

I. Articles

Measuring the Effectiveness of Israel's 'Targeted Killing' Campaign

by Ophir Falk

Abstract

With targeted killing long becoming a key and perhaps primary counterterrorism measure used by a number of States in their confrontation with lethal terror, this article looks at the pros and cons of this method of warfare while focusing on the underlying justification for its use—namely its objective driven effectiveness. Israel's use of targeted killing, intended to mitigate Palestinian suicide terrorism during the first decade of the 21st century, serves as the key case study in this article. A quantitative approach was adopted, using growth model analysis, and isolation of designated area, to demonstrate the effectiveness of targeted killing in reducing fatalities caused by suicide bombings. The period examined was from 2000 to 2010, with a key finding being that targeted killings of ideological leaders, primarily in Gaza, were more effective than operative level targeted killings in the context of confronting suicide bombing fatalities.

Keywords: Targeted Killing; Effectiveness; Quantitative analysis; Suicide bombings; Counter-terrorism

Introduction

Terrorist organizations and states choose methods of terrorism or counterterrorism based on the expected effectiveness of those methods. For that ostensible rationale, suicide bombings were adopted by over 30 different terrorist organizations, with attacks carried out in more than 30 countries on four different continents[1]. Based on the same logic of expected effectiveness, targeted killing, a “premeditated act of lethal force employed by a state to eliminate specific individuals outside their custody”[2] became a prime method applied by Israel during the first decade of the 21st century in its efforts to confront suicide bombings.

It is fully acknowledged that counter terrorism policy is often complex and that multiple measures are often used. At the same time, when assessing the effectiveness of counter terrorism, although difficult, it is imperative that the effectiveness of a specific countermeasure be examined and not only an entire policy. This has been done before in regards to the effectiveness of house demolition mitigating.[3]

In light of the fact that targeted killing has become a prime measure used by a number of states, it is important that its effectiveness, as it relates to the goal for which it is used, be addressed. This is possible and important. Its importance is more vehemently recognized today in such theaters as North West Pakistan, where the US primarily relies on targeted killing to curb the threats on its interests. Aside from targeted killing, other tactical counterterrorism measures, such as arrests, check points and house demolition were also used by Israel to confront suicide terrorism. However, it is argued that targeted killing was the prime, perhaps strategic measure used by Israel against the suicide bombing phenomenon, certainly in Gaza during the time in question.[4]

Targeted killing is not a new phenomenon. However, in recent years it has become a key part of many operational security doctrines. What was once a highly controversial and seldom-used tactic has become a widely accepted and applied policy. In the course of four years (2001 to 2005) Israel carried out over 160 targeted killings [5]. During the course of the subsequent six years (2006-2012) targeted killing became

the most widely used counter-terrorism or counter-insurgency tool in America's military campaigns in Afghanistan and Pakistan [6]. Further, Russian forces targeted Chechen "rebel warlords"[7], Sri Lankan forces targeted Liberation Tigers of Tamil Eelam (LTTE) leaders and the LTTE targeted Sri Lankan leaders [8], and the US has targeted al-Qaeda's alleged terrorists.[9]

From an Israeli perspective, targeted killing, as Moshe Yaalon, Israel's Minister of Defense has explained, disrupts the daily routine of terrorists: "The potential target tries to avoid being seen in public, doesn't use means of communication since he understands we're listening. He is forced to rely on messengers and face to face meetings".[10] In other words, the threat of targeted killing forces the terrorist to become preoccupied with survival instead of attacks. Wisely selected targeting lowers the terrorists' morale, reduces their cumulative operational capabilities and, of course, increases morale on the attacker's side.

On the other hand, targeted killing may create new "martyrs", evoke feelings of revenge in the Palestinian street, and involve risk to innocent civilians' lives.[11] Above all, targeted killing has one central weakness: the inability to produce additional information from the operation. One of the most important principles in terror prevention is "the translation of information into more information". The arrest of an operative and his interrogation lead to more arrests, which in turn lead to more exposures and arrests. Targeted killing prevents a specific attack or chain of attacks, but it can also leave a void in intelligence. [12]

Targeted killing is viewed by many as an unethical and, at times, illegal tactic.[13] Others view it as the least of all evils under certain circumstances intended to serve the common good.[14] Despite the aforementioned disadvantages of targeted killing, Israel applied an extensive targeted killing policy during the first decade of the 21st century. Shortly after the outbreak of the Second Intifada in October of 2000 – characterized by an escalation in Palestinian suicide terror bombings – the Israeli Defense Forces (IDF) carried out their first targeted killing in the territories. On November 9, 2000, Hussein Abayat was targeted in Palestinian Authority-controlled Bethlehem.[15] In 2002, shortly after an unprecedented wave of Palestinian suicide bombings, targeted killing became a declared Israeli policy in confronting this lethal form of terrorism. This declared policy and associated doctrine is part of the Israeli Security Authority (ISA), IDF and Israeli police's counter-terrorism doctrine.

Views vary as to the rationalization of targeted killing, yet ultimately, the "*effectiveness in the short and long term remains the lynchpin of any justification for named killing*".[16] The alleged effectiveness of targeted killing is the rationale for its use.

This article quantitatively examines the effectiveness of targeted killings carried out by Israel during the first decade of the 21st century, in its confrontation with Palestinian suicide bombings.

Why Suicide Terrorism and Targeted Killing

The focus of this article is on suicide bombing and targeted killing, primarily because suicide terrorism became the main and most significant form of terrorism applied by Palestinian terrorist organizations against Israel during the time in question. This, in turn, resulted in targeted killing becoming the main and most significant form of counter terrorism measure applied to confront the said suicide bombings in the period under consideration here [17]. It may be argued that if there were no suicide bombings there would probably be no Israeli targeted killings in the territories. On the other hand, if there were no targeted killings, Israel may very well still have to face Palestinian suicide bombings. And yet, the effectiveness of targeted killing in this region, during this disputed period, has not been quantitatively assessed.

Research Question.

This paper addresses the question: *Was the Israeli use of targeted killing effective in its effort to mitigate suicide bombings during the first decade of the 21st century?*

Prior to addressing this question, a working definition of ‘effectiveness’ is provided, as it applies to this study, followed by a review of the available literature on the effectiveness of counter-terrorism in general, and targeted killing in particular. Subsequently, relevant data on targeted killings in territories and suicide bombings in Israel during 2000-2010 are presented and discussed.

Effectiveness

Different researchers define ‘effectiveness’ in various manners, using different criteria to measure success or failure. For example, Amos N. Giora suggests a conceptual definition that “*Effective counterterrorism causes the terrorist infrastructure to suffer serious damage—including damage to finances, intelligence, resources, or personnel—thereby preventing a particular, planned attack from going forth and/or postponing or impacting plans for future attacks while minimizing collateral damage, exercising fiscal responsibility, and preserving civil liberties.*”[18]

Giora’s far reaching definition takes into consideration several factors, some of which are difficult to quantify and assess. A narrow, more limited yet more measurable and operational working definition, defines ‘effectiveness’ as “adequate to accomplish a purpose; producing the intended or expected result.”[19] That is, *effectiveness* is the capability of producing a desired result. Simply framed, when something is deemed effective, it means it has achieved an intended outcome.[20] In the context of this study, which evaluates the effectiveness of one factor, namely targeted killing, in confronting one type of terrorist tactics, namely suicide bombings, it is more appropriate to adopt a narrow definition of effectiveness.

In the context of this study, it is important to determine Israel’s strategy vis-à-vis its targeted killing program. That is, what was the State’s desired effect of its counter-terrorism measure (targeted killings). Israel used targeted killing in the designated territories/Gaza [21] during the years 2000 to 2010, to prevent suicide terrorism.[22] For the purpose of this study, ‘effectiveness’ relates to Israel *achieving a goal set by its decision makers in terms of mitigating the threat of suicide bombings.*

Literature Review

Most studies examining counterterrorism effectiveness are qualitative in nature; very few are quantitative. This study utilizes both qualitative and quantitative analysis. Few studies look at the specific effectiveness of a particular counter-measure[23], and fewer yet examine the indirect effectiveness of targeted killing in combating a specific terror tactic such as suicide bombing.[24] Some studies attest that no direct causal relationship can be proven between targeted killing and the decline in terror,[25] while others support such a relationship and point to a cause and effect pattern in the conflict.[26] The explicit effectiveness of targeted killings in reducing suicide bombings has received little attention.[27]

This section briefly discusses the main findings of key studies on a) counterterrorism effectiveness in general; b) the effectiveness of targeted killing on mitigating terror in general; and c) the effectiveness of targeted killing on mitigating suicide terrorism in particular.

Counter-terrorism effectiveness

The assessment of counter-terrorism effectiveness has proven to be a challenge.[28] For example, while some authors have used incidences and fatalities as outcome measures, [29] Spencer suggests that for countermeasures to be effective, they must reduce the *fear* of terrorism among the general population,[30] highlighting the importance of perception.

In an effort to learn lessons for confronting al Qaeda, Seth Jones and Martin Libicki analyzed a list of 268 defined terrorist groups that existed between 1968 and 2006 and tried to identify which counter-terrorism policies (if any) brought an end to the violent activity of terrorist organizations.[31] According to the authors, terrorist organizations ended their activities due to two main reasons: they were either penetrated or eliminated by local police and intelligence agencies (40%), or they reached a resolution with their government (43%). In 10% of cases, terrorist groups disbanded because they achieved victory and reached objectives. Military force led to the end of terrorist groups in only 7% of cases.[32] This study examined the effectiveness of counter-terrorism in general and did not address targeted killing in particular.

Richard J. Chasdi's *Counterterror Offensives for the Ghost War World*[33] is a comprehensive quantitative analysis of counterterrorism effectiveness. Chasdi analyses the counterterror systems of seven different states (the UK, US, France, Israel, Turkey, the Russian Federation and Peru). In an effort to depict what works and what does not, Chasdi provides an empirical analysis that uses historical and theoretical data to explore five broad categories, or "action types"[34] as he depicts them: disruption, cooptation, destruction, preemption, and repression. Chasdi concludes with mixed results: more often than not, and depending on context and idiosyncrasies of regime types, "hard line" policies of disruption, preemption and repression were found to be more effective than "soft line" policies such as cooptation.[35]

Ami Pedahzur analyzed the effectiveness of intelligence-based defensive and offensive means used by Israel to confront terrorism and argued that over-reliance on offensive measures, including targeted killings, was flawed and that defensive measures should be preferred, inter alia, so that future reconciliation could be more plausible.[36] On the other hand, in 2007, Hillel Frisch evaluated the effectiveness of the security fence in Judea and Samaria and compared it to the effectiveness of defensive and offensive counter-terrorism strategies.[37] Frisch concluded that offensive measures are the most effective way of reducing casualties in Israel's conflict with the Palestinians and that the fence can only serve as a supplement that will eventually become ineffective.[38]

Haushofer et al. examined the causal factors that perpetuated the Israeli-Palestinian conflict. By applying econometric techniques to empirical data they concluded that between January 2001 and April 2008, Palestinian violence (but not necessarily Israeli fatalities) significantly increased following Israeli attacks.[39] The authors did not distinguish between various forms of Israeli attacks, nor did they distinguish between the various forms of Palestinian violence. The number of attacks were the key variable examined. On the other hand, using number of casualties or fatalities as the key outcome variables, Golan and Rosenblatt reached different conclusions; namely, that fatalities decreased over time.[40]

While the above studies examined the effectiveness of counter-terrorism in reducing terrorist activities in general, they did not specifically focus on the confrontation with a specific form of terrorism tactic, namely, suicide bombings. With approximately 50 percent of Israeli casualties between 2000 and 2010 being caused by suicide bombings,[41] this form of terrorism and the specific tactics used to confront it, merit specific examination.

Suicide terrorism results in minimal fatalities on the terrorists' side while maximizing injuries and fatalities on the targeted side.[42] It has therefore become the terrorists' method of choice.[43] Addressing this tactic, Hillel Frisch[44] and Boyden and colleagues[45] concluded that over time, Israel's general counter-terrorism measures considerably reduced Palestinian suicide bombings. However, they did not examine the effectiveness of targeted killing in particular.

Targeted Killing Effectiveness vis-à-vis Terrorism in general

Studying 19 different movements and 35 case studies drawn from more than 40 countries from as far back as 1780, Langdon et al. examined what happened to militant movements after the death or arrest of their leader.[46] They concluded that in most cases where the leader is killed by an external force, the group de-radicalizes. In some cases it even disbands. In none of the examined cases did a group become more radicalized after its leader was killed.[47] Perhaps most noteworthy, the authors conclude that movements of which the leader is killed appear to be more likely to fail than movements of which the leader is arrested. Moreover, movements in which the leader dies of natural causes appear to be the most resilient to a crisis in leadership.[48] It was noted that while the loss of a leader does not necessarily cause the group or movement to fail, it often leads the group to become less radical.[49] From that respect, this study supports the effectiveness of the targeted killing of militant movement leaders. One limitation of this study is that only one organization of the groups reviewed was of Muslim origin.[50]

In 2006, Byman argued that Israel's targeted killing policy was effective in that, although the number of Hamas attacks grew steadily as the Intifada progressed, the number of Israeli deaths they caused plunged, suggesting that the terror attacks became far less effective.[51] That is, the number of attacks increased but their lethality decreased.

In mid-2008 Avi Kober argued that the targeted killing – or as it is often referred to, the decapitation – of Hamas's political and spiritual leaders between September 2000 and April 2004 seemed to account for the organization's decision to suspend lethal hostilities against Israel. This decision, in his view, essentially meant the end of the second Intifada. Therefore, Kober argued, targeted killing was effective.[52] More specifically, Kober stressed that targeting military leaders and operatives proved to be ineffective, whereas decapitation of Hamas's political and spiritual leaders was effective.[53]

Jenna Jordan examined 298 targeted killings of leaders in different places in the world from 1945 to 2004 and concluded that the "decapitation" of terrorist leaders is effective under certain circumstances but can often be counterproductive under different circumstances.[54] Jordan suggests that an organization's age, type, and size are critical in determining whether or not decapitation will result in the cessation of terrorist activity. As an organization matures and increases in size, it is much more likely to withstand attacks on its leadership. Jordan's underlying conclusion was that decapitation is not only ineffective against religious, well-established, or large groups, it is often actually counterproductive. Moreover, going after the leader may strengthen such a group's resolve, result in retaliatory attacks, increase public sympathy for the organization, or produce more lethal attacks.

In contrast to Jordan's suggestions, Bryan C. Price argues that the sustainability of terrorist groups is very sensitive to the decapitation of their leaders.[55] Price concluded that: a) decapitated terrorist groups have a significantly higher mortality rate than non-decapitated groups; b) the earlier leadership decapitation occurs in a terrorist group or large group, the more effective it is; c) killing, capturing, or capturing and then killing the leader, significantly increases the "mortality rate" of terrorist groups; and that d) any type of leadership turnover, not just decapitation, increases the mortality rate of terrorist groups.

In *How Terrorism Ends*, Audrey Kurth Cronin examined possible factors, including “decapitation” that caused terrorist organizations to stop functioning as such over the last two centuries. Cronin notes that the effectiveness of decapitation depends on the structure, size, age and motivation of the organization: those organizations that ended through decapitation tended to be hierarchically structured, young, characterized by a cult of personality and were lacking a viable successor.[56] In a more recent paper that discussed the effectiveness of the U.S. use of drones, Cronin concluded that “although drones can protect the American people from attacks in the short term, they are not helping to defeat al Qaeda, and they may be creating sworn enemies out of a sea of local insurgents. It would be a mistake to embrace killer drones as the centerpiece of U.S. counterterrorism.”[57]

Patrick B. Johnston took an in-depth look into the effectiveness of the targeted killing or capturing of enemy leaders in the context of counterinsurgency campaigns.[58] His findings were based on 118 publicly reported decapitation attempts of insurgent organizations’ leadership by government forces in a variety of countries from 1974 to 2003. Johnston’s findings suggest that leadership decapitation can be very effective as campaigns are more likely to end quickly when counterinsurgents successfully target enemy leaders. It was further concluded that conflict intensity is more likely to decrease following leadership removals.

While many of the above studies examine the effectiveness of targeted killing in reducing terrorist activities or in disbanding a terrorist organization, not all studies are in agreement on conclusions or key elements. Notably, these studies examined the effect of targeted killing on a terrorist organization’s capabilities, motivation, or violence in general, but did not specifically examine its effect on suicide terrorism. Furthermore, most if not all of these studies are qualitative in nature and are not always supported by empirical data.

It is most noteworthy that none of the studies overviewed above specifically examined the effectiveness of targeted killing vis-à-vis suicide terrorism.

Targeted Killing Effectiveness vis-à-vis Suicide Terrorism

Edward Kaplan et al. examined the effects of targeted killings over a three year period (2002-2005) in Israel and suggested a terror-stock model that treats the suicide bombing attack rate as a function of the number of terrorists available to plan and execute suicide bombings.[59] Interestingly, their main conclusion was that preventive arrests, rather than, or to a greater degree than targeted killings, result in a reduction in the suicide bombing attack rate.

David Jaeger and Daniele Paserman carried out causal studies on the Palestinian-Israeli conflict, concentrating on events that took place between September 2000 and January 2005.[60] Looking at the number of deaths (rather than attacks) occurring each day, one key conclusion reached was that there was unidirectional Granger causality[61] from Palestinian violence to Israeli violence, but not vice versa, and that a “tit-for-tat” violence cycle is technically not evident. Another conclusion reached in this study was that successful Israeli targeted killings do reduce the number of subsequent Israeli fatalities.[62] Jaeger and Paserman looked at terror-related fatalities in general, in a study emphasizing the fatalities caused by suicide bombings. In a subsequent paper (2007), Jaeger and Paserman concluded that targeting low-level operatives (as opposed to high ranking operatives) results in an increase in intended Palestinian violence.[63]

Daniel Jacobson and Edward Kaplan suggested a sequential game model of Palestinian suicide bombings and Israeli targeted killings and reached the conclusion that targeted killings may decrease motivation of suicide

bombings, and that over time, the minimization of civilian casualties increases targeted killing effectiveness. [64]

As evident from the above, a number of studies have examined the effectiveness of counter-terrorism measures in general but few have focused on the effectiveness of targeted killing. Those that have examined the effectiveness of targeted killing did not specifically evaluate its effectiveness as it directly relates to suicide bombings. Considering the latter was the method of choice for Palestinian terrorist organization for many years, the objective of this study is to examine specifically whether targeted killings were effective in confronting suicide bombings, in terms of mitigating the number of fatalities resulting from suicide attacks. This is done by looking at the Israeli experience of using targeted killing during the first decade of the 21st century, in designated areas (i.e., Gaza) where that was the primary or only offensive counter-terrorism measure applied. The effectiveness of Israeli targeted killings was evaluated by analyzing the number of suicide bombings and the number of fatalities subsequent to the targeted killings. Additionally, the effects of targeted killings particularly in Gaza, as well as the effects of the targeted killings of key ideological leaders compared to operatives were examined.

Methodology

The number and results of targeted killings carried out by Israel in the territories in the first decade of the 21st century was gathered by reviewing leading media sources (by means of LexisNexis and other search engines such as Google for Scholars), governmental sources, non-governmental organization sources and data attained through personal communication with other researchers (Asaf Zussman and Noam Zussman[65] and Ariel Merari[66]). Most of the data on targeted killing was collected from publications made by the following organizations: the Israel Security Agency, the Palestinian Human Rights Monitoring Group; the International Policy Institute for Counterterrorism; B'tselem, the Israeli Information Center for Human Rights in the Occupied Territories; the Public Committee against Torture in Israel; and the Palestinian Society for the Protection of Human Rights and the Environment. Recorded data includes the date and location of the targeted killing event, political association of the target and his seniority within his organization, as well as other personal characteristics, such as level of education, marital status and place of residence.

Information on suicide bombings carried out by Palestinians against Israel was mainly gathered from Israeli Security Agency Reports, Israel's office of Foreign Affairs, and detailed databases, including those concerning suicide attacks worldwide compiled by Ami Pedahzur [67]. These databases were consolidated with the database generously provided by Prof. Ariel Merari. The latter database includes data on suicide bombings carried out by Palestinians against Israeli targets between the years 1993 and 2009.[68] Some of the data have been previously analyzed and published in *Suicide Terror: Understanding and Confronting the Threat*[69]. Recorded data include the date and location of the suicide bombing, its origin and the number of resultant fatalities.

In addition to written sources, scores of interviews were carried out with high ranking Israeli operational officers and decision makers in order to understand the objectives and operational effectiveness of Israel's targeted killing policy.[70] Data obtained from the above mentioned sources were researched again and their accuracy was verified by reports appearing in the news media and professional literature. Those sources are referred to in this paper, specifically in the discussion section.

Statistical Analysis [71]

Using the gathered data, an empirical model was built for this study that tested the hypothesis stating that Israel's use of targeted killing was effective in its effort to mitigate suicide bombings fatalities during the first decade of the 21st century. The model also facilitates the examination of the effect of targeted killings in Gaza, as well as the effect of targeting one type of targets (i.e. ideological leader) in comparison to a different type of target (i.e. militant leader).⁷²

The hypothesis-testing model was designed as a panel of suicide bombing fatalities posterior (subsequent) to targeted killings. In other words, the model examines suicide bombing fatalities that occur subsequent to designated targeted killings. For this purpose, the unit of analysis is a month along the time period from late September 2000 to early March 2009. While previous studies examined the relationship between suicide bombings and targeted killings as a cyclic phenomenon, this study measures a latent individual trend (slope) across suicide bombing fatalities subsequent to targeted killings. A latent slope means that there is a trend that represents suicide bombing fatalities subsequent to targeted killings. The latent slope may be positive or negative, depending on the individual case. This can conceptually be described by the following equations:

$$(1) SB_{it} = SLOPE_{it} * T + b1 * TKi0 + \varepsilon_{it};$$

$$\text{and (1a) } SLOPE_{it} = c0 + b2 * GAZA + b3 * POLITICAL + \xi_{it}.$$

Where $i=1,2,\dots,101$ months as unique observations; $t=0,+50,+100$; $c0,b1,b2,b3$ are estimated coefficients; SB is number of suicide bombing fatalities; TK represents number of targeted killings carried out during a specific month i ; $GAZA$ is an observed variable that takes the value of "1" if any TK was carried out in Gaza in the particular month and "0" otherwise; $POLITICAL$ is an observed variable that takes the value of "1" if a political/religious leader was targeted during that month and "0" otherwise; $SLOPE$ is an unobserved (latent) individual slope with respect to time post- TK ; T stands for linear time points (0,1,2), and ε and ξ are residuals for the observed and unobserved parts of the model, respectively.

Conceptually, the model provides a latent individual slope which is based on the evaluation of three different suicide bombing time periods. This model is also referred to as a longitudinal model.^[73] Thus, a slope reflects the effect of targeted killings over time. If the slope is positive, it indicates that suicide bombing fatalities increase subsequent to targeted killings, and vice versa if the slope is negative.

For the purpose of this analysis, the targeted killing events were clustered into months. That is, the number of targeted killings within a specific month is recorded as one observation. The suicide bombing fatalities following each targeted killing month during the first 50 days (SBs at $TK0$), from 50 days to 100 days (SBs at $TK+50$), and from 100 days to 150 days (SBs at $TK+100$) are examined. For example, the effectiveness of targeted killings that were carried out during September 2002 is examined in relation to suicide bombing fatalities in September and half of the month of October (SB at $TK0$); suicide bombing fatalities in late October and November (SB at $TK+50$); and lastly, suicide bombing fatalities from December to mid-January (SB at $TK+100$). In total, there were 101 non-zero months (months in which targeted killings were carried out) out of the total 111 months from 2000 to 2009. A graphical example of selected trends can be seen in Figure 1 (see explanation below).

As a specific example, the targeted killing of Sheikh Ahmed Yassin took place on the 22nd of March, 2004. In that month three additional targeted killings were carried out. In terms of suicide bombings, there were 14 fatalities caused by six suicide bombing events from March 22nd to the end of April (50 days, $TK0$). From May 2004 until mid-June 2004 (50 to 100 days after Yassin TK , $TK+50$), another two suicide bombings were carried out, which caused no fatalities. Later, from mid-June to the end of July ($TK+100$), no suicide

bombings were carried out. Our objective in this modeling strategy is to describe and explain this change in suicide bombing events and fatalities over time across the targeted killings and suicide bombing events.

Different time intervals can clearly be applied in this model. A 50 day time interval was used in this study, primarily due to the assessment, based on interviews with experts in the field, that during the relevant years that this study evaluates, it took Hamas and other relevant organizations approximately a month and a half to recruit, train and dispatch suicide bombers. Thus, a specific suicide attack that is carried out a month and a half or more after a specific targeted killing was carried out, cannot be attributed to that targeted killing. [74]

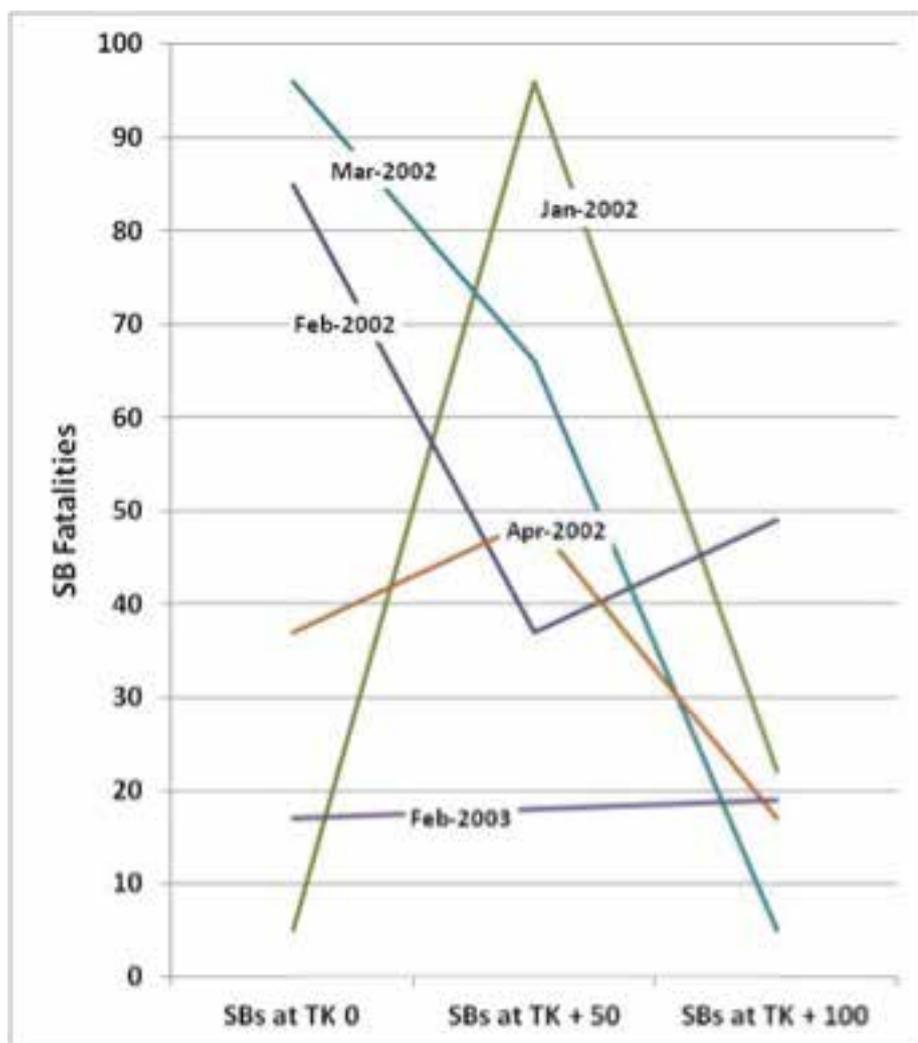


Figure 1: Individual SB fatality trends over time as a response to TKs, selected trends

Figure 1 illustrates the number of suicide bombing fatalities following selected targeted killing months between 2000 and 2009 and how this number changes across the three periods (TK0, TK+50, TK+100). These targeted killings were selected only to demonstrate the different types of subsequent suicide bombing patterns observed in the present study. In some cases, the number of fatalities decreases and then rises, and in others, different trends are observed. For example, following the targeted killing which occurred in January 2002, there were 5 suicide bombing fatalities in the subsequent 50 days (TK0), rising to 95 fatalities in the 50-100 subsequent days (TK+50), and then decreasing to 21 fatalities in the 100-150 subsequent days (TK+100). On the other hand, during April 2002, 5 targeted killings were carried out, and Israeli fatalities subsequent to these TKs (T0) were 37, increasing to 49 (T+50), but then decreasing to 17 (T+100). In February 2002, 2 targeted killings were carried out, whereby T0 was 85, decreasing to 37 at TK 50 and rising to 49 at TK 100. In March 2002, T0 was 95 decreasing to 66 at T50 and to 5 at TK 100.

Figure 2 (see results section) shows the number of targeted killings, along with the number of suicide bombing fatalities (at TK0) across time from 2000 to 2010. From the end of 2006, both the suicide bombing fatalities and the number of targeted killings decrease, but earlier, especially in 2002, numbers of events and fatalities are relatively high altogether, but not always during the same month. This lack of *obvious* patterns or associations between targeted killing and suicide bombings over time, prompted our individual growth model for analysis.

The advantage of this methodology is that it allows the examination of different trend lines for each set of observations, as described above, while also determining an overall trend. In addition, the effects of specific TKs can be further described/quantified by adding dummy variables which provide further information about each TK event. We added two dummy variables mentioned earlier: the first distinguishes between TKs that were carried out in the Gaza strip and TKs that were carried out elsewhere—94 TKs out of total number of 213 TKs (44%) were carried out in Gaza strip. There were 54 months (53.4%) in which TKs were carried out in the Gaza strip, across the 101 months in the final dataset. The second dummy variable distinguished between a target that was an ideologist or political leader, versus other militants. About 8% of the months with TKs included either political or ideological targets—those targets will be detailed below. Finally, we added to the model a variable identifying the number of TKs in each month. A unique aspect of this longitudinal modeling framework is the identification (or inclusion) of relationships between the time-dependent variables, in this case, the correlations between measurement errors of the three time points.[75]

Results

With the primary goal of curbing suicide terror,[76] Israel carried out 213 targeted attacks in the territories between 2000 and 2010, killing 239 people.[77] These targeted killings were meant to mitigate the number of suicide bombing fatalities.

Figure 2 demonstrates all the suicide bombings and targeted killings that took place in Israel and the territories since the Palestinian suicide bombing phenomenon commenced in June 1993 until 2010.

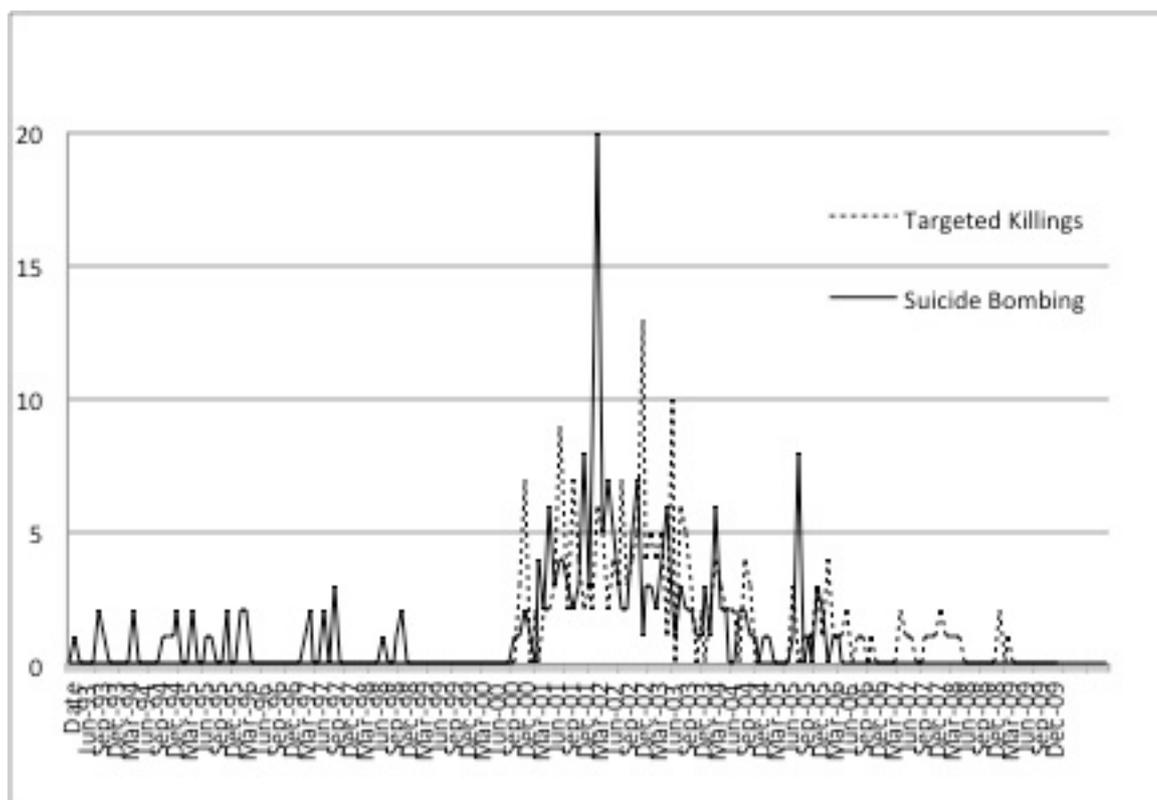


Figure 2: Suicide Bombings and Targeted Killing Comparison

Figure 3 illustrates the targeted killings carried out in Gaza and suicide bombings originating from Gaza, September 1993 to 2010.

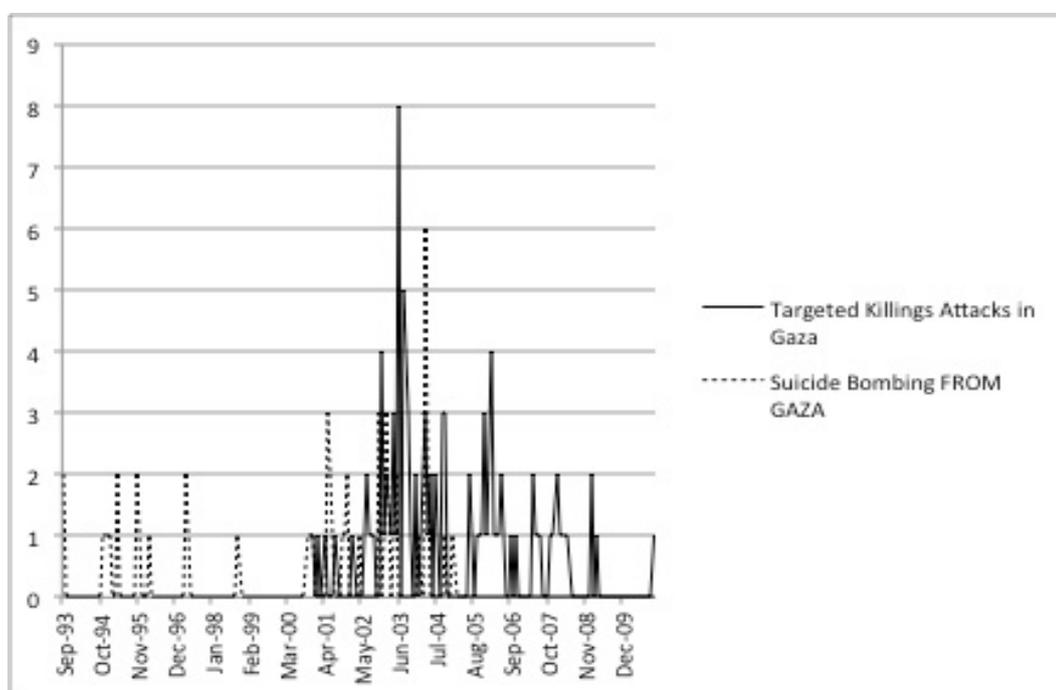


Figure 3: Israeli Targeted Killing in Gaza vs. Suicide Bombings originating from Gaza

Figure 4 illustrates TKs and SBs aggregated over the specific time frame used in the present study (i.e. TK + 50 days) from 2000 to 2010.

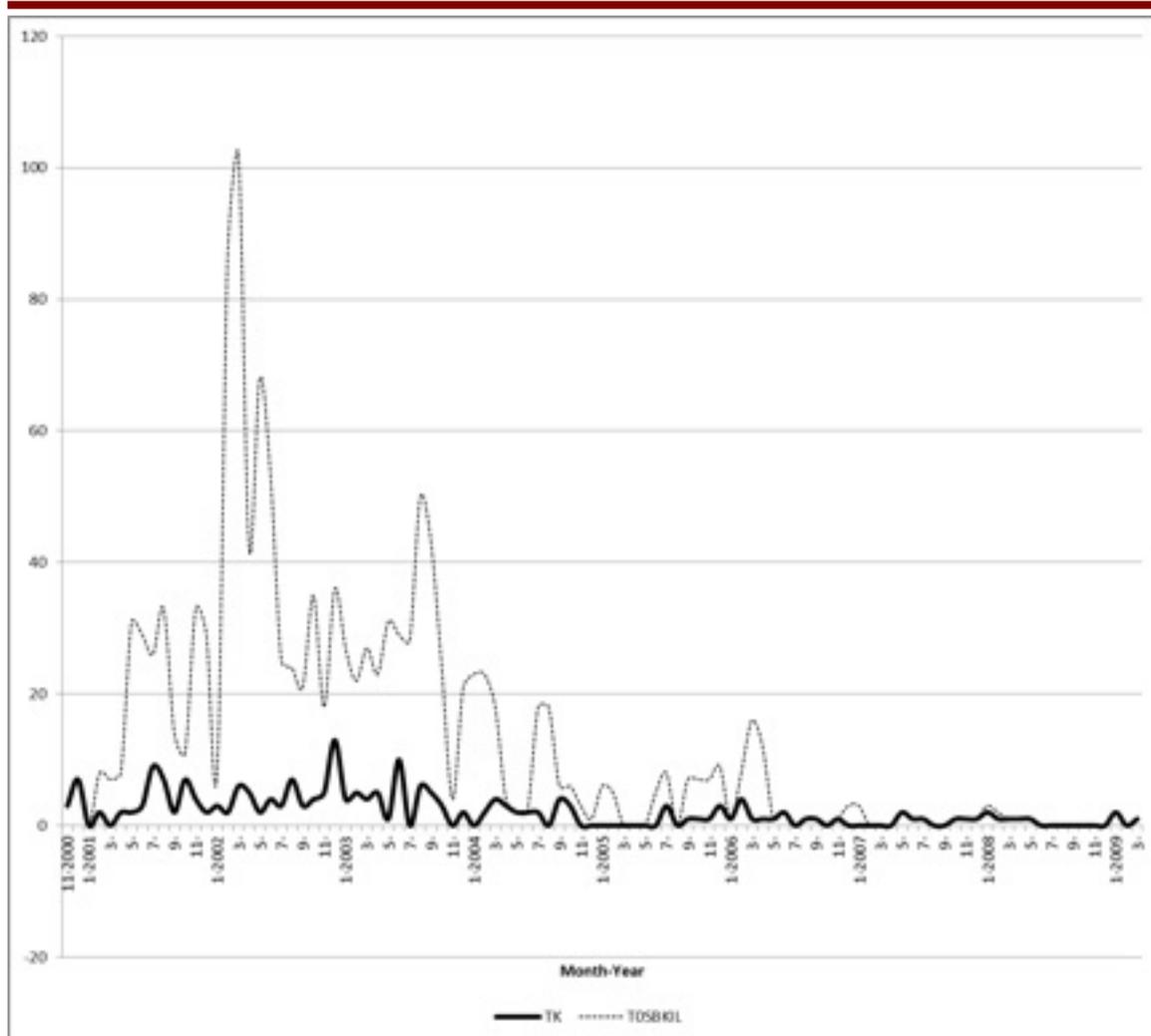


Figure 4: The distribution of suicide bombing fatalities and targeted killing events over time

Figure 4 displays the suicide bombings fatalities and targeted killings that were carried out in Israel and the territories between the years 2000 and 2010. The year 2002 was the year of most suicide bombings, followed by a peak in targeted killings. Both suicide bombings and targeted killings can be seen as campaigns or policy rather than sporadic single attacks. From this figure, it is difficult to determine that one specific or even a series of targeted killings effectively mitigated suicide bombings. However, it is clear that Israel's targeted killing campaign or policy began subsequent to and superannuated Palestinian suicide bombings. It should also be noted that more people were killed in suicide bombings than by targeted killings.

Key Targeted Killings

In the course of Israel's targeted killing campaign, there were a number of targeted killings that were considered to be key attacks because targeted individuals were considered either spiritual leaders or high-level operational leaders.[78] Below is a list and short description of key targeted killings that were carried out by Israel between 2000 and 2010[79].

2000:

- The first targeted killing of 2000 was carried out on November 9th. The target was Hussein Abayat, the head of the Fatah's military wing in Bethlehem, who was responsible for a shooting in Jerusalem's southern neighborhood and the murder of several Israelis. Based on intelligence reports, he was plotting an imminent suicide bombing as well.[80]

2001:

- Abu Ali Mustafa, head of the Palestinian Popular Front, in August 27, 2001. [81]

2002:

- Raed Karmi, head of Fatah's Tulkarm terror network, in January 14, 2002.[82]
- Salah Mustafa Shehadeh, head of Hamas' military wing, in July 22, 2002. In addition to Shehadeh, 14 civilians were also killed in this incident.[83]

2003:

- Dr. Abraham Makadme, one of Hamas' founders and third-in-command in the organization, in March 8, 2003.

2004:

- Founder and spiritual leader of Hamas, Sheikh Ahmad Yassin, in March, 2004
- Less than a month later, Yassin's successor, Dr. Abed el-Azziz Rantisi, in April, 2004.

Note: The number of suicide bombings began to decline after mid-2004.

2006:

- Jama Abu Samhadana, the commander of the Popular Resistance Committees, in June 2006

2009:

- Said Siam, former Hamas Interior Minister, in June 2009
- On that same day, Salach Abu Shraich, former head of Hamas' interior security, in June 2009.

2010:

- There were two targeted killings in November of that year (Muhammad a-Namnan on November 3rd and Islam al-Hamid Yasin on November 17).

The results of the empirical modeling are presented in two parts. The first part describes the results in general, while the second looks at individual predictions of trends over time. Table 1 displays the results of our growth model analysis. It demonstrates that the number of TKs across all events affects the SB fatalities, but this effect slightly decreases over time. The effect of TKs on number of SB fatalities during the same time period (50 days) is higher than it is after 50 days and after 100 days, ($\beta=0.52$, $p<.001$; $\beta=0.48$, $p<.001$; $\beta=0.33$, $p<.05$, respectively). This suggests that both TK events and SB fatalities are associated, but the strength of this relationship decreases with an increase in duration from TK. Table 1 also shows that there is a positive relationship between the SB fatalities and the latent slope, suggesting, the effectiveness of targeted killing in decreasing fatalities caused by suicide bombings. Lastly, we see that whenever TKs were carried out in the Gaza strip, it tended to reduce the slope. In other words, for Gaza TKs this trend tends to change from positive value, which means an increasing number of fatalities in response to TKs, to a negative slope, a decreasing number of SB fatalities in response to TKs.

Independent Variables:	Dependent Variables:	SBs at T=0	SBs at T+50	SBs at T+100	Latent Slope
Latent Slope		0.44 *** (.06)	0.42 *** (.06)	0.62 *** (.07)	
Gaza TKs					-0.23 ~ (.14)
Political TKs					-0.05 (.14)
TK Number		0.52 *** (.07)	0.48 *** (.08)	0.33 * (.10)	
Model Fit Information:	CFI = .85; TLI = .78; RMSEA = .007; SRMR = .06; N=101				

p<.05 *, p<.01 **, p<.001 ***, p<.1 ~; standard error of the coefficient in parentheses.

Table 1: Model Coefficients (Standardized)

The individual estimates of the slopes show interesting patterns. Table 2 shows a comparison between the most positive and most negative slopes. The value of the slope reflects a change in the number of SB fatalities in each time unit (50 days). That is, a slope of -9 means a drop of 9 fatalities during the next 50 days. The highest positive slopes (increases in SB fatalities following TKs) occurred in 2001-2002. On the other hand, the greatest decreases in the number of SB fatalities were more spread out (from 2000 to 2007).

	Observed								
Month, Year	Number TKs	Prior Fatalities	SB fatalities at TK0	SB fatalities at TK+50	SB fatalities at TK+100	G a z a Yes/No	Political Yes/No	Predicted Slope	
								Negative	
M a r - 2004	4	21	14	0	0	1	1	-10	
J u l - 2001	9	26	17	12	3	0	0	-5	
N o v - 2000	3	-	0	0	6	1	1	-3	
J u n - 2003	10	30	19	44	21	1	0	-3	
D e c - 2007	1	0	0	1	0	1	0	-3	
								Positive	
F e b - 2002	2	5	85	37	49	1	0	27	
N o v - 2001	4	4	29	5	81	0	0	26	
D e c - 2001	2	29	27	85	15	0	0	19	
J a n - 2002	3	27	5	96	22	0	1	16	
M a r - 2002	6	85	96	66	5	0	0	16	

Table 2: A comparison between highest positive and negative trends (slopes) over time with respect to observed SB fatalities and TKs

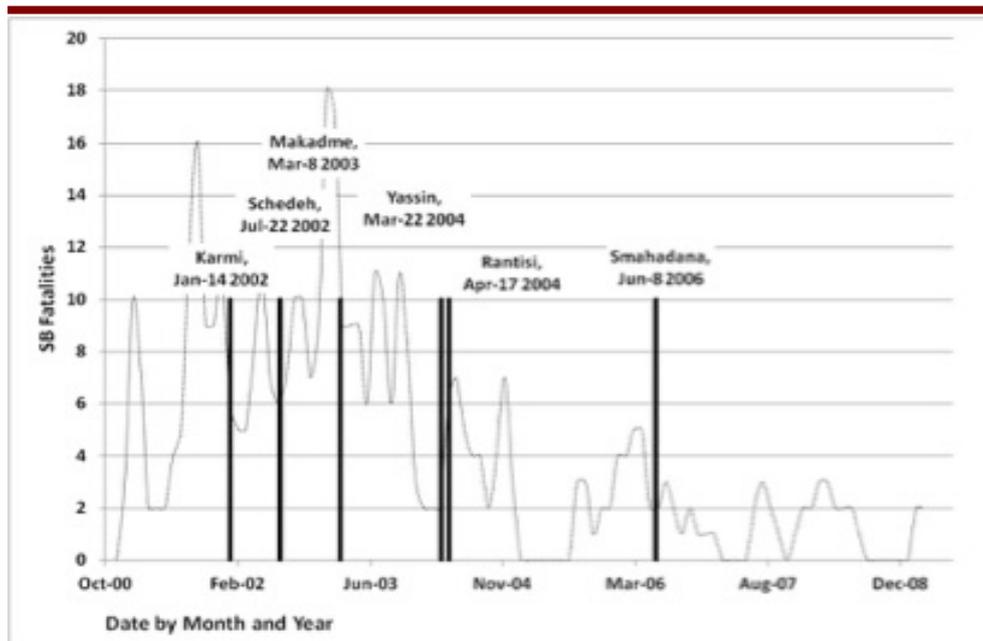


Figure 5: Key TK and subsequent SB fatalities over time

Figure 5 illustrates the number of fatalities resulting from suicide bombings from 2000 until 2010. Key targeted killings are highlighted (black vertical lines). The figure demonstrates that following most of the key targeted killings, there was an evident decreasing trend in suicide bombings fatalities.

The number of fatalities following each key targeted killing were analyzed in 50 day intervals, with key results appearing in Table 3 below. For example, a key targeted killing event was that of Schedeh, on July 22, 2002. There were 8 SB fatalities in the 50 days prior to this event. Following the TK, there were 5 SB fatalities in the first 50 days (TK0), 7 fatalities in the subsequent 50-100 days (TK+50), and 7 fatalities in the period 100-150 days post the TK (TK+100). This would suggest that the Schedeh TK had a positive effect on mitigating SB fatalities, whereby positive effect means a decrease in SB fatalities. This is reflected by a positive slope. As demonstrated in the Table below a positive slope, reflecting an overall decrease in SB fatalities was associated with each of the key targeted killings, with only one exception. That is, the Makadme, Yassin, Rantisi and Smahadana targeted killings mitigated the number subsequent SB fatalities.

The TK of Raed Karmi, on January 14, 2002 presents a different pattern. During the 50 days prior to this TK event, there were 11 SB fatalities. Subsequently, there were 11 fatalities at TK 0 and 25 fatalities at TK+50 and 7 fatalities at TK+100. Thus, it can be suggested that the Karmi targeted killing had a negative effect on mitigating suicide bombings, whereby negative means an increase in SB fatalities.

Notwithstanding the Karmi case, the key targeted killings noted in Figure 5 and Table 3 below, all of which were carried out in Gaza, had a positive effect on mitigating suicide bombing fatalities. That is, they were followed by a decrease in SB fatalities subsequent to the TK. All of the noted key targeted killings were carried out against ideological or political leaders except for Karmi who was an operational leader. Interestingly, this conclusion is somewhat in contrast to that of Noam and Assaf Zussman, who evaluated the effect of targeted killings on the Tel Aviv stock market and concluded that "...The market reacts strongly, to the assassinations of senior leaders of terrorist organizations: it declines following assassinations targeting senior political leaders but rises following assassinations of senior military leaders"[84].

If that is the case, one could observe that the targeted killings were not effective as far as the stock market was concerned, but were effective in relation to subsequent suicide bombing fatalities.

Table 3 shows key targeted killings and the number of Israeli fatalities resulting from suicide bombings in the period before the targeted killing, the 50 days after the targeted killing (TK0), 50-100 days after the targeted killing (TK+50) and the 100-150 days after the killing (TK+100). The effect of the key targeted killing (positive or negative) is reflected by the slope, where a positive slope reflects a mitigating effect on subsequent fatalities.

Key Targeted Killing	SBs prior	SBs at TK0	SBs at TK+50	SBs at TK+100	TK effect (slope)
Schedeh, July 22, 2002	8	5	7	7	+
Makadme, Mar 8, 2003	4	5	3	3	+
Ahmad Yassin March 22, 2004	4	7	4	0	+
Rantisi April 7, 2004	7	4	0	2	+
Smahdana June 8, 2006	7	5	2	1	+
Karmi January 14, 2002	11	11	25	7	-

Table 3 Key targeted killings and the number of Israeli fatalities resulting from suicide bombings (See text for further explanation)

It is evident that the targeting of high value ideological leaders, primarily in Gaza, were usually effective in decreasing subsequent suicide bombings fatalities. The key targeted killings noted in Gaza, had a positive effect on mitigating suicide bombing fatalities.

Discussion

One clear conclusion that can be drawn from an examination of Israel’s experience with Palestinian suicide bombings is that the frequency and lethality of the bombings declined over time, from a peak of 60 attacks in 2002 to eight in 2005, one in 2007 and zero attacks since 2009. The discussion below addresses the role that the targeted killings played in reducing suicide bombings, as well as other factors and events which may have influenced the turn of events.

As demonstrated in Table 2 and the results of the growth model analysis, there was a close association between targeted killing and the fatalities resulting from suicide bombing. And that association was strongest immediately after the targeted killing, gradually decreasing over time. In other words, the number of fatalities resulting from suicide bombing decreased after targeted killing events. This was particularly evident for cases of targeted killing in Gaza and subsequent suicide bombing originating out of Gaza.

The targeting of senior political figures was most effective [85, 86] as the targeting of Sheikh Ahmad Yassin and Dr. Abed el-Azziz Rantisi by the IDF in 2004 show. Yassin, the founder and leader of Hamas, was targeted in March 2004 and less than a month later Yassin’s successor, Dr. Abed el-Azziz Rantisi, was targeted. Both leaders were charismatic, spiritual and very influential Hamas leaders. In contrast, the targeting of operational commanders had a different effect.

After the targeting of Yassin the motivation to carry out attacks against Israel was very high[87], but those attacks did not materialize. The main reasons for that were not just diminished capabilities, but more importantly the fact that the leaders who succeeded the targeted leaders did not want to become subsequent targets.[88]

The results of the present study are in line with Former IDF Chief of Staff and Defense Minister Shaul Mofaz' comments on targeted killing effectiveness. In the course of a live television interview he stated that "In 2004–2005, as Defense Minister, I led an operation coined 'Anemone Picking' which targeted 14 or 15 key terrorist leaders in Gaza and brought an end to the suicide terror phenomenon. It did not put an end to terror but it mitigated suicide bombings".[89]

Aside from targeted killings, other actions were taken by Israel to mitigate suicide bombing. In fact, it may be argued that it is difficult to isolate the effect a specific measure. However, in this particular case, it should be noted that during the period in question, in Gaza, targeted killing was the prime measure used by the IDF to confront suicide bombings. Unlike in the West Bank, a Gaza fence was in place before the examined period, very few arrests were carried out in the area during that time and targeted killing was used practically in isolation as a counter-measure for suicide bombings[90]. Therefore, by focusing on Gaza, this study can examine the specific effectiveness of targeted killing on suicide bombing.

When looking at the factors that helped decrease attacks, specifically those originating from Gaza, it is clear that alongside offensive measures such as targeted killings, Israel deployed a number of defense measures. [91] One such measure was a security fence around Gaza. Such a fence separates Gaza and Israel proper.

The Gaza Barrier

The Gaza Strip borders Egypt on the southwest and Israel on the south, east and north. It is about 41 kilometers (25mi) long and between 6-12 kilometers (4–7.5mi) wide, with a population of about 1.5 million people. Construction of the first barrier–60 kilometers (37mi) long between the Gaza Strip and Israel began in 1994 following the signing of the Oslo Accords. The barrier was completed in 1996. The focus of this study is the years 2000 to 2010 which is after the initial Gaza barrier was erected.

After being largely torn down by the Palestinians at the beginning of the al-Aqsa Intifada in September 2000, the Gaza barrier was rebuilt between December 2000 and June 2001. A one-kilometer buffer zone was added, in addition to new high-tech observation posts. There are three main crossing points in and out of the Gaza Strip: the northern Erez Crossing into Israel, the southern Rafah Crossing into Egypt, and the eastern Karni Crossing used only for cargo.

Over the years the security at border crossings became tighter and more sophisticated, in such a manner that bypassing them became very difficult. It can be argued that this increased security measure mitigated the number of suicide bombings. Indeed, Almog argues that it prompted a shift in the tactics of Palestinian militants who commenced firing rockets and mortars over the fence into Israel.[92]

In September 2005, following Israel's withdrawal from the Gaza Strip, control of the Philadelphi corridor between Egypt and the Gaza strip was handed over to the Palestinian National Authority. Additionally, after the disengagement there were fewer easily accessible Israeli targets, as the settlements in the Gaza strip and Gush Katif had been evacuated. The crossing of Palestinian workers from Gaza into Israel stopped completely, making it more difficult for terrorists to infiltrate Israel. This could have reduced the opportunities for suicide bombing attempts. On the other hand, the pullout of Israeli forces and residents

simplified accessibility to the Gaza strip from the southern border with Egypt and thus increased the offensive capabilities of the different organizations active in Gaza.[93]

Indeed, on June 25, 2006, Palestinian militants used an 800-meter tunnel dug under the barrier over a period of months to infiltrate into Israel. They attacked a patrolling Israeli armored unit, killed two Israeli soldiers and captured another one—Gilad Shalit.

In June 2007, Hamas took over the Gaza strip, ousting the forces of Fatah – the faction led by Palestinian Authority President Mahmoud Abbas – and effectively splitting Gaza from the West Bank in terms of its administration. At that time, Hamas' interest in reinforcing its rule may have altered its policy on suicide attacks. During the immediate aftermath of Hamas' rise to power in Gaza, its efforts were focused on consolidating its rule and less on carrying out attacks on Israel. However, the general motivation to attack Israel did not wane. This is evident by looking at the number of missiles that were directed against Israel.[94] The number of suicide bombings declined and the number of rockets fired increased.

The perspective and rationale for the Palestinian policy change is complex. However, it was clear that Palestinian leaders' concern over retaliation or unintended ramifications subsequent to suicide bombing, primarily their own targeted killings, was paramount, and the targeting of political or spiritual leaders was of the highest concern.[95] This is supported by the analysis of Table 1 and can be seen by Hamas' demand to stop targeted killing as a condition for the cease-fire after operations *Cast Lead* and *Pillar of Defense*. [96]

In addition, Palestinian Authority policy changed due to internal considerations. The policy towards suicide bombings and frequent endorsement of such attacks may have changed after the death of PLO leader Yasser Arafat in November 11, 2004. His successor, Abu Mazen, was less enthusiastic about suicide bombings, as compared to Arafat. The new Palestinian leader used a different tone from that of his predecessor and on a number of occasions said that Palestinian acts of violence were counterproductive to the Palestinian cause. This position, however, had very little effect if at all on the Palestinian Authority's rule in Gaza, which, as noted, had fallen into the hands of Hamas in 2007.[97]

What was the key factor that brought about a decline in the number of suicide bombings? Can one key factor be isolated from all others? It is complex and perhaps artificial to isolate targeted killing from other counterterrorism measures that may have also affected the decline in Palestinian suicide bombings. In particular, *Operation Defensive Shield* in mid-2002, wherein Israel regained military control over the West Bank, and the construction of the security fence in the West Bank that began in late 2003, would seem to be other contributing factors. Those two counterterrorism measures, however, are almost irrelevant when evaluating the decline of suicide terror bombings originating in Gaza. A security fence has separated that geographical area from Israel proper well before the year 2000 and *Operation Defensive Shield* was not applied to that area. In fact, targeted killing was the primary counterterrorism tool used during the evaluated time to confront suicide bombings launched from Gaza.

Conclusions

This article presented a systematic evaluation of the effectiveness of Israeli targeted killing in confronting Palestinian suicide terror, specifically suicide bombings originating from the territories in general and especially from Gaza during the first decade of the 21st century.

Assessing the effectiveness of a counter-terrorism tactic or strategy essentially depends on the objectives set by the decision makers who decided on implementing the said counter measure. In Israel's case, targeted killing, was originally intended to mitigate suicide terror and so measuring the policies effectiveness must

be based on an assessment of whether suicide attacks in general and their consequential fatalities indeed decreased as a result of such targeted killings. This article, for the first time, carried out such a systematic evaluation.

Targeted killing did not end the conflict or achieve peace. A productive political process will probably be needed for that. But it did have a clear effect on subsequent suicide bombing fatalities. Since there may have been other factors contributing to the decrease in suicide bombing fatalities during that period, it is difficult to conclude decisively that a decrease was exclusively due to the targeted killing policy. The unique case of Gaza, however, provides more conclusive findings, since defensive and offensive security measures implemented elsewhere were not relevant in the arena of Gaza, allowing for an isolation of the variables being tested. The strong association between suicide attacks generated from Gaza and targeted killings in the area demonstrate the effectiveness of the targeted killing campaign.

Another key finding of this article is that it is evident that the targeting of high value ideological leaders, primarily in Gaza, were effective in decreasing subsequent suicide bombings fatalities. The key targeted killings noted in Gaza, had a positive effect on mitigating suicide bombing fatalities.

Israel's targeted killing policy, along with other less significant factors during the first decade of the 21st century, was effective in mitigating suicide terror attacks generated from the Territories in general and from Gaza most specifically. Israel's targeted killing policy achieved tactical and strategic success. From a tactical perspective, the operations accurately eliminated their targets. From a strategic perspective, the policy was the key factor in stopping or at least mitigating suicide bombing fatalities.

Future Research

The data presented indicate that over time, Israel's targeted killing policy was effective in mitigating suicide bombings from Gaza. The manner of which the said effectiveness was evaluated as it pertains to Israel, may also be relevant when evaluating the effectiveness of targeted killing campaigns carried out by different states in different theaters. Furthermore, although the targeting of key operational and spiritual leaders seem to be most effective, from the data analyzed it is not completely clear what makes the targeted killing strategy effective. What facets or elements within a targeted killing strategy make it effective and what may make it counterproductive? Does the target selection impact the effectiveness of the policy? Does legal compliance or perceived compliance impact the effectiveness of a targeted killing campaign? Does collateral damage and unnecessary civilian deaths have a negative impact on effectiveness? These research questions are beyond the scope of this study and should be addressed in future studies.

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Note

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