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# **The Role of Terrorist Events in Determining Stock Returns in Pakistan: Covering Most Vibrant Era 2003-2013**

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## **Abstract**

This study explains the relationship and significance of terrorism attacks and Pakistan Stock Exchange behavior. This study uses standard event study methodology and data relating to the stock market index was collected from the website of the Pakistan Stock Exchange and data relating to terrorist events was collected from the newspapers of Business Recorder and DAWN. A total of 277 terrorist events have been considered in this study. The first-day abnormal return, five-day cumulative abnormal return, and ten-day cumulative return were calculated for all of the events. Terrorist events have been analyzed year-wise and also on the bases of their category like events related to foreigners, military, politics, and general terrorist events. This study finds evidence that terrorist events affect the stock market in Pakistan. But their impact is different considering the economic and political implications of these events. Terrorist events yield mixed results where the significance of the events differed considerably in their impact on the stock market. Moreover, the abundance of terrorist events also hindered the estimation as rare events bring the element of surprise and the market adjusts to more frequent events inappropriate manner. However, terrorist events relating to politics and foreigners yield more consistent results as these events were distributed across time with longer intervals. Overall, this study lays the foundation to make further explorations into the phenomenon of uncertainty caused by terrorist events in relevance to the stock market in Pakistan. Implications and directions for future research are also provided at the end of the study.

**Keywords:** Terrorism Events, Stock Market, Abnormal Returns

**JEL Codes:** H54, P16

## **1. Introduction**

The Pakistan Stock Exchange was founded on September 18, 1947, Pakistan's largest, most liquid, and one of oldest stock exchanges in South Asia. It was formally incorporated on March

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10, 1949, under the name of the Karachi Stock Exchange as a company limited by guarantee. In October 1970 second stock exchange had been established in Lahore. In October 1989 Islamabad Stock Exchange had been established to facilitate investors in the northern part of the country. Ultimately, the Government of Pakistan merged the operations of three exchanges effective from January 11, 2016, under the new name 'Pakistan Stock Exchange Limited (PSX)'. At present 854 companies are listed on the Pakistan Stock Exchange and its market capitalization was Rs. 113.755 billion as on August 2021 (PSX). The KSE-100 index is the most famous index, which is used as a benchmark to assess market activity. The market closed at 36235 points of the KSE-100 index on May 30, 2016. At present, there is a descending movement in the stock market and the stock market has witnessed a sharp drop from a level of more than 36,720 points in February 2016; the level the market attained for the very first time in its history. The level was achieved from the low of 4782 points in December 2008, after the stock market crashed from 15760 points (the highest at that time) in April 2008 (DAWN, 2012). This scenario indicates that the stock market in Pakistan is quite volatile. So, following the importance of the Pakistan Stock Exchange, this study has examined the impact of terrorism events on the Pakistan Stock Exchange.

The terrorist attacks in Pakistan have very significant threats to social and financial markets as well. The first wave of terrorist attacks has started in 2000 and it goes to a peak level in 2009. Pakistan Army conducted a series of military operations to reduce the menace of terrorist attacks and as per the South Asian Terrorist Portal Index (SATP) terrorist attacks were reduced by 89% from 2009 to 2017 in Pakistan after military actions were taken (Afzal et al., 2012). Pakistan is strategically situated at the junction of Afghanistan, China, India, Iran, and the Gulf States of oil-soaked sands. From 2000 to 2012 the development process in Pakistan is badly affected by the Taliban (Al Qaeda) and the conflict on terror to distinction on the international political phase. These phenomena's discouraged Pakistan Stock Exchange, but after that stable political environment has been promoting and prospering the stock market of the country which was nominated as the region's best-performing stock market twice in the last decade. Capitalization of the stock market and per capita income over the last two decades has more than tripled. During this era, Pakistan's political menace, however, and its penalty has become the object of strong concentration due to Pakistan's far above-the-ground position in the war on terror and which has the potential to exert a strong impact on the stock market performance. The overall scenario of Pakistan provides a unique socioeconomic and political environment (Ali, 2015; Ali and Rehman, 2015; Ali, 2018; Ali and Bibi, 2017; Ali and Audi, 2016; Ali et al., 2021) that has distorted investors' expectations about the prospects of the corporate sector in the country (Collier, 2003).

The Efficient Market Hypothesis proposed by Fama (1965), this hypothesis is based on an information system that explained the prerequisite for the partially strong form of the efficient market and implies that all the publicly available information has an impact on stock prices. This information includes all significant events of economic importance and has somehow impacted overall economic activities in the country which further have the potential to be translated into the corporate context of the companies (Ross et al., 2008). Empirics reveal that the political scenario of Pakistan is characterized by intense strife among political parties as well as instability due to the frequent intervention of military dictators and terrorist events. In such an environment available information changes the sentiment and the overall performance of the corporate sector. The assassination of Benazir Bhutto has a significant negative impact on Pakistan Stock Exchange and the index fell almost by 5% (Sohail and Hussain 2009). This type of exercise is hardly available in the existing literature. Hence, this study will be a healthy contribution to the respective literature.

## 2. Literature Review

Drakos and Kutan (2001) investigate the regional effects of terrorist activities on tourism by taking evidence from 03 Mediterranean countries (Turkey, Greece, and Israel) for the period from 1996 to 1999. The dissimilar regression model was used to find the results. The relevant data collected related to Greece and Israel from its National Tourism Organizations, data related to Turkey was obtained from the Central Bank of Turkey, data related to Italy was retrieved from the National Statistics Institute and the data regarding terrorist attacks was acquired from the International Tourism Database. The study concluded that due to terrorist attacks in Israel and Turkey tourist arrivals were significantly reduced and finally it is established that the concentration of causalities and geographic place of incidents have significant own and cross-country effects on the market shares of involved countries.

Chena and Siems (2003) study terrorist and military attacks' effects on worldwide equity markets and investigated terrorist attacks' effects on the U.S. capital market. It is also examined that Iraq's invasion of Kuwait in 1990 and the 9/11, 2001 terrorist attacks impact U.S equity markets. The relevant data were collected from Bloomberg and used the broadest stock market indexes obtainable in each market, similar to the New York Stock Exchange (NYSE) composite index in the U.S. Daily excess returns were measured by the mean-adjusted returns approach. They concluded that worldwide equity markets are strongly interlinked; news spreads speedily (especially bad news), with rapid overflow, or infection, effects. They establish confirmation that suggests current U.S. equity markets are more flexible than they were in the earlier period and that they make progress sooner from terrorist/military attacks than other international capital markets.

Abadie and Alberto (2004) have investigated the new gauge of terrorism taken that includes both national and international terrorism to explore the determinants of terrorism at the country level. Terrorist hazard was not considerably higher for inferior countries, once the effects of new country-specific uniqueness such as the level of political freedom were taken into account. Terrorism was explained by political freedom, but it was done so in a non-monotonic way: states in some middle range of political liberty were shown to be more horizontal to violence than states with high levels of political liberty or countries with high military regimes. Finally, the results suggested that geographic features were significant at the bottom of terrorist activities.

Eckstein and Tsiddon (2004) analyze the effects of terrorist activities on the economy; the value of future relative at present is decreased and this analysis is formalized in two directions. The first cost-benefit analysis of counter-terror expenditures had been conducted and the second insecurity impact had been documented on economic performance by taking the case of Israel. The relevant Israeli quarterly data was collected from the Central Bureau of Statistics (CBS) for the period from 1970-2003.

Johnston and Nedelescu (2005) examine that financial markets openly or not directly are affected by rebel activities, direct or indirect economic consequences of terrorism, September 11, 2001, in New York and March 11, 2004, in Madrid terrorist attacks effect on financial markets and crisis management response to these attacks. This study paper finalized that expanded, liquor, and sound financial markets were efficient in absorbing the shocks of terrorist attacks as well as the timely and elastic response of the competent authorities was also critical in stabilizing the markets. In a broad sense to safeguard the soundness and reliability of financial markets and systems from terrorism, a collective effort was required from all the relevant stakeholders like the financial industry, regulators and supervisors, intelligence and prosecuting agencies, governments, international organizations, etc.

Hanson (2005) expresses a case study that discusses five big concerns regarding Policy Analysis Market was described as terrorism futures. Manipulation and Moral Hazards are

mostly mentioned for the publicity of the Policy Analysis Market and the remaining three concerns are Combinatory, Hiding prices, and Decision selection bias. In July 2003, a great commotion occurred over a Pentagon research project called the Policy Analysis Market. Billed as having a bet on terrorism, PAM was widely criticized by politicians as ethically disgusting and straight away lost, which speedily led to the resignation of Ex-Admiral John Poindexter (of Iran-Contra fame). This study paper concluded that no issue or problem seems insurmountable. If politicians have the political will to pursue the concept then terrorism future markets reasonably help to deal with terrorism.

Abadie and Gardeazabal (2008) investigate the effects of terrorism in an incorporated world economy and described the main four effects. First of all the capital stock (human and physical) of a country is abridged as an effect of terrorist attacks. 2<sup>nd</sup> one the terrorist menace persuades advanced levels of insecurity. 3<sup>rd</sup> one terrorism supports the increases in counter-terrorism expenditures, drawing funds from industrious sectors for use in safety and the 4<sup>th</sup> one terrorism is identified to influence negatively a specific industry such as tourism. A stochastic version of the AK endogenous growth model (see, e.g., Obstfeld, 1994, and Turnovsky, 1997) was used to exemplify the importance of the “open economy channel” of terrorism. The relevant data were collected from United Nations Conference on Trade and Development (UNCTAD, 2004) and its database provided information on Foreign Direct Investment (FDI) stocks in the year 2003 for 196 countries and territories. This study concluded that terrorism has an unenthusiastic and large impact on overseas investment positions.

Li (2006) has investigated how an extreme form of political instability means “political violence” affect foreign direct investment (FDI). Different types of political violence were discussed in this study paper like civil war, interstate war, and transnational terrorism) The relevant data were collected from the Armed Conflict Database from 1946 to 2000 by Gleditsch, Wallenstein, Eriksson, Sollenberg, and Strand (2002), and data related to terrorism were collected from the international terrorism database. The empirical analysis of FDI inflows covered about 129 countries from 1976 to 1996. One tail t-test was used for hypothesis testing because the hypotheses were directional. The study concluded that unexpected civil conflict had a harmful ex-post effect on investment options over location and magnitude, but not predictable civil war. Surprising interstate war menace the investors to invest in that particular state but the investor does not reduce the size of the investment, predictable interstate war does not influence ex-post investor options over either location or magnitude.

Llusa and Tavares (2007) have organized the study of the economics of terrorism around the following seven areas; The Nature of Terrorists, The Impact of Terrorism on Aggregate Output, Terrorism and Economic Policy, The Measurement of Terrorist Activity, The Utility Cost of Terrorism, Terrorism and Specific Sectors of Activity and Counter-Terrorism. The study concluded that to diminish the occurrence of terrorism one should understand the motivations of terrorists and the intrinsic nature of the terrorist phenomena.

Berrebi and Klor (2008) conduct a study to analyze the impact of terrorism on Israeli companies related to the defense, security, or antiterrorism industries, compared to its impact on other companies. This study compared Israeli and American companies with the approximately same expected return that belong to the same industry and trade in the same market to check the terrorism effect separately from other common industry shocks. The sample of 125 Israeli companies was taken and the relevant data was taken from the Israeli Foreign Ministry, the National Insurance Institute, and the Israeli Defense Forces, the collections of different newspapers, Amex, NYSE, and Nasdaq exchanges. The event study methodology was employed to find the desired results. This study concluded that terrorism has a positive effect on the stock-market valuation of companies involved with defense, security, or anti-terrorism products or clients, and a significantly negative effect on that of other companies.

Posner and Vermeule (2009) compare emergency lawmaking and crisis governance after the 9/11 terrorist attack in the USA and the financial meltdown of 2008. The study concluded that Bush's government declared its power more aggressively after 9/11 than during the economic disaster. Rejecting challenging explanations based on legal dissimilarities, we trait the dissimilarity to the Bush supervision loss of fame and reliability in the era between 2001 and 2008 and to the more prominent and discordant distributive effects of financial management.

Gul et al., (2010) aim to study the financial markets of Pakistan affected by terrorist activities during the 2 years from 2006 to 2008. They strived to establish the association or track between financial markets and terrorist activities like KSE, the FOREX market, and the interbank market. OLS regression model was used to quantify the impact of terrorist activities on financial markets. The relevant was collected from the KSE website, the Monetary Policy Department of the State Bank of Pakistan, and KIBOR from the Domestic Markets & Monetary Management Department of the State Bank of Pakistan for two and a half years (i.e. from 31st December 2005 to 30th June 2008). The primary data on terrorist activities on daily basis was collected from different newspapers. The study found that ongoing terrorist activities adversely affect the Pakistan financial markets and significantly affect the performance of KSE.

Baker and Bloom (2013) investigate the causal relationship between uncertainty and growth does uncertainty drives slumps, do slumps drive uncertainty, or does something else drive both? A sample of 60 countries had been used and the selected countries had more than \$50 million in nominal GDP in 2008 for the period starting from 1970. They have made assumptions for first-moment shocks and second-moment shocks like natural disaster change stock marker level; which comes under first-moment shocks and other shocks like coups come under second-moment shocks. The study concluded that both first and second-moment shocks are highly significant in driving business cycles and very similar to our self-generated results.

### **3. Theoretical Foundations**

This study uses standard event study methodology which is a forward-looking approach that focuses on the quantification of abnormal returns resulting from a specific event of interest. Positive abnormal stock returns around the event date will be considered if investors react favorably to an event. Alternatively, if investors react unfavorably to an event, will be considered negative abnormal stock returns. Hence, abnormal returns provide a mean of assessing the capital market's response to specific events. The event-study methodology is based on the efficient markets hypothesis (Fama et al., 1969). This hypothesis generally states that as new information becomes available (as a result of some significant unpredicted event), it will be fully taken into consideration by investors assessing its current and future impact on the stock market. Investors without delay reconsider individual firms and their capability to withstand potential economic, Political, environmental, demographic, and societal changes resulting from that event and that information is reflected immediately in the stock prices (Sulehri and Ali, 2020; Audi et al., 2021; Audi et al., 2022; Ali et al., 2022).

So, the new assessment results in stock price change which is based on the discounted value of the future firm performance as measured by its ability to generate positive cash flows. The strength of the event study method lies in its ability to identify such abnormal changes because it is based on the overall assessment of many investors who quickly process all available information in assessing each firm's market value (Schwert, 1981; Alim et al., 2021; Audi et al., 2021; Alim et al., 2022).

Since index returns are random variables, they will deviate from their means over any given event window. Also, when examining these deviations to past average returns and taking into account historical variability; important conclusions can be drawn regarding the statistical significance (the depth and breadth) of an event. If the return deviation (abnormal return) is small and statistically insignificant on trading days that coincide with an event, then we can

conclude that the market saw the event as inconsequential. However, if the return deviation is large and statistically significant (falling outside the range of returns normally expected), then we can conclude that the market saw the event as important and one that moved it significantly. For the measurement of abnormal market returns mean-adjusted-returns approach would be used in the study which compares the market returns after the events with the mean of market returns before the happening of the event. This procedure was proposed by Brown and Warner (1985), Sulehri and Ali (2020) and Audi et al., (2022). The time frame of the study is from 2000 to 2017 and data relating to the stock market index and terrorist events happened during this time frame.

This study uses the mean-adjusted-return approach for the calculation of market abnormal returns each day after the event for the ten-day window. Data related to the PSX 100 index was collected from the website of the Pakistan Stock Exchange and ‘Business Recorder’ and DAWN newspapers were explored to locate significant events and their dates related to the political scenario. The abnormal returns are calculated as follows:

$$AR_{it} = R_{it} - \bar{R}_i$$

Where

$AR_{it}$  = Abnormal return of index i at time t

$R_{it}$  = Actual return of index i at time t

$\bar{R}_i$  = Expected return of index i

$\bar{R}_i$  is calculated using a 20 days estimation period before the events by mean of index returns on days (-30, -11) where 0 is the event date. The expected return of the index is compared to the actual return of the stock on the event date i.e. 0. But to capture any subsequent impact of the event on the stock index two longer event windows would also be considered i.e. From event data for 5 trading days ( $t = +5$ ) and from the event date to 10 trading days ( $t = +10$ ). Cumulative abnormal returns (CARS) are also calculated for the longer event windows. This procedure is proposed and used by Chen and Siems (2004). Further, to establish the significance of the abnormal returns and cumulative abnormal returns t-statistics have been used as proposed by Brown and Warner (1980).

For better insight, the abnormal returns calculated using the procedure entailed previously would be analyzed separately. Political events analysis is distributed in two heads where political events first are analyzed on overall bases and after that political events are also analyzed category wise where categories relating to defense, democracy, dictatorship, general elections, government suspension, international relations, strikes of political parties and political terrorist attacks are considered.

#### **4 Empirical Findings and Discussion**

This part of the analysis provides the analysis of the terrorist events considered for the study. This part of the analysis is segregated into two subparts. The first subpart of the analysis provides a year-wise analysis of the terrorist events that occurred from 2003 to 2013. The events were segregated into four types where terrorist events yielded positive and negative abnormal returns and whether these returns were significant or insignificant. The averages of these abnormal returns are elaborated on and analyzed in the first subpart. The second sub-part of terrorist events segregates the terrorism events according to their categories i.e. events related to foreigners, general events, events related to the military, events related to politics, and sectarian events.

##### **4.1 Year-wise analysis**

This part of the analysis provides the year-wise analysis of the terrorist events. Terrorist events are segregated into four types i.e. events that yielded negative and significant returns, events

that yielded negative and insignificant returns, events that yielded positive and significant events, and events that yielded positive and insignificant returns.

**Table-1: 2003 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 1 **  | 0.21%  |        | -1.50% |        | -3.91%  |        |
| Positive         | 3**   | 1.59%  | 0.79%  | 5.49%  | 3.22%  | 11.86%  | 7.01%  |
| Positive         | 1*    | -0.47% |        | 2.46%  |        | 0.40%   |        |
| Negative         | 2*    | -0.29% | 1.17%  | -1.32% | 1.58%  | -1.17%  | 3.21%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 1 provides a terrorist event analysis that occurred in 2003. A total of 7 events occurred in the year whereas only one event yielded significant negative abnormal return and its first-day abnormal return was 0.21%, five days cumulative abnormal return was -1.50% and ten days cumulative abnormal return was -3.91%. On the other hand, three events yielded significant positive abnormal returns and their average first-day abnormal return was 1.59% (Standard deviation 0.79%), five days cumulative abnormal return mean was 5.49% (Standard deviation 3.22%) and ten days cumulative abnormal return mean was 11.86% (Standard deviation 7.01%). There was only one event that had a positive but insignificant abnormal return and its first-day abnormal return was -0.47%, five days cumulative abnormal return was 2.46% and ten days cumulative abnormal return was 0.40%. Two other events had negative and insignificant abnormal returns and their first-day abnormal return mean was -0.29% (Standard deviation) 1.17%, five days cumulative abnormal return mean was -1.32% (Standard deviation 1.58%) and ten days cumulative abnormal return mean was -1.17% (Standard deviation 3.21%).

**Table-2 : 2004 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 6 **  | -0.23% | 0.95%  | -2.34% | 1.43%  | -4.33%  | 1.62%  |
| Positive         | 4**   | 0.34%  | 0.73%  | 3.49%  | 1.97%  | 5.64%   | 1.59%  |
| Positive         | 1*    | 0.31%  |        | -0.19% |        | 2.09%   |        |
| Negative         | 1*    | -0.02% |        | -0.89% |        | -0.46%  |        |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 2 provides an analysis of the terrorist events that occurred in 2004. A total of 12 events occurred in 2004 out of which six events yielded significant negative abnormal returns. The first-day abnormal return mean of these six events was -0.23% (Standard deviation 0.95%), the five-day cumulative abnormal return mean was -2.34% (Standard deviation 1.43%) and ten days cumulative abnormal return mean was -4.33% (Standard deviation 1.62%). On the other hand, four events yielded significant positive abnormal returns and their first-day abnormal return mean was 0.34% (Standard deviation of 0.73%), five days cumulative abnormal return mean was 3.49% (Standard deviation of 1.97%) and ten days cumulative abnormal return mean was 5.64% (Standard deviation 1.59%). There was only one event in 2004 that yielded positive but insignificant abnormal return and its first-day abnormal return was 0.31%, five days cumulative abnormal return was -0.19% and ten days cumulative abnormal return was 2.46%. There was only one event that had negative and insignificant abnormal return and its first-day abnormal return was -0.02%, five days cumulative abnormal return was -0.89% and ten days cumulative abnormal return was -0.46%.



**Table-3: 2005 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 4**   | -1.73% | 2.45%  | -7.41% | 12.30% | -12.11% | 16.09% |
| Positive         | 3**   | 0.48%  | 3.11%  | 6.81%  | 4.08%  | 12.37%  | 4.63%  |
| Positive         | 1*    | 0.43%  |        | 0.75%  |        | -1.00%  |        |
| Negative         | 1*    | -1.43% |        | -0.65% |        | -4.31%  |        |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 3 provides an analysis of the terrorist events that occurred in 2005. A total of 9 events occurred in 2005 out of which four events yielded significant and negative abnormal return and their first-day abnormal return mean was -1.73% (Standard deviation 2.45%), five days cumulative abnormal return mean was -7.41% (Standard deviation 12.30%) and ten days cumulative abnormal return mean was -12.11% (Standard deviation 16.09%). Three events on the other hand yielded significant and positive abnormal returns and their first-day abnormal return mean was 0.48% (Standard deviation of 3.11%), five-day cumulative abnormal return mean was 6.81% (Standard deviation of 4.08%) and ten days cumulative abnormal return mean was 12.37% (Standard deviation 4.63%). There was only one event that had a positive but insignificant abnormal return and its first-day abnormal return was 0.43%, five days cumulative abnormal return was 0.75% and ten days cumulative abnormal return was -1.00%. There was also one event having negative abnormal return and its first-day abnormal return was -1.43%, five days cumulative abnormal return was -0.65% and ten days cumulative abnormal return was -4.31%.

**Table-4: 2006 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 4**   | -1.69% | 1.38%  | -5.89% | 3.00%  | -9.52%  | 2.32%  |
| Positive         | 5**   | 1.49%  | 2.28%  | 5.62%  | 8.26%  | 10.28%  | 12.89% |
| Positive         | 1*    | 0.61%  |        | 0.92%  |        | -2.18%  |        |
| Negative         | 1*    | -0.10% |        | 2.04%  |        | -1.51%  |        |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 4 provides an analysis of terrorist events that occurred in 2006. Out of the total of 11 events, four events yielded significant negative abnormal returns and their first-day abnormal return mean was -1.69% (Standard deviation of 1.38%), five days cumulative abnormal return mean was -5.89% (Standard deviation of 3.00%) and ten days cumulative abnormal return mean was -9.52%, (Standard deviation 2.32%) which were significant at 5% level of significance. Apart from that, five events had positive and significant abnormal return and their first-day abnormal return mean was 1.49% (Standard deviation of 2.28%), five days cumulative abnormal return mean was 5.62% (Standard deviation of 8.26%) and ten days cumulative abnormal return mean was 10.28% (Standard deviation 12.89%). There was only one event that yielded positive but insignificant abnormal return and its first-day abnormal return was 0.61%, five days cumulative abnormal return was 0.92% and ten days cumulative abnormal return was -2.18%. There was only one event that had insignificant negative abnormal return and its first-day abnormal return was -0.10%, five days cumulative abnormal return was 2.04% and ten days cumulative abnormal return was -1.51%.

**Table-5: 2007 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 14 ** | -0.66% | 1.77%  | -4.48% | 3.40%  | -7.46%  | 4.10%  |
| Positive         | 11**  | 1.06%  | 0.76%  | 4.96%  | 2.29%  | 7.72%   | 3.38%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 5 provides an analysis of the terrorist events that occurred in 2007. A total of 25 events occurred in 2007, out of which fourteen events had significant negative abnormal return and their first-day abnormal return mean was -0.66% (Standard deviation 1.77%), five days cumulative abnormal return mean was -4.48% (Standard deviation 3.40%) and ten days cumulative abnormal return mean was -7.46% (Standard deviation 4.10%). Eleven events, on the other hand, had positive abnormal return and their first-day abnormal return mean was 1.06% (Standard deviation of 0.76%), five days cumulative abnormal return mean was 4.96% (Standard deviation of 2.29%) and ten days cumulative abnormal return mean was 7.72% (Standard deviation 3.38%).

**Table-6: 2008 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 8**   | -0.49% | 1.59%  | -5.75% | 3.42%  | -6.63%  | 4.46%  |
| Positive         | 11**  | 0.09%  | 1.35%  | 3.18%  | 3.00%  | 5.00%   | 4.92%  |
| Positive         | 5*    | -0.01% | 0.70%  | 1.16%  | 1.00%  | 2.74%   | 1.13%  |
| Negative         | 2*    | -0.93% | 0.08%  | -1.08% | 1.97%  | -0.99%  | 1.35%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 6 provides an analysis of the terrorist events that occurred in 2008. A total of 26 events occurred in 2008, out of which eight events had significant negative abnormal return and their first-day abnormal return mean was -0.49% (Standard deviation 1.59%), five days cumulative abnormal return mean was -5.75% (Standard deviation 3.42%) and ten days cumulative abnormal return mean was -6.63% (Standard deviation 4.46%). Eleven events, on the other hand, had positive abnormal return and their first-day abnormal return mean was 0.09% (Standard deviation of 1.35%), five days cumulative abnormal return mean was 3.18% (Standard deviation of 3.00%) and ten days cumulative abnormal return mean was 5.00% (Standard deviation 4.92%). Five events had insignificant positive abnormal return and their first-day abnormal return mean was -0.01% (Standard deviation of 0.70%), five days' cumulative abnormal return mean was 1.16% (Standard deviation of 1.00%) and ten days' cumulative abnormal return mean was 2.74% (Standard deviation 1.13%). The remaining two events had insignificant and negative abnormal return and their first-day abnormal return mean was -0.93%, (Standard deviation of 0.08%), five-day cumulative abnormal return mean was -1.08% (Standard deviation of 1.97%) and ten days cumulative abnormal return mean was -0.99% (Standard deviation 1.35%).

**Table-7: 2009 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 20**  | -1.01% | 1.67%  | -6.05% | 4.43%  | -9.94%  | 5.80%  |
| Positive         | 14**  | 1.57%  | 1.74%  | 8.35%  | 5.56%  | 10.95%  | 8.36%  |
| Positive         | 18*   | 0.28%  | 1.72%  | 1.91%  | 1.92%  | 3.20%   | 1.94%  |
| Negative         | 2*    | -0.91% | 0.64%  | -1.31% | 1.51%  | -0.27%  | 2.04%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 7 provides an analysis of the terrorist events that occurred in 2009. Out of the total of 54 terrorist events that occurred in 2009, twenty events had significant negative abnormal return and their first-day abnormal return mean was -1.01% (Standard deviation 1.67%) five days cumulative abnormal return mean was -6.05% (Standard deviation 4.43%) and ten days cumulative abnormal return mean were -9.94% (Standard deviation 5.80%). Fourteen events, on the other hand, had positive and insignificant abnormal returns and its first-day abnormal return mean was 1.57% (Standard deviation of 1.74%), five days cumulative abnormal return mean was 8.35% (Standard deviation of 5.56%) and ten days cumulative abnormal return mean was 10.95%, (Standard deviation 8.36%). Eighteen other events occurred which showed positive but insignificant abnormal returns and their first-day abnormal return mean was 0.28% (Standard deviation 1.72%), five days cumulative abnormal return mean was 1.91% (Standard deviation 1.92%) and ten days cumulative abnormal return mean was 3.20% (Standard deviation 1.94%). The remaining two events had negative and significant abnormal returns and their first-day abnormal return mean was -0.91% (Standard deviation of 0.64%), five-day cumulative abnormal return mean was -1.31% (Standard deviation of 1.51%) and ten days cumulative abnormal return mean was -0.27% (Standard deviation 2.04%).

**Table-8: 2010 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 13**  | -0.21% | 0.69%  | -3.88% | 1.83%  | -6.22%  | 2.98%  |
| Positive         | 15**  | 0.00%  | 1.27%  | 3.19%  | 1.49%  | 4.73%   | 1.88%  |
| Positive         | 16*   | 0.39%  | 0.59%  | 1.29%  | 1.03%  | 1.34%   | 1.90%  |
| Negative         | 3*    | -0.52% | 0.19%  | -0.04% | 0.22%  | -1.02%  | 0.23%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 8 provides the analysis of terrorist events in 2010. A total of 47 events occurred in 2010 out of which thirteen events yielded significant negative abnormal return and their first-day abnormal return mean was -0.21% (Standard deviation 0.69%), five days cumulative abnormal return mean was -3.88% (Standard deviation 1.83%) and ten days cumulative abnormal return mean was -6.22% (Standard deviation 2.98%). Fifteen other events that occurred during the year had positive and significant abnormal returns and their first-day abnormal return mean was 0.00% (Standard deviation of 1.27%), five days cumulative abnormal return mean was 3.19% Standard deviation of 1.49% and ten days cumulative abnormal return mean was 4.73%, (Standard deviation 1.88%). Another sixteen events had positive but insignificant abnormal returns and their first-day abnormal return mean was 0.39% (Standard deviation 0.59%), five days cumulative abnormal return mean was 1.29% (Standard deviation 1.03%) and ten days cumulative abnormal return mean was 1.34% (Standard deviation 1.90%). Lastly, three events had negative and insignificant abnormal returns their first-day abnormal return mean was -0.52% (Standard deviation of 0.19%), their five-day cumulative abnormal return mean was -0.04% (Standard deviation of 0.22%), and their ten-day cumulative abnormal return mean was -1.02% (Standard deviation 0.23%).

**Table-9: 2011 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 3**   | 0.06%  | 0.43%  | -3.28% | 0.68%  | -5.36%  | 2.14%  |
| Positive         | 5**   | 0.96%  | 0.63%  | 3.78%  | 1.85%  | 7.37%   | 2.30%  |
| Positive         | 4*    | 0.23%  | 0.43%  | 1.06%  | 0.69%  | 1.56%   | 1.17%  |
| Negative         | 3*    | -0.66% | 0.76%  | -0.55% | 0.61%  | 0.07%   | 1.59%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 9 provides the terrorist events that occurred in 2011 i.e. total of 15 events. Out of these 15 events, only three events yielded significant negative abnormal returns and their first-day abnormal return mean was 0.06% (Standard deviation of 0.43%), five days cumulative abnormal return mean was -3.28% (Standard deviation of 0.68%) and ten days cumulative abnormal return mean was -5.36% (Standard deviation 2.14%). Five events other events yielded significant positive abnormal returns and their first-day abnormal return mean was 0.96%, Standard deviation was 0.63%, five days cumulative abnormal return mean was 3.78%, Standard deviation was 1.85%, and ten days cumulative abnormal return mean was 7.37%(Standard deviation 2.30%). Four events other events showed positive but insignificant abnormal return and their first-day abnormal return mean was 0.23% (Standard deviation of 0.43%), five days cumulative abnormal return mean was 1.06% (Standard deviation of 0.69%) and ten days cumulative abnormal return mean was 1.56% (Standard deviation 1.17%). Lastly, three events had negative and insignificant abnormal returns their first-day abnormal return mean was -0.66%, (Standard deviation of 0.76%), their five-day cumulative abnormal return mean was -0.55% (Standard deviation of 0.61%), and their ten-day cumulative abnormal return mean was 0.07% (Standard deviation 1.59%).

**Table-10: 2012 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 4**   | -0.28% | 0.77%  | -1.50% | 0.81%  | -1.73%  | 2.02%  |
| Positive         | 5**   | 0.29%  | 0.79%  | 4.01%  | 3.28%  | 5.44%   | 3.68%  |
| Positive         | 9*    | 0.19%  | 0.65%  | 0.66%  | 0.55%  | 2.13%   | 2.41%  |
| Negative         | 5*    | -0.34% | 0.77%  | -0.30% | 0.88%  | -0.56%  | 0.56%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 10 provides an analysis of the terrorist events that occurred in 2012. A total of 23 events occurred in 2012. Four events showed significant negative abnormal return and their first-day abnormal return mean was -0.28% (Standard deviation of 0.77%), five days cumulative abnormal return mean was -1.50% (Standard deviation of 0.81%) and ten days cumulative abnormal return mean was -1.73% (Standard deviation 2.02%). Five other events had significant positive abnormal return and their first day abnormal return mean was 0.29% (Standard deviation of 0.79%), five days cumulative abnormal return mean was 4.01% (Standard deviation of 3.28%) and ten days cumulative abnormal return mean was 5.44% (Standard deviation 3.68%). Nine events on the other hand had insignificant and positive abnormal returns and their first-day abnormal return mean was 0.19% (Standard deviation 0.65%), five days cumulative abnormal return mean was 0.66% (Standard deviation 0.55%) and ten days cumulative abnormal return mean was 2.13% (Standard deviation 2.41%). Lastly, five events yielded insignificant and negative abnormal return and their first-day abnormal return mean was -0.34% (Standard deviation of 0.77%), five-day cumulative abnormal return mean was -0.30% (Standard deviation of 0.88%), and ten days cumulative abnormal return mean was -0.56% (Standard deviation 0.56%).

**Table-11: 2013 Outcomes**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 9**   | -1.56% | 0.87%  | -5.93% | 3.44%  | -7.32%  | 4.13%  |
| Positive         | 4**   | 0.56%  | 0.24%  | 2.96%  | 0.67%  | 4.17%   | 1.08%  |
| Positive         | 8*    | -0.21% | 0.61%  | 1.20%  | 1.27%  | 1.87%   | 1.46%  |
| Negative         | 1*    | 0.16%  |        | -0.12% |        | -0.49%  |        |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 11 provides an analysis of the terrorist events that occurred in 2013. A total of 22 events occurred in 2013 out of which nine events yielded significant negative abnormal return and their first-day abnormal return mean was -1.56% (Standard deviation 0.87%), five days cumulative abnormal return mean was -5.93%, (Standard deviation 3.44%) and ten days cumulative abnormal return mean was -7.32%(Standard deviation 4.13%). Four other events yielded significant and positive abnormal return and their first-day abnormal return mean was 0.56% (Standard deviation of 0.24%) five days cumulative abnormal return mean was 2.96% (Standard deviation of 0.67%) and ten days cumulative abnormal return mean was 4.17% (Standard deviation 1.08%). Eight events occurred in 2013 yielded positive but insignificant abnormal returns and their first-day abnormal return mean was -0.21%(Standard deviation of 0.61%), five days cumulative abnormal return mean was 1.20%(Standard deviation of 1.27%) and ten days cumulative abnormal return mean was 1.87%(Standard deviation 1.46%). There was only one event that showed negative and significant abnormal return and its first-day abnormal return was positive i.e. 0.16%, the five-day cumulative abnormal return was -0.12% and the ten-day cumulative abnormal return was -0.49%.

Overall, it seems that with time terrorist events in Pakistan increased, and at the start of the second half of the last decade such events were at their peak. Year-wise analysis of terrorist events seems to provide conflicting evidence where some events yielded significant negative abnormal stock returns while other events provided significant positive stock returns. This might be due to the abundance of events where the stock market does respond to the significant terrorist events but after such strong events become insensitive to other following terrorist events and in the recovery phase yield positive abnormal returns. The significance of the terrorist events as to whether they have stronger economic and political implications also differed where the stock market yielded stronger response for stronger events and weak or no response for the events which are less significant or which happen in remote areas not having direct link with the economic and business activity in the country.

#### 4.2 Event-Wise Analysis

This part of the analysis provides a category-wise analysis of the terrorist events. Terrorist events were segregated into different categories to highlight the importance of the nature of the events in the context of the stock markets. The categories considered in the study are related to foreigners, general events, events related to the military, events related to political terrorism, and sectarian events.

**Table-12: Analysis of Terrorist Events Related to Foreigners**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 05**  | -0.55% | 1.14%  | -3.20% | 3.17%  | -5.30%  | 3.40%  |
| Positive         | 01**  | -0.03% |        | 3.16%  |        | 4.73%   |        |
| Positive         | 04*   | -0.01% | 0.27%  | 1.55%  | 1.43%  | 2.77%   | 2.12%  |
| Negative         | 02*   | -1.03% | 1.02%  | -1.80% | 2.62%  | 1.13%   | 2.91%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 12 provides an analysis of the terrorist events related to foreigners. A total of 12 events were considered that directly affected foreigners in Pakistan. Out of the total of 12 events, the stock market significantly and negatively responded to five events and the first-day abnormal return mean was -0.55% (Standard deviation 1.14%), five-day cumulative abnormal return mean of these five events was found to be -3.20% (Standard deviation 3.17%) along with ten days cumulative abnormal return mean -5.30% (Standard deviation 3.40%) Only one terrorist event yielded positive and significant abnormal return whereas; the first-day abnormal return

was -0.03%, five days cumulative abnormal return was 3.16% and ten days cumulative abnormal return was 4.73%. Another four events yielded positive but insignificant abnormal returns in the stock market whereas the first-day abnormal return mean was found to be -0.01% (Standard deviation of 0.27%), the five-day cumulative abnormal return mean was 1.55% (Standard deviation of 1.43%) and ten days cumulative abnormal mean 2.77% was (Standard deviation 2.12%). Lastly, two events yielded negative and insignificant abnormal stock returns in the stock market whereas the first-day abnormal return mean was -1.03%(Standard deviation 1.02%), the five-day cumulative abnormal return mean was -1.80% (Standard deviation 2.62%) and ten days cumulative abnormal mean was 1.13%, (Standard deviation 2.91%).

Overall, events related to foreigners are significant events related to the stock markets in Pakistan because stock markets in Pakistan also tend to attract foreign investments and when foreigners are hit with terrorist events, the confidence of the foreign investors got shaky.

**Table-13: Analysis of General Terrorist Events**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 45**  | -0.82% | 1.49%  | -4.90% | 3.57%  | -7.54%  | 4.86%  |
| Positive         | 37**  | 0.89%  | 1.51%  | 4.94%  | 4.57%  | 7.43%   | 6.94%  |
| Positive         | 30*   | 0.45%  | 1.11%  | 1.45%  | 1.37%  | 2.32%   | 2.12%  |
| Negative         | 19*   | -0.65% | 1.01%  | -0.31% | 1.25%  | -1.36%  | 2.01%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 13 provides an analysis of general terrorist events which did not have any target association. A total of 131 general terrorism events occurred from 2001 to 2013. Out of these, forty-five events yielded significant and negative abnormal returns in the stock market whereas the first-day abnormal return mean was -0.82% (Standard deviation of 1.49%), the five-day cumulative abnormal return mean was -4.90% (Standard deviation of 3.57%) and ten days cumulative abnormal return mean was -7.54% (Standard deviation 4.86%). Another thirty-seven terrorist event yielded positive and significant abnormal returns in the stock market whereas the first-day abnormal return mean was 0.89% (Standard deviation 1.51%), five-day cumulative abnormal return mean was 4.94% (Standard deviation = 4.57%) and ten days cumulative abnormal return mean was 7.43% (Standard deviation 6.94%). Another thirty events occurred had positive but insignificant abnormal returns whereas the first-day abnormal return mean was 0.45% (Standard deviation of 1.11%), five days cumulative abnormal return mean of 1.45% (Standard deviation of 1.37%), and ten days cumulative abnormal mean was 2.32% (Standard deviation 2.12%). Lastly, nineteen events held which had negative and significant abnormal stock returns and stock market yield first-day abnormal return mean of -0.65% (Standard deviation 1.01%), five days cumulative abnormal return mean of -0.31%(Standard deviation 1.25%) and ten days cumulative abnormal mean of -1.36% (Standard deviation 2.01%).

Overall, mixed evidence is found about the general terrorist events whereas some events yielded negative significant stock returns, others yielded positive significant stock returns and some also yielded insignificant positive and negative events. The occurrence of terrorist events in Pakistan is an ordinary phenomenon so stock markets tend to only respond to events having economic consequences. Thus, it could be argued that individual events of terrorism state different effects on the stock market where some events are more powerful than others and some events do not have any power about their impact on stock markets in Pakistan.

**Table-14: Analysis of Terrorist Events Related to Military**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 16**  | -1.07% | 0.96%  | -5.42% | 3.26%  | -8.10%  | 4.88%  |
| Positive         | 21**  | 0.54%  | 1.38%  | 3.58%  | 2.54%  | 5.94%   | 3.95%  |
| Positive         | 12*   | 0.01%  | 1.02%  | 1.22%  | 1.53%  | 2.75%   | 2.17%  |
| Negative         | 02*   | -0.50% | 0.22%  | -1.98% | 1.05%  | 0.10%   | 0.61%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 14 provides an analysis of the terrorist events which targeted the military. A total of 51 such events were found out of which sixteen events yielded significant negative abnormal returns, whereas, the first-day abnormal return mean was -1.07% (Standard deviation 0.96%), Five days cumulative abnormal return mean was -5.42% (Standard deviation 3.26%) and ten days cumulative abnormal return mean was -8.10% (Standard deviation 4.88%). Another 21 events yielded positive and significant stock returns whereas the first-day abnormal return mean was 0.54% (Standard deviation of 1.38%), Five-day cumulative abnormal return mean was 3.58% (Standard deviation of 2.54%) and the ten-day cumulative abnormal return mean was 5.94% (Standard deviation 3.95%). Further 12 events of this type yielded positive but insignificant abnormal stock returns whereas the first-day abnormal return mean of these events was 0.01% (Standard deviation 1.02%), the five-day cumulative abnormal return mean was 1.22% (Standard deviation 1.53%) and ten days cumulative abnormal return mean was 2.75% (Standard deviation 2.17%). Lastly, two events of this type yielded negative and insignificant stock returns whereas the first-day abnormal return mean was -0.50% (Standard deviation of 0.22%), the five-day cumulative abnormal return mean was -1.98%, (Standard deviation of 1.05%) and ten days cumulative abnormal mean was 0.10%, (Standard deviation 0.61%). Overall, events related to the military do not seem that much important for stock markets in Pakistan. Some events showed significant and negative impacts on the stock prices while other events were found insignificant or positive.

**Table-15: Analysis of Terrorist Events Related to Politics**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 16**  | -0.47% | 2.12%  | -3.72% | 3.44%  | -5.81%  | 3.39%  |
| Positive         | 05**  | 1.49%  | 1.29%  | 7.65%  | 5.59%  | 9.37%   | 5.53%  |
| Positive         | 11*   | -0.24% | 1.19%  | 1.26%  | 1.50%  | 1.95%   | 1.41%  |
| Negative         | 04*   | -0.40% | 0.72%  | -0.54% | 1.52%  | -0.77%  | 1.92%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Table 15 provides the terrorist events having political significance. A total of 36 such events were located and analyzed in this study. Out of the total of 36 events, 16 events yielded significant negative abnormal returns whereas the first-day abnormal return mean of these events was -0.47% (Standard deviation of 2.12%), Five days cumulative abnormal return mean was -3.72% (Standard deviation of 3.44%) and ten days cumulative abnormal return mean was -5.81% (Standard deviation 3.39%). Another five such terrorist events yielded positive abnormal returns and their first-day abnormal return mean was 1.49% (Standard deviation of 1.29%), Five days cumulative abnormal return mean was (7.65%) Standard deviation of 5.59%, and ten days cumulative abnormal return mean was 9.37% (Standard deviation 5.53%). Eleven events, on the other hand, yielded positive but insignificant abnormal stock returns whereas the first-day abnormal return mean was -0.24% (Standard deviation of 1.19%), the five-day cumulative abnormal return mean was 1.26% (Standard deviation of 1.50%) and ten days cumulative abnormal mean was 1.95% (Standard deviation 1.41%). The last four events in the

category provided negative abnormal returns, whereas the first-day abnormal return mean was -0.40% (Standard deviation of 0.72%), the five-day cumulative abnormal return mean was -0.54% (Standard deviation of 1.52%) and ten days cumulative abnormal mean was -0.77% (Standard deviation 1.92%).

Overall, political terrorism events seem to have stock market significance as more than 50% of such events yielded negative returns. But again the significance of individual events could not be ignored and events like the assassination of Benazir Bhutto have wider implications and stronger impact on the local stock markets whereas other events might not have that much significance. Thus, again the notion remains that individual terrorism events may convey information of different significance to the market even if the nature and category of events are alike.

**Table-16: Analysis of Terrorist Events Related to Sectarian**

| Abnormal returns | Count | AR0    |        | CAR +5 |        | CAR +10 |        |
|------------------|-------|--------|--------|--------|--------|---------|--------|
|                  |       | Mean   | Stdev. | Mean   | Stdev. | Mean    | Stdev. |
| Negative         | 13**  | -0.90% | 1.48%  | -5.53% | 6.61%  | -9.16%  | 9.04%  |
| Positive         | 21**  | 0.57%  | 1.37%  | 4.94%  | 3.09%  | 8.20%   | 5.33%  |
| Positive         | 08*   | 0.10%  | 0.64%  | 1.13%  | 1.11%  | 0.23%   | 1.47%  |
| Negative         | 03*   | -0.02% | 0.56%  | -0.40% | 0.44%  | 0.48%   | 2.37%  |

\*\* Significant @ 5% level of significance, \* Insignificant

Lastly, table 16 provides an analysis of the terrorist events related to sectarianism. A total of 45 events were considered in this regard out of which thirteen yielded significant negative abnormal returns whereas the first-day abnormal return mean of these events was -0.90% (Standard deviation 1.48%), Five days cumulative abnormal return mean was -5.53% (Standard deviation 6.61%) and ten days cumulative abnormal return mean was -9.16% (Standard deviation 9.04%). Another twenty-one sectarian terrorist events provided significant positive abnormal returns whereas the first-day abnormal return mean of these events was 0.57% (Standard deviation of 1.37%), Five days cumulative abnormal return mean was 4.49% (Standard deviation of 3.09%) and ten days cumulative abnormal return mean was 8.20% (Standard deviation 5.33%). Moreover, eight other sectarian terrorist events yielded positive but insignificant abnormal returns whereas the first-day abnormal return mean of these events was 0.10% (Standard deviation of 0.64%), the five-day cumulative abnormal return mean was 1.13% (Standard deviation of 1.11%) and the ten days cumulative abnormal return mean was 0.23% (Standard deviation 1.47%). Lastly, three sectarian terrorist events yielded insignificant negative abnormal returns whereas the first-day abnormal return mean was -0.02% (Standard deviation 0.56%), the five-day cumulative abnormal return mean was -0.40% (Standard deviation 0.44%) and the ten-day cumulative abnormal mean was 0.48% (Standard deviation 2.37%).

Overall, sectarian events also provided mixed evidence. The problem of sectarianism is quite old in Pakistan and such events do not have direct economic ramifications. Moreover, these events also differ concerning their types, significance, place of origin, and other characteristics. Overall analyses of these events do not signify their importance much as to their impact on the stock markets in Pakistan.

### 4.3 Summary of Analysis of Terrorist Events

Overall, terrorist events which primarily are classified as negative events were analyzed in two ways. Firstly, a year-wise analysis of the terrorist events was conducted, and after these events were categorized according to their types as to whether the event was related to foreigners, military, politics, sectarian problems, or general to further assess which type of event yielded stronger impact on the stock market.



Overall, the year-wise analysis yielded mixed evidence where within each year terrorist events not only negative significant abnormal stock returns but also positive abnormal stock returns. The problem might arise due to the abundance of terrorist events where terrorist events occurred in Pakistan more frequently than in other parts of the world. The stock market does respond to the terrorist events but subsequent terrorist events do not yield many negative abnormal returns and while in recovery such events do not impact stock markets and due to recovery positive, abnormal returns are yielded. This is following Chen and Siems (2003) who found that stock markets in the US recovered faster than the other capital markets after the imitation of the invasion of the US government in other countries because of the frequency of such events in the US. Moreover, the terrorist event also differs concerning their economic, political, and strong significance which implies differencing response of the stock market to each terrorist event where strong terrorist event yield a stronger response and weak terrorist events do not have any significant impact on the stock market. A subsequent analysis considering the different categories of terrorist events was also conducted. This analysis also yielded mixed evidence where almost every type of event yielded positive significant responses, negative significant responses, and also insignificant responses from the stock market side. Overall, more negative significant responses were generated by political and foreigner-related terrorism events, while general events, sectarian events, and military-related events yielded less negative significant responses. This might also be due to the reputation of terrorist events in general and the military category, while the events related to politics and foreigners occur after some time which gives the stock market proper time to respond to the severity of each event while in case of general and military-related events, such events occur too often and stock market for such events which become common do not respond in a significant manner and while recovery of past events such weak events could even show a positive impact of terrorist events on the stock price. Although the evidence provided by the impact of terrorist events on the stock market is not conclusive; it does lead towards the notion that terrorist events have varying implications concerning the stock market and economic, political, and business implications of individual terrorist events could differ from a great extent.

## **5. Conclusions and Suggestions**

The data relating to the stock index was collected from the website of the Pakistan Stock Exchange and the data relating to terrorist events was collected from the newspapers. The standard event study methodology was employed to assess the impact of each political and terrorist event on the stock market. The study considers a total of 277 terrorism events were considered in the study. The terrorist events were segregated year-wise and also category-wise. Concerning terrorism, mixed evidence was found in the study where individual terrorist events not only yielded negative significant abnormal returns but also positive significant abnormal returns and many of the terrorist events also provided insignificant abnormal returns in the stock markets of Pakistan. The problem which this scenario was related to the abundance of terrorist events where stronger terrorist events yielded a stronger negative impact on the stock market, but during recovery other less strong terrorists fail to affect the stock market negatively. Variations in the nature and significance of terrorist events also cause varying responses of the stock market to individual events. It was also indicated by the analysis that terrorist events having economic and political consequences yielded a greater impact on the stock markets in Pakistan. The subsequent categorical analysis provided that terrorism events relating to politics and foreigners have a greater probability of effect the stock market in a negative manner. Although the evidence provided by the impact of terrorist events on the stock market is not conclusive; it does lead towards the notion that terrorist events have varying implications concerning the stock market and economic, political, and business implications of individual

terrorist events could differ from a great extent. Overall, this study found that the stock market does respond to terrorist events in Pakistan but the implications of each event might be different. Following are the implications and recommendations of the study in this regard:

- The study finds varying evidence concerning terrorist events implying that each terrorist event has its implication according to the nature and strength of the event. The economic and political consequences of these events seem relevant in this regard.
- The stock market in a period of prosperity considers positive news normal and in a period of low economic growth considers negative events normal. While negative events are responded to in good times and positive events are responded to in bad times.
- Policymakers should adopt a stabilized outlook of both political and economic scenarios to avoid negative shocks of negative events on the stock market.
- A serious effort should also be made to eliminate terrorism from the country as terrorism has wider implications and it also hinders the stock market to attain its full potential.
- Government should also actively try to disengage with the USA and its war on terrorism as such initiatives yielded a positive response from the stock market in Pakistan.

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