g., Bandyopadhyay and Younas 2011; Blomberg, Hess, and Weerapana 2004; and Gassebner and Luechinger 2011); other articles uncover a negative relationship (e.g., Li and Schaub 2004); and still others find no relationship (e.g., Abadie 2006 and Krueger and Malečková 2003). Most articles on this empirical relationship rely on panel estimates and pay little attention to functional form. A few studies uncover an inverted U-shaped relationship between terrorism and GDP per capita (e.g., Enders and Hoover 2012 and Lai 2007).

The literature uses different country samples, diverse time periods, and alternative measures of transnational terrorism. Hence, a robust methodology is needed that can produce consistent findings for varying controls, sample periods, and sample countries. To date, the most robust analysis is that of Enders, Hoover, and Sandler (2016), who employ a flexible nonlinear empirical specification that includes linear, quadratic, and other functional forms.[44] Their empirical analysis is performed on alternative series of terrorist incidents that involve casualties, since such incidents are more apt to be

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[44] Their method is known as a nonlinear smooth transition regression.

reported and less driven by random factors. Their regressions indicate a consistent nonlinear relationship between real GDP per capita and eight alternative measures of terrorism, accounting for attack venue, perpetrators' nationality, and terrorism type (i.e., transnational and domestic). Two alternative time periods—1970–92 and 1994–2010—that correspond to the dominance of the leftist and religious fundamentalist terrorists, respectively, are analyzed. In all instances, their nonlinear estimates outperform linear and quadratic representations.

For all eight terrorism series, there is a peak level of terrorism at some intermediate range of GDP per capita. There is a nonsymmetrical relationship on either side of the peak, leading to a rejection of a quadratic relationship between income per capita and terrorism. This peak shifted between the two time periods; occurring at a relatively high intermediate GDP per capita when the leftist terrorists dominated in the pre-1993 era, and occurring at a relatively low intermediate GDP per capita when the religious fundamentalist terrorists dominated in the post-1993 era. This shifting peak is consistent with many left-wing terrorist groups originating from and operating in relatively well-to-do countries during the earlier period, and many religious fundamentalist terrorist groups originating from and operating in less well-to-do countries during the latter period. The former consideration may explain the preponderance of positive linear estimates for the income–terrorism relationship before the early 1990s. The Enders, Hoover, and Sandler (2016) study shows that neither very low nor very high GDP per capita is conducive to terrorism. At low GDP per capita, subsistence is an overriding concern, thus limiting terrorism. At high GDP per capita, grievances are not great and society invests in counterterrorism, thus curbing terrorism. Moreover, these nonlinear relationships are robust to myriad controls that display anticipated signs.[45] The relationship between GDP per capita and terrorism is much more nuanced than presupposed by political leaders, the media, and researchers. Not only is the relationship nonlinear, but its nature alters with circumstances—e.g., the predominant type of terrorism and the origin country of perpetrators—thereby confounding estimation. In summary, there is no discernible relationship per se between poverty and alternative forms of terrorism.

6.3 *Regime Type and Transnational Terrorism*

Given that 9/11 took place in a democracy and high-profile transnational terrorist attacks before and after 9/11 targeted democracies, the relationship between regime type and terrorism is of great interest. There are three schools of thought on this relationship. The "strategic" school argues that democracy facilitates terrorism by limiting its price through freedom of movement, freedom of association, the protection of civil liberties, rights to due process, and the ability to acquire weapons (Eubank and Weinberg 1994, Eyerman 1998, and Hoffman 2006). Moreover, in democracies, freedom of the press provides terrorists with the publicity that they crave (Li 2005 and Rohner and Frey 2007). By contrast, the "political access" school views democracies as assuaging grievances through greater political participation, thereby reducing terrorism (Eyerman 1998 and Li 2005). The "democratic protection" school stresses that strong liberal democracies take swift actions to counter terrorism in order to maintain their legitimacy (Gaibulloev, Piazza, and Sandler 2017). Strict autocracies also take draconian measures to counter terrorism. Given these opposing considerations, the relationship

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[45] Domestic terrorism displays the same nonlinear relationship with GDP per capita.

between regime type and transnational terrorism is an empirical question.

Findings in the empirical literature on this relationship are mixed and generally unconvincing. Most articles find a positive relationship between democracy and terrorism in support of the strategic school (e.g., Chenoweth 2010; Eubank and Weinberg 1994, 2001; Lai 2007; Li and Schaub 2004; Piazza 2008; and San-Akca 2014). A small number of articles display a negative relationship, supportive of the political access or democratic protection schools (e.g., Eyerman 1998). Other articles find no significant relationship (Gassebner and Luechinger 2011, Krueger and Laitin 2008, and Savun and Phillips 2009).[46] A handful of articles uncover an inverted U-shaped relationship in which some intermediate regime type in between autocracy and democracy, known as anocracy, displayed the greatest amount of terrorism (Abadie 2006; Chenoweth 2013; Drakos and Gofas 2006; and Gaibulloev, Piazza, and Sandler 2017).

The overwhelming number of studies involves panel analyses that do not adequately address endogeneity concerns regarding regime type and terrorism. Many of these studies either do not account for unobserved heterogeneities or, when they do, their fixed-effects estimates typically do not support the articles' hypotheses. Often, articles examine limited time periods and a single type of terrorism, leaving one to wonder about the true relationship between regime type and alternative forms of terrorism.

Unlike the extant literature, Gaibulloev, Piazza, and Sandler (2017) take up these concerns in their investigation of regime type and terrorism for a global sample during 1970–2012. They first present a game-theoretic model, accounting for the three schools of thought. In so doing, they establish theoretical grounds for an inverted U-shaped relationship between forms of terrorism—transnational and domestic—and alternative measures of regime type.[47] This follows because autocracies employ draconian measures to curb terrorism, while strong democracies also apply effective means to protect lives and property. Moreover, strong democracies limit terrorism-inducing grievances through political access. In contrast, anocracies lack the means to respond rigorously to terrorism and only offer intermediate levels of political access. Along a regime spectrum with autocracies and strong democracies at the endpoints, anocracies are anticipated to experience the most domestic and transnational terrorism, thus giving rise to an inverted U-shaped regime-terrorism relationship.

Given the count nature of the terrorism variable, Gaibulloev, Piazza, and Sandler (2017) employ various estimators for panel count data to test empirically their hypothesis. They consider an extensive set of controls, consistent with the literature, and present instrumental variable approaches to address endogeneity concerns. Alternative measures of regime type are included to capture notions of political rights, civil rights, and political participation. These authors show that regime type has a robust inverted U-shaped relationship on terrorism. Their results strongly suggest that the effect of regime type on terrorism is nonlinear and more complex than initially presupposed by commentators, leaders, and researchers.

This inverted U-shaped finding raises an important policy concern with respect to post-9/11 efforts to push democracies,

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[46] Sandler (1995) cautions about the bias from employing terrorist event data sets, collected from the news media, to test this relationship. Autocracies are less likely than democracies to report small-scale terrorist incidents. There are ways to ameliorate this bias.

[47] Also see Dragu (2011) on an inverted U-shaped relationship between security and liberty.

culminating in Western democracies supporting the "Arab Spring." As autocracies are transformed into fledgling democracies or anocracies, the risk of greater terrorism surfaces, so that preventive actions must be in place to protect against this risk.

7. *Economic Consequences of Terrorism*

Terrorists aim to harm the economy of targeted governments in order to induce governments' concessions to some of the terrorists' demands. But how damaging is terrorism to a country's economy?

7.1 *Economic Growth and Terrorism*

Based on a panel of 177 countries for 1968–2000, Blomberg, Hess, and Orphanides (2004) uncover a negative and statistically significant effect of transnational terrorism on the growth of GDP per capita. Terrorism appears to induce a reallocation of resources from productive investments toward government spending. However, the magnitude of the growth effect of terrorism is economically modest and substantially smaller than the impact of internal or external conflicts.[48] Their analysis shows that the impact of terrorism on GDP disappears after one year, which is much shorter lived than the effect of internal and external conflicts. Using a panel of world countries for 1987–2001, Tavares (2004) also finds that the negative effect of transnational terrorism on economic growth is quantitatively small. Moreover, the estimated coefficient for terrorism is not statistically robust across alternative model specifications.

Subsequent studies distinguish between transnational and domestic terrorism and focus on regional subsamples (e.g., Africa, Asia, and Western Europe).[49] Generally, terrorism had a small adverse effect on the growth of GDP per capita. The effect is driven by transnational terrorism; domestic terrorism is usually not statistically significant.[50]

This literature commonly applies dynamic fixed-effects regressions to account for endogeneity bias that might stem from country-specific unobserved heterogeneities and time-specific global shocks. However, the issue of endogeneity of terrorism—owing to potential omission of factors that may influence both terrorism and economic growth—remains a concern. Given the difficulty of finding a proper instrument, some studies use lagged value of terrorism to ameliorate this issue (e.g., Tavares 2004). Using a fixed-effects estimator in dynamic panel regression leads to Nickell bias. To address this issue, studies focus on longer sample periods and relatively smaller numbers of cross-sectional units. In a related study, Gaibulloev, Sandler, and Sul (2013) find a significant cross-sectional correlation of transnational terrorism across 106 countries. Gaibulloev, Sandler, and Sul (2014) show that the negative, albeit small, impact of terrorism on growth is not robust: once Nickell bias and cross-sectional dependence are corrected in dynamic panel regressions, the coefficient for terrorism loses its statistical significance.

With few exceptions, the literature does not distinguish between the pre-1990s and the post-1990s periods in terms of the effect of terrorism on growth. For Asia, Gaibulloev

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[48] A one-unit increase in the number of terrorist attacks per million persons was associated with 0.24 percentage point decrease in GDP per capita growth for the full-sample fixed-effects regression (Blomberg, Hess, and Orphanides 2004, table 5, p. 1023). The average number of terrorist attacks per million persons was just 0.2 in their sample.

[49] See, e.g., Gaibulloev and Sandler (2008, 2009b, 2011).

[50] Findings also suggest that less-developed countries were more susceptible to a negative impact of terrorism on growth (e.g., Blomberg, Hess, and Orphanides 2004).

and Sandler (2009b) find that terrorism is not statistically significant for the period before 1986, but is statistically significant and negative for 1986–2004.

The adverse effect of terrorism on growth can be substantial for an individual country or subregion plagued with terrorist incidents. Abadie and Gardeazabal (2003) introduce an innovative econometric method—the synthetic control approach—to obtain the causal effect of terrorism on the economy of the Basque Country.[51] This method addresses identification challenges that arise in cross-country panel regressions. They show that terrorism reduced GDP per capita in the Basque Country by about 10 percentage points during the 1980s and 1990s. These authors further demonstrate that the 1998–99 cease-fire caused a substantial improvement in the relative performance of the stock portfolios of firms with large business dealings in the Basque region (a value increase of 10.4%) when the truce became credible. The abnormal return of Basque stocks relative to non-Basque stocks was negative and large (–11.2%) at the end of the truce period. A case study of Israel also indicates a sizable impact of terrorism on per capita output during high terrorism periods (Eckstein and Tsiddon 2004).

7.2 *Trade and Terrorism*

In general, the empirical research on terrorism and trade finds a negative relationship between terrorism and bilateral trade.[52]

Presumably, trade falls owing to the greater costs of doing business—e.g., greater uncertainty, higher insurance and wage premiums, and larger transaction costs. The literature usually utilizes the gravity model, which is the standard in the empirical trade literature. The adverse effect of terrorism on trade is shown for the period of the dominance by the leftist terrorist groups (e.g., Nitsch and Schumacher 2004) as well as for the era of dominance by the religious fundamentalist terrorists (e.g., Bandyopadhyay, Sandler, and Younas 2018). Egger and Gassebner (2015) are an exception; they discern a negligible non-robust effect of terrorism on trade in the short run. They attribute the differences in their findings to the neglect of aggregation bias and general equilibrium effects by previous studies. Although most work on terrorism and trade uses transnational terrorism data, recent evidence suggests that domestic terrorism also reduced bilateral trade. For example, Bandyopadhyay, Sandler, and Younas (2018) disaggregate bilateral trade data into primary commodities and manufactured goods for a panel of 151 countries during 1995–2012 and find a detrimental impact of both domestic and transnational terrorism on trade, particularly on the trade of manufactured goods.[53] Overall, terrorism had a considerable smaller effect on trade, relative to other types of violence such as civil war (e.g., Blomberg and Hess 2006).

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[51] The basic idea is to construct a "synthetic" Basque Country using a weighted combination of the other regions in Spain so that the synthetic and real Basque Country are closely matched in terms of their economic characteristics before the onset of terrorism. Assuming that the economic trajectories of synthetic Basque Country and the Basque Country are similar in the absence of terrorism, any differences in the outcome variable after the outbreak of terrorism in the Basque Country is attributed to the casual effect of terrorism.

[52] See, e.g., Blomberg and Hess (2006); de Sousa, Mirza, and Verdier (2009); and Mirza and Verdier (2014).

These studies apply gravity trade models using panel data. de Sousa, Mirza, and Verdier (2009) examine the spatial spillover effect of terrorism and find that a country's export to the United States was adversely affected by terrorism in neighboring countries.

[53] Nitsch and Schumacher (2004) estimate the elasticity of total trade in response to transnational terrorism to be around –0.04 using pre-2001 data. Blomberg and Hess (2006) use a dummy variable for terrorism: if a country-pair experienced terrorism in a given year, trade fell by about 5 percent.

7.3 *Stock Exchanges and Terrorism*

Chen and Siems (2004) implement the event-study methodology to examine the effect of terrorist attacks on global capital markets. An analysis of 14 military/terrorist events for 1915–2001 reveals that, over time, the US capital markets became more resilient and faster in absorbing the effects of such shocks.[54] US markets displayed a remarkable resilience to the 9/11 terrorist attacks. The decline in the US stock market, though significant, was the second smallest among the ten largest capital markets in the world. The Dow Jones Industrial Average stock index took forty trading days to fully recover its losses.

Chen and Siems' (2004) analysis illustrates that a large terrorist attack could have a sizable effect on financial markets, but the impact was transitory; markets absorbed the shock and continued to function efficiently. Within sixty trading days of 9/11, twenty-seven of the thirty-three markets (82 percent) in their sample recouped their losses. The length and the depth of the terrorism shock depended on the size and the maturity of the markets and the strength of institutions. A stable banking/financial sector and prudent government policies can mitigate the adverse effect of terrorism by providing necessary liquidity (and fiscal stimulus), as shown in the case of the United States (Enders and Sandler 2012). This also implies that developing markets are more vulnerable to terrorism. In fact, Arin, Ciferri, and Spagnolo (2008) compare six financial markets and record a greater effect of terrorism

on stock returns and stock volatility in emerging markets.

Terrorism has a dissimilar effect on stocks across both countries and industries. Chesney, Reshetar, and Karaman (2011) employ various empirical methodologies, including event-study and nonparametric approaches, to compare the effects of seventy-seven major terrorist events, four financial crashes, and nineteen natural disasters for 1994–2005 on global and regional stock markets and industry stock indices. About two-thirds of the sample terrorist attacks had a significant adverse impact on at least one of the studied stock markets. The American (Swiss) market is found to be most (least) immune to the negative shock of terrorism. Similarly, the majority of the sample terrorist events had a significant impact on at least one of the studied industry indices. However, these authors do not examine why a given stock market or industry stock index reacted differently to individual terrorist events. Chesney, Reshetar, and Karaman (2011) uncover interesting similarities and differences between three types of shocks—terrorism, financial crises, and natural disasters—in terms of their effect on industry indices. For example, terrorism had a strong adverse effect on the stocks of airline.[55] In contrast, the banking sector was most vulnerable to financial crises. The impact of terrorism, similar to financial crises, was strongest during an event day but decayed in the post-event period.

7.4 *Direct and Indirect Costs of Large-Scale Terrorist Incidents*

Available estimates suggest that the direct economic cost of large-scale terrorist incidents is modest, particularly for advanced economies. According to Kunreuther,

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[54] Out of eight terrorist attacks in the sample, only the 9/11 attacks had a significant impact on the Dow Jones Industrial average stock index. The Air India bombing in 1985 had a marginally significant impact only on the day of the event. The other terrorist incidents, which include the US Embassy bombing in Kenya in 1998 and the World Trade Center bombing in 1993, did not have a statistically significant effect.

[55] Drakos (2004) discerns a substantial increase in both systematic and idiosyncratic risks of the airline stocks as a result of 9/11.

Michel-Kerjan, and Porter (2003) the damage from the 9/11 terrorist attacks was more than $80 billion for the United States. Similarly, the estimated direct cost of the March 11, 2004 terrorist attacks in Madrid, Spain, was around 212 million euros, which was about 0.03 percent of Spain's GDP (Buesa et al. 2007). As pointed out by Becker and Murphy (2001), diversified economies adjust and withstand large-scale attacks with a small number of key sectors affected. They estimate the cost of the ongoing threat following 9/11 to be around 0.3 percent of the US GDP.[56] However, indirect economic costs of terrorist attacks, which are difficult to measure, are likely to be substantial.[57]

7.5 *Tourism and Terrorism*

The tourism sector is particularly vulnerable to terrorism. Enders, Sandler, and Parise (1992) examine the impact of terrorist events on tourism receipts in Western European nations using quarterly data for 1970–88. Using an autoregressive integrated moving average (ARIMA) method with transfer function, these authors find that terrorism reduced tourism revenue. However, the effect was heterogeneous: Austria, Greece, and Italy suffered significant losses in tourism receipts but France, Denmark, and Germany did not experience statistically significant losses. Further, there was evidence for a negative externality; terrorist incidents in a country dissuaded tourist visitors in neighboring countries. A number of ensuing studies examine an individual country, a region, and a world sample for either the 1970s–2000s or the post-1990s period; they confirm that terrorism adversely influences tourism.[58] Overall, the short-run effect of terrorism on tourism could be large, but the impact faded quickly with airline discount fares. Nevertheless, for countries that rely on tourism for a source of foreign exchange, sustained terrorist campaigns can be detrimental to the economy.

Recent studies point toward a significant spillover effect from terrorism. Drakos and Kutan (2003) uncover a negative association between terrorist incidents and the number of tourists that visited three Mediterranean tourist destinations—Greece, Israel, and Turkey—from January 1991 to December 2000. As the intensity of attacks increased in a country, the number of tourists fell, causing the country to lose market share. The tourists either chose another country in the region (substitution effect) or left the region in favor of safer destinations (regional effect). The latter effect is estimated to be substantially greater than the substitution effect for the sample countries. Neumayer and Plümper (2016) distinguish three types of statistically significant spillover effects arising from transnational terrorist campaigns in Islamic countries.[59] A terrorist attack against a Westerner in an Islamic country deterred the flow of tourists from the victim's country to other Islamic countries. Furthermore, the attack discouraged tourists from other Western countries to both the targeted Islamic country and other Islamic destination nations.

7.6 *Foreign Direct Investment and Terrorism*

International investors consider countries' risk ratings, including terrorist risk, in their

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[56] They assume one successful attack annually that downs one plane and kills up to one hundred people. The estimated cost includes air travel security, loss of human life, physical damage, and reduced GDP growth.

[57] See Frey, Luechinger, and Stutzer (2009) for estimates of the psychological cost of terrorism.

[58] See, e.g., Neumayer (2004), Pizam and Fleischer (2002), and Sloboda (2003). Ito and Lee (2005) report a significant immediate drop of 30 percent in demand for US airlines as a result of 9/11 attacks.

[59] They use dyadic data of world countries for 1995–2013. The regression model is specified following a gravity-type model, which is well-suited to explain the dyadic relationship.

investment decisions. Terrorist risk reduces the expected return to investment and creates uncertainty about possible future terrorist incidents (Abadie and Gardeazabal 2008). Therefore, in an open economy, mobility of productive resources results in the reallocation of investments from countries with a higher level of terrorism to those with small levels of attacks. For a sample of seventy-eight developing countries over 1984–2008, Bandyopadhyay, Sandler, and Younas (2014) uncover a negative association between both transnational and domestic terrorist incidents and FDI. The specification challenges discussed in section 7.1 apply to FDI regressions as well. Bandyopadhyay, Sandler, and Younas (2014) implement a dynamic GMM method to address the Nickell bias and endogeneity problems. The majority of studies use terrorist incidents and casualties; however, Abadie and Gardeazabal (2008) take advantage of unique data on terrorist risk across 186 countries for 2003/2004. Their cross-sectional analysis reveals that the net FDI position of an average country fell by about 5 percent of GDP in response to a one standard deviation increase in the terrorist risk, which is a large shock. These authors provide numerous robustness checks to eliminate potential sources of the omitted variable bias and argue that a potential reverse causation is not expected to weaken their result.

In general, the available evidence suggests that terrorism depressed FDI both before 1990 (e.g., Enders and Sandler 1996) and after 1990, but the magnitude of the effect depends on the size of the economy and the severity of terrorism.[60] Generally, the effect

is small in relation to the size of the economy, especially because an average country experiences very little transnational terrorism.

8. *Concluding Remarks*

To conclude this study, we return to addressing the questions posed at the outset.

Over the last half century, transnational and domestic terrorism changed in a few essential ways. First, the number of transnational terrorist incidents have fallen by about 40 percent since the start of the 1990s; however, each incident was much more likely to involve casualties since then. Second, domestic terrorism displayed a somewhat similar pattern: it rose until 1992 and then fell before rising abruptly after 2008. After 9/11, transnational and domestic terrorists shifted their venues from Europe, Central Asia, and Latin America to the Middle East, Africa, and South Asia. Some of this displacement is due to defensive measures taken by industrial countries following 9/11. Third, during the post-9/11 era, terrorists relied more heavily on hostage taking and armed attacks. The former provided funding that was reduced by post-9/11 actions.

Religious fundamentalist groups, which represent the dominant terrorist influence for the last twenty-five years, rely on kinship, long-term friendships, and worship for recruitment. Some of these groups tighten their grip on members by supplying excludable club goods to operatives (Berman 2009). Backlash to governments' crackdowns can also attract recruits, as can highly visible spectacular terrorist attacks, even when unsuccessful. The literature on terrorist groups shows that religious fundamentalist groups display long-term survival, fostered by group size and cooperative links with other terrorist groups. Islamic terrorist groups are

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[60] Using quarterly data for 1975–91, Enders and Sandler (1996) find that the annual number of terrorist incidents in Spain (Greece) reduced Spanish (Greek) annual net FDI by 13.5 percent (11.9 percent). A panel analysis of 69 countries for 1989–1999 suggests that attacks against US interests abroad had a small effect on the stock of US FDI in the OECD countries but had no effect on the stock of

US FDI in the non-OECD countries (Enders, Sachsida, and Sandler 2006).

particularly resilient. Groups that rely less on transnational terrorist attacks possess better survival prospects by not angering a formidable targeted state. Terrorist groups foster their survivability by responding rationally to government countermeasures.

Studies of counterterrorism effectiveness offer a rather mixed picture. Technological barriers are effective, provided that they are constantly updated so that they stay ahead of terrorist-designed circumventions. In addition, authorities must anticipate attack, target, and location transference that barriers and other defenses encourage. For transnational terrorism, defensive measures tend to be overprovided, while proactive measures tend to be underprovided, so that targeted governments work at cross-purposes with one another. Thus, international cooperation has the potential of achieving the right balance of these measures against a common terrorist threat by internalizing a host of opposing externalities. Unfortunately, even after 9/11, the extent of such cooperation is rather limited as targeted countries cherish their autonomy over security matters. At the domestic level, the right mix of defensive and proactive measures is generally struck as a central government internalizes externalities between alternative venues and targets. Berman (2009) offers a novel counterterrorism approach against Islamic fundamentalist terrorists that involves government provision of services to counter monopoly provision of these services by some religious fundamentalist groups. The literature also shows that directed proactive measures—e.g., assassination of militant leaders or house demolitions—are effective (Benmelech, Berrebi, and Klor 2015 and Zussman and Zussman 2006).

Following 9/11, the media, some heads of state, and academics put forward three causes or facilitators of terrorism: globalization, poverty, and democracy. To date, the literature finds no evidence of a relationship between terrorism and globalization. A similar story holds for poverty. Any relationship between GDP per capita and terrorism is highly nonlinear with some intermediate level of income being most associated with transnational and domestic terrorism. Operationally, terrorist leaders prefer to deploy well-educated operatives, even for suicide missions, because they are likely to succeed (Benmelech and Berrebi 2007). Moreover, anocracies, not democracies, provide the most favorable environment for terrorism because political access is limited, many terrorism-facilitating freedoms are present, and lives and property are not well-protected. The alleged relationships between GDP per capita and terrorism and between regime type and terrorism are more subtle than originally presupposed.

Despite the damage wreaked by 9/11, most terrorist attacks have little impact on property and people on average. For large-scale terrorist attacks, economic and financial ramifications are transitory. Most countries sustain very few terrorist attacks annually so that terrorism generally has little or no influence on GDP per capita growth. Rich diversified countries are able to absorb these attacks with little macroeconomic consequences; however, terrorism-plagued small or developing countries are adversely affected in terms of lost GDP. Losses in terrorism-prone sectors (e.g., tourism and FDI) may be measurable but relatively small compared to GDP for most countries. Rich diversified economies naturally cushion these sectoral impacts by transference as activities move to less terrorism-risky parts of a targeted country's economy.

There are clear directions for future research on terrorism. Empirical analyses on aspects of terrorism must pay greater heed to their identification strategy. Panel studies on terrorism determinants need to do more than lag some control variables to account for endogeneity. Given the rise of homegrown

terrorist attacks by Islamic extremist groups, research must consider the radicalization process and subsequent attacks. To assist this research, terrorist event data sets should record whether attacks are inspired by foreign influences and radicalization. Currently, group-level data that are cleaned and tied to an event data set end in 2006. Such data must be brought up to date to investigate how diverse terrorist ideologies influence groups' survival and their response to counterterrorism. In particular, this expanded data on terrorist groups will foster more informative studies on the determinants of alternative ways that these groups end in the post-9/11 era. Attention must be paid to how micro-level studies of particular terrorist campaigns add to our general knowledge of terrorism. For instance, do micro-level studies of Israel or Iraq inform us about terrorist campaigns in other places where different conditions apply? Also, the relationship between immigration and terrorism warrants careful study. Finally, empirical analyses of terrorist behavior must account for more competing choices.

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