

Impact of Terrorism on Forex Market and Karachi Stock Exchange: Evidence from Pakistan

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Abstract

The present study is an effort for estimation of impact of terrorism on financial markets of Pakistan over the period from 2007 to 2010. The most terrorism affected era of Pakistan history. It finds the relationship between the terrorist activities and the two kinds of financial markets which are the capital market including the variable KSE stock prices, FOREX market which includes Exchange rate variable. A result show that terrorism has an adverse effect on the Karachi stock prices (capital market) Currency has also depreciated significantly due to the increase in the terrorism during this period. Time series data on daily basis has been used in this study.

Key Words: Terrorist Incidents, Forex Market, Stock Market.

INTRODUCTION

Terrorism creates fear and sense of insecurity in the society which kills less militants and more innocent people. It may be either by state or non state actors. (Binyamin, 2010) Pakistan suffered terrorism since 9-11 incidents. After the Laal Musjid operation in 2007 and Baynazir assassination in that same year greatly affected the financial markets of the country. After the military operation in South Waziristan in 2009 started a new wave of terrorism in the country which continued till the end of 2010. during 2009 and 10 terrorist attacks were taking place almost every week on average. Which greatly hampered the confidence of the foreign investors.

Objectives:

- To find the impact of terrorism on financial markets.
- To show the effect of terrorism on Exchange Rate (Forex market)
- To see the impact of terrorism on KSE100 index (capital market).
- On the basis of findings to suggest the policy recommendations

Literature Reviewed

Chena and Siems (2003) explored that terrorist attacks and military incursion greatly affected the capital markets across the world in a short period of time. Eldor and Melnick (2004) found that suicidal attacks in Israel and number of people killed had a negative impact on the stock market and foreign exchange market. However location of the attack did not affect any of the markets. Johnston and Nedelescu (2005) concluded that terrorist attacks in US and Madrid created uncertainty and volatility in the financial markets. Chesney et al. (2011) studied the role of terrorism and natural disasters on financial markets using the data of 25 countries over 11 years and found the negative repercussions of the terrorist attacks and natural disasters on stock, commodity and bonds market. Gul, et al. (2010) investigated the impact of terrorist attacks on different financial markets using the primary data on daily basis from 2006 to 2008 and concluded that terrorism had a negative impact on stock prices, KIBOR rates and exchange rates in Pakistan.

Data and Methodology

Introduction to Econometric Model: To find the impact of Terrorism on financial markets of Pakistan regression analysis is used and for the estimation of the results, the time series E Views econometric software has been used. For this purpose of analysis, "The Multiple Regression Model" is used. In this study the dependent variables (regressand) are KSE 100 index points and Exchange Rate while the Terrorist activity is the independent variable (regressor).

Following functional form is to be found;

$$FM = f(T)$$

Where,

FM is the financial market indicating any type of the above mentioned markets.

T indicates any type of the terrorist activity.

The equations with the intercept are to be found as:

Equation 1:

$$ER = \beta_0 + \beta_1(T) + \mu$$

Equation 2:

$$KSEI = \beta_0 + \beta_1(T) + \mu$$

Where,

β_0 = intercept

β_1, β_2 = coefficient or parameter to be estimated

μ = error term or stochastic term

T = terrorism

ER = Exchange rate

KSEI = Karachi Stock Exchange 100 index

Data: data of exchange rate and Karachi stock index value on daily basis from 2007 to 2010 were obtained from State Bank of Pakistan website, whereas dummy variable of terrorist attacks was created by assigning 1 if terrorist attack occurred on that day and 0 otherwise from 2007 to 2010 on daily basis. If the terrorist incident occurred in the evening, its effect was taken on the next date.

Econometric Procedure: The desired equations are estimated by the following steps.

MAKING OF HYPOTHESIS

Following hypothesis are tested to check the significance of the specific variables used in the study

Alternative Hypothesis;

- a. There is a significant negative impact of terrorism on the KSE 100 index
- b. Terrorism is a significant factor to depreciate the currency.

NUL hypothesis;

- a. There is insignificant impact of terrorism on KSE
- b. Terrorism has no significant impact on Exchange Rate

Ordinary Least Square Method (OLS): The method of Ordinary least squares was developed by Carl Friedrich Gauss, a German mathematician. OLS estimators are Best Linear Unbiased Estimators (BLUE) under certain assumptions. Assumptions of Homoscedastic and not auto correlated error term have been checked by White test and

Durban Watson test respectively. The problem of autocorrelation was removed by including AR (1) and AR(2) process.

RESULTS AND DISCUSSION

Exchange Rate Model				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TERRORISM	0.0568	0.0152	3.74396508712	0.0002
C	94.1328	13.7043	6.8688440793	0.0000
AR(1)	1.0745	0.0316	34.0055103397	0.0000
AR(2)	-0.0758	0.0316	-2.40025170067	0.0166
R-squared	0.9992	F-statistic		417528.1793
Adjusted R-squared	0.9992	Prob(F-statistic)		0
Durbin-Watson stat	1.9902			

Dependent Variable: Exchange Rate

White Heteroskedasticity Test:

F-statistic	0.2977	Probability	0.5854
Obs*R-squared	0.2982	Probability	0.5850

Source: Author's calculations

1000 observation from 1st July 2007 to 31st December 2011 have been taken on daily basis.

According to the results obtained, the value of R^2 is 0.99 or 99% which implies that there is 99% variations in dependent variable(ER) explained by variations in independent variables. Value of coefficient of Terrorism is 0.05 which shows that domestic value of foreign currency (US Dollar) increase by 0.05 Rupees a day when terrorist attack occurs and it has a significant impact on the average at 10, 5 and 1 % level of significance. The value of intercept is also significant even at 1% level. 1st lag of the depended variable has the positive and the significant impact on the Exchange Rate, where as 2nd lag turns out to be negative and significant. AR process has been introduced in the above model to remove the problem of autocorrelation.

The value of DW test is 1.99, which shows no problem of autocorrelation. White Test shows that there is no problem of Heteroscadasticity, as it accepts the Null Hypothesis of Homoscadasticity as probability is greater than α at 1, 5 and 10% level of significance.

KSE 100 INDEX MODEL				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TERRORISM	-28.9601	18.9271	-1.5301	0.1263
C	10051.9593	1105.2086	9.0951	0.0000
AR(1)	1.0429	0.0318	32.7883	0.0000
AR(2)	-0.0520	0.0318	-1.6357	0.1022
R-squared	0.9852	F-statistic		21815.1699
Adjusted R-squared	0.9852	Prob(F-statistic)		0
Durbin-Watson stat	2.0008			

Dependent Variable: Closing Price

White Heteroskedasticity Test:

F-statistic	0.5729	Probability	0.4493
Obs*R-squared	0.5737	Probability	0.4488

Source: Author's calculations

985 observations have been taken in the above model from 1st Jan 2007 to 31st Dec 2011.

The value of intercept is 10051.9593043, which is the mean value of the bench mark category or the category for which dummy variable is not created to avoid dummy trap. Bench mark category in the above model is the day when there is no terrorist activity.

There is reduction of 28.9600840594 points in a day on the average if terrorist activity takes place on that day, keeping other things or factors constant. And terrorism has a negative impact on the KSE 100 index at 10 % level of significance using 1 tale T test.

1st lag of the depended variable has the positive and the significant impact on the KSE Prices, where as 2nd lag turns out to be negative and significant. AR process has been introduced in the above model to remove the problem of autocorrelation.

The value of DW test is exactly 2.00, which shows no problem of autocorrelation. White Test shows that there is no problem of Heteroscedasticity, as it accepts the Null Hypothesis of Homoscedasticity as probability is greater than α at 1, 5 and 10% level of significance.

Conclusions and Policy Recommendations

Conclusions: The primary aim of the present study was to estimate and see the impact of terrorism on financial markets of Pakistan. After applying OLS regression analysis, the study enable to conclude that terrorism has affected significantly negative on the economy of Pakistan. Terrorism has significant negative effect on FOREX market or ER but have positive relation with ER. It means that with increase in terrorist activities in the economy ER also increases as domestic price of foreign currency increases, hence currency depreciates. It is because of demand for foreign currency (dollar) is greater than supply for foreign currency (dollar) when there would be depreciation of ER. As foreign investor will avoid investing in domestic economy hence there will be reduction in portfolio investment, consequently currency depreciates. It can be concluded that terrorism has positive relationship with ER but it has negative impact on it. Terrorism has negative but least significant impact on the performance of the KSE100 index. According to the findings it can be because of that KSEI is more sensitive to other factors which are not included in the model of the present study. These factors can be the external shocks, capital taxes on the stock earnings or due to the financial and political crisis in the economy which can be the high inflation or rise of fiscal deficit. All these factors have more effects on the performance of KSEI. KSE is affected significantly at 10% but insignificant at 1 and 5% level of significance because dummy variable created for the terrorist activities, includes even such events that do not create fear at larger level. Like blasts in smaller cities or in tribal areas. Or target killings in Baluchistan.

Policy Recommendations: As it is evident by thee results terrorism hamper the confidence of the investors therefore exchange rate depreciates. So the policy makers need to give incentives to the investors and need to make consistent economic policies that could keep the exchange rate stable. Further more foreign investors are needed to be given full security. Security of the major cities is needed to be insured that has a significant impact on the Forex Market and the Stock Market.

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