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Impact of Terrorism on the Financial Markets of Pakistan

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Abstract

The study is an effort to estimate the impact of terrorist activities on the financial markets in Pakistan over the period of two years i.e. 2006 to 2008. It also finds out the extent and direction of relationship between the terrorist activities and three financial markets of Pakistan, which are the Karachi Stock Exchange, the FOREX market and the Interbank market. After collection of the primary data for the terrorist activities on daily basis and the secondary data on the indicators of the three markets, by using the OLS model it attempts to quantify the impacts of various types of terrorists' activities on financial markets. We have found during our analysis that the terrorist activities adversely affect the financial markets under study but the significance varies for different markets. Along with terrorist activities many other stochastic activities are responsible for the adverse performance of financial markets which have not been taken into account. The study recommends the policy stance on institutional development regarding investment in the innovative security industry and providing rosier environment for investors by altering the money supply and interest rates.

Keywords: Terrorism; Financial Markets; KSE; KIBOR; FOREX

Acronyms

SBP	STATE BANK OF PAKISTAN
KSE	KARACHI STOCK EXCHANGE
KSEI	KARACHI STOCK EXCHANGE INDEX
FOREX	FOREIGN EXCHANGE
KIBOR	KARACHI INTER BANK OFFER RATE
ER	EXCHANGE RATE
FM	FINANCIAL MARKET
PKR	PAK RUPEE
OLS	ORDINARY LEAST SQUARES

But it then very soon became clear that the response of a war against terrorism, initially conceived of in a metaphorical sense, began to be taken increasingly seriously and came to entail waging a real war.

Ulrich Beck

I. Introduction

Since the emergence of 9/11 event in U.S.A., the world has witnessed significant increase in terrorist activities. Pakistan unfortunately has been the most vulnerable to the paradigm shift of terrorism. Its vulnerability is mainly subjected to its geographical location. Nonstop terrorist activities toppled over the country's political, social and economic structure. Now the life of a normal citizen is at risk. State of infrastructure has become deplorable owing to the series of terrorist activities. Resultantly economic activity reduced manifold.

Being a frontline state on "war on terror" the loss of Pakistan's economy was a natural consequence. Pakistan's economy was affected almost at all economic fronts which comprises of external, industrial, agricultural, business and services sector, etc. The continued rise in the terrorist activities also affected the confidence of foreign investors which caused the stoppage of FDI, besides withdrawal of the portfolio investment.

The impact of terrorism was also felt in all the areas of the economy with varying degree and intensity. The most prominent areas included tourism, hotelling, manufacturing, cottage industry, transportation, trade, etc. These industries have reinforcing effect on each other. Factors such as heavy influx of Afghan immigrants, particularly Taliban; porous Pak-Afghan border; political instability; external conspiracies, demographic weaknesses and its geographical attractiveness have accentuated the process of Terrorism in Pakistan. All these factors combined with global "war on terror" have deteriorated Pakistan's economic situation as a whole. Financial markets, which are the nucleus of any economic system, are also supposed to be affected due to terrorist activities. In the aftermath of the terror attacks of 11 September 2001 in New York and 11 March 2004 investors' confidence deteriorated beyond national boundaries because of contagion effects (Johnston and Nedelescu, 2006). Under the current wave of terrorism in Pakistan, particularly the stock market, forex market and money markets are affected the most. These markets are highly important as most of the policy impacts are transmitted through these markets. Therefore, any disruption in the smooth working of these markets may affect the achievement of overall economic target set by the government. Especially the stock market, which is considered to be the barometer of economic health of a country, appeared to have been affected by the rise in extremism or terrorism in recent times. The negative impact of the market to hype in such activities is reflected by the selling of bonds of the target firm's, but the magnitude and consistency of the negativity stirred in the market and of the spill over effects is questionable (Karolyi, 2006). Similarly, the forex market which is also obviously affected by the uncertainty prevailing in the economic environment bears adverse effects of the related events. As regard the banking sector of Pakistan, it is also found to be inflicted due to the aftermath of the terrorist activities. The size and distribution of the effect of these activities would depend on the myriad of factors such as nature of terrorist attack, target of the attack, the multiplier effect, policy response and the resilience of the financial market (Bruck and Wickstrom, 2004). Besides Lal Masjid operation, the hall mark of the terrorist activities over the sample period is loss of internationally known Pakistani Political personality i.e. Benazir Bhutto. After the assassination of the said Pakistan's banking sector faced substantial losses due to damage to the infrastructure and robberies of the bank. Downfall of any of the financial market associated with a terrorist activity reduces the incentive to spend as opposed to save, a process that can spread through the economy and the rest of the world through normal business cycle and trade channels (Johnston and Nedelescu, 2006).

Keeping in view the significance of financial market for Pakistan's economy, the quantification of the impact of terrorists' activities on financial market becomes an interesting area of research work. Especially, this requires empirical quantification of the impact of various kinds of terrorist activities that either occurred in key business centers or happened in the far flung areas.

II. Literature Review

We find very limited literature on the subject issue. Although a few studies are found to be discussing the overall consequences of terrorism on world economies, we do not find much evidence about the quantification of the impact of terrorist activities on financial markets using such high frequency data and with special reference to Pakistan. For the benefit of readers, the review of some of the relevant studies has been made which is given as under:

After the eruption of terrorism in Spain in the 1970's, Abadie and Gardeazabal (2001) discovered the fact that there was ten percent deterioration in the per capita GDP of the Basque region as opposed to a synthetic control region. They also found out that this difference widened due to the rise in the terrorist activities. Chen and Siems (2004) assessed the degree to which the U.S. Stock market reacted to fourteen extremist acts in the past ninety years by using the event study methodology. They also tried to assess the impact of the September 11 attacks and the raid on Kuwait by Iraq on the stock markets of different nations of the world. They found certain proof of flexibility in the fact that the encounter with such extremists' lead to a decrease in the market reaction. Moreover, they came to know that the impact of the September 11 incidence and the Iraqi raid were more unfavorable and harmful on the stock markets of nations around the world as opposed to the U.S. stock markets. The study by Johnston, et al. (2005) attempted to explore the impact of terrorism on financial markets. They found that how financial markets react to different shocks stemming from terrorist attacks. By making use of the data on financial markets such as the government securities market, the repo market, the insurance industry and the capital market of U.S, the study analyzed the reaction of the financial markets to the September 11 '2001 terrorist attacks in the New York, and March 11, 2004 attacks in Madrid. They concluded that given the accurate timely response of the authorities and rogue disaster management, the financial markets of U.S and Spain respectively were attributed with diversity and resilience to absorb the shocks of terrorist attacks. Both the central banks laden with the sense of responsibility of the "lender of the last resort" also came to rescue their respective financial systems in the aftermath of these acts of terrorism. In addition, the globalization trends also incepted the cross border cooperation among the central banks which mitigated the diffusion of contagion effects through the chain process of business cycle. Barth, and et al (2006) used panel data on terrorism and employed some of the control variables which proved the negative, depressing and unfavorable influence of terrorism on economic progress. In broad-spectrum, these extremists' occurrences and events have a substantial destructive impact on the economy of a country and thus render a depreciation and deterioration of the economy. Their outcome also sheds some light on the fact that the aim of such attacks also makes a difference. Extremists' attacks directed at places and properties other than that of public have an unconstructive link commonly with development and capital structure and generation. Gulley and Jahangir (2006) used the statistical data available for the stock, bond and foreign exchange rate and stock market from 1968 to July 2005, for a group of countries i.e Australia, Canada, France, Germany, Italy, Japan, UK and the US. Data on terrorist attacks has been collected from The National Memorial Institute for Prevention of Terrorism (MIPT) for exactly the same time period characterizing the date, time, location, type and target of the attack. Since the data is high frequency data, they have employed "Generalised Autoregressive Conditional Heteroscedasticity (GARCH) Model" to study the impact of terror attacks on the return (level) and volatility of the financial markets of the sample area, while their theoretical model is based on asset pricing model. Their results are well collaborated with the perceived expectations and the theory. They found negative returns with increasing terrorist activities for the stock market, while for the bond market lower yields were observed. Terrorist attacks had not been found associated with additional volatility in stock market in the given set of countries under observation. Liquidity of the foreign exchange market is significantly higher than other markets. Abadie and Gardeazabal (2007) attempt to measure the impact of terrorism on the foreign direct investment in an open economy. They made use of the data set on net stock of FDI obtained from the UNCTAD (United Nation Conference on Trade and Development) for 98 countries and GTI (Global Terrorism Index) for measuring data on terror activities which have the

advantage over other measures by being popular among the international investors' who use it to evaluate specific country's risk. During their regression analysis, keeping the other types of risks constant, it was concluded that small changes in terror activities have the potential to bring big change in the allocation of the productive resources across the countries, keeping the international economy sufficiently open. They have statistically proved that with the increasing standard deviation of the terror attacks, the net FDI shrinks by 5 percent of GDP. Melnick and Eldor (2007) used discounted-cash-flow valuation model in order to calculate the media exposure created due to such terrorist acts and also for the assessment of costs in term of the foregone alternatives of the liberated and unbound media exposure provoked by such extremists' acts and their impact on the single stock market functioning in Israel, "Tel Aviv Stock Exchange", to measure the influence on the economy. They reached to the conclusion that there is a statistical importance and significance of the opportunity cost variable and that it provides a role as an adequate indicator including the whole content required to portray the impact of militant acts on the stock market. The outcome clearly shows the converse relationship between the degree of media exposure and the deterioration in the value of stocks. However, it was also found that not any of the elements arising out of terrorism are statistically substantial and significant after the insertion of the opportunity cost variable in the equation. Berrebi and Klor (2008) took the sample of 125 Israeli defense and security companies that are traded in American markets and a number of American companies as controls for Israeli companies. The data on terror attacks, collected from Israeli foreign ministry, was based on daily terror attacks and noncombatant fatalities arising from them. They made use of the event study methods in order to measure and assess the positive impact of terrorism on the return of the stocks of the sample companies relative to those of control group. It was empirically found that Israeli defense related companies experienced comparatively lowered (negative) abnormal returns than those of American controls during the first part of the period under analysis i.e. before Palestinian uprising (January 1st, 1998 - September 28th, 2000). They had also been successful in proving that average cumulative difference in abnormal returns (CDRAR) of the defense related companies exhibit downward slope before the Palestinian uprising where as the trends reverses abruptly during the second part of period under analysis (second Palestinian uprising). During the second uprising, the defense related companies gained around 70 percentage points while the non defense companies lost over 60 percentage points.

Out of the myriad of research problems pertaining to this area of interest, quantification of the terrorist activities and measuring its impact on the fluctuation of various economic variables is imperative owing to the possibility of plausible relationships between two variables which may result in biased empirical results (Berrebi and Klor, 2008). In this paper, this problem has been tried to be sought out by using Durbin Watson statistics in order to check the variables for autocorrelation issue.

This study is different in several aspects from the existing studies which were conducted on the subject matter. Some of the distinguishing features are given as under:

- It uses daily data on all the financial markets and the terrorist activities. Earlier studies present on this topic have examined the financial markets on a much lower frequency data.
- This study is first of its kind with reference to Pakistan. No research has been done in Pakistan before on the same lines.
- Different aspects of terrorism have been incorporated in this study in terms of the kind of terrorist activity, its intensity, the location of incidence and the target.
- The study examines the effect of each kind of terrorist activity on stock, forex and money markets separately.

III. Research Methodology

Data Description

The study uses time series data for this piece of research work. It uses high frequency data, which is a daily data, over a period of two and a half years (i.e. from 31st December 2005 to 30th June 2008). The

data has been collected from different resources. Secondary data has been used for three financial markets separately, i.e. banking market which represents the money market while stock market (KARACHI STOCK EXCHANGE) and the FOREX market represent the capital market. The data on the KSE Index has been taken from the KSE website. The data on the foreign exchange (i.e. rupee dollar parity) has been acquired from the Monetary Policy Department of the State Bank of Pakistan. The data on KIBOR (Karachi Inter Bank Offer Rate) has also been obtained from Domestic Markets & Monetary Management Department (DMMD), State Bank of Pakistan.

The most cumbersome process of the primary data collection has been the collection of terrorists' activities on daily basis. Daily information on these activities has been collected from various news papers including "The Daily Dawn". Since various kinds of terrorists' activities were found in the news papers, an attempt was made to choose the most relevant activities which has some impact on the working of financial market.

While finding out the impact of terrorists' activities on the financial markets of Pakistan we categorize the terrorists' activities into four distinct dummy variables. The terrorists' activities have been grouped together in four different categories naming D_1 , D_2 , D_3 & D_4 . Each activity has been assigned a particular group according to its intensity. A brief discussion of dummy variables used in the study is given as under;

- D_1 is equal to 1 for the kind of terrorists activities which have targeted the key personnel (political or otherwise) of the country and 0 for not happening of such event.
- D_2 is equal to 1 for the happenings of the terrorists' activities in the cities that are financially active or are the economic centers of the country and 0 for not happening of such events.
- D_3 is equal to 1 for occurrence of major activities but in the non financial cities,
- Whereas D_4 equals 1 for minor terrorists' events taking place in small cities and 0 for not happening of such events.
- D_{ST} is equal to 1 in case of any structural change that has taken place during the period under study, otherwise it is equal to 0.

Though most of the activities placed in D_4 are not minor in terms of cost of human lives and infrastructure of the cities, but may be because of the peaking magnitude of the terrorism in the country for the past two and a half years or so, we as a nation, has become so much resilient to such attacks that loss of lives of normal citizens or human beings or blowing up of country's resources does not mean much loss to us, neither in moral sense nor in financial terms.

Analytical Techniques

For the estimation of results, E-views, which is time series econometric software, has been extensively used. For the purpose of analysis, the model used is "MULTIPLE REGRESSION MODEL". This model not only tells us the extent of the impact of terrorists' activities on the individual financial markets but it also tells us the direction of the relationship between the regressors and the regressands.

In this study the regressand are KSEI, FOREX rate and KIBOR while the four categories of terrorist activities are regressors. The study assesses the impact of terrorist activities on these three market. The functional form of the model would be as follows;

$$FM = f(D_i) \quad (1)$$

Where;

FM indicates any type of the above mentioned financial market.

D_i indicates dummy variable capturing the impact of any type of the terrorist activity which affects the financial markets in Pakistan.

To assess the impact, the functional form of the equation no. 1 is converted into mathematical equation, which is as follows;

$$FM = \alpha + \beta D_i \quad (2)$$

Where;

FM = any financial market operating in Pakistan e.g. KSE, FOREX, Money market.

α = intercept

β = parameter to be estimated or coefficient.

D_i = dummy variables ranging from D_1 to D_4 . While D_1 , D_2 , D_3 and D_4 are already explained. For KIBOR analysis, the study uses an additional dummy variable namely D_{ST} . It denotes any structural changes occurring in the economy which has imminent impact on the inter bank market.

Since the dependent variable (financial markets) is also affected by many other variables which are called stochastic or error terms, so we need to convert the equation no. (2) into an econometric equation, which is represented as follows;

$$FM = \alpha + \beta D_i + e_i \quad (3)$$

Where e_i is an error term.

Since the dynamics of each kind of financial markets are a bit different. We need to estimate the results separately using a different equation for estimation purpose. These are given below;

i. Stock Market

Since KSE is the most active or most efficient of all the financial markets in Pakistan, we analyze the impact of four dummy variables on KSE 100 index first.

In order to particularly analyze the growth of KSE Index we convert the daily values of KSE 100 Index into their log values. As the stock market show significant volatility over the last few years, we take natural log of the equation no. (2) for smoothening of the KSE Index.

$$KSEI = \alpha + \beta D_i + e_i \quad (4)$$

Taking natural log on the left hand side we get;

$$\text{Ln}(KSEI) = \alpha + \beta D_i + e_i \quad (5)$$

This is the final equation which can now be used for estimation of the impact analysis of terrorist activities on KSE.

The equation reads as the natural log of Karachi Stock Exchange 100 Index is a function of the D_i viz D_1 , D_2 , D_3 and D_4 representing various forms and intensity levels of terrorist activities. After regressing all the dummy variables (D_1 to D_4) separately on the $\text{Ln}KSEI$, we see adverse effect of D_1 , D_2 and D_4 on the $\text{Ln}KSEI$. It is important to note that the individual effect of D_1 and D_2 seemed suppressed. So in order to enhance the collective effect of D_1 and D_2 we combine both the variables and name it as D_1' . So that the terrorists' activities targeting key personnel and major financial areas are singularly termed as "major events" (grouped in D_1') while D_3 and D_4 remain the same.

By applying OLS regression technique, we estimate the following equation;-

$$\text{Ln}(KSEI) = a + \beta D_1' + \gamma D_4 + e_i \quad (6)$$

Where;

$\text{Ln}(KSEI)$ = natural log Karachi Stock Exchange Index.

D_1' = terrorists' activities targeting key personnel and major financial cities.

D_4 = minor activities in small cities.

α , β , γ = parameters to be estimated.

e_i = stochastic/ error/residual term.

ii. FOREX Market

Foreign exchange market of a nation is the arena where country's currency is traded for other currencies. The daily buying and selling of a currency determines the daily average rate of a currency. The trading takes place in domestic and international market simultaneously and hence the equilibrium point of the demand and supply of a currency determines the daily average FOREX rate. The rate can be determined in terms of any foreign currency. The exchange of currency typically takes place via brokers, but overall many institutions like commercial banks, investment banks, brokerage houses, clearance houses, foreign exchange markets on the whole and individuals are involved in the process. FOREX market is the biggest financial market of the world but with reference to Pakistan it stands second. Since foreign exchange rate can be expressed in two ways, i.e;

- i. Direct quotation
- ii. Indirect quotation.

In this study we have used the direct quotation of the Pak rupee (PKR). We take the exchange rate of PKR in terms of U.S Dollar and express the exchange rate as I/PKR (direct quotation). Taking its natural log reduces the volatility of the exchange rate. In our analysis we are required to determine the impact of terrorists' activities on the Exchange Rate stability or to critically see how much of the underlined activities depreciate the domestic currency in terms of the foreign currency (U.S. Dollar). We have derived the following equation:

$$\text{Ln}(\text{ER}) = \alpha + \beta D_i + e_i \quad (7)$$

Where;

ER = exchange rate.

While for analysis purpose we use the following equation.

$$\text{Ln}(\text{ER}) = \alpha + \beta_1(D_1) + \beta_2(D_2) + \gamma(D_4) + e_i \quad (8)$$

where;

Ln(ER) = natural log of exchange rate

D₁ = terrorists' activities targeting the key personalities

D₂ = terrorists' activities taking place in the major financial cities

D₄ = minor terror events in small cities.

α, β, γ = parameters to be estimated

e_i = residual/ error term.

It is clear from equation (8) that ER is influenced by the terrorist activities grouped in D₁, and D₂. For the empirical findings, we regress the given econometric equation by applying OLS technique.

iii. KIBOR

Karachi Inter Bank Offer Rate (KIBOR) is the average of daily offer rates of commercial banks. It is the average daily rate on which a bank offers short term loans to other commercial banks. In other words, KIBOR is a yardstick to measure the capability of banking industry of a country to accommodate short term loans and funds. The underlined activities may also affect KIBOR rates. Interbank rate is the relative indicator of performance and efficiency of banking industry since it indicates the borrowing ability of the commercial banks.

Econometric equation for KIBOR is given as;

$$\text{KIBOR} = \alpha + \beta D_i + e_i \quad (9)$$

To find out the empirical results of impact of terrorism on banking industry (KIBOR) we estimate the following econometric equation by OLS technique.

$$\text{KIBOR} = \alpha + \beta D_1 + \gamma D_{ST} + e_i \quad (10)$$

Where;

KIBOR = Karachi Inter Bank Offer Rate

D₁ = major terrorists' activities targeting key personalities.

D_{ST} = dummy variable for structural changes.

α, β, γ = parameters to be estimated

e_i = stochastic/error/residual term.

IV. Empirical Findings

As already explained, we separately estimate the impact of terrorists' activities on three types of financial markets mainly due to having different dynamics and sensitivity of events. The final impact analysis is given as under;

i. KSEI

Using equation no. (6) we obtain the impact of underlining activities on KSE market.

It is apparent from the results that the value of R^2 is 0.98 or 98% which means that our model is best fitted. It implies that 98% of variations in the dependant variable (LnKSEI) are explained by the independent variable. Durbin Watson Statistics is equal to 1.96, which is closer to 2, shows that the regression model is not ploughed with the problem of autocorrelation. Standard error of the model is also reasonably small (0.016336) which is responsible for increasing the calculated value of t-statistics, thus we reject null hypothesis (i.e. $H_0: \beta \text{ \& } \gamma = 0$). F-statistics is 14379.05, which is comparatively very high indicating the overall significance/fitness of the model. C or α is actually the intercept which is the weighted average of all the ignored variables that might affect the KSE index. Its value is 9.441305 which are significant at 1 % level of significance (highly significant). This indicates that KSEI is affected by variety of events not included in this analysis due to time constraint factor. Most probably the factors like capital taxes on earnings of stocks, capital inflows, and future strategies of companies registered at stock market, external shocks might be included in the test. Similarly, the terrorist activities also adversely affect KSE. Particularly, the value of D_1 dummy variable ($\beta = -0.005021$ at 2% level of significance) indicates that 1 percent increase in relevant terrorists' activities might negatively affect KSE 100 Index by 0.5 percent. It means that the terrorists' activities occurring in major financial hubs and those targeting key personalities of the country negatively and significantly impacts the performance of the KSE. To put it the other way round, KSE 100 Index might decline when any such terrorist activity occurs in the region. In the same way, the dummy variable D_4 has also affected the KSE 100 Index negatively. It indicates that minor terrorist attacks occurring in small cities do not impact the KSE 100 Index significantly, although the impact is negative. Here, the estimated negative value of γ (-0.000137) means to support the argument that small terrorist activities have negative impact on KSE. More appropriately, the said terrorist activities grouped in D_4 combined with other residual factors also affect the functioning of the KSEI negatively.

The impact of such activities on KSE performance may become significant because of the important paradigm shift in policy measures. Policies of the government or other concerned institutions are greatly affected by the magnitude of terrorism in a region. Greater the magnitude of the terrorist activities, greater would be the uncertainty in economic environment, and consequently greater would be the rate of change of policy measures. Since Karachi provides the centre of financial activities to the country and Karachi Stock Exchange is the biggest stock market of the country, so the vulnerability of the city to the terrorism is most likely to create volatility of the liquidity in the economy. Greater the occurrence of terrorist activities in the city, greater would be the likelihood of adverse effect on the financial markets, particularly KSE. Consequently the result would be the higher outflow of capital, lower investments, lesser exports and depletion of foreign reserves.

ii. FOREX Rate

Using the equation no.(8) the results of the impact of terrorist activities on FOREX market has been estimated by OLS technique.

According to the results obtained, the value of the R^2 is 0.99 or 99%, which implies that 99% of the variations in dependant variable (ER) are explained by the variations in explanatory variables. The value of R^2 is pretty high indicating that the model is a best fit. Durbin Watson statistics is equal to 2 showing that there is no issue of autocorrelation in the regression model. The F- statistics value is also very high and significant showing the overall significance of the model. Standard error of the regression is very low, making t- statistics pretty high. The intercept term, C or α is -4.078457 which is quite significant indicating that the ignored variables caused depreciation of Pak rupee against U.S. Dollar. As regards the impact of dummy variable D_1 , it is negative but insignificant. So we are able to interpret that the terrorist activities named as D_1 do adversely affect the exchange rate of PKR but the impact is not at all significant. Similarly, the coefficient of D_2 is also very small which indicates that the response of the FOREX market to underlying activities is almost negligible. It determines that D_2 activities have a negative and insignificant impact on the determination of FOREX rate. The impact of D_4 activities on FOREX is interpreted in the same way as that of D_1 and D_2 .

From all of the above coefficient values we can infer a negative relationship between the terrorism and the FOREX rate. The negative sign indicates that any such happening is responsible for the depreciation of the domestic currency in terms of the foreign currency (U.S. Dollar in the present case). Though this impact is not significantly visible with reference to Pakistan but there might be several possible explanations for this suppressed relationship. From Pakistan's standpoint the impact might be insignificant because of high resilience of the financial markets here. From the daily data of the terrorist activities it is evident that these events have been taking place at a very high frequency over the sample period. The magnitude of these activities ranges from mild offensive happenings to very high terror attempts that scare off the whole humanity. In this scenario, it is likely to expect the convergence of financial markets. The impact has to be adverse because such happenings produces uncertainty in the economic environment, increases the risks and liquidity shortage, reduces exports, depreciates currency, lowers the domestic and foreign investments and thus definitely there is a flight of capital from economy. But in case of Pakistan, high frequency of such events might be responsible for the cold blooded attitude of nation as a whole and these events may seem a routine happening to the people involved in currency trading or in any other financial market. It is because of this reason that the variation in depreciation of PKR is very less as compared to the perceived expectations. So we can safely say, terrorism does not signify its impact on foreign exchange market of Pakistan, unless the event is highly adverse or of global attention like that of assassination of the former prime minister of Pakistan, Benazir Bhutto.

iii. KIBOR

By using OLS technique on equation no.(10) we get the following results on impact of terrorist activities on the money market or interbank market (KIBOR).

The results showed us that the value of R^2 is 0.98 or 98% which means that it is a best fitted model. 98% of the variations in the dependant variable, KIBOR, are determined by the variations in the explanatory (independent) variable. The estimated value of Durbin Watson Statistics is 1.95 which is used to indicate that the results are not ploughed with the menace of autocorrelation problem. This reflects the accuracy of results, as it can be used in the policy formulation process concerning the KIBOR. Standard Errors are very small which means higher values of t-statistics. Values of F-statistics are again very high i.e. 15109.34 showing the overall significance of the model. The value of intercept, C or α is 8.474 is high, which is significant at 1% level of significance. It is indicative of the fact that other factors are more likely to be responsible for the increase in the bank rate. The value of the coefficient of D_1 i.e. β_1 is 0.001382. The terrorist activities grouped in D_1 do affect the KIBOR positively but insignificantly. Positive sign indicates that greater the occurrence of the activities, higher will be the interbank rate. The coefficient of D_2 is also positive (highly significant at 1 % level of significance). It indicates that factors other than terrorist activities play a key role in bringing about changes in the KIBOR rate.

The impact of terrorist activities on KIBOR is widespread as compared to that of stock market (KSE). It is because of the fact that we find a bank branch network throughout the country, while KSE is confined to one city only. So the likelihood of the affect of terrorism increases on banking industry. The increased impact can be seen in the shape of the KIBOR rate.

V. Conclusions and Recommendations

This study was primarily aimed at estimating the impact of various kinds of terrorist activities on the three financial markets viz Karachi stock market, Foreign exchange market and the money market. The findings of the OLS regression model enable us to conclude;

- The economy of Pakistan has been adversely affected by the ongoing terrorist activities.
- The terrorists' activities in Pakistan have adversely and significantly affected the performance of KSE. Further, the KSE has been relatively more affected by the terrorist events compared to

the other markets. This might be due to its vary nature as KSEI is relatively more sensitive to events rather than economic fundamentals.

- The terrorist activities have insignificant but adverse effect on FOREX market. One reason behind the insignificant impact of terrorist activities on FOREX rates might be the inter bank data used in the analysis. As the SBP continue to interfere in the FOREX market, therefore, any volatility arising due to such events might be subdued due to SBP proactive intervention.
- The impact on KIBOR rate although negative but estimated to be insignificant is a very positive development as KIBOR rate is considered as an indicator of short term loans extended by banks. In case of significant adverse impact of terrorist activities on KIBOR, it may affect investment plans of the country, which might have been negative implication for Pakistan's economy.
- Most of the findings of this study are consistence with the theoretical expectations. The result estimates for the KSE 100 Index and KIBOR rate are per expectations. The econometric results for the second regression are although correctly directed but not consistent with the theory to extent as expected.
- The rising magnitude of terrorism in a country definitely adversely affects the economy in general and financial markets in particular.
- Last but not the least, targets of the terrorist activities play an important role in determining the impact on financial markets.

There might be many shortcomings in the study which mainly accounts to the time constraints.

In the light of the present study some policy recommendations could be made, following are some of these;

- In the light of the study, its empirical findings and conclusions the government and the state ought to work on the institutional development on account of terrorism. Anti terrorism policy framework of international concern shall be formulated, enhanced and made available to the general public under this institution. Masses be given advanced warnings before occurring of any such event and rehabilitation be an important immediate step after the event has happened.
- Besides the well being of the general masses, effective contingency planning to mitigate the financial risk faced by the financial firms and the over all economy has to form a major constituent of the anti terrorism policy making institution.
- Since the adverse impact of terrorism on the financial markets has been econometrically proved in this study, economic policy should form an eminent part of the anti terrorism policy making. Effective measures shall be devised to counter the wave of disruption created in any of the above mentioned financial markets. With the continuous attacks of terror on the economy, as in Pakistan, the major domestic and international investor's draw their money out of the financial markets. There is a flight of capital out of the economy which is a major set back to the domestic currency. To mitigate the risk of depreciation of the currency, policies regarding increasing the money supply and lowering the interest rates in order to perk up investor's confidence and to keep the foreign reserves build up shall be enacted.
- Policy has to be formed to strengthen the financial structure of the economy and increase its resilience to absorb the shocks to the maximum limit. Opportunities to the domestic manufacturers' shall be accentuated to increase exports and thus demand of domestic currency. This is an important measure to avoid the depreciation of currency and also it will make the trade deficit unlikely to occur. This is an important policy implication for the money market.
- Investment in research and development and innovative security measures is also need of the day.

- Lastly, policies should be made and extended on the global level to increase the cooperation and coordination among the major stake holders in the global financial markets. Policies regarding benign relationships among the central banks of international importance shall also be encouraged so as to extend financial help during the crucial financial crunch after any enormous act of terrorism.

Based on the results findings, the study mainly recommends that the concerned policy makers must take into account the impact of terrorist activities while formulating policies for the three kinds of financial markets. However, the impact of terrorist activities varies on each market in terms of its intensity, place of occurrence etc.

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