How Different Terrorist Attacks Affect Stock Markets

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Abstract
Terrorism has become a destructive factor causing not only fatalities and injuries but also real economic cost. Terrorist attacks in Pakistan have seen a remarkable surge since 2000. Our study examines the impact of 470 terrorist attacks on the stock market of Pakistan over the period of twelve years from 2000 to 2011. Attacks on cities with stock markets have a negative effect on the KSE-100, while any attack on Federally Administered Tribal Areas (FATA) shows positive significant effect on the performance of the stock market. Attacks with gaps are associated with larger negative market reactions as compared to frequent attacks. Results of the study show that from year 2000 to 2011, there was a surge in terrorist trends, much of which came with a corresponding negative effect on KSE-100 index. The type of attacks has no effect on the performance of the stock market. A negative relation was found between loss of human life and the KSE-100 index return. In sum, different types of terrorist attacks have varied effects on financial markets.

Keyword: Terrorist's Attack, Event Study, Stock Returns, Karachi Stock Exchange (KSE), Federally Administered Tribal Areas, Drone Attacks, Geopolitical risk

Header: Terrorist attacks and stock market

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1. Introduction

Terrorist attacks are significant events to financial markets. For example, after the 9/11 terrorist attacks, the NYSE and NASDAQ were closed until 9/17. In the first opening days, the DJIA decreased by 684 points. Existing literature concludes that terrorism has a negative impact on financial markets all over the world. For example, Johnston and Nedelescu argue that terrorism affects the economy by undermining investor confidence and reduces the incentive to spend as opposed to save. This process can spread throughout the economy and the rest of the world through normal business cycle and trade channels.[1] Hoffman examines the historical trends of international terrorism and their ramifications to economic matters[2]. Nevertheless, existing literature focuses on the financial impact of a very limited number of terrorist events and focuses particularly 9/11. Karolyi concludes that there is still little known about the economic and financial consequences of terrorism[3]. We contribute to the literature by analyzing the impact of 470 terrorist attacks on the stock market of Pakistan with five different aspects.

Terrorist attacks create uncertainty by increasing investment risks in Pakistan; this adversely affects stock markets, can lead to lower economic growth, increased cost to companies, smuggling and negatively affects the society of Pakistan. According to government statistics, the direct and indirect economic cost of terrorism in last ten years is $68 billion, equivalent to almost half of the country's total debt (Pakistan economic survey 2010-11)[4]. There are non-stop series of terrorist attacks all over the country. Suicide squads, attacks on foreigners, bomb blasts, and even the mosques, the holiest places for Muslims, are not safe.

Despite the terrorist attacks, the Pakistan stock market apparently demonstrates growth potential. The Karachi stock exchange (KSE) was awarded "The best performing stock market of the world for the year 2002." Similarly, in December 2007, the KSE 100 index closed at 14,127

points with Market capitalization of Rs.4.57 trillion (1 USD = 85 to 90 Rs). However, a great decline can be noticed after the counterinsurgency struggle by the Pakistan government. The KSE 100 Index dropped to 4,675 points with a market capitalization of Rs.1.58 trillion only, which is equivalent to loss of over 65% from its capitalization in December 2007.[5]

Although terrorism is not new, the terrorist attacks of 9/11 changed the scope of terrorism as a geo-political risk that affects the worldwide economy and financial markets. To design effective policies to cope with non-stop terrorism, to reduce its cost and to improve the confidence of investors in stock markets, a clear understanding of the nature of terrorism and its effects on stock markets is necessary. Thus, our illustration focuses on the impact of terrorist attacks on the stock market of Pakistan over the period of 12 years, from 2000 to 2011.

******* Table 1 and Table 2 *******

Terrorism in Pakistan has become the most destructive social phenomenon in recent years. Table 1 shows that a total of 470 relatively major events took place since 2000. The attacks are increasing, with the worst year being 2009 with 111 major attacks. Table 2 also shows that the 470 terrorist attacks caused 10,743 fatalities and 22,451 major injuries. The annual death toll from terrorist attacks has risen from 189 in 2003 to 6,142 in 2011, with a total of 10,743 fatalities and 22,451 injuries.

******* Figure 1, Table 3, Table 4 *******

A total of 470 major attacks took place all over the Pakistan without any specific target

area. Table 3 indicates the location and number of incidents from January 01, 2000 to September 15, 2011. In federally administered tribal areas (FATA)/Border Area, 97 attacks took place as this area is near the Afghan border and Taliban and others terrorists have much involvement in this area. Collectively, 90 major attacks took place in three financial cities specifically Karachi, Lahore and Islamabad, while 89 attacks took place in larger but non-stock market cities of the country. One hundred ninety-four attacks took place in other areas of the country. Figure 1 is the graphical representation of Table 3 which shows location fractions of terrorist attacks in the country. Twenty-one percent of the attacks were only in the FATA, 8% in Karachi and 5% of the total attacks took place in the capital city of Pakistan. Forty-one percent of the total attacks were in other areas of the country. Table 4 details the number and type of terrorist attacks since 2000. While terrorist attacks can be different types, the impact of all is equally destructive. Places of worship have not even been spared in the country, with 23 deadly attacks being carried out in mosques. Two hundred eleven bomb blasts in different areas caused massive human loss; infrastructure damage and many more problems.

Our study is unique in many aspects from previous studies. We analyze the effects of 470 terrorist attacks from various aspects: the effects of drone attacks, attacks in federally administered tribal areas (FATA)/border area, mosque attacks, a comparison of frequent attacks vs. non-frequent attacks and an analysis of all 470 attacks from five days before the event to ten days after the attacks. This makes our study unique and contributive to related literature. First, we consider the year-wise changes in effect from year 2000 to 2011, as we notice that the number of terrorist attacks markedly increased in Pakistan. Second, we analyze the effects of different types of attacks by dividing the attacks into five main categories: bomb blast, attacks in mosques, suicide squads, 9-11 western targets (foreigners residing in Pakistan) and drone

attacks. Third, we compare the effect of attacks with gaps with frequent attacks within our event window of [-5:10]. Fourth, we undertake location-wise quantification of the effects by dividing the terrorist attacks in five groups namely Karachi, Stock Market City, the FATA/Border Area, Large Non Financial City and other which is any location other than four mentioned categories. Fifth we analyze the effects according to the human loss caused by the attacks. In addition to that we also consider the timing of the terrorist attacks while finding the impact. If an attack took place after the stock market trading hours i.e. 3:30 pm, its effect was considered in next working day.

The findings of our study are useful for regulatory agencies, investors, anti-terrorist operations, banks/ lenders and insurance companies. We found that location of terrorist attacks is important. Any attack in cities with a stock market has negative effect while the attack in FATA/Border Area shows a positive significant effect on the performance of stock market. The attacks with time frame gaps are associated with larger negative market reactions as compared to frequent attacks. Similarly, every additional human loss increases the negative impact on the stock market. However, the types of the attacks have no significant impact on the stock market. Investors have no concern whether the attack was a suicide squad, bomb blast, or drone attack. Market efficiency of the Karachi stock market varied in last decade. The effect of terrorist attack was absorbed in one day in all years except in years 2005 to 2008 where the effect was dominant after as many as the ten days after the events. We also found that market has predictive power on terrorist attack one day before the event took place from year 2001 to 2011. Thus, market can perceive the terrorist attacks as unusual and impactful for long time.

2. Literature Review

The analysis about the impact of terrorism on financial markets is in a developing stage. Most of the research focuses on the impact of very limited terrorist events and particularly 9/11. Very limited literature is available in measuring the impact of a series of events on stock market. Karolyi [6] concludes that there is yet little known about the economic and financial consequences of the terrorism. To the best of our knowledge, our paper is the first to study the relationship of wide range of terrorist attacks and tactics on the stock markets (particularly the Pakistan market). We consider time, type of attacks, location of the attacks, successive attacks and human loss caused by every terrorist attacks in our study. We also consider the timing of the terrorist attacks while finding the impact of the attacks.

Many research studies found a negative impact of terrorism on financial markets. For example Abadie and Gardeazabal, Suarez and Pshisva, Barth et al., Karolyi and Martell, Nguyen and Enomoto, Barros and Gil-Alana and Gul et al. find negative impacts of terrorism on financial markets and the economy. However, Chen and Siems and Eldor and Melnick argue that financial markets are efficient, and no evidence supports that market becomes de-sensitized over time to terror. Johnston and Nedelescu conclude that precise, timely and flexible response of the authorities is crucial to make the financial markets efficient in absorbing terrorist shocks. There is no consensus about the reasoning of terrorism. [7] Gunaratna and Nielsen mentioned the movement of Al Qaeda from Afghanistan to tribal areas of Pakistan, while Khokhar argued that *madaris*, Shia Islamic schools of higher education, are the main reason of terrorism, however. Asal et al. examines the role of family in joining or refusing any jihad organization and found that *madaris* are not the reason of terrorism.

Literature agrees on the negative impact of terrorist events. Terrorism has a negative

impact on GDP, economic growth and financial markets all over the world; however, significance of the impact varies from country to country and market to market. Abadie and Gardeazabal studied the economic cost of conflict in terms of economic growth and market capitalization of public firms in Basque country. They discovered that per capita GDP of Basque decreased by 10 percent on average as compared to a synthetic control region without terrorism. Basque stocks outperform the non-Bosque stocks in peace, while opposite performance at the end of cease fire.[8] Barth et al. examined the impact of terrorism on economic growth and capital formation by using annual panel data from 1970 to 2003. They found that terrorist incidents had significant negative effects on economic growth. They discovered that the target of the attack also made a difference. Terrorist attacks on private institutions increased because it affected both growth and capital formation.[9]

Other research focuses on the impact of terrorism on financial markets. Suarez and Pshisva measured the relationship between kidnappings and firm investment in Colombia. They found that the direct kidnapping of the managers and owners had more effect than other general violent crimes like guerrilla attacks and homicides, for example. Firms with significant foreign ownership are more sensitive to kidnappings of foreign managers and owners.[10] Karolyi and Martell cover a much wider range of terrorist events and examine the impact of 75 terrorist attacks in the US over a period of eight years, in which publicly traded firms were targets. By applying the event-study analysis, the authors discovered a statistically significant negative reaction in stock prices of -0.83%, which was equivalent to an average loss of $401 million per firm per attack market capitalization. These attacks had different effects according to country. They discovered larger negative share price reaction in wealthier and more democratic countries. The authors found human capital losses such as kidnappings of company executives are

associated with larger negative share price impact than physical losses.[11] Unlike our study, time effects were not analyzed. In addition, the location of the terrorist attack was also not considered. Human loss is also related to selected firms like kidnapping of the CEOs, while human loss on the basis of people killed in any attack regardless of the firm is the basis of our study. Comparison of the affects of frequent attacks vs. infrequent attacks also makes our study different from this study.

Relatedly, Nguyen and Enomoto use the GARCH model to determine the effect of seven international terrorist attacks on the stock markets of Iran and Pakistan. They found attacks in Indonesia, Madrid, London and in the Iraq war had significant, negative effects on volatility of market returns. The 9/11 attack showed statistically significant negative reaction of -.92% on Tehran, while -2.76% on Karachi stock market.[12] Gul et al. estimated the impact of terrorism on the financial markets in Pakistan over the period of two years. By using the ordinary least square method (OLS), they found that terrorist attacks adversely affected the financial markets and the economy of Pakistan. However, the significance of the effect varied for different markets. They recommended that the government and the state ought to work for the institutional development regarding investment in the innovative security industry.[13] However, we found that impact of the attack varies as the location of the attacks change; Gul et al. do not consider this aspect. Similarly, the types of the attack were also not studied. The Gul et al. study uses only two years of data and does not capture the changes in the impact of attacks during the last 12 years. Furthermore, we use event window of five days before the attack and analyze it ten days after the attack to see the market efficiency which is unique in this study. Comparison of the impact of frequent attacks vs. attacks with gap has also not been studied before.

Similarly Barros and Gil-Alana analyzed the affects of terrorist attacks on the Basque

stock market (Bolsa de Bilbao stock market) from 1st July 2001 to 18th March 2006. They employed long memory regression models, with daily stock market returns of Bilbao 2000 Index as a dependent variable and index for violence as an independent variable. The authors found that violence has significant negative effect on the stock market returns. Oppositely, the volatility processes are positively correlated with violence.[14]

Several studies did not find any evidence that terrorism has a negative impact on stock markets because the markets are so efficient and flexible in some countries that they absorb the impact of such events. Chen and Siems apply event study methodology to assess the effects of fourteen terrorist/military attacks dating back to 1915. In addition to these 14 attacks the authors also includes the event of Iraq's attack on Kuwait and the 9/11 attacks on the World Trade Center and the Pentagon. They found that U.S financial markets are more flexible, more liquid and recover more quickly than the other global financial markets do. This study concludes that reaction of the financial markets to 9/11 was less severe than the terrorist events in past.[15] As compared to the above mentioned study we use a large number of attacks. We found an increasing trend in attacks and associated negative impact on stock market. Our results show that location of the attacks matter as we found that attacks in Karachi has negative while attacks in FATA have positive impact on stock market. Furthermore we found that infrequent attacks have more impact than frequent attacks. Chen and Siems conclude that markets are liquid and recover the impacts.[16] We found significant negative impacts of terrorism on Karachi stock market with different aspects. We agree that some financial markets can absorb the impact of terrorist attacks, but argue that several terrorist tactics can make varied influence on stock markets.

Among existing literature, this paper is partly related with Eldor and Melnick which examines the reaction of Israel's stock market prices and exchange rates to terror through time

series analysis for 3,515 daily observations. They examine the affect of 639 terror attacks on stock and foreign exchange markets during the period 1990 and 2003. They found that suicide attacks had a permanent effect, while location of the event had no effect on financial markets. Financial markets are efficient. There is no evidence to support that the market becomes de-sensitized over time to terror. They argue that market liberalization policies contributed to cope with the effects of terrorist attacks.[17] This study is different from ours in many ways. First, we analyze the impact of all 470 terrorist attack five days before the attack and ten days after the attack. Second, we consider the changes of the impact in last twelve years in order to analyze the serial changes in the tactics of terrorists and their impact to financial market. Third, we also compare the impacts of frequent attacks vs. infrequent attacks which were not considered in this study. Fourth, while in Israel the location of the attack does not matter, we found varying impact of the attack with respect to location.

Buesa et al. measured the direct economic costs of the terrorist attacks on March 11, 2004 in the region of Madrid. In addition to physical and infrastructural damages and economic losses terrorist attacks caused 291 fatalities and 1,600 major injuries. By applying the conservative criterion for evaluation they found that these terrorist attacks caused a minimum loss of € 211.584 million to the regional economy of Madrid which is equivalent to 0.16 % of the GIP of the Region of Madrid and 0.03 per cent of the national GDP of Spain. This confirms that the direct impact of the attacks of March 11 has been limited and short term.[18]

Just like there is no consensus on the definition of terrorism, similarly there is no consensus about the reasoning of terrorism. Literature mentioned important reasons of terrorism in Pakistan. Gunaratna and Nielsen mentioned the movement of Al Qaeda from Afghanistan to tribal areas of Pakistan, while Khokhar argued that *madaris* are the main reason of growing

terrorist activities in Pakistan. Asal et al. examine the role of family in joining or refusing any jihad organization.

Gunaratna and Nielsen examine the movement of Al Qaeda and Taliban infrastructure from Afghanistan to tribal areas of Pakistan. After the U.S. attack in October 2001, the Federally Administered Tribal Area (FATA) in Pakistan has emerged as a base for the Al Qaeda leaders. The authors argue that unless the Afghan-Pakistan border is not cleared from these militant groups, the threat for both countries will continue.[19] The results of our study are consistent with the authors, as we found that killing terrorists in FATA shores up confidence in the stock market and stock market shows positive return from .9 % to 1.71% compared to any "other" location.

Khokhar argued about Reforming Militant *Madaris* in Pakistan. The *madaris* are Religious Education Institutions (REIs) and after 9/11 these *madaris* have been the focus of Western media. These days, *madaris* are labeled as terrorist factories and openly linked to terrorism by the west. After the War on Terror started by Pakistan in coalition with U.S., the Pakistani Government was also forced to deal with these violent religious schools. Although the federal government took few actions, they were not successfully implemented and there are still *madaris* in operation all over Pakistan.[20] Asal et al. indicate from their survey of a sample of 141 families in Pakistan that they know their consent in favor of, or against their children for joining a Jihad. The author presented about the role of the family in encouraging participation in jihad and what are the factors that might affect the decision of the families to give or deny permission or why some families refuse. The author use two logit models of consent and refusal and found that a number of social, economic, and religious factors affect both consent and refusal. Better off households are less likely to give consent to their child's jihad while unemployed were less likely to be refused to join a jihadi organization.[21] Contrary to Khokhar the author argued that

madaris are not the main reason of terrorism in Pakistan. Tradition is important to consider toward militancy as it is found that Deobandis (group follow Hanafi School of thought) are less likely to give consent to their sons' decision to join jihad.

The descriptive study of Johnston and Nedelescu attempts to explore the reaction of global financial markets to selected terrorist attacks and to the authorities' responses. They analyzed the reaction of financial markets to the terrorist attacks of 9/11 on world trade center and March 11, 2004 attacks in Madrid. The authors argue that precise, timely and flexible response of the authorities is crucial to make the financial markets efficient in absorbing terrorist shocks. Due to globalization, in addition to the response of the authorities, the combine force among financial institutions, regulators, intelligence and prosecuting agencies and government is essential to make the financial systems more resilient against terrorism.[22]

3. Research Methodology

3.1Data Description

We collected data over a period of 12 years (i.e. from 1st January 2000 to 15th September 2011). Two types of data were used, one being the KSE 100 index and other the terrorist attacks news. We obtained the time, type of attacks, location of the attacks, successive attacks and human loss from media sources. Making this difficult, terrorism is relatively hard to define as there are more than hundred definitions. There is no consensus on the definition of terrorism as terrorism has been a controversial subject. Terrorism can be described as both a tactic and strategy; a crime and a holy duty; a justified reaction to oppression and an inexcusable abomination. Obviously, the definition depends on whose point of view is being represented. Section 6 of The Anti-Terrorism Act, 1997 by National Public Safety Commission of Pakistan

defines a 'terrorist act' in the following terms:

> "Whoever, to strike terror in the people, or any section of the people, or to alienate any section of the people or to adversely affect harmony among different sections of the people, does any act or thing by using bombs, dynamite or other explosive or inflammable substances, or fire-arms, or other lethal weapons or poisons or noxious gases or chemicals or other substances of a hazardous nature in such a manner as to cause, or to be likely to cause the death of, or injury to, any person or persons, or damage to, or destruction of, property or disruption of any supplies of services essential to the life of the community or displays fire-arms, or threatens with the use of force public servants in order to prevent them from discharging their lawful duties commits a terrorist act."[23]

As there are more than a hundred definitions of terrorism, the process of the data collection of terrorists' attacks on a daily basis and particularly the timing of the attacks was challenging. Daily information on these attacks was collected from the South Asian Terrorist Portal (http://www.satp.org/) and from various news papers including "The Nation" (http://www.nation.com.pk/), "The Daily Dawn" (http://www.dawn.com/), "Express News" (http://express.com.pk/epaper/), and other newspapers. Since a very large number of terrorist attacks took place in Pakistan since 2000, we choose 470 relatively major attacks based on the human loss. We also considered the timing of the attacks; if some event was done after the stock market closed (03:30pm) it was considered to occur on the next day.

3.2. Analytical Techniques

We used event study methodology to find the impact of terrorist attacks on stock markets. We analyzed the effect of terrorist attacks with respect to time, location of the attacks, types of attacks, successive attacks (days between two attacks) and human loss in any attack. Simple regression was used for human loss, while, for comparison, terrorist's attacks were grouped into four distinct dummy variables naming D1, D2, D3 and D4. Each activity was assigned a particular group. We used the dummy variables as follow:

- D1 is equal to "0" if terrorist's attack took place in year 2000, otherwise (from year 2001 to year 2011) equal to "1".
- D2 is equal to "0" if the type of attack is bomb blast, and equal to "1" if type of the attack is Mosque Attack, Suicide Squads, 9-11 west targets or drone attack.
- D3 is equal to "0" if the gap between two terrorist attacks is more than 16 days (our event window of [-5:10]) and is equal to "1" if the terrorists' attacks are done within 16 days of the previous attack.
- D4 is equal to "0" if the location of the terrorist attack is other and is equal to "1" for Karachi, city with Stock Market, Large Non Financial City or FATA/Border Area.

We investigated the impact of all four dummy variables on KSE-100 index. KSE-100 index data ranges from January 3, 2000 to September 30, 2011, This consisted of 2,888 observations. Logarithmic return or continuously compounded return of KSE-100 index was used to observe the movement in stock market returns. The data consisted of daily closing prices stated in Pak rupee (PKR), the local currency of Pakistan. We used the event window of [-5:10]

for every attack, which showed that we analyzed the movement of KSE-index five days before the attack till ten days after the attack. Market efficiency of the Karachi stock market could be observed by looking at the number of days to absorb the impact of every terrorist attack.

4. Results

4.1. Yearly Analysis:

In this section, we examine the time effect of terrorist attacks on KSE-100 Index. We evaluated the changes in the return of the market in the time interval from five business days prior the terrorist attack to ten business days after the attack. Table 5 compares the yearly analysis of the attacks from year 2000 to 2011. The base is year 2000.

******* Table 5 *******

We found significant effect of -.7% to -2.2% per day from year 2001 to 2011. Results show that from year 2000 to 2011 there was an increasing trend of terrorist attacks causing more negative effects on the KSE-100 index. We can see that the Karachi stock exchange absorbed the effect in one day from year 2001 to 2005. In year 2006, we notice that effect of the attack has continued after 8 days of the terrorist attacks, in year 2007, we found a -2.8% effect was absorbed in 5 days and in year 2008 this negative is effect was significant after ten days of the attack. KSE was more efficient from year 2001 to 2004, less efficient from year 2005 to 2008 and again increased efficiency from year 2009 to 2011.

A clear pattern was found before the event, The market had predictive power on terrorist attacks one day before the event took place from year 2001 to 2011. From year 2001 to year

2011, one day before the event market shows negative returns as compared to year 2000, which predict the terrorist attack. However, in 2005, five days before the event market shows negative returns compared to year 2000, while in 2008, four days before the event market predict the terrorist attack by showing negative returns.

4.2. Types of Attacks:

Table 6 compares the effect of five types of attacks in the time interval from five business days prior the terrorist attack to ten business days after the attack. Here the base is bomb blast and the comparison is done with attacks in mosques, suicide squads, 9-11 west targets and the drone attacks.

******* Table 6 *******

Results show that the type of attacks had no significant impact on the returns of KSE-100 index. Islam is the official religion of the Pakistan and a majority (95-97%) of Pakistanis is Muslim.[24] A mosque, a place of Muslim worship, not only has spiritual and emotional attachment but also has great social importance. However, from an investment point of view, we did not find any evidence that attacks in mosques had negative effects on the stock market, which shows that investors do not respond to type of attacks.

4.3. Overlapping:

We compare the effect of successive attacks with non successive. Table 6 compares in the time interval from five business days prior the terrorist attack to ten business days after the attack. We use a 16 day event window for every attack.

******* Table 7 *******

The extent of terrorism can be seen by the fact that out of 470 relatively major terrorist attacks, 413 took place within 16 days. Only 57 attacks have a gap of 16 days or more. Our results show that if attacks have gap of more than 16 days of our event window, it shows significant negative effect as compare to frequent attacks. The frequency of the attack is so high that we did not find any evidence that successive attacks have more negative effect than others. Our results show that overlapping (frequent events within the event window) have no significant impact on the returns of the stock

4.4. Location:

In this section, we examine the effects of different locations of terrorist attacks on the KSE-100 Index. Table 8 compares the effect of five types of attacks in the time interval from 5 business days prior the terrorist attack to 10 business days after the attack.

******* Table 8 *******

We divided the locations into five categories. We noted the effects of these attacks on KSE-100 index, located in one of the largest cities, Karachi. The first category is Karachi. The second category is Stock Market Cities, meaning the cities of Pakistan, other than Karachi, with stock markets. There are three stock markets in Pakistan, the Karachi stock market, Islamabad stock market and Lahore stock market. Thus if any attack was done in Lahore or Islamabad, it was included in the Stock Market City category. The third category is Fata/Border and the fifth

category is Large Non Financial City, which consists of large cities without stock markets. Here the base category is "other," which is any location other than these three categories; we can see the marginal effect of these categories with other locations.

Our results show that whenever any terrorist attack occurred in the FATA/Border Area, the KSE-100 index showed a positive trend from 3rd to 10th day of the attack compared with the base case. The killing of terrorist in the FATA shored up confidence in the stock market. We found that the market showed a positive return from .9 % to 1.71% compared to any "other" location. FATA is an area of high terrorist activity. Terrorism in this area has led to a lack of legal framework, high security costs, inability to market and sell products, lack of skilled labor and raw material and shortage of energy supply is contributing to inefficient growth.[25] Many industries have now closed due to all these risks there, so killing of the terrorists in FATA is encouraging for the investor and shows positive trend in the market.

We also found a positive effect compared with the base case in three areas: in Stock Market City (+3 and +4), large non financial city (+6 and +7) as well as FATA/Border Area (+3 and +10). This result indicated that terrorist attack was particularly devastating to stock market if the attack occurred in Karachi. We found that if any terrorist attack took place in Karachi, it showed a negative effect after the sixth day of the attack.

If any attack took place in stock market cities such as Lahore or Islamabad, we saw that it has predicting power about the behavior of the market, as five days before the event market showed the same trend as it showed after 1st and 2nd day of the attack. However, the Karachi stock market absorbed the impact in two days if attack was in Lahore or Islamabad. Significantly, the impact of an attack in large financial city had an impact on 6th and 7th day after the attack. However, before the event larger non financial cities have significant positive impact

on the market as compared to other places. Capital Markets in Pakistan consists of three Stock Exchanges, Karachi, Lahore and Islamabad. All markets are integrated and reflect the communication of inter-market information which leads to exert an influence from one market to another. When securities are traded on multiple markets, arbitrage ensures that price differences do not deviate without bound. Traders have an opportunity to be matched against the best available orders across all locations.[26] So if any terrorist attack is done in any of the Stock Market Cities, it immediately affected the performance of other indexes due to interrelationship between these stock exchanges.

4.5. Human Loss:

In this section, we examine the effect of terrorist attacks with respect to human loss caused by them. We regressed daily stock market returns on the number of killed at terrorist attacks. Table 9 shows the result of regression from five business days prior the terrorist attack to ten business days after the attack.

******* Table 9 *******

Our results show that every additional death in any terrorist attack has significant negative impact on the returns of KSE-100 from -.01 percent to -.02 percent. This means if in any attack 100 people are killed, it has a negative effect of 1% on 2nd day and -2 percent on the 3rd and 4th day of the terrorist attack. We can conclude that more human loss has more negative effect on the returns of the KSE 100 index.

More human loss creates widespread fear and causes distress, uncertainty and vulnerability. A study in American College of Neuropsychopharmacology examined the impact of terrorism on brain and behavior. The study found that terrorist's attacks produce death, destruction and injuries but the ultimate goal of these terrorist attacks was psychological - to create a climate of fear, uncertainty, and vulnerability. Through psychological means, terrorists can attain what they cannot accomplish militarily. More people killed had more effect on the brain of the investors and more uncertainty is natural phenomenon and our results are in compatible with this study also.[27]

5. Conclusion

Terrorism in Pakistan has become the most destructive phenomenon causing not only fatalities and injuries but also has real economic cost. Terrorist attacks in Pakistan have shown a remarkable surge since 2000. Terrorism creates uncertainty by increasing the risk to invest in Pakistan; this adversely affects stock markets, and can lead to lower economic growth, increased cost to companies and negative affects to the society of Pakistan. According to government statistics, the direct and indirect economic cost of terrorism in last ten years has been $68 billion.

This study examined the impact of terrorist attacks on the stock markets of Pakistan using daily time series data from year 2000 until 2011. Pakistan is the laboratory of terrorism these days with a non-stop series of terrorist attacks all over the country in different ways. In the last twelve years 470 major terrorist's attacks have taken place, causing to a total of 10,743 deaths and 22,451 injuries. The negative impact on the KSE-100 index indicates that beyond the loss of precious lives, these terrorist attacks have had real economic cost to Pakistan.

By using the event study methodology we found that terrorism had a negative effect on

the KSE from -2% to -3% on the day of terrorist attack. In years 2005 to 2008 this negative effect was dominant after the ten days of the events showing long term negative effect on the market. The market had a predictive power on terrorist attack one day before the event took place from year 2001 to 2011, in that, one day before the event, the market showed negative returns. We found that location of the attack was also important to consider as our results showed that any attack in a city with a stock market had a negative effect from -.16 % to -.17% on the KSE-100 as compared to other areas. However, any attack in the FATA/Border Area which showed positive significant effects on the performance of the market. We also found positive effects compared with a base case in three areas: in Stock Market City (+3 and +4), large non financial city (+6 and +7) as well as FATA/Border Area (+3 and +10). This result indicates that terrorist attack is particularly devastating to stock market if the attack occurs in Karachi.

Attacks with gaps of time between occurrences were associated with larger negative market reactions as compared to frequent attacks. The type of attacks, however, had no effect on the performance of the stock market and investor had no concern whether the attack was a suicide squad, bomb blast, or drone attack. It was found that negative relation between loss of human life and the KSE-100 index return. In sum, different types of terrorist attacks had varied effects on financial markets. Our results showed that every additional death in any terrorist attack has significant negative impact on the returns of the KSE-100 from -.01 percent to -.02 percent (+3 and +4).

One limitation of our study is that we used only one financial market i.e. the stock market of Pakistan. The comparison with different financial markets like a bond market or foreign exchange markets of different countries can be the subject for future research. We also ignored other countries for comparison, as every country has different sizes of the market, security

concerns, political systems, structure of financial institutions, so comparison between different countries and regions was not done. We leave this for future research as well.

Our research can generate managerial and policy implications for portfolio allocation, security trading, national security and policy making. As our results showed that Karachi stock market has the predictive power on terrorist attack one day before the event took place, advanced warnings can be given to investors before other terrorist attacks. An anti-terrorism policy can be formulated in the light of this study and should be made available to the investors and general public. Investors can manage their portfolio keeping in view the tactics of terrorist attacks and their impact on stock market performance. Initially, the KSE absorbed the negative impact one day after the attack, but, after a few years, we found that negative impact continued more than a week, so there is a need to strengthen the stock market to absorb the shocks more quickly. Due to globalization, in addition to the response of the authorities, the cooperation among central banks, other financial institutions, regulators and intelligence agencies is essential to make the stock market stronger against terrorism. While formulating the policies for stock markets, our study recommends that the policy makers should consider the tactics used by the terrorist groups as the impact of the attacks varies as the tactics change. Most importantly there is an urgent need to take actions by all the major stakeholders that can really help to build a better image of countries under terrorist attacks (e.g. Pakistan) in the eyes of the world. Future research can extend these implications to analyze proper tactics of authorities in response to varied terrorist tactics from the perspectives of financial market.

Table 1: Year-wise major terrorist attacks (Jan 1 2000 - Sep 15 2011)

There is an increasing trend of the attacks in Pakistan with the worse year being 2009 with 111 major attacks. We used the terrorist events in this study to show were more severe in comparison with each other, based on the human loss. A total of 470 relatively major events took place between 2000 and 2011, with maximum number of attacks in year 2009.

Year	No. of Incidents
2000	8
2001	3
2002	13
2003	5
2004	16
2005	10
2006	13
2007	67
2008	57
2009	111
2010	101
2011*	66
Grand Total	470

*till September 15

Table 2: Total number of people killed and injured by terrorist attacks (Jan 1 2000 - Sep 15 2011)

More than 10 thousand people were killed in 470 major attacks in Pakistan, while more than 20 thousand people were injured in these attacks. A total of more than 30 thousand people were affected due to these major events. In 2009 more than 8 thousand people were affected by these attacks. This figure is even higher, if we include all the minor events as well.

Year	Total Killed	Total Injured	Total
2000	64	282	346
2001	21	64	85
2002	99	366	465
2003	142	205	347
2004	232	986	1218
2005	209	642	851
2006	306	638	944
2007	1518	3291	4809
2008	1226	2724	3950
2009	2582	5696	8278
2010	2888	5009	7897
2011*	1456	2548	4004
Grand Total	10743	22451	33194

*till September 15

Figure 1: Terrorist attacks, by geographic location

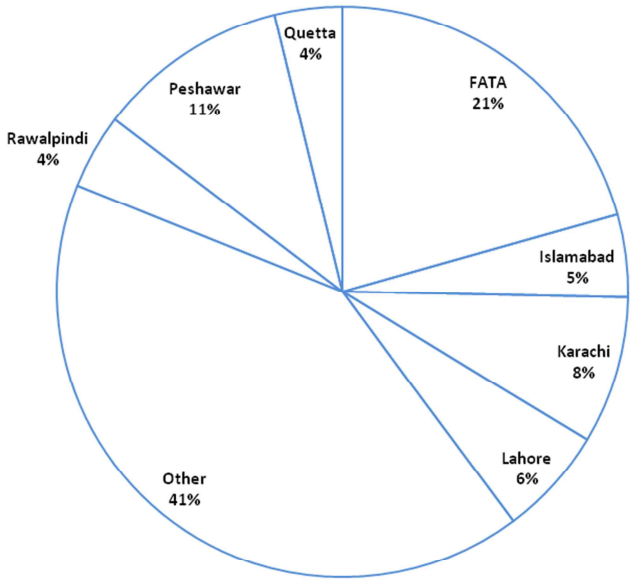

Table 3: Location of number of incidents (Jan 1 2000 - Sep 15 2011)
Table 3 shows location of distribution of terrorist attacks since 2000. 470 major attacks took place all over the Pakistan without any specific target area. In the FATA/Border Area, 97 attacks took place as this area is near the Afghan border. Taliban and others terrorist groups have much involvement in this area. Karachi, Lahore and Islamabad are the main financial cities of Pakistan and attacks in these cities can affect the investor's decision about future investments more because all these three cities have stock markets. Peshawar, Quetta and Rawalpindi are larger and important cities from business point of view. Collectively 90 major attacks took place in three financial cities while 89 attacks took were in large non-financial cities.194 attacks took place in other areas of the country.

Year	FATA	Karachi	Islam abad	Lahore	Peshawar	Rawalp indi	Quetta	Other	Grand Total
2000	-	2	-	1	-	-	1	4	8
2001	-	-	1	-	-	-	1	1	3
2002	-	5	2	1	-	1		4	13
2003	-	1	-	-	-	2	2	-	5
2004	-	7			-	-	1	8	16
2005	-	3	3	1	-	-	-	3	10
2006	-	5	-	-	1		-	7	13
2007	7	2	5	--	7	8	3	35	67
2008	10	1	9	8	5	3	1	20	57
2009	25	2	2	5	22	6	1	48	111
2010	39	5	-	11	9	-	4	33	101
2011*	16	6	-	2	7	-	4	31	66
Grand Total	**97**	**39**	**22**	**29**	**51**	**20**	**18**	**194**	**470**

*till September 15

Table 4: Comparison of year and type of incidents (Jan 1 2000 - Sep 15 2011)
Iy's notable that terrorists do not even care about the holy mosques in Pakistan, with 23 major attacks taking place in mosques. Two hundred eleven bomb blasts in different areas caused huge loss to human beings and infrastructure..

Year	Mosque Attack	Bomb Blast	Suicide Squad	9-11 west targets	Drone Attack	Grand Total
2000	0	8	-	-	0	8
2001	0	2	-	1	0	3
2002	0	5	1	7	0	13
2003	1	1	2	1	0	5
2004	-	10	4	2	0	16
2005	1	5	3	1	0	10
2006	-	8	4	1	0	13
2007	3	31	32	-	1	67
2008	3	25	24	2	3	57
2009	7	49	38	-	17	111
2010	4	40	33	2	22	101
2011*	4	27	22	-	13	66
Grand Total	**23**	**211**	**163**	**17**	**56**	**470**

*till September 15

Table 5: Yearly analysis of impact

Table 5 compare the yearly analysis of attacks from year 2000 to 2011 Here the base is year 2000 and the comparison is done with years 2001 to 2011. The event window is five days before the event and ten days after the event denoted by T1 and T2, where T1 is the starting date of the event window while T2 is the ending date of the event window. Here the minus sign shows days before the terrorist event while the plus sign shows days after the terrorist event, i.e. [-5,0] is five days before the attack and [0,10] is the ten days after the attack is done. T=0 is the event day. Yearly coefficients between T1 and T2 ***, **, * denote statistical significance at the 1%, 5%, and 10% level (two-tailed), respectively. Standard errors are in parentheses.

Days	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
-5 : 0	0.044*	-0.033*	-0.030	-0.025	-0.072***	-0.034*	-0.037***	-0.049	-0.031**	-0.031	-0.039***
	(0.027)	(0.018)	(0.022)	(0.017)	(0.019)	(0.018)	(0.015)	(0.015)	(0.014)	(0.014)	(0.015)
-4 : 0	0.007	-0.020	-0.022	-0.018	-0.068***	-0.023	-0.029**	-0.035***	-0.020	-0.018	-0.027***
	(0.023)	(0.015)	(0.019)	(0.015)	(0.016)	(0.015)	(0.013)	(0.013)	(0.012)	(0.012)	(0.013)
-3 : 0	0.005	-0.029**	-0.021	-0.019	-0.063***	-0.014	-0.028**	-0.035***	-0.016	-0.017	-0.023***
	(0.021)	(0.014)	(0.018)	(0.013)	(0.015)	(0.014)	(0.012)	(0.012)	(0.011)	(0.011)	(0.012)
-2 : 0	-0.002	-0.015	-0.012	-0.007	-0.045***	-0.006	-0.015	-0.020**	-0.005	-0.004	-0.012
	(0.018)	(0.012)	(0.015)	(0.011)	(0.012)	(0.012)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
-1 : 0	0.015	-0.025***	-0.020*	-0.018*	-0.035***	-0.015*	-0.022***	-0.027***	-0.015**	-0.013*	-0.017**
	(0.014)	(0.009)	(0.012)	(0.009)	(0.010)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
0	-0.007	-0.020***	-0.019**	-0.020***	-0.027***	-0.022***	-0.020***	-0.022***	-0.017***	-0.017***	-0.019***
	(0.009)	(0.006)	(0.008)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
0 : +1	-0.012	-0.010	0.003	-0.017*	-0.018*	-0.021**	-0.016**	-0.018**	-0.010	-0.011	-0.012
	(0.014)	(0.009)	(0.012)	(0.009)	(0.010)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
0 : +2	-0.018	-0.012	-0.001	-0.021*	-0.017	-0.033***	-0.020**	-0.017*	-0.011	-0.011	-0.013
	(0.018)	(0.012)	(0.015)	(0.011)	(0.012)	(0.012)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
0 : +3	-0.037*	-0.015	0.001	-0.026**	-0.022	-0.032**	-0.031***	-0.027**	-0.018	-0.016	-0.018
	(0.021)	(0.014)	(0.018)	(0.013)	(0.015)	(0.014)	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)
0 : +4	-0.028	-0.009	0.010	-0.022	-0.019	-0.037**	-0.028**	-0.030**	-0.008	-0.011	-0.016
	(0.023)	(0.016)	(0.020)	(0.015)	(0.016)	(0.016)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
0 : +5	-0.050**	-0.013	0.010	-0.023	-0.020	-0.035**	-0.028**	-0.042***	-0.009	-0.015	-0.022
	(0.025)	(0.017)	(0.021)	(0.016)	(0.018)	(0.017)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
0 : +6	-0.057**	-0.017	0.007	-0.025	-0.014	-0.043**	-0.026	-0.043***	-0.009	-0.012	-0.022
	(0.026)	(0.017)	(0.022)	(0.017)	(0.018)	(0.017)	(0.015)	(0.015)	(0.014)	(0.014)	(0.015)
0 : +7	-0.046	-0.015	0.017	-0.016	-0.006	-0.046**	-0.023	-0.039**	0.000	-0.005	-0.017
	(0.030)	(0.020)	(0.026)	(0.019)	(0.021)	(0.020)	(0.017)	(0.017)	(0.016)	(0.016)	(0.017)
0 : +8	-0.032	-0.019	0.032	-0.012	-0.009	-0.038**	-0.020	-0.042**	0.001	-0.003	-0.019
	(0.032)	(0.021)	(0.027)	(0.020)	(0.022)	(0.021)	(0.017)	(0.018)	(0.017)	(0.017)	(0.017)
0 : +9	-0.041	-0.027	0.030	-0.017	0.003	-0.041	-0.025	-0.048***	-0.001	-0.009	-0.022
	(0.033)	(0.022)	(0.027)	(0.021)	(0.023)	(0.022)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
0 :+10	-0.062*	-0.023	0.038	-0.020	-0.002	-0.037	-0.028	-0.052***	-0.002	-0.011	-0.023
	(0.034)	(0.023)	(0.029)	(0.022)	(0.024)	(0.023)	(0.019)	(0.019)	(0.018)	(0.019)	(0.019)

Table 6: Comparison of type of attacks on the KSE-100 index

Table 6 compares the effect of types of attacks, here the base is bomb blast and the comparison is done with attacks in mosques, suicide squads, 9-11 west targets and the drone attacks done in the Pakistan. Between dates T1 and T2, where T=0 is the day of the event while [-5, 0] is five days before the attack and [0, 10] is the ten days after the attack is done. The coefficients between T1 and T2 ***, **, * denoted statistical significance at the 1%, 5%, and 10% level (two-tailed), respectively.

Days	Mosque Attack		Suicide Squad		9-11 west targets		Drone Attack	
T_1: T_2	Coefficients	Stand. Error	Coefficients	Stand. Error	Coefficients	Stand. Error	Coefficients	Stand. Error
-5 : 0	-0.0143	0.0089	-0.0035	0.0042	0.0053	0.0102	-0.0074	0.0061
-4 : 0	-0.0148*	0.0076	-0.0028	0.0036	0.0018	0.0087	-0.0030	0.0052
-3 : 0	-0.0085	0.0071	-0.0019	0.0034	-0.0027	0.0081	-0.0018	0.0048
-2 : 0	-0.0111*	0.0059	-0.0012	0.0028	0.0021	0.0068	0.0027	0.0041
-1 : 0	-0.0088*	0.0047	-0.0018	0.0022	0.0033	0.0054	0.0038	0.0032
0	-0.0022	0.0030	-0.0010	0.0014	0.0039	0.0035	-0.0005	0.0021
0 : 1	0.0011	0.0046	0.0002	0.0022	0.0078	0.0052	-0.0007	0.0031
0 : 2	0.0029	0.0058	0.0011	0.0028	0.0094	0.0067	0.0030	0.0040
0 : 3	0.0038	0.0068	0.0011	0.0032	0.0098	0.0079	0.0062	0.0047
0 : 4	0.0055	0.0078	-0.0005	0.0037	0.0094	0.0090	0.0028	0.0054
0 : 5	0.0108	0.0084	0.0008	0.0040	0.0074	0.0097	0.0043	0.0058
0 : 6	0.0075	0.0089	0.0001	0.0042	0.0001	0.0102	0.0052	0.0061
0 : 7	0.0065	0.0102	-0.0015	0.0049	0.0013	0.0117	0.0066	0.0070
0 : 8	0.0037	0.0106	-0.0008	0.0051	0.0071	0.0122	0.0079	0.0073
0 : 9	0.0039	0.0110	-0.0006	0.0052	0.0025	0.0127	0.0116	0.0076
0 : 10	0.0042	0.0116	-0.0014	0.0055	0.0109	0.0133	0.0110	0.0079

Table 7: Comparison of frequent vs. non frequent attacks

Table 7 compares the effect of overlapping of attacks, here in our study the window is from -5 to +10 , so overlapping if the attacks is done within 16 days of the previous attack it is consider as overlapping otherwise no there is overlapping. We compare the overlapping with no overlapping as base. The coefficients between T1 and T2 ***, **, * denote statistical significance at the 1%, 5%, and 10% level (two-tailed), respectively.

Days	Overlapping	
T1: T2	Coefficients	Stand. Error
-5 : 0	-0.0007	0.0057
-4 : 0	0.0017	0.0049
-3 : 0	0.0033	0.0045
-2 : 0	0.0033	0.0038
-1 : 0	-0.0018	0.0030
0	0.0001	0.0019
0 : +1	0.0006	0.0029
0 : +2	0.0035	0.0037
0 : +3	0.0036	0.0044
0 : +4	0.0048	0.0050
0 : +5	0.0062	0.0054
0 : +6	0.0085	0.0057
0 : +7	0.0112*	0.0066
0 : +8	0.0121*	0.0068
0 : +9	0.0129*	0.0071
0 : +10	0.0137*	0.0074

Table 8: Comparison of Location-wise Attacks:

Table 8 compares the effect of the location of the attacks We take the returns of the KSE-100 index located in Karachi, Pakistan. The 2nd category is Stock Market Cities other than Karachi. There are three stock markets in Pakistan, namely the Karachi stock market, the Islamabad stock market and the Lahore stock market, so if any attack is done in Lahore or Islamabad, it is included in the Stock Market City category. The 3rd category is the FATA/Border Area and the 4th category is large cities without stock markets. Here the base category is "other", which is any location other than four mentioned categories. We can see the marginal effect of these categories with other locations. Between dates T1 and T2, where T=0 is the day of the event while [-5, 0] is five days before the attack and [0, 10] is the ten days after the attack is done. The coefficient between T1 and T2 ***, **, * denotes statistical significance at the 1%, 5%, and 10% level (two-tailed), respectively.

Days	Karachi		Stock Market City		FATA/Border Area		Large Non Financial City	
T1: T2	Coefficients	Stand. Error	Coefficients	Stand. Error	Coefficients	Stand. Error	Coefficients	Stand. Error
-5 : 0	0.0059	0.0071	-0.0154**	0.0064	0.0028	0.0051	0.0115**	0.0050
-4 : 0	0.0038	0.0061	-0.0117**	0.0055	0.0051	0.0044	0.0119***	0.0042
-3 : 0	0.0000	0.0056	-0.0097*	0.0050	0.0069	0.0040	0.0122***	0.0039
-2 : 0	0.0021	0.0048	-0.0076*	0.0043	0.0068**	0.0034	0.0072**	0.0033
-1 : 0	0.0026	0.0038	-0.0099***	0.0034	0.0038	0.0027	0.0049	0.0027
0	0.0034	0.0024	-0.0017*	0.0022	0.0015	0.0017	0.0028	0.0017
0 : +1	0.0039	0.0035	-0.0016*	0.0032	0.0024	0.0025	0.0034	0.0025
0 : +2	0.0017	0.0047	0.0037	0.0042	0.0039	0.0034	0.0016	0.0033
0 : +3	0.0048	0.0056	0.0094*	0.0050	0.0090**	0.0040	0.0049	0.0039
0 : +4	0.0029	0.0064	0.0116**	0.0058	0.0097**	0.0046	0.0062	0.0045
0 : +5	0.0035	0.0068	0.0034	0.0061	0.0098**	0.0049	0.0073	0.0047
0 : +6	-0.0006	0.0071	0.0006	0.0064	0.0130**	0.0051	0.0082*	0.0049
0 : +7	-0.0029	0.0081	0.0047	0.0073	0.0161***	0.0058	0.0104*	0.0057
0 : +8	-0.0070	0.0085	0.0003	0.0077	0.0155**	0.0061	0.0083	0.0060
0 : +9	-0.0084	0.0089	-0.0044	0.0080	0.0152**	0.0063	0.0081	0.0062
0 : +10	-0.0075	0.0094	-0.0052	0.0084	0.0171**	0.0067	0.0099	0.0066

Table 9: Impact of Human loss

Table 9 shows the impact of human loss on market return. Here the dependent variable is the KSE-100 index return and the independent variable is people killed in any terrorist attack. We regressed daily stock market returns on the number of killed at terrorist attacks. We did this daily regression from five business days prior the terrorist attack to ten business days after the attack. The coefficients between time T1 and T2 are highlighted with ***, **, * denote statistical significance at the 1%, 5%, and 10% level (two-tailed), respectively.

Days	Intercept		# killed	
T1: T2	Coefficients	Stand. Error	Coefficients	Stand. Error
-5 : 0	1.0067***	0.0027	0.0001	0.0001
-4 : 0	1.0062***	0.0023	0.0001	0.0001
-3 : 0	1.0039***	0.0021	0.0001	0.0001
-2 : 0	1.0036***	0.0018	0.0000	0.0001
-1 : 0	1.0030***	0.0015	0.0000	0.0000
0	1.0008***	0.0009	0.0000	0.0000
0 : +1	1.0036***	0.0013	0.0000	0.0000
0 : +2	1.0054***	0.0018	-0.0001*	0.0001
0 : +3	1.0068***	0.0021	-0.0002**	0.0001
0 : +4	1.0086***	0.0024	-0.0002**	0.0001
0 : +5	1.0072***	0.0025	-0.0001	0.0001
0 : +6	1.0062***	0.0027	0.0000	0.0001
0 : +7	1.0060***	0.0031	0.0000	0.0001
0 : +8	1.0083***	0.0032	-0.0001	0.0001
0 : +9	1.0083***	0.0033	-0.0001	0.0001
0 : +10	1.0067***	[0.0036	0.0000	0.0001

Notes

1. This is very comprehensive study to evaluate the role of effective policy and regulatory responses to protect financial systems against terrorist attacks. See R. Barry Johnston and Oana M. Nedele, "The Impact of Terrorism on Financial Markets." *Journal of Financial Crime* 13, no. 1 (2006): 7-25.

2. Bruce Hoffman, *Inside Terrorism* (New York: Columbia University Press, 2006), 127-128.

3. Professor Karolyi is an internationally-known scholar in the area of investment management and received the Fama/DFA Prize for Capital Markets and Asset Pricing in 2005. In addition to his extensive research on print and electronic media he also explores the impact of terrorism on financial markets. See George A. Karolyi, "The Consequences of Terrorism for Financial Markets: What Do We Know?". *Ohio State University, Charles A. Dice Center for Research in Financial Economics* (2006).

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5. The author talks about the consequences of poor corporate governance, political instability and terrorism on the economy of Pakistan. See Hashim Abro, "Corruption, terrorism & investment," pakobserver, http://pakobserver.net/detailnews.asp?id=108075. (accessed May 08, 2012)

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15. Andrew H. Chen and Thomas F. Siems, "The Effects of Terrorism on Global Capital Markets." *European Journal of Political Economy* 20, no. 2 (2004): 349-66

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18. Mikel Buesa, Aurelia Valino, Joost Heijs, Thomas Baumert And Javier Gonzalez Gomez, "The Economic Cost of March 11: Measuring the Direct Economic Cost of the Terrorist Attack on March 11, 2004 in Madrid." *Terrorism and Political Violence* 19, no. 4 (2007): 489-509.

19. Rohan Gunaratna and Anders Nielsen, "Al Qaeda in the Tribal Areas of Pakistan and Beyond." *Studies in Conflict & Terrorism* 31, no. 9 (2008): 775-807.

20. The madaris in Pakistan have played a key role in spreading militant jihadist ideologies and author use the term “terrorist factories” for these madaris. The first madrassa was established in 1005 A.D. in Egypt. A militarized madrassa is one that apparently preaches Islam, but also includes a political agenda with the religious teachings. See Moniza Khokhar, "Reforming Militant Madaris in Pakistan." *Studies in Conflict & Terrorism* 30, no. 4 (2007): 353-65.

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