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Bearing the Brunt: The Effect of Terrorism on Foreign Direct Investment in Pakistan

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ABSTRACT

Globalization and extended liberalization of the economies, during the last two decades, has made possible the transnational movement of capital. This capital movement includes the flows of foreign direct investment across economies. Pakistan economy is one of the beneficiaries of inflows of foreign direct investment. On the other hand, Pakistan economy has experienced terrorist activities during the last three decades or so. Terrorism has adversely affected the socio-economic spectrum of Pakistan. The present analysis is an attempt to investigate the impact of terrorism on inflows of foreign direct investment in Pakistan. The autoregressive distributive lag approach to cointegration is employed for the econometric analysis. The empirical results confirm adverse impact of terrorism on inflows of foreign direct investment both in long run and short run. Terrorism attacks measured by sectarian violence affect FDI inflows negatively and significantly over the long run period. Stock market capitalization and human capital are positively and significantly associated with FDI inflows in Pakistan. The short run dynamics of the variables are analyzed by error correction model. The error correction term is significant confirming the long run causality from independent variables to FDI inflows. The results of the empirical analysis are statistically robust.
KEYWORDS: Violence, Capital Movements, Stock Market Capitalization, Human Development, Open Economy, ARDL Model, Pakistan.
JEL Classification: C22, D74, F23, O15

1. INTRODUCTION

This study analyzes the brunt of terrorism on inflows of foreign direct investment in Pakistan economy. The impact of violence and terrorism has been analyzed in a number of theoretical and empirical studies. The terrorist attacks and risk my affect the economy through different channels. Firstly, Terrorism activities may be harmful for human and physical capital of an economy. Secondly, the terrorist attacks induce and increase uncertainty in the economy. Thirdly, terrorism may divert resources of the economy from productive allocations by increasing counter-terrorism and security related expenditures [1] [2]. Fourthly, it may have adverse impact on some specific industries. For example, terrorism negatively affects tourism industry [3] [4].

The motivation to the present study is the impact of terrorism and sectarian violence in Pakistan economy as following. It has been argued, in some of the studies, that sectarian violence and terrorist attacks may not have sizeable and long term effect on economic activity. The direct effect of terrorist incidents on industrious and prolific capital may relatively be modest. A study by Becker and Murphy [5] anticipated the impact of 9/11 terrorist attacks on the U. S. economy. In this study, the 9/11 terrorist attacks caused a loss of 0.06 percent of the total productive capital of the U.S. economy. Some of studies reveal that terrorist attacks were unlikely to exert a robust effect on economy in long run. As estimates in Becker & Murphy [5] revealed long run impact of 9/11 terrorist attacks to only 0.3 percent of GDP.

In contrast to Becker and Murphy [5] the most of theoretical and empirical studies estimated larger economic impacts of terrorism. Abadie and Gardeazabal [6] estimated a drop of 10 percent in GDP per capita in Basque economy due to terrorist conflicts during two decades. Enders and Sandler [7], Chen and Siems [8], Becker and Rubinstein [9], Blomberg *et al.* [10], Blomberg and Mody [11], Pshisva and Suarez [12] and Gaibulloev and Sandler [13] suggested large influences of terrorism on economic variables. Blomberg *et al.* [10] found, in a panel of 177 economies, that terrorism affected economic growth negatively and significantly. Terrorism was concluded to redirect economic activity from investment expenditures to government spending. The terrorism campaigns cause an increase in public expenditure on defensive actions to curb terrorist activities and to take practical actions to target terrorists and their assets. The amplified public expense on security and campaign against terrorism crowds out growth-enhancing private and public expenditures in the economy [10][14]. Moreover, terrorism attacks also hamper growth by mounting cost of doing business in the economy. Terrorism

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activities increase wages, insurance premiums and increased security expenses. This increase in cost of doing business results in lower profitability and smaller returns of investment projects.

Gaibulloev and Sandler [13] used panel data to quantify the effect of terrorism and conflicts on economic growth in Asian economies. The results of the empirical analysis showed growth-limiting impact of transnational terrorist attacks in these economies. It was found that per capita GDP growth was reduced by about 1.5 percent with an additional incidence of terrorist activity per million persons. The growth reducing impact of terrorist attacks was stronger in developing economies. Whereas, developed economies were able to absorb the negative impact of these activities. It was observed that internal conflicts in the countries were great source of concern. Conflict variables were linked to smaller levels of investment and caused increase in government spending. Crowding-in of public spending might have crowding-out impact on investment.

Terrorist attacks may reduce investment and distract FDI by increasing uncertainty in the economy [6-7] [11] [15]. Enders and Sandler [7] used time series techniques to analyze the impact of terrorist activities on foreign direct investment in Spain and Greece. The researcher applied VAR model for Greece and transfer function for Spain. The results of the study confirmed persistent and adverse impact of terrorism on foreign direct investment. Moreover, it was also concluded that smaller economies facing a persistent threat of terrorist activities faced economic cost in the shapes of reduction in investment and growth levels. In another study, Abadie and Gardeazabal [6] investigated the economic impacts of terrorist conflict in Basque economy. The authors found a decline of 10 percentage points in per capita GDP after the outbreak of terrorist attacks in the late 1960s. Moreover, the researchers used the 1988-99 truce as a natural experiment and found positive impact, during the credible years of truce, on stocks of firms but, at the end of ceasefire, the relative performance of stocks of firms was negative. Blomberg and Mody [5] concluded that violence, in the form of terrorism; wars and revolutions adversely affect international investment. The adverse impact of violence in terms of terrorism on trade and foreign investment was more significant in developing economies.

Tavares [16], in cross sectional study, introducing an interactive term between terrorism and political rights as determinant of per capita GDP growth, found a small impact of terrorism on growth when standard growth variables were left out. When standard growth variables were included in the model terrorism showed no influence on GDP per capita. In another study, Eckstein and Tsiddon [17] applied VAR model for Israel and used four interactive time series variables to assess the impact of terrorism. The authors concluded negative and significant impact on GDP per capita, investment, exports, and nondurable consumption of Israel. The impact of terrorism on investment and exports was three times its effect on GDP per capita. Moreover, the researchers found that higher levels of terrorism activities caused an annual decline of 2 percent in per capita GDP.

Enders *et al.* [18] gauged the impact of international terrorism against U.S. interests by using different statistical techniques. The researchers used time series intervention analysis to analyze whether incident of 9/11 had negative impact on U.S. FDI flows. The study found no evidence of long lasting adverse effect on U.S. FDI flows except for Turkey. The authors also employed panel estimation to measure the effect of U.S. oriented terrorist attack abroad on the U.S. FDI. They also controlled for the impact of other important factors such as relative facer endowment and national GDP of the economies. A small but significant impact of terrorist attacks on the stock of U.S. FDI in the OECD economies was found. Each U.S. directed incident caused a decline by 1 million dollar and these assaults reduced the U.S. FDI flows by 1 percent for the entire sampled period. The U.S. FDI stock, in Greece and Turkey, fell by 5.7 percent and 6.5 percent respectively. The authors found insignificant impact of terrorist attacks on U.S. FDI flows in non-OECD economies.

Adadie and Gardeazabal [2] explored the impact of terrorism on global economy. In this study, the impact of terrorist risk on net FDI in the economies was explored by introducing terrorism as disastrous risk in a standard endogenous growth model. The estimated model suggested that terrorism risk depressed net FDI positions. It was due to the fact that transnational investors were able to broaden their horizons to other country risks and terrorism provoked massive movements of capital across economies. The estimates of the study revealed that the net FDI position of the economy fell by 5 percent with one standard deviation rise in the terrorism risk. The researchers suggested the open-economy channel to be vital way through which terrorism harms the economies. Agarwal [19] attempted to empirically investigate the association between transnational terrorist violence and foreign direct investment by economic sector in developed economies viz-a-viz developing economies of Asia, Africa and the Middle East. The study confirmed significant but inconsistent association between transnational terrorism and FDI inflows. The author argues that Investors, in different sectors, respond to terrorism risks in non-homogeneous manner. Out of 12 broad industrial sectors terrorism showed adverse and significant impact on manufacturing, trade and repair, and construction.

Ali [20] argued that terrorism was the primary source of uncertainty in Pakistan. This uncertainty sourced from terrorist activities has adversely affected the decision of firms regarding allocation of their investments. As a result, FDI inflows into Pakistan economy declined manifold during the last few years. In a comprehensive study, Irshad [21] focusing on the causes and remedies of terrorism in Pakistan concluded that it is in hobble. Higher levels of inflation coupled with low levels of investment and increasing trend in capital flight has adverse impact on the economic fabric of the Pakistan economy. Rasheed and Tahir [22] found that terrorism neg-

atively affected FDI inflows in Pakistan. Moreover, the authors concluded bidirectional causality between terrorism and FDI in the economy. The negative impact of terrorism on FDI inflows was due to increase in uncertainty in the economy. Uncertainty has shaken investor's confidence in economy [22].

Abbasi [23] pointed out that Pakistan, as frontline state in the war on terror, have experienced aggravated instability, insecurity and political unrest in the economy. The study was focused on identification of human, socio-politico-economic and psychological implications of terrorism in Pakistan. Except the human losses of civilians, officials of law enforcement agencies, troops, instability, exacerbated security challenges Pakistan economy has also been bearing negative effects on investment flows and confidence in the market. Terrorism attacks have increased the uncertainty in the economy. Increased uncertainty resulted in slowdown in domestic economic activity and capital flight from the economy. The uncertain situation in the economy has shaken the confidence of foreign investors. In another study, Ahmad *et al.* [24], in a recent study, attempted to take a look at the brunt of crime on economic growth in Pakistan economy. The authors found growth decreasing impact of crime level on growth in the long run. In short run, the impact of crime on growth was also negative but statistically insignificant.

Zeshan and Afza [25] exploring the determinants of FDI in Pakistan concluded terrorism activities to have negative impact on FDI flows into the economy. The study examined the effects of terrorism, political instability, and gas shortage along with the control variables (inflation, trade openness, GDP, exchange rate and incentives for investment) in FDI inflows in Pakistan. Findings of the study revealed negative impact of terrorism and political instability in FDI but gas generation was found to have positive impact on these flows.

2. MATERIALS AND METHODS

2.1. The Model & Data Sources

Since the study is an endeavor to assess the effect of terrorism on FDI in Pakistan so the ratio of net inflows of FDI to GDP is taken as dependent variables in the empirical analysis. This study analyses the ratio of stock market capitalization to GDP, ratio of killed and injured in sectarian violence to total incidents of sectarian violence, and human development index as proxy of human capital on foreign direct investment. Globerman and Shapiro [39] used human development index as an explanatory variable while analyzing the role of governance infrastructure (governance infrastructure index, human development index, and environmental sustainability index) on global FDI flows. The model of the present study is expressed as:

FDGDP = f (SMC, KIINC, HDI)

$$FDGDP_t = \mathrm{a}_0 + \mathrm{a}_1 SMC_t + \mathrm{a}_2 KIINC_t + \mathrm{a}_3 HDI_t + e_t \quad [1]$$

FDGDP = Ratio of Foreign direct investment to GDP

SMC = ratio of stock market capitalization to GDP

KIINC = Ratio of killed and injured in sectarian violence to total incidents of sectarian violence

The data for the foreign direct investment has been taken from the World Development Indicators (WDI) of the World Bank [26] and Various Issues of the Pakistan Economic Survey [27] published by Ministry of Finance, Government of Pakistan. The ratio of stock market capitalization to GDP is obtained from World Bank [26]. The data of incidents of sectarian violence, killings and injuries in these incidents has been taken from the South Asia Terrorism Portal (SATP) [28]. The human development index used in the present study, for the period of 1989-2011, was estimated by using income index, education index and health index. The data of purchasing power parity (PPP) GDP per capita (constant 2005 international, $) was taken from World Development Indicators (WDI) of the World Bank [26]. The data of total life expectancy index (year) was also taken from the WDI of the World Bank. The gross primary school enrollment and literacy rate was taken from the various issues of Economic Survey of Pakistan and WDI of the World Bank. The data of human development index for the period 2012-14 was taken from the Human Development Reports (HDR) of the United Nations Development Program (UNDP) [29].

2.2. Cointegration Analysis

2.2.1. Unit Root Test

In this study, time series data has been utilized for analysis. Most of the economic time series may not have zero mean and/or non-constant covariance over time. This study utilized Augmented Dickey Fuller (ADF) unit root test [30] to analyze the stationary of the variables. The ADF test is the extension of the Dickey& Fuller test. ADF test is useful in higher order of lags and applicable when error terms are serially correlated. The ADF unit root test estimates three possible forms of ADF regressions, as:

$$\Delta z_t = \Omega z_{t-1} + \sum_{i=1}^{l} \Phi_i \Delta z_{t-i} + u_{1t} \quad [2]$$

$$\Delta z_t = a_0 + \Omega z_{t-1} + \sum_{i=1}^{l} \Phi_i \Delta z_{t-i} + u_{2t} \quad [3]$$

$$\Delta z_t = a_0 + a_1 \mathrm{t} + \Omega z_{t-1} + \sum_{i=1}^{l} \Phi_i \Delta z_{t-i} + u_{3t} \quad [4]$$

In all of the above ADF models, the null hypothesis is that $\Omega = 0$. Rejection of null hypothesis of unit root (non-stationarity) is rejected it implies that time series is stationary. Economic time series, generally, are stationary at

their first difference. If the variable are I(1) then Johansen cointegration technique is more appropriate but it is not applicable if the variables are integrated of the different order. In the case when variables are I(0) or I(1) or combination of I(0) and I(1), the autoregressive-Distributive Lag (ARDL) technique is more suitable to test the long run equilibrium relationship among the variables [31].

2.2.2. The Autoregressive-Distributed Lag (ARDL) Cointegration Approach

The ARDL approach to cointegration is a single equation technique of cointegration. Pesaran and Shin [32] introduced this technique and it was further extended in Pesaran *et al.* [31]. In contrast to Johansen cointegration approach, ARDL approach is applicable if variables are I(0) and/or I(1) [31][33]. The ARDL technique estimates the long run and short run estimators of the model simultaneously. Moreover, the ARDL model captures the data generating process, in a general to specific framework, by taking sufficient number of lags. Another advantage of the ARDL technique is that problems due to non-stationarity of the data are avoided. Furthermore, in this technique, error correction model assimilates, without losing long run information, short run dynamics with long run equilibrium [34]. The variables included in the study were integrated of different orders so it was appropriate to apply ARDL method to explore the coinegrating association among these variables. The ARDL model to be estimated is expressed as:

$$\Delta FDGDP_t = \beta_0 + \sum_{i=1}^{l} \beta_{1i} \Delta FDGDP_{t-1} + \sum_{i=1}^{l} \beta_{2i}\, \Delta SMC_{t-1} + \sum_{i=1}^{l} \beta_{3i} \Delta KIINC_{t-1} + \sum_{i=1}^{l} \beta_{4i}\, \Delta HDI_{t-1} + \gamma_1 FDGDP_{t-1} + \gamma_2 SMC_{t-1} + \gamma_3 KIINC_{t-1} + \gamma_4 HDI_{t-1} + \mu_t \quad [5]$$

Where, Δ indicates first difference, β_0 is intercept, and μ_t is the stochastic error term. l shows optimum number of lags. The terms with sigma signs are error correction representations and terms without summation signs with γ's correspond to long run association. The ARDL method of cointegration obtains the optimum lag length for the variables by estimating $(l + 1)^k$ number of regressions. Here, k indicates the number of variables in the model to be estimated. The most commonly used lag distribution function is Akaike Information (AIC) and Schwartz Bayesian Criteria (SBC) criteria. The SBC criterion is preferred for the selection of optimum lag because it has more parsimonious specifications [35]. In the present study, Schwarz Bayesian Criterion (SBC) for optimum lag length has been used in econometric estimations. The ARDL approach, as suggested in Pesaran *et al.* [31], uses bound testing to find out long run association among FDGDP, SMC, KIINC and HDI. The bound testing method is based on F-statistic. In the bound testing approach F-statistic tests the null hypothesis of no cointegrating association against the alternative hypothesis of presence of cointegrating relationship between the variables, as:

H_0: $\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$ [*No coinetgration among variables*]

H_1: $\gamma_1 \neq \gamma_2 \neq \gamma_3 \neq \gamma_4 \neq 0$ [*There is coinetgration among variables*]

Pesaran *et al.* [31] has reported two sets of critical values for F-statistic (Wald test) for the rejection of the null hypothesis. For the critical value it is assumed that all of the variables in the ARDL model are I(1). Upper critical values is estimated on the assumption that time series in the model are I(1). When the estimated F-statistic is greater than upper bounds value then null hypothesis of no cointegrating association among the variables is rejected. When estimated F-value is less than lower bounds value then the null hypothesis of no cointegration is accepted. The cointegration test becomes inconclusive when the calculated F-value falls between lower bounds and upper bounds values. If the F-statistic test confirms the presence of cointegrating relationship among the variables then the model 5 can be expressed as error correction representation as:

$$\Delta FDGDP_t = \beta_0 + \sum_{i=1}^{l} \beta_{1i} \Delta FDGDP_{t-1} + \sum_{i=1}^{l} \beta_{2i}\, \Delta SMC_{t-1} + \sum_{i=1}^{l} \beta_{3i} \Delta KIINC_{t-1} + \sum_{i=1}^{l} \beta_{4i}\, \Delta HDI_{t-1} + \delta ECT_{t-1} + \varepsilon_t \quad [6]$$

Where, δ and ECT are speed of adjustment and residuals obtained from the model 5 respectively. The coefficient (δ) of the error correction term is known as speed of adjustment. The significance of the speed of adjustment with the negative sign would confirm the long run causality from stock market capitalization, sectarian violence and human capital to FDI inflows. The significance of the β_{1i}, β_{2i}, $\beta_{3i}$and β_{4i} would confirm the short run causality from FDGDP, SMC, KIINC and HDI respectively. The diagnostic tests such as Lagrange Multiplier test of residual serial correlation, Normality test and Heteroscedasticity test are conducted to analyze the adequacy of the model. Pesaran and Pesaran [33] suggest the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) to check the stability of the long run and short coefficients. The CUSUM test [36] plots the cumulative sum of recursive residuals with the 0.05 level critical values. The parameters of are concluded to be stable if the cumulative sum of recursive residuals lies within the two critical lines. Similarly, the occurrence of the CUSUMSQ test [36] within the 0.05 level critical lines suggests that parameters or variances are stable.

3. RESULTS AND DISCUSSION

3.1. Unit Root Test for Stationarity

Unit root test results are given in the Table 1. The stationarity property of the variables was tested by ADF unit root test. All of the variables were tested at level without constant term and no trend, with constant term but no deterministic trend, with constant term and deterministic trend both at level and their first difference. The ADF test results reveal that all of the variables are stationary at their first difference except stock market capital-

ization (SMC). Stock market capitalization is stationary at level. So it is concluded that foreign direct investment, sectarian violence and human development index are all I(1) but stock market capitalization is I(0).

Table 1: Stationarity of Time Series Variables

Variable	ADF Test Statistic						
	None	C	CT	Variable	None	C	CT
$FDGDP_t$	0.2584 (0.7514)	-2.5619 (0.1139)	-2.2359 (0.4463)	$\Delta FDGDP_t$	-5.3410** (0.0000)	-5.3601** (0.0003)	-5.1995** (0.0023)
SMC_t	-0.5304 (0.4768)	-2.5637 (0.1141)	-4.2486* (0.0163)	ΔSMC_t	3.1953** (0.0027)	-3.1273* (0.0379)	3.2087 (0.1063)
$KIINC_t$	-2.6283* (0.0108)	-3.8563** (0.0074)	-4.5257** (0.0072)	$\Delta KIINC_t$	-8.2989** (0.0000)**	-8.1238** (0.0000)	-7.9627** (0.0000)
HDI_t	0.2453 (0.7492)	-1.8653 (0.3422)	-1.1453 (0.9002)	ΔHDI_t	-4.9001** (0.0000)	-4.8167** (0.0008)	-5.1697** (0.0018)

Source: Author(s)
Note: The values in ( ) are MacKinnon (1996) one-sided p-values. None = without drift & no trend, C = with drift but no trend, and C & T = with drift and deterministic trend. Δ is a first difference operator.
****(**) significant at 0.05(0.01) level.***

3.2. Autoregressive Distributive Lag (ARDL) Model

The ARDL can be applied on the variables that are I(0) or I(1) or combination of variables integrated of order I(0) and I(1) [31]. The F-statistic, with 95 percent critical values, of the ARDL model is given in the Table 2. The optimum lag for the estimation of ARDL model was selected by SBC criterion. The optimum lag of two was selected as an optimum lag. The maximum lags of two, in the ARDL approach, are appropriate for annual data [35] [37].

The F-statistics (12.7485) is more than the upper bound value (5.3082) at 0.05 level of significance so the null hypothesis of no cointegrating relationship is rejected. It is concluded that there is a cointegrating relationship between FDGDP, SMC, KIINC and HDI.

Table 2: Results of ARDL Model

F-Statistic	95 % Lower Bound	95 % Upper Bound	Conclusion
12.7485	3.9223	5.3082	Cointegration

3.3. Estimated Long Run Coefficients of ARDL Model

The long run coefficients reported in the Table 3 are evident that all of the estimated partial regression coefficients are statistically significant and have expected signs. The coefficient of stock market capitalization is positive and is statistically significant at 0.05 level showing an increase in foreign direct investment with the increase in stock market capitalization in Pakistan over a long run period. The better performance of stock markets in Pakistan is the indicator of the confidence of domestic and foreign investors in the economy. The development in the stock markets of the economy helps in improving the confidence of the investors and thereby increases in foreign direct investment into the economy [27]. The development and liberalization of the stock market increases the market size. Increase in market sizes increases the inward foreign direct investment flows into the economy [38].

The terrorist attacks (sectarian violence) showed negative impact on flows of foreign direct investment in Pakistan. This result is in agreement with the previous empirical studies such as [2] [6] [19] [22-25] that terrorism attacks in increase uncertainty and unrest in the economy. The increased uncertainty shakes the confidence of transnational investor in the economy. As results, not only the domestic investors are discouraged but transnational investors also decreased their investments to the terrorism attacked economy. Moreover, it promotes capital flight from the economy and has adverse impacts on growth process of the economy.

Improvement in the human capital measured by human development index has favorable and significant impact on foreign direct investment in Pakistan over a long run period. Public investment in human capital such as better health services and education facilities has their socio-economic benefits. Increased healthcare and education facilities have spillover impacts in the economy. Improved human capital attracts the foreign firms to invest in the respective country and thereby have positive impact on FDI inflows into the economy [39]. Some other studies also conclude that human capital is an important determinant of foreign direct investment in the host economy [40] and levels of human capital affects international investments positions [2]. Foreign direct investment is positively related to human development in the economy [41].

Table 3: Estimated Long Run Coefficients

ARDL (2, 0, 1, 2) selected based on SBC Criterion Dependent Variable: $FDGDP_t$		
Variable	Coefficient	[p-value]
Constant	-0.018867*	[0.0110]
SMC_t	0.3647E-3**	[0.0000]
$KIINC_t$	-0.1825E-3**	[0.0050]
HDI_t	0.033046*	[0.0240]
Source: Author *****(*) denote significance at 0.01(0.05) level.***		

Table 4: Error Correction Representation for the Selected ARDL Model

ARDL (2, 0, 1, 2) selected based on Schwarz Bayesian Criterion Dependent Variable: ΔFDGDP		
Variable	Coefficient	p-value
ΔFDGDP1	0.21668	0.1330
ΔSMC	0.3061E-3**	0.0000
ΔKIINC	-0.4461E-4	0.2070
ΔHDI	0.014096	0.2930
ΔHDI1	-0.098693**	0.0000
ECM_{t-1}	-0.83932**	0.0000
Diagnostic Tests		
Test Statistic	LM Version [p-value]	F-Version [p-value]
Serial Correlation[a]	0.70163 [0.4020]	0.42161 [0.5270]
Normality[b]	1.1417 [0.5650]	Not Applicable
Heteroscedasticity[c]	0.23787 [0.6260]	0.22023 [0.6430]
R-Squared = 0.93066, Adj. R-Squared = 0.89367 **F-value = 33.5518, P(F-value) = 0.0000** **Durbin-Watson = 2.2023**		
Source: Author(s) ***ΔFDGDP = FDGDP – FDGDP(-1), ΔFDGDP1= FDGDP(-1) – FDGDP(-2), ΔSMC = SMC – SMC(-1), ΔKIINC = KIINC – KIINC (-1), ΔHDI = HDI – HDI(-1), ΔHDI1 = HDI(-1) – HDI(-2)*** ***[a]Lagrange Multiplier test of residual serial correlation*** ***[b]Based on a test of Skewness and kurtosis of residuals*** ***[c] Based on the regression of squared residuals on squared fitted values*** *****(*) significant at 0.01(0.05) level.***		

After finding the cointegrating relationship between terrorism, foreign direct investment, stock market capitalization and human capital the short run dynamics of the variables was analyzed by error correction model. The results of the ECM are reported in the Table 4. The coefficient of ΔFDGDP1 is 0.2167 but it is insignificant. The coefficient of stock market capitalization is positive and significant at 0.01 level. It implies that stock market capitalization have positive impact on inflows of foreign direct investment in short run. The short run impact of SMC is strongly in agreement with the long run results of the present study that SMC has positive impact on FDI flows in Pakistan. The coefficients of ΔKIINC and ΔHDI are negative and positive signs respectively but both of the coefficients are insignificant.

The coefficient of ECM_{t-1} is -0.8393. It is significantly different from zero at 0.01 level of significant. The significant ECM_{t-1} with negative sign confirms the long run causality running from the explanatory variables (SMC, KIINC, and HDI) to foreign direct investment.

Figure 2: Plot of Cumulative Sum of Recursive Residuals

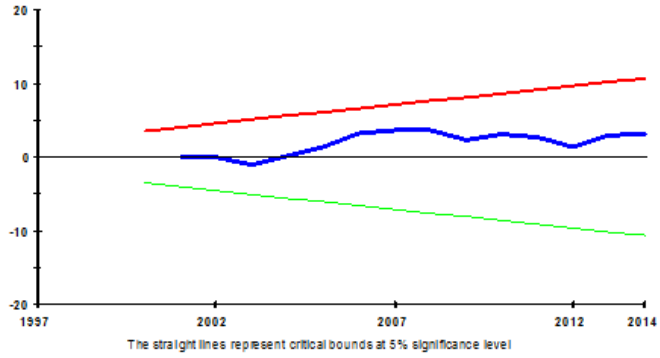
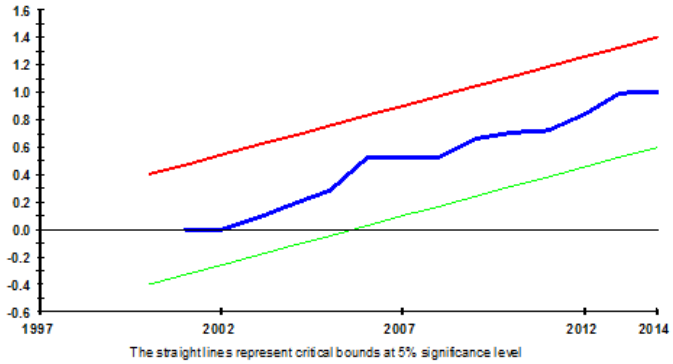


Figure 3: Plot of Cumulative Sum of Squares of Recursive Residuals



The speed of adjustment (-0.8393) is very high showing that 83.93 percent of deviations in long run foreign direct investment occurred in previous period are corrected in current year at 1 percent level of significance. The results of empirical analysis are statistically robust. The value of R^2(0.93) and Adjusted R^2 (0.89) show that estimated model is a good fit. The F-value is also significant at 0.01 level it confirms overall significance of the regression. The value of Durbin-Watson Statistic closer to zero and value of serial correlation LM test is evident that the error terms are serially uncorrelated. The normality test and heteroscedasticity test confirm that error terms are normally distributed and homoscedastic. The existence of CUSUM and CUSUMSQ (see Figure 2 and 3) between the critical lines also shows the stability of the regression coefficients.

4. CONCLUSION

In this research article, we employed autoregressive distributive lag model to investigate the brunt of terrorism attacks on inflows of foreign direct investment in Pakistan for the sampled period of 1989-2014. The impact of stock market performance measured by stock market capitalization and human capital measured by human development index were also controlled for. The significance of F-value of the ARDL model confirms the cointegrating relationship among FDI inflows, stock market capitalization, terrorism and human capital. Terrorism attacks measured by sectarian violence affect FDI inflows negatively and significantly over the long run period. Stock market capitalization and human capital are positively and significantly associated with FDI inflows in Pakistan. The short run dynamics of the variables are analyzed by error correction model. The error correction term has negative sign and significant confirming the long run causality from independent variables to regressand.

Terrorism has its socio-economic consequences. Increased tide of terrorism increases damage to infrastructure, additional cost on security, forfeiture of international trade and disturbance in balance of payments; amplified insurance premiums increase insecurity and risk about foreign enterprises' investment and returns on these investments. This situation shatters the confidence of investors to invest in that economy. The created risk and anxiety in the economy results in decline in FDI inflows into the economy. Best strategy to eradicate terrorism activities is to remove the causes of terrorism. There are many reasons of violence and terrorist activities in Pakistan. Spillovers of Afghan War, socioeconomic injustice, socioeconomic exclusion, deprivation, hunger, poverty, inequality, unemployment, ignorance, lack of civic facilities coupled with rampant corruption and nepotism has put the Pakistani society into the cruel abyss of violence and terrorism. The evacuation of NATO forces from Afghanistan after ensuring a logical end to war on terror would ensure a peaceful Afghanistan. The peaceful Afghanistan is prerequisite to curb terrorism in Pakistan. The improvement in the intelligence and enrichment of security forces is necessary tool of a profound strategy to combat militancy and extremism.

Some concrete measures by the government and policy makers should be taken to reduce terrorism and cost of terrorism in the country. Stability of political environment by adapting the democratic principles and strengthening of political and economic institutions, policies aiming at increased electricity generation would not only improve the economic and financial performance of the economy but would also amplify the confidence of domestic and foreign investors in the economy.

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