

Dealing with uncertainty: the illusion of knowledge in the study of counterterrorism effectiveness

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Efforts to combat terrorism have become a priority in the security agenda of most countries around the world, while the respective policies, tools and instruments have amounted to significant costs. In this article, we review the literature on counterterrorism (CT) effectiveness and draw a series of rather negative conclusions with regard to the reliability of our knowledge in this area. We find that the literature displays case and data selection biases, and the results produced are oftentimes contradictory, mostly due to the use of different indicators. We then propose a conceptualisation of CT effectiveness, which should help to resolve some of the issues outlined. The article concludes by outlining some future research directions that should improve our methodological grasp in the field.

Keywords: counterterrorism; effectiveness; security; methodology; causality; conceptualisation

Introduction

Efforts to combat terrorism have become a priority in the security agenda of most countries around the world, while the respective policies, tools and instruments have amounted to significant costs. A study by PricewaterhouseCoopers in 2011 estimated that the EU spent €93.5 million on counterterrorism (CT) in 2009 alone (PricewaterhouseCoopers 2011).¹ Estimates for the United States suggest that between 2001 and 2011, more than one trillion US dollars has been allocated to measures and policies related to the fight against terrorism (Mueller and Stewart 2012, 103). In this context, an effectiveness assessment would appear to be not only warranted but also necessary. In an oft-cited meta-analysis, Lum, Kennedy, and Sherley (2006) discovered that out of 20,000 evaluated studies on terrorism, only seven contained information on the effectiveness of CT policies. Lum et al. concluded at the time:

There has been a proliferation of anti-terrorism programs and policies as well as massive increases in expenditures toward combating terrorism. Yet, we currently know almost nothing about the effectiveness of any of these programs (2006, 510).

This article is in a sense a continuation of this exercise, and also a response to voices still deploring the minor role CT effectiveness plays in academic research (see, e.g., Benmelech, Berrebi, and Klor 2010, 1; Gold 2005, 7; TTSRL 2007, 28; Van Dongen

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2009, 1). We are surveying the ensuing scholarship in order to see whether, in the meantime, there has been a more engaged and systematic effort in researching CT effectiveness. Additionally, we aim to examine whether scholarship now has a clearer grasp of what works and what does not work in CT. We acknowledge the fact that there are broader political debates related to some of the measures discussed (such as the use of drones, for instance); yet, for the purpose of this review, we only make reference to studies which have a clear focus on issues of effectiveness.

Demands for more research in the area have been repeatedly formulated by scholars and politicians alike. The Committee on Civil Liberties, Justice and Home Affairs of the European Parliament, for instance, demanded a review of CT policies based on criteria such as effectiveness and proportionality in July 2011. At the same time, we can already observe a number of works dealing specifically with CT effectiveness and an overall increase in the amount of works dedicated to this topic. This article first scrutinises this research effort along two dimensions: the state of play with regard to the types of measures which are deemed to “work” and the validity and reliability of this knowledge. We find that the literature first displays case and data selection biases and, second, has produced contradictory results with regard to the effectiveness of individual measures, mostly due to the use of different indicators. We then propose a conceptualisation of CT effectiveness that should help solve some of the issues outlined before and, beyond that, propose ways to improve our knowledge in this area.

Conceptual considerations

Before engaging the substantial part of our analysis, it is important to clarify our stance on the concept of effectiveness, in particular given critical objections to its use. Similar to other concepts in the area, not least the concept of terrorism, there is little agreement on how effectiveness should be defined. Furthermore, even the choice of words has varied, from the notion of “effectiveness” itself (Drakos and Giannakopoulos 2009; Frisch 2006; Hewitt 1984; Jordan 2009) to other notions such as “success” (Byman 2003; Miller 2007; Probst 2005; Wilner 2010), “victory” (Quaker Council for European Affairs (QCEA) 2007), “impact” (Hafez and Hatfield 2006; Jaeger and Siddique 2011; LaFree, Dugan, and Korte 2009), “efficiency” of CT measures (Laffiteau 2010) or the “progress” against terrorism (Perl 2007). Despite the use of different terms, however, for scholars working in the positivist tradition, there is still generally little doubt concerning the possibility and the use of looking into questions of CT effectiveness.

However, critical scholars have expressed serious doubts with regard to the use of this concept in general, and the possibility to operationalise and measure it in particular. Spencer (2006) highlights two main difficulties: *first*, the difficulty of deriving law-like findings from terrorist violence which is characterised by a “random-like and uneven nature” (186). Efforts to identify general trends and patterns of terrorist violence are additionally undermined by a widely known difficult data situation. The terrorism field has generally been plagued by a considerable lack of reliable data both on terrorism and on CT policies. This is to some extent rooted in the ambiguity of the notion of terrorism itself. Accordingly, there are currently only a few comprehensive databases of terrorist incidents. These have, in addition, been subject to criticism with regard to their completeness and varying definitions of terrorist incidents (Benmelech, Berrebi, and Klor 2010; Drakos 2011).

Second, we face difficulties when seeking to quantify certain effects of CT measures, such as effects on fear and threat perceptions: “A special difficulty here consists in the

problem of quantifying and monetising fear and its consequences, a problem that has yet to be seriously engaged in the relevant literature” (Sunstein 2003, 132–133). Not surprisingly, people’s perceptions of security and insecurity do not usually show up in CT effectiveness research. An additional problem is the fact that research on CT effectiveness regularly fails to capture long-term effects and remains bound to short-term observations. Yet, terrorist groups usually learn from past mistakes and adapt their behaviour in response to CT measures in place. The success of a policy may thus remain temporally limited. While acknowledging the pertinence of this critique, we argue that it is necessary to focus on the conceptualisation and measurement of effectiveness, at the very least in order to assess the literature on the topic, which is not only sizeable, but also influential at the level of political decision-making processes.

The state of play

Generally speaking, a variety of measures and policies have been captured in the scholarship (see Table 1). That said, we find a strong focus on a limited selection of policy measures that have attracted special attention in the academic world, due to either their recent increased use or their controversial nature. A good example here is targeted killings (also known as targeted assassinations) which have been extensively evaluated, both as a general policy (David 2002; Johnston 2012; Jordan 2009; Kaplan et al. 2005; Kober 2007; Langdon, Sarapu, and Wells 2004; Mannes 2008; Price 2012; Wilner 2010) and in the form of drone warfare (Byman 2013; Cavallaro, Sonnenberg, and Knuckey 2012; Cronin 2013; Hudson, Owens, and Flannes 2011; Smith and Walsh 2013). Other measures have largely remained outside the scope of evaluations. The installation of camera surveillance (CCTV), for instance, has been advanced in many countries as an instrument to deter terrorist attacks. There is, however, no systematic evidence to date on whether these systems have had any, let alone the intended effect (Stutzer and Zehnder 2010).

As regards the broad methodological approach, we find different kinds of effectiveness evaluations, from studies based on rigorous empirical analysis (see, e.g., Johnston 2012) to others using rather anecdotal evidence (e.g. Byman 2013). Furthermore, in terms of case selection and sampling (which has obvious effects in terms of the generalisability of results), the literature displays a clear selection bias towards certain case studies: Israeli, British and American CT policies (see, e.g., Frisch 2006; Hafez and Hatfield 2006; Kaplan et al. 2005; LaFree, Dugan, and Korte 2009; Prunckun and Mohr 1997).²

Having outlined the kinds of measures and cases that have captured scholars’ attention, along with the problems associated with their selection, we now turn our attention to the core of the evaluation exercise, namely the question of “what works.” Concerning the actual results of effectiveness analyses, we find broad consensus on only a limited number of cases. Most scholars agree that measures that entail human rights infringements are not effective; such measures are, for instance, aggressive tactics, invasive techniques as well

Table 1. Examples of evaluated CT measures.

Negotiations	House demolitions	Socioeconomic policies
Counterradicalisation policies	Metal detectors	Targeted assassinations
Curfew and search operations	Military tribunals	Security/military force
Emergency powers	Wiretapping	Torture
EU/international cooperation	Military air strikes	Racial profiling
Potential target protection	Pre-emptive arrests	Economic sanctions

as the use of force or torture (see, e.g., Araj 2008; Duyvesteyn 2008; Josiger 2010; Malinowski 2008).

In the case of most measures, however, there is no agreement on whether or not they are effective. The field of targeted killings illustrates this point. This measure has increasingly attracted attention within the scientific community given its increased use as part of CT efforts in recent years. Evaluations of the effectiveness of targeted killings have made two main, and at the same time conflicting, arguments on their effects. Advocates of this policy (particularly officials and governments, but also academics) have claimed that these work, seeking to prove this argument through both in-depth case studies (Long 2010; Wilner 2010) and large-N analysis (Johnston 2012; Price 2012). There has been, however, also substantial critique on the notion that targeted assassinations are an effective instrument (Jordan 2009; Langdon, Sarapu, and Wells 2004; Pape 2003). A similar situation can be observed for the more specific case of drone attacks as part of CT strategies. We find both advocates (Byman 2013; to a limited extent, Jaeger and Siddique 2011) and opponents (Cavallaro, Sonnenberg, and Knuckey 2012; Hudson, Owens, and Flannes 2011; Smith and Walsh 2013) of this policy in terms of its effectiveness. These ambiguous findings point to the necessity of asking what we actually know about CT effectiveness despite increasing research in this area; how this knowledge has been acquired and how reliable it is.

How reliable is our knowledge?

An aspect that is often set against positivist attempts at generalisation is the relevance of historical, political and organisational context. The fact that different evaluations lead to different results might be due to the fact that the benefits of certain measures remain country specific. Evidence of success of Saudi Arabian deradicalisation programmes, for example, does not necessarily imply these programmes will produce the same (positive) effects elsewhere. Without proper knowledge of the effects of CT policies in different settings, we might fail to adequately evaluate CT effectiveness.

Apart from the local context, research has pointed to *features of the targeted group* as another determinant of CT effectiveness. This supports the argument of context dependency. Görzig (2010), for example, has shown the context-specific benefits of negotiations in discouraging terrorist groups which, in particular, depend on the group under consideration. Jordan (2009) identifies terrorist groups' age, size and type as being crucial determinants for CT measures to be effective. Mannes (2008) similarly concludes that the success of a CT policy may depend on specifics and circumstances, including the ideology of groups. Price (2012) identifies organisational characteristics of terrorist groups as being critical to the effectiveness of decapitation strategies. In particular, he suggests that terrorist group leaders need to be pivotal for organisations and leadership succession must be difficult, if decapitation strategies are to work. A study by Long (2010) concludes that CT policies may be effective in disrupting terrorist groups' activities, yet this effectiveness depended on the level of institutionalisation of militant groups. Groups that are well-institutionalised (and thus feature functional and clearly defined hierarchies) are found to be less prone to be affected by campaigns of leadership assassinations. Poorly institutionalised groups, in contrast, would tend to suffer from leadership targeting and may even collapse. Cronin (2013) similarly highlights organisational characteristics and finds that decapitation might help to defeat insurgent/terrorist groups that are "hierarchically structured, characterised by a cult of personality, and less than ten years old, and [...] lacked a clear succession plan" (45). Using drones and

decapitation to defeat al Qaeda, however, as a movement “with a broad network of outposts” (45) would prove futile. These findings remind us to remain cautious when trying to generalise findings from single stories of success or failure of applied CT measures.

While taking these factors on board, we go further and point out an arguably even more salient problem in the research on CT effectiveness, which goes to the heart of positivist approaches, namely the validity and reliability of measurement. Research findings on CT effectiveness have not only pointed to different levels of effectiveness in different settings, but even produced varying results for one and the same measure being applied in the same country. This is due to a series of problems related to the definition and use of indicators for the measurement of effectiveness. We highlight these in the remainder of this section and concretely show how different indicators have been used for measuring the effectiveness of the same CT policy (which we illustrate with the case of targeted killings), and that the same indicators have been afforded different weights.

Use of different indicators

To date, measurement in the area of CT effectiveness has been neither fleshed out nor consistently carried out. As Friedman (2005, 7) notes, “[...] measuring success seems to be a matter of how one interprets the facts [...]” Targeted assassinations, and in particular drone attacks, which were previously referred to, are a good case in point to illustrate the broad variety of indicators leading to different results as to the effectiveness of these policies. In recent years, drones have become a prominent instrument for targeted assassinations. They have played an increasingly pivotal role particularly for the US strategy to fight terrorist groups in Afghanistan, Pakistan, Yemen and elsewhere (Hudson, Owens, and Flannes 2011). Not particularly surprising, officials have repeatedly referred to the success story of these new forms of warfare:

In the United States, the dominant narrative about the use of drones in Pakistan is of a surgically precise and effective tool that makes the US safer by enabling “targeted killing” of terrorists, with minimal downsides or collateral impacts (Cavallaro, Sonnenberg, and Knuckey 2012, v).

The conflicting results on the effectiveness of drone attacks have much to do with a lack of a common understanding of what we should consider a success. Daniel Byman, for instance, considers US drones to work as they “have done their job remarkably well: by killing key leaders and denying terrorists sanctuaries in Pakistan, Yemen, and, to a lesser degree, Somalia, drones have devastated al Qaeda and associated anti-American militant groups” (Byman 2013, 32). Byman further refers to the high numbers of militants (estimated to be 3300) that have allegedly been killed during the Obama administration as evidence of success. A recent study by Jaeger and Siddique (2011) highlights other effects of drone attacks, namely effects on the numbers of terrorist attacks. These numbers are said to have decreased in the aftermath of drone strikes.

Many of the critiques on the drone programme, however, highlight alternative indicators, among which are repercussions on the international level, the deterioration in the US–Pakistani relationship (Hudson, Owens, and Flannes 2011), the number of civilian casualties (Cavallaro, Sonnenberg, and Knuckey 2012), groups’ operational capabilities (Cavallaro, Sonnenberg, and Knuckey 2012)³ or Al Qaeda output in terms of propaganda (Smith and Walsh 2013). In other words, scholars have used different metrics to determine

effectiveness, so that one and the same CT measure has repeatedly been evaluated differently.

Finally, a series of studies have not used *any* kind of indicators at all but made claims of effectiveness nevertheless. Laffiteau (2010) argues, for instance:

Many of the initial steps taken by the US in the wake of the 9/11 al Qaeda terrorist attacks were appropriate, albeit expensive, counter-terrorism measures [...]. Multilateral efforts to identify and freeze al Qaeda's and other terrorist groups' financial resources was yet another step in the right direction (12–13).

Yet he offers no basic criteria by which such statements could be assessed. Alexander (2006) argues that CT measures in Germany have mostly been effective, but that at the same time “the preemptive ‘grid search’ capabilities have, thus far, proven ineffective” (211), without explaining why this should be the case.

Different weighing of indicators

Apart from the problem of different indicators being used for the same measure, another issue connected to measurement is the inconsistent weighing of certain indicators, such as civil and human rights violations, domestic support for CT policies and economic impact. These indicators have been used both as (prime) indicators and as side effects (see Table 2). Assessments of what constitutes an effective CT policy may therefore differ significantly, depending on whether or not certain indicators are weighted intensively.

The problems associated with a different weighing of indicators can clearly be illustrated for the case of (negative) CT effects on human rights. These effects might be considered merely an unpleasant consequence affecting the state's reputation and moral credibility. Some authors regard its breaching as a negative consequence or side effect of CT policy accordingly (Malinowski 2008). Other authors have listed the effects on human rights as an actual indicator of effectiveness through the intermediary of increased recruitment. From their perspective, respect for human rights can be linked to the idea of public support and therefore legitimacy of the government engaging in CT. In cases where state policies ignore human rights, the state may lose legitimacy by breaching one of its most important functions: upholding the rule of law. In return, this might boost the human capital of terrorist organisations and sabotage state efforts to combat it.

In line with this argument, a number of scholars link radicalisation, an increase in the number of recruits and, ultimately, further attacks to the breach of international law and the loss of legitimacy on the side of the state using such policies (Mannes 2008, 40; Price 2012, 10–11). In support of this argument, Hudson, Owens, and Flannes (2011) suggest that the US campaign of drone attacks in Afghanistan and Pakistan was counter-productive and produced a number of undesirable effects. The authors find that the attacks not only by and large failed to kill senior leaders of targeted groups but, even more, led to

Table 2. Examples of indicators used within the study of CT policy effectiveness.

	As a primary indicator	As a side effect
Civil rights and human rights violations	Harcourt 2006; Josiger 2010	Jonas and Harper 2006
Domestic support for CT policy	Byman 2003; Morag 2005	Van Dongen 2009
(Negative) Economic impact	Zussman and Zussman 2006	Brzoska 2009

radicalisation and increased recruitment, and, ultimately, to further violence and instability in response to the US attacks.

Scholars from Stanford University and New York University have been among the most downright critics of the US drone programme. In their report *Living Under Drones* published in September 2012, they reject the officials' claim according to which the drone war was a success story (Cavallaro, Sonnenberg, and Knuckey 2012). Based on a large collection of interviews and other data, the researchers find that the policy of drone attacks proved ineffective in many ways and produced unintended negative side effects. The campaign of drone attacks not only undermined the legitimacy of the US with an increasing number of Pakistanis considering the United States an enemy; beyond that, it also contributed to increasing recruitment for militant groups in response to the US attacks, resulting in more attacks against US targets.⁴ Other scholars have made similar arguments. In a study on Israeli CT policies, Pedahzur and Perliger (2010) claim that security policies increasingly limit basic civil and political rights and, more particularly, lead to an increase in Palestinian animosity towards Israel.

Similarly, if negative economic consequences of CT measures are only considered as a minor aspect in determining effectiveness, harsh measures that help arrest potential terrorists, but impose a heavy economic burden, might still be considered effective. If, in contrast, the economic impact of CT measures is considered to be central to the evaluation of effectiveness, the same measures might be evaluated more critically. For instance, newly implemented security measures in the transport area might have deterred terrorist actors from committing attacks or may at least have increased the perception of security after the attacks of 9/11. Yet, the transport sector had to bear additional costs created by these newly implemented security standards. Taking into account economic costs as a prime indicator, one would be more cautious to call these measures a success.

Conceptualising effectiveness

We have seen in the above section how the use of various indicators can lead to different results, often associated with the lack of any delineation of indicators. This confusion is spurred by the lack of any standard or notion of what an effective CT policy is actually supposed to bring about. In fact, as we already suggested at the beginning of this article, a generally accepted definition or framework of CT effectiveness does not exist in the literature to date (see Van Dongen 2009, 1). This is despite early demands for an elaboration of the notion of effective measures (see Waugh 1982, 157), so that we still face, today, a lack of a clear conceptualisation of the term. We argue that a way forward in this respect would be a more precise and transparent conceptualisation of the effectiveness concept, which would then in turn allow for more accurate statements as to what works. This would, furthermore, help us determine which research findings can be compared in the first place.

In order to provide a tool for clear and systematic effectiveness assessments, we adapt the effectiveness conceptualisation initially developed in the system theory of political decision-making. This conceptualisation distinguishes between output, outcome and impact of a policy (Easton 1965; with modifications from Young 2001). Within this framework, *output effectiveness* refers to the implementation of regulations, policy instruments or compliance mechanisms. It is the behaviour of officials alone (those passing laws and the agencies executing the laws) in relation to which the effectiveness of the adopted measures is assessed. Studies in this regard have looked at the establishment of European institutions (Alexander 2006), the formulation of strategies, organisational

reform in the CT field (9/11 Commission Report 2004; Josiger 2010) and the implementation of legislation, for example that of the EU CT directives in the Member States of the European Union (Keohane 2005).

Outcome effectiveness, in contrast, particularly covers the direct and measurable effect that these laws and regulations have in real life. Outcome effectiveness would basically depend on the behaviour of policy-makers implementing the measure in the first instance. But it also depends on the behaviour of the targeted group in relation to the short-term objectives of a certain CT policy, such as affecting the finance or the recruitment pool of a terrorist organisation.⁵ The measure implemented might have the desired effect or not, also depending on whether the terrorist organisation or group is able to find ways around it.

Impact effectiveness depends on the behaviour of the targeted audience alone in relation to the long-term objective of the CT policy, namely that of reducing or stopping terrorism. It is no longer the policy-makers or those executing a specific law who determine the effectiveness of a policy, but rather the reaction by the target of such a policy. Consider the example of freezing terrorist assets as illustrated in Figure 1.⁶ Passing a bill which allows the freezing of assets suspected to serve terrorist financing purposes would be considered as evidence of *output effectiveness*; one would not look into the intended effects of these measures as prescribed by law. *Outcome effectiveness* is twofold and would first refer to the short-term objective of such a policy measure, namely the freezing of the terrorist assets themselves. The long-term objective of such a policy would be aimed at draining the resources of terrorist groups. *Impact effectiveness* would correspond to the reduction or cessation of the violent terrorist activity of the groups in view as a result of this policy.

As illustrated earlier, the use of different indicators has produced varying results on the effects of one and the same policy, clearly shown for the case of targeted killings. Our concept helps in clarifying the conceptions of effectiveness underlying authors' statements and results.⁷ Accordingly, targeted assassinations may be considered a success based on a certain notion of effectiveness, but a failure from another. The assassination of suspected terrorists alone has sometimes been considered evidence of effective CT policies, but this would correspond only to the level of outcome effectiveness. The studies by Long (2010) and Price (2012), for example, are based on such an outcome-related understanding of effectiveness. Since these individuals can easily be replaced, their number does not necessarily say much about the overall effect on terrorist groups and the number of future attacks (i.e. the impact of such measures), however (Byman 2003, 411; Probst 2005, 320;

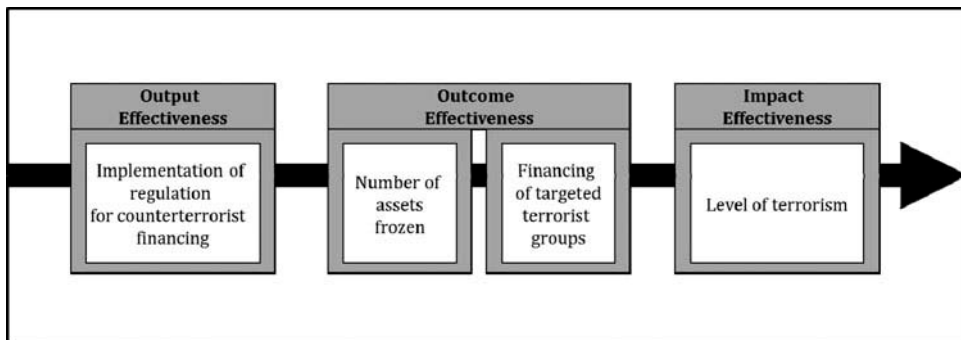


Figure 1. Concepts of CT effectiveness: the example of freezing terrorist assets.

Spencer 2006, 186). In fact, aggressive CT measures aimed to cripple groups may spark recruitment, lead to growing numbers of militants and ultimately and even increase the number of attacks (Schmid and Sing 2009). When looking at the literature, we find studies on both the outcome and the impact of CT measures. However, only a few of the studies identified have actually made use of more comprehensive approaches combining these different aspects (see, in particular, Cavallaro, Sonnenberg, and Knuckey 2012).

An implication of this differentiation between three types of effectiveness in conceptualisation and measurement is the need for more comprehensive lists of indicators. This would be beneficial in order to estimate CT effectiveness and would help to picture the various effects of single policies more accurately and comprehensively. Efforts to identify the effects of CT policies more comprehensively through sets of indicators may provide us with a more accurate understanding of the way in which CT policies succeeded, and when they failed. For the case of drone attacks, this would require us to identify not only the number of drone attacks carried out (*output effectiveness*) or the number of killed alleged terrorists (*outcome effectiveness*), but, most importantly, the actual effect on the resulting number of terrorist attacks (*impact effectiveness*).

In line with this, some researchers have actually proposed rather elaborate and comprehensive sets of indicators to measure CT effectiveness. Morag (2005) uses seven parameters in the categories “human life,” “economic resources” and “political resources.” Malvesti (2002) and Perl (2007) focus on several components of terrorist infrastructure and terrorist capabilities. Horgan and Braddock (2010) consider the effects of deradicalisation programmes on the rate of terrorism, yet they also study additional effects of such programmes. However, the bulk of studies previously discussed resort to single indicators related to terrorist activity, such as the intensity of terrorist attacks, to measure the effectiveness of CT policies.

Limits remain

The previous section proposed a conceptualisation of effectiveness which can help us grasp existing research in a more systematic way and especially aims for more accurate and comparable measurement. Yet, limits remain with regard to the reliability of our knowledge on “what works” in CT policy. A major limitation is the “attribution problem,” which basically refers to the difficulty in pointing out whether certain effects are due to one or more CT policies, other policies or completely exogenous factors.

Before–after comparisons most clearly illustrate the limits of establishing causal links and should be considered with caution if they aim to link the destruction of facilities or the killing of (suspected) terrorists (*outcome*) to a shift in the patterns of terrorist violence (*impact*) (see, e.g., Collins 2004; Frisch 2006; Malvesti 2002; Prunckun and Mohr 1997; Wilner 2010). It remains difficult, and often even impossible, to derive any causal interpretations from such correlations. In other words, whether or not certain measures indeed cause a decrease or even cessation of terrorist activity is an issue that CT effectiveness research can only address with a limited amount of certainty. In most cases, the effect of a policy measure remains probabilistic, since the actual reason for an observed effect may be a number of other factors and not the actual CT measure (cf. Perl 2007; Probst 2005; Spencer 2006; Stohl 2006; Van Dongen 2009).

Wilner (2010), for example, studied certain indicators of CT effectiveness before and after targeted assassinations in Afghanistan had taken place, including the overall level of terrorist attacks, the rate of failures and the sophistication of attacks. But he ignored that other policies had been applied at the same time. In reality, many countries have employed

a variety of CT measures, all with the ultimate aim to eradicate terrorist violence. Israel has, for example, employed a number of different policies, including roadblocks, raids into Palestinian cities and the separation wall (Zussman and Zussman 2006, 193). Beyond that, changes in the patterns of terrorist violence may not be due to policies after all. A reduction in terrorism may as likely be the result of terror groups' strategic thinking to reallocate resources for the preparation of a more elaborated attack or to other causes such as internal rivalry within a terror group (Bonner 1992, 200; Miller 2007, 337; Perl 2007, 1; Spencer 2006, 185).

Several solutions to overcome the attribution problem are conceivable and have been offered, but none of them has yet been satisfactory. This means that we can presently speak only in plausibility terms when referring to the effects of various measures. First, well-established models of causality which convincingly link cause and effects of measures would be helpful in supporting verified correlations; but we often do not have such models available. Consider again the example of targeted killings which may, on the one hand, interfere with the operational abilities of terrorist groups and thereby reduce the number of terrorist attacks. The killing of (alleged) terrorists and other measures such as preventive arrests are likely to diminish terrorists' resources and may also lead to fewer incidents of attacks. However, killing militants and uninvolved civilians is, on the other hand, likely to intensify opposition to aggressive policies and increase the number of those committed to the fight, which in turn would enlarge the reservoir of terrorist recruits. In the end, assassinating members of terrorist groups may trigger revenge and ultimately increase the level of terrorism. Both are possible and cannot be derived from established theoretical frameworks. As Jaeger and Paserman (2009, 320) conclude, "All of these factors suggest that whether targeted killings and suicide attacks raise or lower the level of violence is ultimately an empirical question."

Other measures have more clearly been related to a reduction in terrorist levels, even if uncertainty remains in this regard. For instance, an established correlation between development aid and reduction of terrorist incidents would only allow for a causal relationship to be established if economic underdevelopment had previously been identified as a root cause of terrorist violence. However, this relationship has not been proven to date. Similarly, as Brzoska (2011) concludes, the causal link between terrorists' financing and the number or intensity of terrorist attacks on which policies of counterterrorist financing ultimately rest lacks empirical validity and is not based on unambiguous assumptions. This implies that correlations established in this area do not necessarily prove a causal link. These examples point to a central problem underlying efforts to establish causality in CT research: the effectiveness of CT is largely an empirical question and therefore hardly one that can be dealt with from an established theoretical standpoint, as chains of causality have not been well established. But through this, problems of attribution remain central.

Second, particularly quantitative studies using statistical techniques have tried to verify the impact of a CT policy by ruling out competing explanations. In practice, this means identifying and measuring the impact of a series of control variables (Miller 2007, 337). LaFree, Dugan, and Korte (2009), for instance, test whether British interventions in Northern Ireland reduced or sparked further violence by Republican militants. Methodologically, the authors seek to rule out the effects of alternative explanations by covering, among others, the effects of Loyalist violence and political events such as "Bloody Sunday," as these might also have shaped Republican militancy.

Other studies similarly deal with several possible explanations, even though in these cases the selection criteria are sometimes far from clear. Examples include Morag's (2005)

list comprising defensive barriers, roving patrols, security barriers, assassination of terrorist leaders, infiltration of terrorist organisations and closing off channels of funding and Beasley's (2008) study of violent, non-violent and socio-economic measures by Israel. Pratto et al. (2009) look at hostile actions, armed strikes against terrorists, arrests, detainment or questioning, release of terrorist operatives, entering enemy territory, confiscation of goods/funds, foiling terrorist attacks and sweeps/searches. Hewitt's (1984) study comes close to a comprehensive assessment, as he attempts to classify the policy measures into ceasefire and negotiations, economic conditions, the enactment of reforms, emergency powers, anti-terrorist legislation and the use of security forces.

Considering a large number of possible explanations, of course, would not solve the attribution problem completely, as there would always be the possibility of certain circumstances not having been considered yet. The claim to causality would therefore remain in the area of plausibility. This type of approach, however, would significantly increase our understanding and, particularly, provide a richer list of tested means of action for policy-makers. In reality, however, many studies fail to consider further measures as alternative explanations for terrorists' behaviour. This is problematic in terms of validity, as we cannot be sure whether the assessed effectiveness is due to the measures analysed or indeed to others which have not been captured in the analysis.

Third, an alternative approach was suggested by Van Dongen (2009) who introduces the concept of *programme theory*. Van Dongen breaks down a CT measure and the assessment of its effectiveness into certain components and aims to establish causal links between the cause and effect of these components similar to methods of process-tracing. This way, Van Dongen hopes to at least partially solve the attribution problem and determine the effectiveness of such a measure. In general, the idea of verifying the causal chain of cause and effect for certain aspects of a CT measure seems promising, since effects can be accounted for more convincingly. However, as Van Dongen himself admits, establishing such a causal chain would be complicated, considering the multi-level effects of a CT policy. This approach is additionally bound to subjectivity, because there is no generally accepted standard for linking components of CT measures.

Finally, another possible solution to the attribution problem would be the use of quasi-experimental designs, often related to applications of counterfactuals. In the aftermath of the 9/11 attacks, some scholars and politicians alike suggested that single measures such as racial profiling or immigration restrictions would have been effective strategies to prevent the attacks (Lamm 2005, 79; Lowry 2005, 66). This oversimplified understanding of a causal relationship, however, ignored that terrorists could easily have found ways around such single CT measures in place. As proof of that, increased security measures in the aviation sector, such as metal detectors, were found to reduce the number of sky-jackings in the late 1960s and early 1970s (Landes 1978), but as Enders and Sandler (1993) made clear, the effects of sector-specific measures of this kind do not necessarily imply that the overall levels of terrorist violence decrease. Instead, the authors found evidence of substitution effects that CT policies may cause. Accordingly, the fortification of certain prospective terrorist targets caused terrorists merely to switch their operational focus and increasingly use alternative means or choose other targets.

More sophisticated counterfactual evaluations have remained sparse, however. We have identified only very few studies that use a counterfactual, among which is a study by Sandler, Arce, and Enders (2011), in which the effectiveness of Interpol is assessed through a counterfactual, and studies by Zycher (2003), Sandler, Arce, and Enders (2009) and by Mueller and Stewart (2009) on the cost-effectiveness of Homeland Security spending in the United States. The use of counterfactuals is difficult to conduct

and usually necessitates comparison with a counterfactual outcome that has not been shaped by CT measures (Tudge 2004, 2). Even more, Sandler, Arce, and Enders (2009) make clear that evaluating costs and benefits of a policy with the help of a counterfactual “requires assumptions that may be controversial” (546). Their own computation necessitates, among other things, assumptions of rational behaviour. According to these assumptions, terrorists respond systematically to changes in their constraints after anticipating the effects of CT measures.

Conclusion

Effectiveness is one of the most, if not the most important, aspect in CT policy, not just from an academic point of view, but also politically. As we have seen, CT measures have been on the increase in recent years, and so has government spending in this field. While a few years ago, Lum, Kennedy, and Sherley (2006) found a dearth of effectiveness evaluations in the literature, we currently have substantially more studies dedicated to this topic. Thematically, the scholarship has considered several types of measures, from comprehensive strategies to groups of measures and individual ones such as targeted killings. Our evaluation has shown that, despite the increasing attention that has been paid to the study of CT effectiveness, our knowledge of whether or not CT works remains limited. In fact, we currently face an illusion of knowledge of CT effectiveness.

We have identified two reasons for this: on the one hand, the literature has mainly focused on only three countries and on the effects of a few policies such as targeted assassinations so that we face case and data selection biases. In this regard, we argue for a more comprehensive and systematic consideration of CT measures in various national contexts. On the other hand, we identified a series of methodological problems, in particular, with respect to indicators. We found that the academic use of different indicators and varying understandings and definitions of what effectiveness actually is has led to contradictory results and prevented more conclusive findings. In order to address some of these problems, we provided a workable operationalisation of CT effectiveness in the form of *output*, *outcome* and *impact* effectiveness. This would allow us to conceptualise the work that has been done in this field so far.

Beyond the conceptual clarity and systematisation that the proposed conceptual framework might bring, there remain, however, a series of limitations pertaining to effectiveness research more generally. This applies, in particular, to the attribution problem. As a signpost for future research, we would point out the need for a methodological shift. As we have indicated above, there is a preponderance of quantitative methods. But, most of the time, such studies inform us if a policy works on average but do not identify in which cases and under which circumstances a policy fails or succeeds. As a step forward, the inclusion of qualitative methods could help to identify cultural and historical conditions which can be operationalised in control variables. This, in turn, would help diminish the attribution problem at the core of causality assessments, through a more comprehensive understanding of contextual settings.

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This article builds on previous work by the authors (see Van Um and PISOIU 2013).

Notes

1. Comprehensive data on European member states' spending, in contrast, are not available.
2. This is not to deny that scholars have also studied other cases, if to a limited extent. Barros (2003), for instance, studies the effects of political and economic CT measures implemented by Spanish governments.
3. Scholars from Stanford University and New York University report that the US use of drone strikes may have killed high numbers of suspected terrorists, as claimed by US officials. Yet, it had largely failed to hit senior members, but rather hit low-level insurgents. In other words, the operational capabilities of groups remained largely intact (Cavallaro, Sonnenberg, and Knuckey 2012).
4. In the authors' view, this increase is also related to the apparently much higher number of civilians who have fallen victim to the US attacks than officially acknowledged. The United States considers "all military-age males [killed] in a strike zone" to be "combatants ... unless there is explicit intelligence posthumously proving them innocent," without any post-attack verification attempts. As a consequence, the United States have come to claim only a very small number of civilian deaths along with their drone attacks (Becker and Shane 2012)
5. Della Porta (1992), for example, refers to the number of arrested (suspected) terrorists as an indicator of effectiveness. This would be evidence of outcome effectiveness.
6. A previous discussion on this issue can be found in Brzoska (2009).
7. Yet, we should bear in mind that each of these conceptions may comprise different indicators which complicates efforts to compare research results. Many of the studies on targeted assassinations, for example, have referred to different indicators of impact effectiveness, including the intensity and frequency of attacks.

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References

- Alexander, Y. 2006. *Counterterrorism Strategies. Successes and Failures of Six Nations*. Washington, DC: Potomac Books.
- Araj, B. 2008. "Harsh State Repression as a Cause of Suicide Bombing: The Case of the Palestinian-Israeli Conflict." *Studies in Conflict & Terrorism* 31 (4): 284–303. doi:10.1080/10576100801925273.
- Ashour, O. 2008. "Islamist De-Radicalization in Algeria: Successes and Failures." *The Middle Eastern Institute Policy Brief* 21: 1–10.
- Barros, C. P. 2003. "An Intervention Analysis of Terrorism: The Spanish ETA Case." *Defence and Peace Economics* 14 (6): 401–412. doi:10.1080/1024269032000085170.
- Beasley, M. 2008. "The Impact of Counterterrorism and Strain on Palestinian Terrorism." In *Armed Forces and Conflict Resolution: Sociological Perspectives*, edited by G. Caforio, G. Kummel, and B. Purkayastha, 331–348. Bingley: Emerald Group Publishing Limited.
- Becker, J., and S. Shane. 2012. "A Measure of Change. Secret "Kills List" Proves a Test of Obama's Principles and Will." *New York Times* [online]. Accessed May 3, 2013. <http://www.nytimes.com/2012/05/29/world/obamas-leadership-in-war-on-al-qaeda.html?r=0>
- Benmelech, E., C. Berrebi, and E. Klor. 2010. "Counter-Suicide-Terrorism: Evidence from House Demolitions." NBER Working Paper no. 16493. Accessed July 10, 2013. <http://www.nber.org/papers/w16493>
- Bonner, D. 1992. "United Kingdom: The United Kingdom Response to Terrorism." *Terrorism and Political Violence* 4 (4): 171–205. doi:10.1080/09546559208427180.
- Boucek, C. 2008. "Saudi Arabia's 'Soft' Counterterrorism Strategy: Prevention, Rehabilitation and Aftercare." Carnegie Papers, no. 97. Washington, DC: Carnegie Endowment for International Peace.

- Brzoska, M. 2009. "Zur Wirksamkeit Von Finanzsanktionen Als Instrument Im Kampf Gegen Den Terrorismus." *Vierteljahreshefte Zur Wirtschaftsforschung* 78 (4): 88–100. doi:10.3790/vjh.78.4.88.
- Brzoska, M. 2011. "The Role of Effectiveness and Efficiency in the European Union's Counterterrorism Policy: The Case of Terrorist Financing." Economics of Security Working Paper 51. Berlin: Economics of Security.
- Byman, D. 2003. "Measuring the War on Terrorism: A First Appraisal." *Current History* 102 (668): 411–416.
- Byman, D. 2013. "Why Drones Work." *Foreign Affairs* 29 (4): 32–43.
- Cavallaro, J., S. Sonnenberg, and S. Knuckey. 2012. *Living Under Drones: Death, Injury and Trauma to Civilians from US Drone Practices in Pakistan*. Stanford, CA: International Human Rights and Conflict Resolution Clinic (Stanford Law School); New York: Global Justice Clinic (NYU School of Law).
- Collins, S. D. 2004. "Dissuading State Support of Terrorism: Strikes or Sanctions? (An Analysis of Dissuasion Measures Employed Against Libya)." *Studies in Conflict & Terrorism* 27 (1): 1–18. doi:10.1080/10576100490262115.
- Cronin, A. K. 2013. "Why Drones Fail." *Foreign Affairs* 29 (4): 44–54.
- David, S. R. 2002. "Fatal Choices: Israel's Policy of Targeted Killing." *Mideast Security and Policy Studies* 51: 1–26.
- Della Porta, D. 1992. "Institutional Responses to Terrorism: The Italian Case." *Terrorism and Political Violence* 4 (4): 151–170. doi:10.1080/09546559208427179.
- Drakos, K. 2011. "Security Economics: A Guide for Data Availability and Needs." *Defence and Peace Economics* 22 (2): 147–159. doi:10.1080/10242694.2011.542336.
- Drakos, K., and N. Giannakopoulos. 2009. "An Econometric Analysis of Counterterrorism Effectiveness: The Impact on Life and Property Losses." *Public Choice* 139 (1–2): 135–151. doi:10.1007/s11127-008-9384-9.
- Duyvesteyn, I. 2008. "Great Expectations: The Use of Armed Force to Combat Terrorism." *Small Wars and Insurgencies* 19 (3): 328–351. doi:10.1080/09592310802228666.
- Easton, D. 1965. *A Framework for Political Analysis*. Englewood Cliffs, NJ: Prentice-Hall.
- Enders, W., and T. Sandler. 1993. "The Effectiveness of Antiterrorism Policies: A Vector-Autoregression-Intervention Analysis." *The American Political Science Review* 87 (4): 829–844. doi:10.2307/2938817.
- Friedman, L. S. 2005. "Introduction." In *Are Efforts to Reduce Terrorism Successful?*, edited by L. S. Friedman, 5–8. Farmington Hills, MI: Greenhaven Press.
- Frisch, H. 2006. "Motivation or Capabilities? Israeli Counterterrorism against Palestinian Suicide Bombings and Violence." *Journal of Strategic Studies* 29 (5): 843–869. doi:10.1080/01402390600901026.
- Gold, D. 2005. "The Costs of Terrorism and the Costs of Countering Terrorism." International Affairs Working Paper 2005-03, March 2005. New York: New School University.
- Görzig, C. 2010. *Talking to Terrorists: Concessions and the Renunciation of Violence*. Abingdon: Routledge.
- Hafez, M. M., and J. M. Hatfield. 2006. "Do Targeted Assassinations Work? A Multivariate Analysis of Israel's Controversial Tactic during Al-Aqsa Uprising." *Studies in Conflict & Terrorism* 29 (4): 359–382. doi:10.1080/10576100600641972.
- Harcourt, B. E. 2006. "Muslim Profiles Post 9/11: Is Racial Profiling an Effective Counterterrorist Measure and Does It Violate the Right to Be Free from Discrimination." Public Law and Legal Theory Working Paper, no. 123. University of Chicago.
- Hewitt, C. 1984. *The Effectiveness of Anti-Terrorist Policies*. Lanham, MD: University Press of America.
- Horgan, J., and K. Braddock. 2010. "Rehabilitating the Terrorists?: Challenges in Assessing the Effectiveness of De-radicalization Programs." *Terrorism and Political Violence* 22 (2): 267–291. doi:10.1080/09546551003594748.
- Hudson, L., C. S. Owens, and M. Flannes. 2011. "Drone Warfare: Blowback from the New American Way of War." *Middle East Policy* 18 (3): 122–132. doi:10.1111/j.1475-4967.2011.00502.x.
- Jaeger, D. A., and D. Passerman. 2009. "The Shape of Things to Come? On the Dynamics of Suicide Attacks and Targeted Killings." *Quarterly Journal of Political Science* 4 (4): 315–342.

- Jaeger, D. A., and Z. Siddique. 2011. "Are Drone Strike Effective in Afghanistan and Pakistan? On the Dynamics of Violence between the United States and the Taliban." Discussion Paper, no. 6262. Bonn: Institute for the Study of Labor. Accessed March 3, 2013. <http://ftp.iza.org/dp6262.pdf>.
- Johnston, P. B. 2012. "Does Decapitation Work? Assessing the Effectiveness of Leadership Targeting in Counterinsurgency Campaigns." *International Security* 36 (4): 47–79. doi:10.1162/ISEC_a_00076.
- Jonas, J., and J. Harper. 2006. "Effective Counterterrorism and the Limited Role of Predictive Data Mining." *Policy Analysis* 584: 1–12.
- Jordan, J. 2009. "When Heads Roll: Assessing the Effectiveness of Leadership Decapitation." *Security Studies* 18 (4): 719–755. doi:10.1080/09636410903369068.
- Jordan, J. 2014. "Attacking the Leader, Missing the Mark: Why Terrorist Groups Survive Decapitation Strikes." *International Security* 38 (4): 7–38.
- Josiger, W. J. 2010. "Getting it Right: Understanding Effective Counter-Terrorism Strategies." In *Coping with Terrorism: Origins, Escalation, Counterstrategies, and Responses*, edited by R. Reuveny and W. R. Thompson, 219–246. Albany, NY: SUNY Press.
- Kaplan, E. H., A. Mintz, S. Mishal, and C. Samban. 2005. "What Happened to Suicide Bombings in Israel? Insights from a Terror Stock Model." *Studies in Conflict & Terrorism* 28 (3): 225–235. doi:10.1080/10576100590928115.
- Keohane, D. 2005. "The EU and Counter-Terrorism." Working Paper. London: Centre for European Reform (CER).
- Kober, A. 2007. "Targeted Killing during the Second Intifada: The Quest for Effectiveness." *Journal of Conflict Studies* 27 (1): 76–93.
- Laffiteau, C. 2010. "What Counter-Terrorism Strategies Characterize a Constructive and Cost Effective Response to Al Qaeda Inspired Terrorism?" Paper prepared for the Annual Meeting of the International Studies Association, New Orleans, LA, February 17.
- LaFree, G., L. Dugan, and R. Korte. 2009. "The Impact of British Counterterrorist Strategies on Political Violence in Northern Ireland: Comparing Deterrence and Backlash Models." *Criminology* 47 (1): 17–45. doi:10.1111/j.1745-9125.2009.00138.x.
- Lamm, R. D. 2005. "Immigration Must Be Restricted to Reduce Terrorism." In *Are Efforts to Reduce Terrorism Successful?*, edited by L. S. Friedman, 78–83. Farmington Hills, MI: Greenhaven Press.
- Landes, W. M. 1978. "An Economic Study of U.S. Aircraft Hijackings, 1961–1976." *Journal of Law and Economics* 21 (1): 1–31. doi:10.1086/466909.
- Langdon, L., A. J. Sarapu, and M. Wells. 2004. "Targeting the Leadership of Terrorist and Insurgent Movements: Historical Lessons for Contemporary Policy Makers." *Journal of Public and International Affairs* 15 (Spring): 59–78.
- Long, A. 2010. "Assessing the Success of Leadership Targeting." *CTC Sentinel* 3 (11/12): 19–21.
- Lowry, R. 2005. "Racial Profiling Reduces Terrorism." In *Are Efforts to Reduce Terrorism Successful?*, edited by L. S. Friedman, 64–69. Farmington Hills, MI: Greenhaven Press.
- Lum, C., L. W. Kennedy, and A. Sherley. 2006. "Are Counter-Terrorism Strategies Effective? The Results of the Campbell Systematic Review on Counter-Terrorism Evaluation Research." *Journal of Experimental Criminology* 2 (4): 489–516. doi:10.1007/s11292-006-9020-y.
- Malinowski, T. 2008. "Restoring Moral Authority: Ending Torture, Secret Detention, and the Prison at Guantanamo Bay." *Annals of the American Academy of Political and Social Science* 618 (1): 148–159. doi:10.1177/0002716208317118.
- Malvesti, M. L. 2002. "Bombing bin Laden: Assessing the Effectiveness of Air Strikes as a Counter-Terrorism Strategy." *The Fletcher Forum of World Affairs* 26 (1): 17–29.
- Mannes, A. 2008. "Testing the Snake Head Strategy: Does Killing or Capturing its Leaders Reduce a Terrorist Group's Activity." *The Journal of International Policy Solutions* 9 (40): 40–49.
- Miller, G. D. 2007. "Confronting Terrorisms: Group Motivation and Successful State Policies." *Terrorism and Political Violence* 19 (3): 331–350. doi:10.1080/09546550701424059.
- Morag, N. 2005. "Measuring Success in Coping with Terrorism: The Israeli Case." *Studies in Conflict & Terrorism* 28 (4): 307–320. doi:10.1080/10576100590950156.
- Mueller, J., and M. G. Stewart. 2009. *Cost-Benefit Assessment of United States Homeland Security Spending*. Research Report no. 273.01.2009, Centre for Infrastructure Performance and Reliability. Accessed August 7, 2013. <http://nova.newcastle.edu.au/vital/access/services/Download/uon:3125/ATTACHMENT01?view=true>

- Mueller, J., and M. G. Stewart. 2012. "The Terrorism Delusion: America's Overwrought Response to September 11." *International Security* 37 (1): 81–110. doi:10.1162/ISEC_a_00089.
- National Commission on Terrorist Attacks upon the United States. (Philip Zelikow, Executive Director; Bonnie D. Jenkins, Counsel; Ernest R. May, Senior Advisor). 2004. *The 9/11 Commission Report*. New York: W.W. Norton & Company.
- Noricks, D. 2009. "Disengagement and Deradicalization: Processes and Programs." In *Social Science for Counterterrorism: Putting the Pieces Together*, edited by P. K. Davis and K. Cragin, 11–70. Santa Monica, CA: RAND.
- Pape, R. 2003. "The Strategic Logic of Suicide Terrorism." *American Political Science Review* 97 (3): 343–361. doi:10.1017/S000305540300073X.
- Pedahzur, A., and A. Perliger. 2010. "The Consequences of Counterterrorist Policies in Israel." In *The Consequences of Counterterrorism*, edited by M. Crenshaw, 335–366. New York: Russell Sage Foundation.
- Perl, R. 2007. *Combating Terrorism: The Challenge of Measuring Effectiveness*. CRS Report for Congress, March 2007. Washington, DC: Congressional Research Service.
- Pratto, F., A. B. Fox, E. Pitpitan, J. Tan, A. Huntington, E. Santos Jr., N. Ravishanker, and A. R. Pearson. 2009. "The Efficacy of Terrorism and Counter-Terrorism in the Second Intifada: An Intergroup Approach." Paper presented at the 32nd Annual Meeting of the International Society of Political Psychology. Dublin, July.
- Price, B. C. 2012. "Targeting Top Terrorists: How Leadership Decapitation Contributes to Counterterrorism." *International Security* 36 (4): 9–46.
- PricewaterhouseCoopers. 2011. "Estimated Costs of EU Counterterrorism Measures." Note requested by the European Parliament's Committee on Civil Liberties, Justice and Home Affairs. Completed in May 2011.
- Probst, P. 2005. "Measuring Success in Countering Terrorism: Problems and Pitfalls." *Lecture Notes in Computer Science* 3495: 316–321. doi:10.1007/11427995_26.
- Prunckun, H. W., Jr., and P. B. Mohr. 1997. "Military Deterrence of International Terrorism: An Evaluation of Operation El Dorado Canyon." *Studies in Conflict & Terrorism* 20 (3): 267–280. doi:10.1080/10576109708436039.
- Quaker Council for European Affairs (QCEA). 2007. *Effective Counter-Terrorism. A Critical Assessment of European Union Responses*. Technical Report, published February 2007. Accessed August 10, 2013. <http://www.qcea.org/wp-content/uploads/2011/04/rprt-counterterrorism-en-feb-2007.pdf>
- Sandler, T., D. G. Arce, and W. Enders. 2009. "Transnational Terrorism." In *Global Crises, Global Solutions*, 2nd ed., edited by B. Lomborg, 516–562. Cambridge: Cambridge University Press.
- Sandler, T., D. G. Arce, and W. Enders. 2011. "An Evaluation of INTERPOL's Cooperative-based Counterterrorism Linkages." *Journal of Law and Economics* 54 (1): 79–110. doi:10.1086/652422.
- Schmid, A., and R. Sing. 2009. "Measuring Success and Failure in Terrorism and Counter-Terrorism. US Government Metrics of the Global War on Terror." In *After the War on Terror: Regional and Multilateral Perspectives on Counter-Terrorism Strategy*, edited by A. Schmid and G. Hindle, 33–61. London: RUSI.
- Smith, M., and J. I. Walsh. 2013. "Do Drone Strikes Degrade Al Qaeda? Evidence From Propaganda Output." *Terrorism and Political Violence* 25 (2): 311–327. doi:10.1080/09546553.2012.664011.
- Spencer, A. 2006. "The Problems of Evaluating Counter-Terrorism." UNISCI Discussion Paper, no. 12.
- Stohl, M. 2006. "Winners and Losers in the War on Terror: The Problem of Metrics." In *Coping with Contemporary Terrorism: Origins, Escalation, Counter Strategies and Responses*, edited by R. Reuveny and W. R. Thompson, 349–367. Albany, NY: SUNY Press.
- Stutzer, A., and M. Zehnder. 2010. "Camera Surveillance as a Measure of Counterterrorism?" *Economics of Security Working Paper* 34. Berlin: Economics of Security.
- Sunstein, C. R. 2003. "Terrorism and Probability Neglect." *Journal of Risk and Uncertainty* 26 (2–3): 121–136. doi:10.1023/A:1024111006336.
- TTSRL. 2007. *Theoretical Treatise on Counter-Terrorism Approaches*. Report prepared for the project "Transnational Terrorism, Security, and the Rule of Law" (TTSRL), financed by the European Commission. Accessed March 4, 2013. <http://www.transnationalterrorism.eu/tekst/publications/WP6%20Del%2010.pdf>
- Tudge, C. 2004. "When Men Have Lost Their Reason." *New Statesman*, April 12, 2004.

- Van Dongen, T. 2009. "Break it Down: An Alternative Approach to Measuring Effectiveness in Counterterrorism." Economics of Security Working Paper 23. Berlin: Economics of Security.
- Van Um, E., and D. Psoiu. 2013. "Assessing Effectiveness in Counterterrorism Policy." In *Studying 'Effectiveness' in International Relations: A Guide for Students and Scholars*, edited by H. Hegemann, R. Heller, and M. Kahl, 255–279. Berlin: Barbara Budrich Publishers.
- Waugh, W. L. 1982. *International Terrorism: How Nations Respond to Terrorists – A Comparative Policy Analysis*. Salisbury, NC: Documentary Publications.
- Wilner, A. 2010. "Targeted Killings in Afghanistan: Measuring Coercion and Deterrence in Counterterrorism and Counterinsurgency." *Studies in Conflict and Terrorism* 33 (4): 307–329. doi:10.1080/10576100903582543.
- Young, O. R. 2001. "Inferences and Indices: Evaluating the Effectiveness of International Environmental Regimes." *Global Environmental Politics* 1 (1): 99–121. doi:10.1162/152638001570651.
- Zussman, A., and N. Zussman. 2006. "Assassinations: Evaluating the Effectiveness of an Israeli Counterterrorism Policy Using Stock Market Data." *Journal of Economic Perspectives* 20 (2): 193–206. doi:10.1257/jep.20.2.193.
- Zycher, B. 2003. *A Preliminary Benefit/Cost Framework for Counterterrorism Public Expenditures*. Santa Monica, CA: RAND.