What Have We Learned? Assessing the Effectiveness of Counterterrorism Strategies in Pakistan

Rehman, Faiz Ur and Nasir, Muhammad and Shahbaz, Muhammad

Quaid-i-Azam University, Islamabad, Pakistan, Pakistan Institute of Development Economics, Islamabad, Pakistan, Montpellier Business School, Montpellier, France

5 February 2017

What Have We Learned? Assessing the Effectiveness of Counterterrorism Strategies in Pakistan

Faiz Ur Rehman
Quaid-i-Azam University, Islamabad, Pakistan
Email: faiz@qau.edu.pk

Muhammad Nasir (Corresponding Author)
Pakistan Institute of Development Economics, Islamabad, Pakistan
Email: nasir84@pide.org.pk
Contact No: +92 321 9033058

Muhammad Shahbaz
Montpellier Business School, Montpellier, France
Email: shahbazmohd@live.com

Abstract

This paper empirically examines the effectiveness of various counterinsurgency policies employed in Pakistan. The literature suggests that any counterinsurgency strategy can have three effects: *deterrence*, *incapacitation,* and *vengeance*. Violence will increase if the vengeance effect outweighs the deterrence and incapacitation effects; if the deterrence and incapacitation effects are dominant, the reverse is true. Pakistan has used three types of counterinsurgency measures to curb violence: peace accords, military operations, and a combination of military assaults (operation Zarb-e-Azb) and the National Action Plan (NAP). Using data for the period 1974m1-2015m12, the results from Negative Binomial Regression models suggest that peace accords have no significant effect on violence, whereas military operations increase violence, suggesting the dominance of the vengeance effect. On the other hand, operation Zarb-e-Azb, complemented by the National Action Plan, generated a strong incapacitation effect, leading to a significant reduction in violence. The results are robust, and even stronger, for a subsample of the post-9/11 period. These findings support the notion that an effective counterterrorism strategy requires a well-executed military operation backed by strong political support.

Keywords: Terrorism; Counterterrorism; Deterrence; Pakistan; Military Operation

JEL Classification: C32, K42, Z10

1. INTRODUCTION

Pakistan has experienced several episodes of political and sectarian violence since the 1970s.[1] However, the intensity of terrorist attacks significantly increased after the unfortunate events of September 11, 2001 (9/11). Since 9/11, terrorism and counterterrorism policies exacted a public cost of more than 50,000 casualties, including 15,700 security personnel, and a monetary cost of 118.32 billion dollars to Pakistan's economy (Pakistan Economic Survey, 2016). In 2011, Pakistan was ranked second among the countries most affected by asymmetric violence and conflict (Global Terrorism Index, 2012). Despite the pervasiveness of conflict and violence over the last four decades, few studies have quantitatively assessed the counterterrorism policies pursued by the government of Pakistan.[2]

Pakistan's government has introduced various defensive and offensive counterterrorism measures to deter and incapacitate militant groups.[3] Insurgents have responded with a quit-and-reprisal strategy over time and across geographic space. The need to scrutinize the effectiveness of these counterinsurgencies is highlighted by the unprecedented rise in violence during the post-9/11 period. A significant structural difference between the pre- and post-9/11 regimes in Pakistan is reflected in the number of military operations conducted against terrorist hideouts. Before 9/11, Pakistan had launched only two counterinsurgency operations against ethnic and separatist militants. Since 9/11, a number of military operations have been conducted against ideological militants.[4] The simultaneous rise in terrorist incidents and counterinsurgency operations in the country necessitate a careful examination of the conflict management strategies adopted by the government to curtail violence.

The literature on crime and punishment and counterinsurgency measures presents three propositions regarding the effectiveness of counterterrorism policies that demand empirical analysis. The first proposition discusses the *deterrence effect* of anti-terrorism measures, which is related to the price (cost) of executing a violent attack. Hence, measures that help increase the probability of apprehension and conviction can reduce violent attacks (Landes, 1978). Similarly,

---

[1] The Global Terrorism Database (GTD) indicates that the first terrorist attack in Pakistan was carried out in 1974.

[2] We will use "counterterrorism policies", "counterterrorism strategies", and "conflict management actions" interchangeably.

[3] Offensive or proactive anti-terrorism actions aim to destroy perpetrators' safe havens, training facilities, infrastructure, and human resources, whereas defensive strategies include counterterrorism legislation, negotiation processes, and fortification of official buildings to reduce the probability of success of a terrorist incident.

[4] During the same period, US military aid to Pakistan increased significantly. Nasir *et al.* (2012) discussed the implications of the nexus between foreign aid and the war on terror in Pakistan.

anti-terrorism laws can deter attacks by imposing severe punishments on convicted terrorists. Such laws increase the cost of an attack relative to labor market activities. The second proposition discusses the *vengeance effect*, whereby some counterterrorism policies may increase the number of future terrorist acts. For instance, a military operation may result in collateral damage in the form of the loss of innocent lives, destruction of property, and repression (e.g., a ban on legitimate protests), which could increase the unit cost of non-terrorist activities. This could, in turn, generate feelings of revenge and provide the opportunity for the militants to recruit more foot soldiers. Measures that increase the cost of non-terrorist activities can stimulate violence and result in what is termed *vengeance* or the *backlash effect* (Schelling, 1980; Siqueira and Sandler, 2007; Rosendorff and Sandler, 2010). A counterinsurgency policy may also affect the capacity of a militant group to launch future attacks. This is achieved by targeting the resource endowments of the group. For example, preemptive strategies like a government's deployment of its military to destroy terrorists' bases of operation or break down their networks across different regions decrease the resource endowment of the insurgent group. Any strategy that decreases terrorist incidents by lowering the group's resources results in what is called as *incapacitation effect*. Conflict management strategies may increase or decrease violence depending on which effect is dominant. If the vengeance effect outweighs the deterrence and incapacitation effects, violence will increase; if the deterrence and incapacitation effects are dominant, the reverse—a decrease in violence—will occur.

Pakistan has used three types of counterinsurgency measures to curb violence: peace accords with militants, independent military operations, and military assaults accompanied by a comprehensive National Action Plan (NAP). This paper empirically assesses the deterrence, incapacitation, and vengeance effects for these three counterterrorism policies in Pakistan. The paper examines which of these effects is dominant in each strategy. The study uses monthly data on terrorist incidents in Pakistan covering 1974m1 to 2015m12.

The results from the Negative Binomial Regression (NBR) models suggest that the vengeance effect was dominant in military operation and therefore led to an increase in violence. Moreover, the peace agreements were ineffective in influencing the capacity of militant groups. Since these agreements did not generate any vengeance or deterrence effect either, they had no significant impact on violence. On the other hand, operation Zarb-e-Azb, complemented by the

National Action Plan, resulted in a strong incapacitation effect, leading to a significant reduction in violence.

The rest of this paper is organized as follows. The next section presents a literature review. The theoretical background is discussed in section 3. Section 4 describes the study's data and variables. The empirical methodology is explained in section 5. The results are analyzed in section 6, and section 7 concludes the paper.

2. RELATED LITERATURE

The rich and comprehensive literature on the (in)effectiveness of counterterrorism policies and strategies dates back to Landes (1978), who applied Becker's (1968) seminal contribution, *the economics of crime and punishment*, to study terrorist hijackings in the United States. Landes exploited the rational choice framework to explore the relationship between terrorism and counterterrorism measures. The study concluded that a potential terrorist compares the expected costs of hijacking an airplane with the benefits. Landes observed that the installation of metal detectors at US airports in January 1973 had increased the probability of the apprehension and conviction of potential hijackers, thus successfully deterring future hijackings. Nevertheless, Enders and Sandler (1993) found that terrorists always substitute one mode of attack for another, depending on the deterrence level of the government's anti-terrorism strategies. Their study shows that the introduction of metal detectors led to a significant reduction in hijackings but also increased other types of terrorist incidents such as kidnappings and assassinations. A few other studies found that deterring one type of terrorist act directed terrorist resources to alternative lethal modes, resulting in harmful consequences (Enders *et al.* 1990). Analogously, Enders and Sandler (2011) observed that metal detectors inadvertently led to a higher number of alternative terrorist incidents with increased casualties. Terrorists also substitute soft targets for hard ones. If a counterterrorism strategy is designed to protect only state officials (e.g., military personnel, legislators, judges, and bureaucrats) and state institutions (e.g., parliament, supreme courts, police, and military installations), terrorists will shift their focus to soft targets such as schools, markets, places of worship, and other public gatherings (Brandt and Sandler, 2010).[5]

The second strand of the literature focuses on the suboptimal outcomes of

---

[5] Concerning the policy-induced substitution of terrorist attacks, interested readers are referred to Anderton and Carton (2005), Bier *et al.* (2007), Enders and Sandler (2002, 2004), Enders (2007), Frey and Luechinger (2003), and Im *et al.* (1987).

counterterrorism policies. It explains that governments often use two strategies, offensive (or preemptive) and defensive, either as complements to or substitutions for each other. With offensive measures, the law enforcement authorities take aggressive steps to prevent potential attacks by destroying militants' infrastructure and training facilities and by eliminating their networks across different geographical regions. Preemptive actions intend to eradicate or at least reduce the capacity of militant groups to initiate terrorist attacks against the state. On the other hand, defensive measures aim to reduce not only the probability of an attack by making the target harder but also the potential damage if a perpetrator succeeds. Interestingly, Sandler and Lapan (1988), Rosendorff and Sandler (2004), Sandler and Siqueira (2006), and Siqueira and Sandler (2007) studied the same problem focusing on different dimensions and concluded that the proactive policy of one country against a transnational terrorist group (like Al-Qaida) becomes a public good for another country if that country is also exposed to the same radical group. On the other hand, the adoption of defensive strategies by one country can become costly for other countries because such strategies may divert attacks to targets in those countries. Consequently, we see fewer of the former kind of strategy and more of the latter.[6]

The third strand of anti-terrorism literature explores the direct and indirect adverse effects of preemptive measures. Proactive actions like military operations and counterinsurgencies may achieve the short-run objective of improving the security situation but may also reduce long-term security by fanning the flames of violence and conflict. Indiscriminate bombing, the shelling of innocent people, and destroying infrastructure (including agriculture, industry, business, commerce and trade, livestock, property, and houses) reduce legal earning opportunities for the inhabitants. Job scarcity decreases passive supporters' opportunity costs of joining a terrorist camp (Ismail and Amjad, 2014). Government military raids and crackdowns may change the level of violence depending on the opposing forces of reducing terrorists' resources and reinvigorating the grievances of potential supporters. Nevertheless, terrorists often induce governments' offensive actions through a surge in attacks in order to attract more recruitment (Rosendorff and Sandler, 2004, 2010; De Mesquita 2005). Siqueira and Sandler (2007) showed that governments usually face a trade-off between providing public goods, which expands economic opportunities, and initiating counterterrorism measures, which raises the security level

---

[6] For more on this topic, readers may consult Azam and Delacroix (2006), Bier *et al.* (2007), and De Mesquita (2007).

but may also have the unintended consequence of increasing support for militants.

3. THEORETICAL FRAMEWORK

Political economists believe that terrorists act rationally while allocating limited resources among alternative targets (Landes, 1978; Sandler *et al.*, 1983; Atkinson *et al.*, 1987). For instance, protecting a target increases the cost of an attack as well as the probability of apprehension, conviction, and being killed. The failure of an attack costs human and physical resources to a terrorist organization and affects the group's budget constraints. Nonetheless, terrorists make decisions strategically and rationally while they change targets from the most- to least-protected. A rational terrorist would equate the expected marginal benefits and costs among alternative potential targets. Similarly, a terrorist equates the expected marginal benefits and costs derived from an attack given two different time periods. A government's preemptive actions increase the relative price of current attacks, which might shift current potential attacks to later periods. The intuition is that current terrorist incidents become costly relative to future ones when the level of security is high. Therefore, consider a rational choice framework in which a terrorist (group) allocates resources across different time periods to maximize the expected benefits. Assume the following utility function:

$$E_t(U) = E_t\left[\sum_{t=1}^{T} U(A_t)\right] \qquad u'(.) > 0, u''(.) < 0 \qquad (1)$$

where $A_1...A_T$ represent terrorist incidents in different time spans given the information available. Similarly, a terrorist group faces an inter-temporal budget constraint while maximizing expected utility. The inter-temporal resource constraint of a terrorist group is given by:

$$R_1 + \frac{R_2}{1+r} = A_1 + \frac{A_2}{1+\rho} \qquad (2)$$

where R_1 represents the total resources of a terrorist group (including human, financial and physical) in period 1, and R_2 is the total budget in period 2. A rational terrorist maximizes equation (1) given the budget constraint in equation (2). To maximize the expected benefits across two periods, a terrorist does not spend all resources in one period given the information

available. A high level of security raises the cost of an attack in period 1, which consequently decreases the expected marginal benefit of the attack. Therefore, a strategic terrorist group distributes its resources among different time periods to maintain the expected level of minimum terror in every period. For example, terrorist attacks in period 1 (current) are equal to the group's given resources plus the discounted value of period 2 (future) net endowments. The first-order conditions of the maximization problem result in the following equation:

$$E(U_1) = E(U_2)(1+\rho) \tag{3}$$

For simplicity, we assume that the interest and discount rates are set equal to zero. Equation (3) can then be written as:

$$E(U_1) = E(U_2) \tag{4}$$

where $E(U_1)$ and $E(U_2)$ are the expected marginal utilities from attacks in periods 1 and 2 respectively. Enhanced and comprehensive security, including counterinsurgency operations, in period 1 reduces the expected marginal utility of a terrorist incident relative to its price. To maintain a minimum level of terror over time, a rational terrorist substitutes resources from period 1 to period 2 to satisfy equation (4).

Following the rational choice framework, we now discuss the deterrence, incapacitation, and vengeance hypotheses of counterterrorism operations. Preemptive measures like military operations reduce the terrorist organization's endowments; this reduces R_1 or R_2 on the left-hand side of equation (2). Therefore, such policies either rotate or shift the budget constraint toward the origin. If a terrorist organization expects huge losses from the government's anti-terrorism actions, it will wait for the next period, thereby decreasing the current level of violence (the deterrence effect). If a terrorist group attacks government installations based on incomplete information about the government's expected capacity and response, it may cost a greater proportion of the group's resources. The net result may be lower expected future attacks if the government responds aggressively (the incapacitation effect). Finally, if law enforcement authorities take non-discriminatory measures against active and passive terrorists, it may enhance support for the terrorist group, which could increase current attacks (the vengeance or backlash effect). Similarly, if the government's selective operations displace terrorists from one region to another, or if the terrorists have an organized network across the country, one would expect more

attacks in response to government counter-insurgency. These propositions are analyzed using an equilibrium analysis of the budget constraint and utility function. It is expected that a terrorist may substitute attacks over time depending on the opposing magnitudes of the deterrence, incapacitation, and vengeance effects. In short, a rational terrorist group decides how to allocate attacks across different time periods, distributing attacks inter-temporally to absorb the shocks from defensive and offensive anti-terrorism policies.

4. DATA AND VARIABLES

4.1. Outcome Variable

Data on monthly terrorist attacks[7] are collected from the Global Terrorism Database (GTD) (2016), managed by the National Consortium for the Study of Terrorism and Responses to Terrorism at the University of Maryland and the Research and Development (RAND) Database of the Worldwide Terrorism Incidents.[8] The GTD registered 12,855 domestic and transnational terrorist[9] attacks in Pakistan from 1974 to 2015. The GTD also collects other relevant information about attacks, including dates, locations, fatalities, target type, weapons used, attack mode, and expected monetary damages. The descriptive statistics of the monthly attacks are given in Table 1. It compares pre- and post-9/11 regimes in terms of terrorist events. Mean terrorist attacks increased from 6 to 64 (an increase of 967 percent) after 9/11. Similarly, the post-9/11 regime constitutes 84 percent of all incidents in Pakistan. Furthermore, after 2006, a significant increase in terrorist attacks was observed when splinter groups merged to establish Tehrik-e-Taliban Pakistan (TTP), one of the deadliest terrorist groups. Most of the military counter-insurgent operations against terrorists have been launched since 9/11.

---

[7] The GTD defines terrorism as follows:

[A] terrorist attack…fulfills the following three criterion[sic]: (i) The incident must be intentional; (ii) The incident must entail some level of violence or threat of violence; and (iii) The perpetrators of the incidents must be sub-national actors. In addition, at least two of the following three criterion must be present for an incident to be included in the GTD: (i) The act must be aimed at attaining a political, economic, religious or social goal; (ii) There must be evidence of an intention to coerce, intimidate or convey some other message to a larger audience (or audiences) than the immediate victims and (iii) The action must be outside the context of legitimate warfare activities.

[8] The GTD and RAND data banks are available at https://www.start.umd.edu/gtd/ and http://www.rand.org/nsrd/projects/terrorism-incidents.html, respectively.

[9] There are two types of terrorism—domestic and transnational. Domestic terrorism involves victims, perpetrators, and target venues from a single country, whereas transnational terrorism is a multi-country affair involving victims, perpetrators, and target venues from two or more countries (Santifort *et al.,* 2012).

Table 1: Descriptive Statistics of Monthly Terrorist Attacks

Time Period	Total Attacks	Mean	Std. Dev.	Min.	Max.
1974–2015	12855	25.51	48.23	0	280
1974–2001	2017	6.002	14.09	0	125
2001–2015	10838	64.51	65.68	0	280
2006–2015	10629	88.49	63.40	5	280

Source: Global Terrorism Database (GTD, 2016)

To help analyze the behavior of terrorist events, Figure 1 draws terrorist incidents over the sample period of 1974m1 to 2015m12. The first vertical line divides the pre- and post-9/11 regimes. The 9/11 is considered an important event in the structural shift in the behavior of terrorists and law enforcement authorities in Pakistan. It shows how, despite the randomness of terrorist incidents, terrorist attacks have increased persistently since 9/11. After 9/11, various carrot-and-stick counterterrorism strategies were used.[10] In this context, the second line represents the start of a comprehensive counterterrorism strategy called the "National Action Plan," in which the Zarb-e-Azb military operation plays an important role against terrorists and their financers, not only in their traditional hideouts in the Federally Administered Tribal Areas (FATA) but also across the whole country. The effectiveness of the National Action Plan and its major component Zarb-e-Azb is evident from the significant decrease in terrorist attacks (see Figure 1) since its launch in the summer of 2014. The National Action Plan is discussed extensively in the following subsection.

4.2. Explanatory Variables

Since the study's focus is on the effectiveness of counterterrorism strategies, information has been gathered on the carrot-and-stick anti-terrorism measures in Pakistan since 1974. Historically, Pakistan's military has been considered highly disciplined and well-equipped. Both dictators and democratic regimes have relied on the use of military force against militants. Before 9/11, only two counterinsurgencies had been carried out in Pakistan. The first was against Baloch militants in 1974, and the second was against Muhajir separatists in Karachi in 1992. The rest of the military operations against domestic and foreign terrorists started after 9/11, when NATO entered Afghanistan. The descriptive statistics of these strategies are reported in Table 2.

---

[10] Carrot-and-stick strategies against terrorism include military search operations and counterinsurgencies, negotiations, accords and dialogues with terrorist groups, and amendments to anti-terrorism laws.
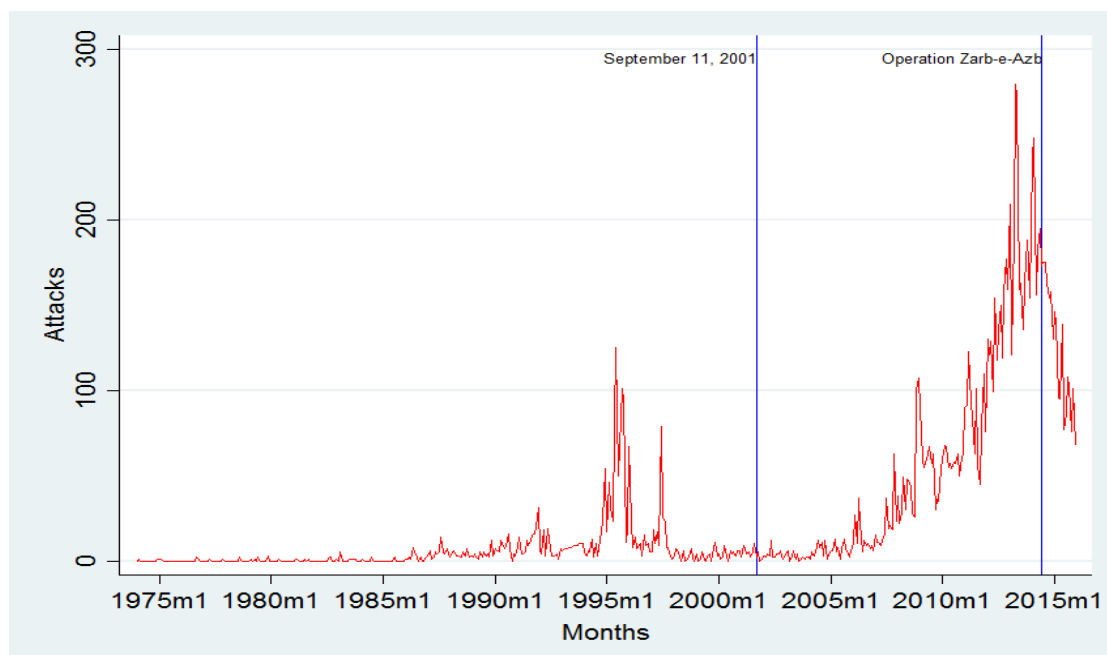
Figure 1: Monthly Terrorist Events in Pakistan

Source: Author's own calculation using GTD (2016)

4.2.1. Operations in South Waziristan Agency

Pakistan's armed forces conducted various counter-insurgent operations in South Waziristan Agency against both domestic and foreign terrorists. These include two major counterinsurgencies, Operation Zalzala and Operation Rah-e-Nijat. The former started in January 2008 and ended in May of the same year with a truce with the militants. The latter was initiated in June 2009 and ended successfully in December of the same year.[11]

4.2.2. Operation in Orakzai and Kurram Agencies

The military operation in Orakzai and Kurram agencies, known as *Operation Khwakh Ba De Sham* (meaning *will teach you a lesson*), was a counterinsurgency against the TTP that started on March 23, 2010, and was completed in June 2010. However, it had actually begun in Kurram agency in September 2009.

---

[11] The Pakistan Institute of Peace Studies (PIPS; 2016), Jones and Fair (2010), and Bundt (2012) provide a detailed analysis of the chronology of military counterinsurgencies in Pakistan, especially after 9/11.

4.2.3. Operation in Momand Agency

Operation Brekhna (meaning *thunder*) was launched by Pakistan's military against the Tehrik-i-Taliban in the Momand Agency. It started in November 2009 and became a part of the ongoing Operation Zarb-e-Azb.

4.2.4. Operation in Bajaur Agency

The Battle of Bajaur (*Operation Sherdil)* was a military assault in the Bajaur Agency launched against TTP and Al-Qaida by the Pakistani Army along with Combat Brigade and Frontier Corps. It was carried in August 2008 and was successfully completed in February 2009.

4.2.5. Operation in Swat

Operation Rah-e-Rast was a Pakistani army counter-insurgency against a TTP faction in the valley of Swat. It was launched in May 2009 and was successfully completed in July 2009. It is considered one of the decisive victories by armed forces against terrorists.

4.2.6. Other Operations

Since 9/11, dozens of small-scale (in terms of time and army personnel involved) military offensives have been launched. These include the *Lal Masjid* (*Red Mosque*) operation in Islamabad, which is believed to be the final trigger for terrorism in Pakistan, and *Operation Meezan* in 2002, when Pakistan's armed forces entered FATA for the first time since independence in 1947.

4.2.7. Peace Agreements

Similarly, various peace agreements have been signed by the government of Pakistan with the militants in North and South Waziristan Agencies and Malakand Division. These include *Shakai Agreement* (March 2004) with the Taliban commander of that time, Nek Muhammad, in South Waziristan; *Sararogha Peace Deal* (February 2005) with the pro-Taliban militant Baitullah Mehsud in South Waziristan; *Miranshah Peace Accord* (September 2006) with North Waziristan militants; and, the most controversial, the *Swat Agreement* (February 2009) with the TTP vice-commander Mullah Fazullah. However, these peace agreements have all proven futile.[12]

---

[12] The main source of peace agreements information is Tajik (2011).

4.2.8. National Action Plan

Pakistan's military and political leadership have learnt from long experience that taking control of an area from terrorists does not provide deterrence or reduce attacks. If terrorists are rational and have a well-established network across the country, they just move from one region to another in response to counterinsurgency operations. The government of Pakistan therefore decided to implement the Nation Action Plan, a comprehensive counterinsurgency strategy across the country. The Plan was established by the government in January 2015 as a counterterrorism strategy across the whole country to complement the ongoing military offensive (Operation Zarb-e-Azb) in North-Western Pakistan. It was hailed as a major coordinated state retaliation following the deadly Peshawar school attack in December 2014. The plan received support and cooperation from across the country's political spectrum, including the federal and provincial governments.

The National Action Plan includes 20 major points, including capital punishment for terrorists, special trial courts for terrorists under the supervision of the army, a ban on militant outfits and their financers, restrictions on hate speech, the registration and regulation of religious seminaries, development and administrative reforms in FATA, the registration and regulation of mobile phone companies, and drawing widespread public support for the ongoing military operations in FATA, Karachi, and Baluchistan.[13]

5. EMPIRICAL METHODOLOGY

We begin with the Poisson distribution family (Cameron and Trivedi, 2013; Greene, 2003) to empirically test the deterrence, incapacitation, and vengeance hypotheses. Terrorist incidents are non-negative count numbers with a minimum value of zero. Figure 2 shows a histogram of monthly attacks. It shows that the distribution is skewed to the right with a long tail. Thus, a linear regression model may not be appropriate for this type of dataset. Linear models assume that the outcome variable is continuous (or that the values of a variable are normally distributed around the liner regression line), an assumption the count data often violates (Cameron and Trivedi, 2013; Ivanova and Sandler, 2007).

---

[13] For a detailed discussion of the Nation Action Plan and its features, please see
http://nacta.gov.pk/NAPPoints20.htm.

Table 2: Descriptive Statistics of the Explanatory Variables

Variables	Mean	S.D.	Min.	Max.
Baluchistan Operation (1974m1–1977m12)	0.1	0.29	0	1
Karachi Operation (1992m6–1994m8)	0.05	0.23	0	1
Lal Masjid Operation (2007m7)	0	0.04	0	1
South Waziristan Operation 1 (2008m1–2008m5)	0.01	0.1	0	1
South Waziristan Operation 2 (2009m6–2009m12)	0.01	0.12	0	1
Orakzai and Kurram Operations (2009m9–2010:m6)	0.02	0.14	0	1
Momand Operation (2009m11–)	0.15	0.35	0	1
Bajaur Operation (2008m8–2009m2)	0.01	0.12	0	1
Swat Operation (2009m5–2009:m7)	0.01	0.08	0	1
Operation Zarb-e-Azb and NAP (2014m6–)	0.04	0.19	0	1
South Waziristan Peace Accord 1 (2004m3–2004m6)	0.01	0.08	0	1
South Waziristan Peace Accord 2 (2005m2–2007m8)	0.06	0.24	0	1
Malakand Peace Accord (2009m2–2009m4)	0.01	0.08	0	1
NATO (2001m10 and onward=1, 0 otherwise)	0.34	0.47	0	1
Anti-terrorism Laws (1998m1 and onward =1, 0 otherwise)	0.43	0.5	0	1
Democracy (=1, 0 otherwise)	0.53	0.5	0	1

Source: Global Terrorism Database (GTD, 2016), Pakistan Institute of Peace Studies (PIPS, 2016), Jones and Fair (2010), Tajik (2011), and Bundt (2012). The dates in parentheses in front of each variable show the starting and end periods of the operation and other variables. During this period, the variable takes the value 1 and 0 otherwise.

One of the important assumptions of Poisson Regression Model (PRM) is that the conditional mean of the observations is equal to its conditional variance (*Equidispersion*), which rarely holds in empirical analysis. The alternative strategy is the Negative Binomial Regression (NBR) which gives efficient estimates even if the assumption of equidispersion does not hold; i.e., conditional variance > conditional mean [*Overdispersion*] (Cameron and Trivedi, 2013; Ivanova and Sandler, 2007; Nasir *et al.*, 2011).

Let *y* be a random variable representing the number of times (count) an event has occurred. If outcome variable *y* has a Poisson distribution, then

$$\Pr\left(y/\mu \right) = \frac{e^{-\mu}\mu^{y}}{y!} \tag{5}$$

13

where $y \in N$ with mean and variance $[E(y) = Var(y) = \mu]$. Another assumption of Poisson distribution is that the occurrence and time of events are random and independent of each other (Cameron and Trivedi, 2013). The outcome variable of this study (terrorist events) may satisfy this assumption. Terrorists randomize their attacks over time to remain unpredictable to law enforcement authorities. The basic Poisson regression model can be written as:

$$\ln(\mu_t) = \beta_0 + \sum_{i=1}^{n} \beta_i x_{t-i} \tag{6}$$

Equation (6) is the Poisson regression equation relating the number of expected events $\ln(\mu_t)$ in time t to the sum of the product of each regressor (x_{t-i}) in time t and the regression coefficient (β_i).
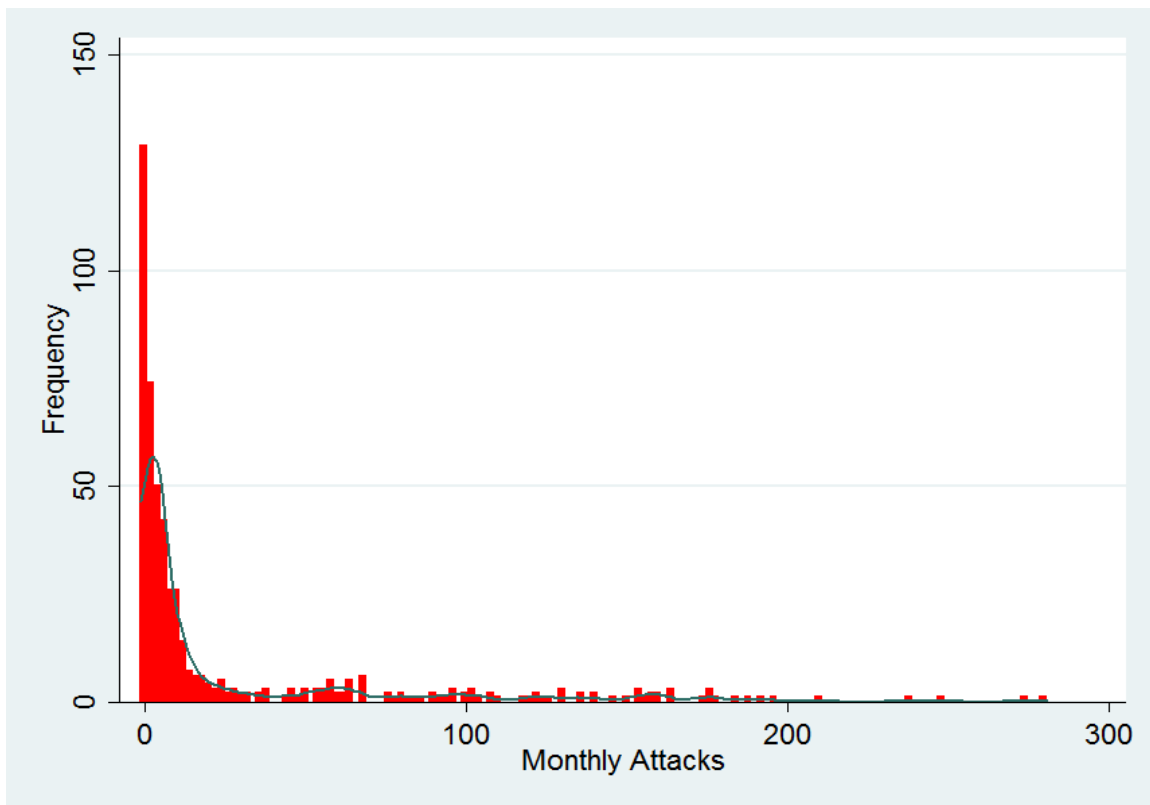

Figure 2: Histogram of Terrorist Incidents

Source: Author's own calculation using GTD (2016)

5.1. Overdispersion and Negative Binomial Regression (NBR) Model

In the empirical research on count data, there is a high probability that the assumption of equidispersion may not hold. Table 1 shows that the variances are greater than the means of the *Monthly Attacks* in all three time periods. Thus, it is plausible to estimate the model with the NBR. The NBR allows an extra parameter to the Poisson regression that incorporates the unobserved heterogeneity of observations. For a given set of regressors, the NBR model assumes that the number of incidents in year *t*, y_t, of our model is distributed with the following probability density function:

$$\Pr\left(y_t \big/ x_t\right) = \frac{\Gamma\left(y_t + a^{-1}\right)}{\Gamma(y_t + 1)\Gamma(a^{-1})}\left(\frac{a^{-1}}{a^{-1} + \mu_t}\right)^{a^{-1}}\left(\frac{\mu_t}{a^{-1} + \mu_t}\right)^{y_t} \tag{7}$$

where μ_t is the mean parameter, and $\mu_t = \exp(x_t'\beta)$. β is the vector of the regressors' coefficients to be estimated. In the above equation, a is the dispersion parameter for capturing the unobserved heterogeneity across observations. Given our regressors in Table 2, the conditional mean is given by:

$$\mu_t = \exp\left(\beta_0 + \sum_{i=1}^{n}\beta_i\, x_{t-i}\right) \tag{8}$$

In equation (8), β_i is a coefficient of regressor x_i in a given time period. Generally, maximum-likelihood methods are used to estimate non-linear models like NBR. Given the regressors of this study (i.e., military operations and peace agreements), the conditional mean is given by:

$$\mu_t = \exp\left(\beta_0 + \beta_0 Operations_t + \beta_1 Accords_t\right) \tag{9}$$

Here $Operations_t$ are military counterinsurgency operations against terrorists since 1974, and $Accords_t$ are peace agreements with the militants/terrorists during the sample period.

Given the time series nature of our data, the two events are likely to be correlated over time. If terrorist attacks hold this property, they become predictable to law enforcement agencies and can be detected. Hence, it may be a reasonable assumption that terrorist incidents are independent over time. Similarly, the Poisson distribution assumes that the two events are independent and that no predictable trend exists in the data. We also estimate the regression

model with the Newey–West standard errors to correct for the autocorrelation and heteroskedasticity among the residuals if these exist. The estimations become robust not only to heteroskedasticity but also to serial correlation after correcting for the Newey–West standard errors.

The interpretation of the negative binomial coefficient is not straightforward. Under the NBR, β_i means that a one unit change in the ith independent variable changes the expected value of the outcome variable by β_is units. For binary (dummy) variables, it is useful to transform the coefficients of the regressors to incidence rate ratios. Hence, the incidence rate ratios can be calculated as:

$$\frac{E\left(y/d = 1, x_i\right)}{E\left(y/d = 0, x_i\right)} = \exp(\beta_i) \tag{10}$$

Equation (10) suggests that, keeping all other variables constant, the incidence rate ratios of the NBR calculates that the expected count (attacks or incidence rate) of an event is $exp(\beta_i)$ times larger if the indicator is unitary rather than zero.

6. RESULTS AND DISCUSSION

6.1. Effects of Anti-terrorism Measures (1974–2015)

Table 3 shows the effects of different counterterrorism strategies on violence by employing NBR to account for the overdispersion in the counts of monthly attacks. In the given estimations, an intervention variable (counterterrorism strategy) takes the value 1 for the intervention period and 0 otherwise. To correct for both autocorrelation and heteroskedasticity, all regressions are estimated using Newey–West standard errors. To control for trends in the attacks, we estimate all the models with a log-linear trend, which is found to be robust in all given specifications.[14] The results of the four models reported in Table 3 examine different intervention policies and regulations to explore which effect (from among deterrence, incapacitation, and vengeance) of a counterinsurgency intervention outweighs the others and prevails over time. Although not

---

[14] We also tested higher polynomial trends; however, a log linear trend is significant in all four specifications of equation (9). Moreover, we also checked the results by controlling for the different lags of the dependent variables; the results were qualitatively similar.

reported in the table, we also controlled for democratic regime, changes in anti-terrorist laws, and NATO's presence in Afghanistan.[15]

In Model 1, we first look at the effects of non-military interventions by the government in the form of peace accords with rebel groups. Given the tribal culture in the FATA, peace deals are considered an important instrument in Pakistan's conflict management strategy. The results of model 1 indicate that the South Waziristan and Malakand peace deals have had no impact on terrorist attacks, whereas the peace agreement with militants in North Waziristan led to an increase in violence. More importantly, almost all of these deals were very short-lived. To analyze the effectiveness of this conflict management strategy, we need to examine which of the three effects is dominant. Since these accords were non-military interventions, the vengeance and deterrence effects do not come into play. This leaves us with the incapacitation effect. Were these accords an attempt to incapacitate the militants and prevent them from instigating future violence? A careful examination of the details of these accords reveals that this is not the case. In fact, some of the clauses of these deals might have added to the militants' capacity to launch fresh attacks. For example, two of the main clauses in the accords asked for the release of prisoners, mostly militants, and the payment of compensation for casualties incurred during military operations. Both these clauses might have increased the financial and military strength of the militants, who may have also used this ceasefire time to regroup and rethink their strategy. The fact that the government treated militants as equals in these accords (Tajik, 2011) reveals that these agreements were made from a weak government position. Consequently, this conflict management strategy tool failed to incapacitate the militants. Hence, one may conclude that these non-military interventions were ineffective in curtailing violence in the country.

Next, we explore the impact of another type of counterinsurgency strategy—military operations. These include operations in different agencies of the FATA region, Swat district, and Baluchistan province, all bordering Afghanistan. The FATA region was considered a safe haven for domestic and transnational terrorists, including the notorious Al-Qaida and TTP. Therefore, most of the operations were conducted in this tribal belt. The model further includes the Karachi operation as well as the Lal Masjid operation in Islamabad. The results are provided in Model 2 of Table 3. These findings reveal that, except for the Karachi operation, the coefficients for all

---

[15] The NATO presence in Afghanistan may have transferred the negative externalities of higher attacks to Pakistan. Moreover, the anti-terrorism laws and democratic regime factors may affect the level of attacks with equal probability in every part of the country.

aggressive military insurgencies are positive. Among these, the coefficients for operations in Baluchistan, Lal Masjid, Swat, Bajaur, and the first operation in South Waziristan are strongly statistically significant, whereas those for the Momand and Kurram operations and the second military assault in South Waziristan are only marginally insignificant.[16] The positive and significant coefficients for most of these counterinsurgency operations suggest that these actions have led to an increase in violence in the country. One probable reason is that these operations were initiated in different regions at different times, resulting in the displacement of militants from one region to another to escape (Rehman, 2015). The deterrence effect might have worked in the region where the military operation was launched. Nonetheless, the failure of the incapacitation effect to eliminate the militants' networks across regions allowed them to escape, providing them the opportunity to conduct terrorist attacks in other parts of the country and thus leading to vengeance or the backlash effect. The fact that the vengeance effect dominated the deterrence effect can be observed in the positive association between these counterinsurgency measures and terrorist incidents.

A noticeable indicative regressor is the Lal Masjid siege in Islamabad in the summer of 2007. Though it is a small place of worship and a religious school with a few hundred students, it had a strong backlash effect. Both Figure 1 and the marginal effect in the given model show the surge of attacks since July 2007 (the month of the Red Mosque siege).[17] The probable explanation of the vengeance effect from the Red Mosque operation is the exploitation of this incident by religious extremists to recruit human resources in the name of religion and jihad. The major proportion of militant groups in Pakistan comprises religious extremists and fanatics. The siege on a mosque may have provided religious extremists with an opportunity to recruit more human resources in the name of religion to fight against a state that had the audacity to attack a sacred place of worship.[18]

The Karachi counterinsurgency initiative was effective in reducing further attacks in the country for two possible reasons. The first is the presence of other law enforcement agencies (e.g., police, intelligence, and judiciary), which may have complemented military personnel

---

[16] As can be observed in Model 4 of Table 3, these marginally insignificant coefficients become significant. Although not reported here, we also ran other specifications and found these coefficients to be positively and statistically significant. Hence, care must be taken when interpreting these coefficients as having insignificant effects in Model 2.

[17] The marginal effects indicate that terrorist incidents increased by approximately seven attacks per month.

[18] The government should consider reforming madrassas (religious schools), which are considered the nurseries of human resources for extremists groups due to their ideology, given the experience of the Red Mosque episode.

while helping them arrest and eliminate terrorist groups and destroy their resources and infrastructure (human and financial). The other possibility is the different nature of the violence involved and the timing and location of the operation. The violence in Karachi was more political than were most attacks carried out in the name of religion in the post-9/11 era.[19] Moreover, it was dealt with through aggressive actions targeted in the populous city against domestic terrorists, which was the only insurgency that took place in the 1990s. Therefore, the entire focus of the state machinery was on washing out terrorists from Karachi and preventing future attacks. The location of Karachi and the absence of militant networks in other regions of the country resulted in the domination of the incapacitation and deterrence effects over the vengeance effect. In conclusion, however, most of these counterinsurgency operations were carried out without well thought-out plans to incapacitate the militants. As a result, the vengeance effect dominated the deterrence effect, leading to higher subsequent violence in the country.

The failure of their military operations compelled the government and armed forces to initiate an operation that would not only deter terrorist attacks but also incapacitate the militant groups, thus avoiding the vengeance effect. Operation Zarb-e-Azb was launched in the summer of 2014 in North Waziristan and supported through active military measures taken by other FATA agencies to prevent the militants from escaping the assault. The military operation was further complemented through the NAP initiative, which implemented several measures that have resulted in the incapacitation effect (the NAP is discussed in detail in section 4.2.8). The launch of a well thought-out military operation accompanied by the comprehensive NAP was successful in breaking down the militants' networks all across the country, thereby affecting their capacity to carry out attacks in retaliation. This is evident from the results in Model 3 in Table 3. The coefficient for operation Zarb-e-Azb is negative and statistically significant, indicating that this operation was successful in reducing terrorist attacks. The result for the marginal effect suggests that the expected number of terrorist attacks was reduced by 1.5 attacks per month.

In Model 4, we include all three types of conflict management strategy. The results are broadly consistent and robust. Figure 3 presents the actual and predicted monthly attacks per month in our sample. The predicted attacks, based on model 4, significantly overlap with the

---

[19] This is not to assert that religion instructed them to act but rather that religion was used as a cover for these attacks.

actual attacks. This confirms the validity of our model in explaining the variations in these attacks. The results in Table 3 show that violence can be reduced only if the incapacitation effect dominates the vengeance effect, as illustrated by the combination of operation Zarb-e-Azb and the NAP. The peace deals were unsuccessful in achieving this end, while disconnected military operations led to a stronger vengeance effect, resulting in more violence.

Table 3: Effects of Anti-terrorism Measures in Full Sample (1974–2015)

Variables	Model 1	Model 2	Model 3	Model 4
Zarb-e-Azb Operation			-0.367**	-0.361***
			[0.143]	[0.066]
South Waziristan Accord 1	-0.074			0.095
	[0.185]			[0.144]
South Waziristan Accord 2	0.197			0.333**
	[0.173]			[0.132]
North Waziristan Accord	0.127***			-0.069**
	[0.037]			[0.033]
Malakand Accord	0.055			0.337*
	[0.072]			[0.188]
Baluchistan Operation		2.316***		2.306***
		[0.714]		[0.749]
Karachi Operation		-0.653***		-0.649***
		[0.082]		[0.084]
Lal Masjid Operation		1.256***		1.140***
		[0.095]		[0.012]
South Waziristan Operation 1		0.658***		0.796***
		[0.103]		[0.133]
South Waziristan Operation 2		0.149		0.236**
		[0.101]		[0.119]
Swat Operation		0.576***		0.642***
		[0.113]		[0.122]
Momand Operation		0.330		0.523**
		[0.234]		[0.246]
Orakzai and Kurram Operation		0.186		0.126
		[0.144]		[0.143]
Bajaur Operation		0.789***		0.904***
		[0.179]		[0.182]
Observations	500	500	500	500

Note: Standard errors in parentheses. All the regressions are controlled for trend, NATO, democratic regime and change in anti-terrorism laws; *** p<0.01, ** p<0.05, * p<0.1.
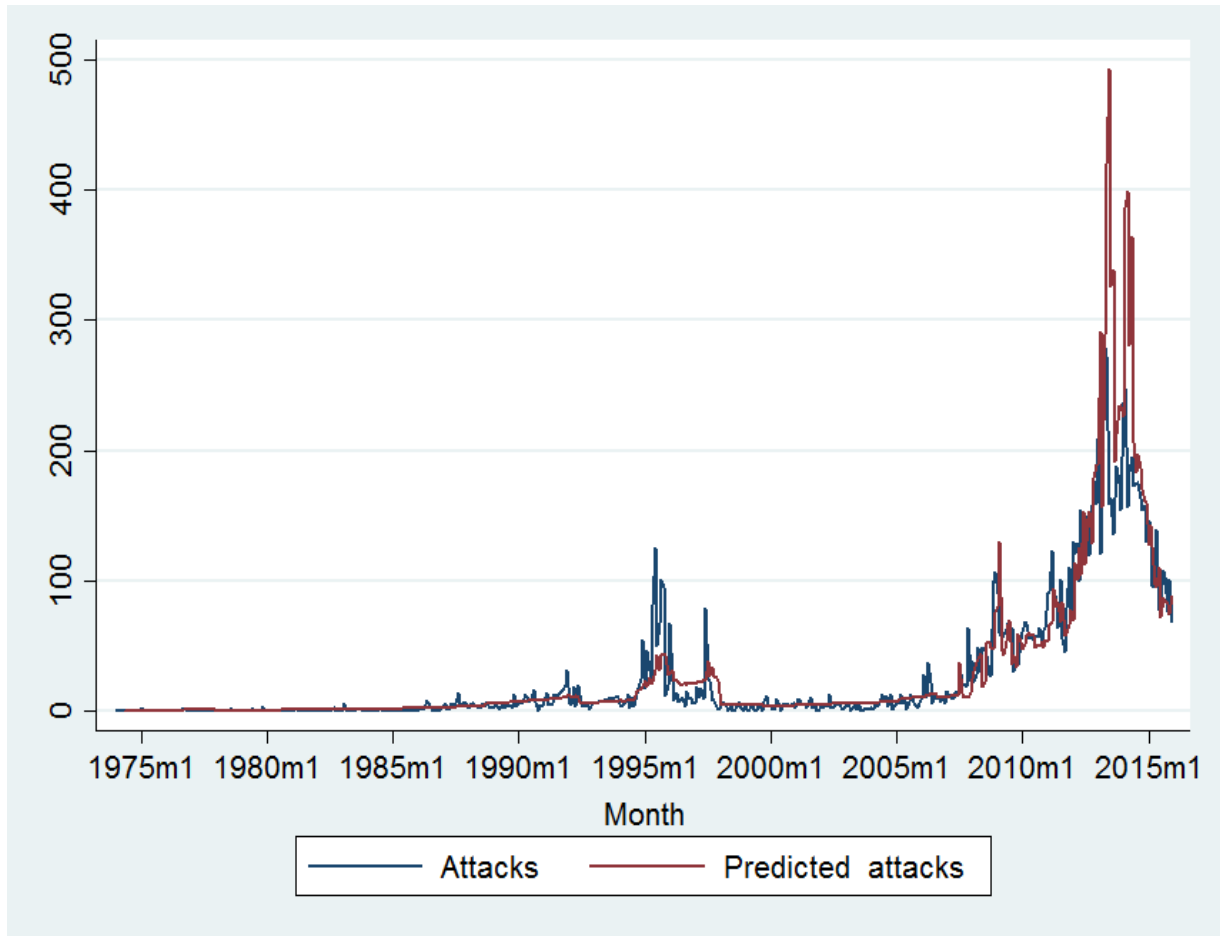
Figure 3: Actual vs. Predicted Attacks (1974m1–2015m12)
Source: Author's own calculation using GTD (2016)

6.2. *Effects of Anti-terrorism Measures in Post-9/11 Era (2001–2015)*

As discussed in the previous section, the marginal effect of operation Zarb-e-Azb was a reduction of 1.5 attacks per month. This amounts to a decrease of only 18 attacks per year, which conflicts with the claim that terrorist attacks in the country dropped to a six-year low since 2008.[20] There are two possible reasons for this result. First, as operation Zarb-e-Azb was initiated only in June 2014, this may be just a short-term effect. Second, the starting point of analysis (1974) averages out the impact over a long period. Hence, we must analyze only the post-9/11 period when most of the counterinsurgency measures were taken. We examine this period by taking a subsample for the 2001m10–2015m12 period. This means that certain variables, such as Baluchistan operation, Karachi operation, anti-terrorism laws, and NATO

---

[20]*The Nation*. June 17, 2015. This reduction of only 18 attacks per year is also not consistent with Figure 1.

presence, will drop out of the regression analyses. The results are reported in Table 4. The findings are qualitatively similar to those in Table 3.[21] More importantly, the marginal impact of operation Zarb-e-Azb suggests that the expected number of terrorist attacks was reduced by 17 attacks per month; this number is more consistent with the trend shown in Figure 1. The results of Model 4 in Table 4 are validated by Figure 4, where the predicted attacks significantly overlap with the actual attacks.

Table 4: Effects of Anti-terrorism Measures in Post-9/11 Era (2001–2015)

Variables	Model 1	Model 2	Model 3	Model 4
Zarb-e-Azb Operation			-0.742***	-0.781***
			[0.076]	[0.083]
South Waziristan Accord 1	0.118			0.138**
	[0.111]			[0.068]
South Waziristan Accord 2	0.153			0.034
	[0.137]			[0.095]
North Waziristan Accord	-0.106			-0.362***
	[0.111]			[0.063]
Malakand Accord	0.234**			0.022
	[0.104]			[0.033]
Lal Masjid Operation		0.930***		1.053***
		[0.137]		[0.023]
South Waziristan Operation 1		0.251***		0.144
		[0.084]		[0.087]
South Waziristan Operation 2		-0.149***		-0.192***
		[0.031]		[0.028]
Swat Operation		0.286***		0.250***
		[0.034]		[0.038]
Momand Operation		-0.192		-0.264***
		[0.122]		[0.093]
Orakzai and Kurram Operation		0.076		0.053
		[0.069]		[0.037]
Bajaur Operation		0.314***		0.322***
		[0.049]		[0.060]
Observations	171	171	171	171

Note: Standard errors are in parentheses. All the regressions are controlled for trend, NATO, democratic regime and change in anti-terrorism laws; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

---

[21] The change in the signs of a couple of the coefficients could be caused by the lack of the variables mentioned above. Once again, however, most of the operations show a stronger vengeance effect, which is broadly consistent with the results in Table 3.
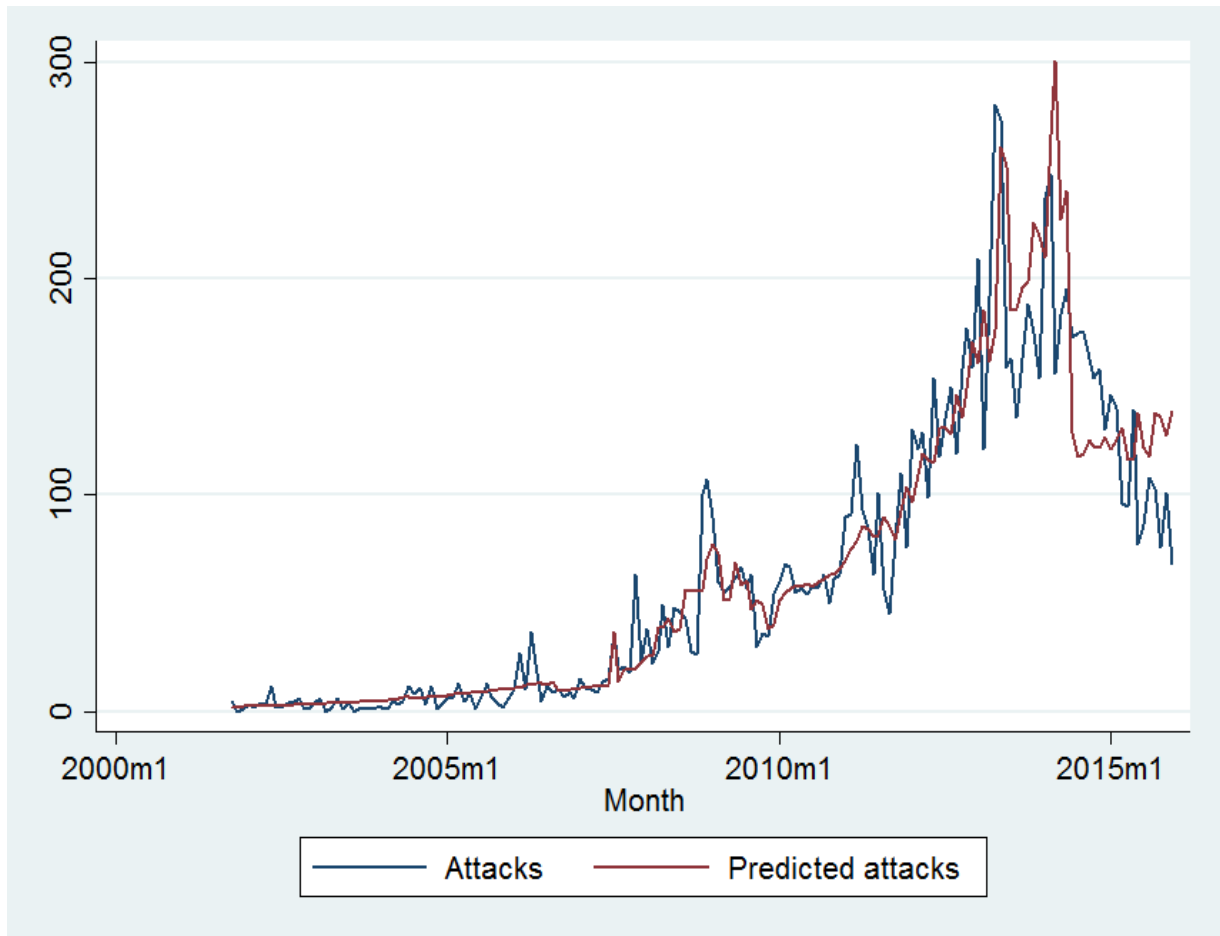
Figure 4: Actual vs. Predicted Attacks (2001m10–2015m12)
Source: Author's own calculation using GTD (2016)

7. CONCLUSION

This study analyzes the effectiveness of different types of terror-thwarting strategies used by Pakistan from 1974m1 to 2015m12. Due to the count nature of terrorist events, this study estimates different specifications with NBR to account for overdispersion. We test the behavior of militant groups while responding to three different government anti-terror interventions: peace accords, military operations, and a comprehensive conflict management strategy including military assault accompanied by efforts to incapacitate the militant groups. The results suggest that law enforcement's preemptive measures, especially military operations, have a significant vengeance or backlash effect. The use of indiscriminate power against religious perpetrators, especially in their places of worship, may inspire sympathy and thus lead to more attacks. This

was witnessed in the case of the Red Mosque siege, which produced the deadly TTP and led to a higher number of attacks over the subsequent years. The results also indicate that terrorists may substitute current attacks for future attacks to demonstrate their strength to the government. They might also increase current attacks, expecting to obtain more resources in the future due to the revenge effect.

Our results also show that clearing an area from terrorists may not necessarily guarantee lower violence, especially when a terrorist group has networks in the rest of the country. For example, the operations in Swat and Bajaur (the cleared areas) have positive effects on the number of incidents. The indiscriminate use of power without proper intelligence-sharing measures may only displace terrorists from one place to another if they have a strong network across the country. Such operations tend to make the vengeance effect dominate over the deterrence effect if incapacitation measures are not taken Anti-terror strategies like peace accords and ceasefire agreements have not been able to incapacitate the militants. This implies that agreements and contracts with outlawed groups are non-binding, especially due to the lack of trust on both sides. Most importantly, the results suggest that only operation Zarb-e-Azb, coupled with the NAP, was successful in generating an incapacitation effect strong enough to overcome the vengeance effect. The steps taken through the NAP significantly affected the capacity of militant groups by destroying their networks across the country and rendering their sleeper cells ineffective. Moreover, this operation and the NAP acquired unprecedented political and public support across the country.

These results imply that any counterinsurgency strategy that lacks strong political support and measures to debilitate militant networks may not be able to curtail violence. The deterrence effect may work for crimes, but it is weak and short-lived in a war based on ideology. The vengeance effect will always be intense. The only way to dominate it is to design a counterterrorism strategy such as the NAP that generates a stronger incapacitation effect. Hence, the government and military establishment should be on the same page and must strengthen their coordination by fully implementing all 20 points of the NAP in order to completely eliminate the militant groups.

Future research could extend this work in at least two main directions. First, although the time series analysis is useful for analyzing the impact of different policies on terrorist behavior over time, it restricts the assessment by excluding the spatial variation generated by different

strategies. For a more concrete and in-depth scrutiny, future research should focus on a spatial panel data analysis of terrorist attacks. This will help explore the deterrence, incapacitation, and vengeance effects of law enforcement activities and their externalities to neighboring areas (spatial analysis). Moreover, we focused on the number of terrorist attacks. However, terrorist incidents might change over time while their intensity remains unchanged. For example, since the start of operation Zarb-e-Azb, the number of attacks has decreased significantly, but the attacks that have occurred have been the deadliest. This may indicate a strategic change in terrorists' behavior instead of a decrease in their capacity. Future research should explore this issue.

REFERENCES

Anderton, C.H. and Carter, J.R., 2005. On rational choice theory and the study of terrorism. *Defence and Peace Economics*, *16*(4), pp. 275-282.

Atkinson, S.E., Sandler, T. and Tschirhart, J., 1987. Terrorism in a bargaining framework. *The Journal of Law & Economics*, *30*(1), pp. 1-21.

Azam, J.P. and Delacroix, A., 2006. Aid and the delegated fight against terrorism. *Review of Development Economics*, *10*(2), pp. 330-344.

Becker, G.S., 1968. Crime and punishment: An economic approach. In *The Economic Dimensions of Crime* (pp. 13-68). Palgrave Macmillan UK.

Bier, V., Oliveros, S. and Samuelson, L., 2007.Choosing what to protect: Strategic defensive allocation against an unknown attacker. *Journal of Public Economic Theory*, *9*(4), pp. 563-587.

Brandt, P.T. and Sandler, T., 2010. What do transnational terrorists target? Has it changed? Are we safer? *Journal of Conflict Resolution*, *54(2)*, pp. 2014-236.

Bundt, T.S., 2012. Counterinsurgency in Pakistan. *Military. Review*, *92*(4), p. 81.

Cameron, A.C. and Trivedi, P.K., 2013. *Regression analysis of count data* (Vol. 53). Cambridge university press.

De Mesquita, E.B., 2005. The quality of terror. *American Journal of Political Science*, *49*(3), pp. 515-530.

De Mesquita, E.B., 2007. Politics and the suboptimal provision of counterterror. *International Organization*, *61*(01), pp. 9-36.

Enders, W., Sandler, T. and Cauley, J., 1990.Assessing the impact of terrorist thwarting policies: An intervention time series approach. *Defence and Peace Economics*, *2*(1), pp. 1-18.

Enders, W. and Sandler, T., 1993. The Effectiveness of Antiterrorism Policies: A Vector-Autoregression-Intervention Analysis. *American Political Science Review*, *87*(04), pp. 829-844.

Enders, W. and Sandler, T., 2002. Patterns of transnational terrorism, 1970–1999: Alternative time-series estimates. *International Studies Quarterly*, *46*(2), pp. 145-165.

Enders, W. and Sandler, T., 2004. What do we know about the substitution effect in transnational terrorism. *Researching terrorism: Trends, achievements, failures*, *119*, p. 119-137.

Enders, W., 2007. Terrorism: an empirical analysis. *Handbook of defense economics*, *2*, pp. 815-866.

Enders, W. and Sandler, T., 2011.*The political economy of terrorism*. Cambridge University Press.

Frey, B.S. and Luechinger, S., 2003. How to fight terrorism: alternatives to deterrence. *Defence and Peace Economics*, *14*(4), pp. 237-249.

Global Terrorism Database (GTD), 2016. https://www.start.umd.edu/gtd/

Global Terrorism Index (GTI), 2012. http://economicsandpeace.org/reports/

Greene, W.H., 2003. *Econometric analysis*. Pearson Education India.

Im, E.I., Cauley, J. and Sandler, T., 1987. Cycles and substitutions in terrorist activities: a spectral approach. *Kyklos*, *40*(2), pp. 238-255.

Ismail, A. and Amjad, S., 2014. Determinants of terrorism in Pakistan: An empirical investigation. *Economic Modelling*, *37*, pp. 320-331.

Ivanova, K. and Sandler, T., 2007. CBRN attack perpetrators: An empirical study. *Foreign Policy Analysis*, *3*(4), pp. 273-294.

Jones, S.G. and Fair, C.C., 2010. *Counterinsurgency in Pakistan*. Rand Corporation Monograph Series. National Security Research Division.

Landes, W.M., 1978. An economic study of US aircraft hijacking, 1961-1976. *The Journal of Law & Economics*, *21*(1), pp. 1-31.

Nasir, M., Ali, A. and Rehman, F.U., 2011. Determinants of terrorism: a panel data analysis of selected South Asian countries. *The Singapore Economic Review*, *56*(02), pp. 175-187.

Nasir, M., Rehman, F.U. and Orakzai, M., 2012. Exploring the nexus: Foreign aid, war on terror, and conflict in Pakistan. *Economic Modelling*, *29*(4), pp.1137-1145.

Pakistan Economic Survey, 2015-2016. Government of Pakistan, Ministry of Finance. http://www.finance.gov.pk

Pakistan Institute of Peace Studies (PIPS), 2016. Available at:
https://www.insightonconflict.org/conflicts/pakistan/peacebuilding-organisations/pips/

Rehman, F.U., 2015. The Spatial Analysis of Terrorism in Pakistan. *Asian. Journal of Law and Economics*, *6*(2), pp. 125-165.

Rosendorff, B.P. and Sandler, T., 2004. Too much of a good thing? The proactive response dilemma. *Journal of Conflict Resolution*, *48*(5), pp. 657-671.

Rosendorff, B.P. and Sandler, T., 2010. Suicide terrorism and the backlash effect. *Defence and Peace Economics*, *21*(5-6), pp. 443-457.

Sandler, T., Tschirhart, J.T. and Cauley, J., 1983. A theoretical analysis of transnational terrorism. *American Political Science Review*, *77*(01), pp. 36-54.

Sandler, T. and Lapan, H.E., 1988. The calculus of dissent: An analysis of terrorists' choice of targets. *Synthese*, *76*(2), pp. 245-261.

Sandler, T. and Siqueira, K., 2006. Global terrorism: deterrence versus pre emption. *Canadian Journal of Economics/Revue canadienned'économique*, *39*(4), pp. 1370-1387.

Santifort, C., Sandler, T. and Brandt, P.T., 2013. Terrorist attack and target diversity Changepoints and their drivers. *Journal of Peace Research*, *50*(1), pp. 75-90.

Schelling, T.C., 1980. *The strategy of conflict*. Harvard university press.
Siqueira, K. and Sandler, T., 2007.Terrorist backlash, terrorism mitigation, and policy delegation. *Journal of Public Economics*, *91*(9), pp. 1800-1815.

Tajik, S.H., 2011. Analysis of peace agreements with militants and lessons for the future. *Conflict and Peace Studies*, *4*(1), pp. 1-18.