Impact of Terrorism on Investment: Evidence from Pakistan

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Abstract
Terrorism destabilizes and demoralizes the nation, it also breeds depression and frustration in an economy. It is badly affecting factor of economic growth and development of Pakistan. In this study, we have tried to find out the impact of terrorism on domestic investment as well as foreign direct investment in Pakistan for the time frame of 1980-2015. The autoregressive distributed lag bound testing co-integration approach is used to examine the long run relationship. The results show that there is a long run relationship between terrorism and investment. The empirics also expose a negative effect of terrorism on both domestic and foreign investments while human capital and trade are playing a vital role to enhance the level of investment. The study suggests that the government should force all the people to leave the country who are illegally present. The need is to take steps to stop the illegal flow of arms and money into the country from abroad. It is the moral responsibility of all the secret agencies of Pakistan and media should work in the coordination with one another and try their utmost to detect and identify the terrorists.

I. Introduction

Terrorism means to use the power and force against a society. It has become one of the most embarrassing exclusive and chronic problem all over the world, especially, in third world countries like Pakistan. It is full of humiliation and degradation. It has a bad impact on the society and human existence. Terrorism destabilizes, demoralizes the nation, breeds depression and frustration in an economy. It creates the feeling of uncertainty, instability and insecurity among the people. In Pakistan, the terrorist activities go on in a planned and organized manner. Terrorists are involved in the illegal activities to create terror among the people and want to achieve their destructive and sorrowful goals. They create violence, commit murder, implant bombs at public places and kidnap people for ransom. Here, certain groups kill one another on the basis of religious' differences, linguistic or ethnic. The main causes of terrorism are mass illiteracy, poverty and wrong economic and defense policies of the government. Some external factors like agents or agencies of hostile neighbor states like India and Afghanistan are also playing a vital role in spreading terrorism. The trend of these kind of activities is increasing day by day after the Afghan war (Hyder et al., 2015).

The bad image and reputation affects the exports and economic growth of a country badly, so the level of investment falls including domestic and foreign as well. In nutshell, terrorism slow down the economic activities. Terrorism is harmful act for economic development and stability of any state. According to Hyder et al., (2015), terrorism has an inverse effect on economic growth in case of Pakistan. The fear of terrorism and insecurity not only affect the level of foreign direct investment but also domestic investment. Investment is an accelerating factor of economic growth. According to Siddique et al. (2016), there is a long run positive relationship between financial developed and economic growth. The financial development shows the strength of an economy (Siddique and Majeed, 2015).

Terrorism is one of the most important factors which disturb the investment rate of an economy. Rehman and Vanin (2016) investigated that terrorism disturbs not only individuals but also institutions of a country. As Siddique et al. (2016) exposed that governance and institutions are indispensable for the growth and development of a nation. The objective of our study is to find out the influence of terrorism on investment incorporating law and order situation in Pakistan. This paper provides fresh evidence and comprehensive result to find out the long run co-integration relationship between terrorism and investment. The study is planned as follows; section 2 contains the review of literature, Section 3 consists of data and methodology. Section 4 focused on empirical findings and its discussion. The last section covers conclusion and policy implementation.

II. Literature Review

Terrorism is harmful act for economic development and stability of any state. Hyder et al. (2015) examined the impact of terrorism on economic development in Pakistan for 1981-2012, employing co-integration approach. The results express that terrorism has an inverse effect on economic growth in case of Pakistan. There are some factors which decrease the level of investment for example terrorism and law & order situation. As Bandyopadhyay et al., (2011) explored the relationship between foreign direct investment and terrorism for 78 developing countries for the time frame of 1984 to 2008. The results show that terrorism reduce the flow of foreign investment in developing economies.

Likewise, Motahari and Dehghani (2015) tried to examine the impact of globalization and terrorism on development for MENA countries, using GMM approach. The findings showed that globalization has positive effect on FDI while terrorism reduces the foreign direct investment. Abadie and Gardeazabal (2005) investigated the adverse association between terrorism and FDI for 186 countries. The study suggests that terrorism hurts economy through open economy channels. Haider and Anwar (2014) find out the empirically and theoretically impact of terrorism on foreign investment in Pakistan for the period of 2001 to 2011. The results show that terrorist events reduce the amount of foreign investment in case of Pakistan. Similarly, Ali et al. (2015) also investigated that terrorism has unfavorable effect on foreign direct investment in Pakistan for 1997-2014, using ARDL co-integration method.

Rasheed and Tahir (2012) also examined the co-integration relationship between FDI and terrorism in Pakistan for the period of 2003 to 2011, using co-integration and granger causality approach. They have investigated that terrorism is a reducing factor of FDI in Pakistan. Kinyanjui, S. (2014) explained the relationship of FDI and terrorism in Kenya for 2010-2012. The author explored that terrorist activities decreases the inflow of FDI in Kenya. The study of Omay et al. (2013) analyzed the relationship between FDI and terrorist events for Turkey over 1991-2003. The results of linear and nonlinear models exposed that terrorism is a decreasing factor of FDI. Farooq and Khan (2014) analyzed the terrorism effect on FDI and main factors of development in Pakistan for 1998-2011 in detail, and investigated that terrorism diminishes FDI. It is a big barrier in the way of domestic investment and inflow of foreign direct investment as well. It is need to explore the dynamic links between FDI

and terrorism. Terrorism creates fear and reduces the confidence of domestic investors as well. In the regards of terrorism, the domestic investment is not being focused in the economic literature. So, it is also necessary to find out the terrorism impact on domestic investment. We have investigated the impact of terrorism on domestic as well as foreign investment in Pakistan.

III. Data and Methodology
To explore the empirical nexus between investment and terrorism for Pakistan we have used the econometric model and techniques. In this section we have discussed the model, methodology and data. The annual time series dataset is taken from 1980-2015 for this analysis. We have used two models and two dependent variables. Our dependent variables are gross capital formation (% of GDP) as a proxy of domestic investment and foreign direct investment (share of gross domestic product). Our independent variables are foreign aid (net official development assistance and aid received at constant 2013 US$), human capital (percentage of total primary school enrollment) and trade (share of GDP). The data are taken from World Development Indicator (WDI). The independent variables also included terrorism and law & order, the data on terrorism (total number of attacks) and law & order is taken from Global Terrorism Database and International Country Risk Guide (ICRG) respectively. We have used the following equations derived from proposed model by Bandyopadhyay et al., (2014).

$$DI_t = \alpha_0 + \alpha_1 TER_t + \alpha_2 T_t + \alpha_3 HC_t + \alpha_4 FA_t + \mu_t \tag{1}$$
$$FDI_t = \beta_0 + \beta_1 TER_t + \beta_2 T_t + \beta_3 HC_t + \beta_4 LO_t + \varepsilon_t \tag{2}$$

Where,
DI: domestic investment;
TER: terrorism;
T: trade;
HC: human capital;
FA: foreign aid;
FDI: foreign direct investment;
LO: law & order
t: time period from 1980-2015;
α_0 & β_0: intercepts of equation 1 and 2 respectively
α_1 & β_1: Coefficients of terrorism for both equations
α_2 & β_2: Coefficients of trade
α_3 & β_3: Coefficients of human capital
α_4: Coefficients of foreign aid
β_4: Coefficients of law & order
μ_t & ε_t: Error terms for both equations respectively

To investigate the impact of terrorism on investment, first, we have applied unit root test to check the nature and order of integration of variables. Second, the co-integration technique is used for the long run and the short run as well. The Johenson co-integration and ARDL methods are used for long run relationship in the literature, the selection of technique depends upon the order of integration of variables. If the variables have one order of integration, we apply Johenson co-integration. If some variables are stationary at first difference and others are at level, in this case autoregressive distributed lag bounds testing for co-integration is most appropriate and suitable. We have applied ARDL approach, as the used variables are stationary at mixed level.

IV. Results and Discussion
This section contains the empirical results and discussion. First of all we have applied unit root test for stationary. Table 1 shows the results of augmented dickey fuller unit root test. The results exposed that FDI and foreign aid are stationary at level, and other variables are stationary at first difference. All variables are not stationary at same level so ARDL for co-integration is appropriate.

Table 1: Results of Unit root test (ADF test)

Variables	Levels	First Difference
DI	-1.3959	-5.8572[*]
FDI	-2.6196[*]	
FA	-3.4969[*]	
TER	-0.7969	-2.6836[*]
HC	-2.4632	-3.1622[*]
T	-2.4256	-7.7907*
LO	-1.1988	-4.4690*

Table 2 contains the results of bounds test for co-integration of both equations. The value of f-stats is greater than the critical values at 1% and 5% in case of Eq.1 & 2, which indicate the co-integration relationship. The bounds test expose the co-integration relationship between investment, terrorism, trade, human capital and foreign aid (Eq. 1). The results also express the co-integration between FDI, terrorism, trade, human capital and law & order (Eq. 2).

Table 2: Results of ARDL Bounds F-test

Equation 1	Lag length	F-stats	Critical Value 1%		Critical Value 5%	
			I(0)	I(1)	I(0)	I(1)
di| ter,t,hc,fa	(4,4,3,4,4)	13.2309	3.29	4.37	2.56	3.49
Equation 2						
fdi| ter,t,hc,lo	(4,3,4,4,4)	10.6397	3.29	4.37	2.56	3.49

Table 3 contains the ARDL results of the long and short run for domestic investment (Eq. 1). In short run, terrorism, human capital and foreign aid have significant positive impact on domestic investment. It means human capital is an accelerating factor of investment, while trade has inverse impact on domestic investment. The error correction term is negative and significant which shows there exist a long run relationship. In the long run, trade and human capital are increasing the level of domestic investment significantly. Foreign aid has insignificant impact on investment. Terrorism is decreasing the level of domestic investment. In Pakistan, for increasing the level of investment it is necessary to control terrorist events. The value of sum of square and R-square is fit for Eq. 1.

Table 3: Results of ARDL Co-Integration for Eq. 1

Variables	Short run coefficients with Prob.		Long run coefficients with Prob.	
dinv (-4)	0.7953	(0.0043)		
Terr	-0.00006	(0.9312)	-0.0018	(0.0560)
terr (-4)	0.0043	(0.0063)		
Tr	-0.1021	(0.1231)	0.2059	(0.0085)
tr (-3)	-0.3248	(0.0069)		
Hc	0.1182	(0.0161)	0.0320	(0.0133)
hc (-4)	0.1747	(0.0081)		
fa	-0.0000	(0.0626)	0.0000	(0.5755)
fa (-4)	0.0000	(0.0156)		
ECM (-1)	-0.3375	(0.0007)		
Constant			13.5551	(0.0046)
RSS	0.4098			
R^2	0.9854			

Table 4: Results of ARDL Co-Integration for Eq. 2

Variables	Short run coefficients with Prob.		Long run coefficients with Prob.	
fdi (-4)	-0.9828	(0.005)		
Terr	-0.0043	(0.0003)	-0.0038	(0.0309)
terr (-3)	0.0044	(0.0009)		
Tr	-0.0744	(0.0435)	0.2248	(0.0693)
tr (-4)	-0.1182	(0.0042)		
Hc	0.0814	(0.0033)	0.0820	(0.0136)
hc (-4)	0.0990	(0.0007)		
Lo	-0.1056	(0.5663)	-0.8706	(0.1059)
lo (-4)	1.7318	(0.0011)		
ECM (-1)	-0.3120	(0.0003)		
Constant			-13.5437	(0.0312)
RSS	0.2193			
R^2	0.9718			

Table 4 consists of ARDL results for the long and short run for foreign direct investment (Eq. 2). In the short run, terrorism, human capital and law & order have significant positive impact on FDI. It means human capital is an accelerating factor of foreign investment, while trade has inverse impact on FDI. The error correction term is negative and significant which shows there exist a long run co-integration relationship. In the long run, trade and

human capital are increasing the inflow of foreign investment significantly. Terrorism is decreasing the inflow of investment in any country. In Pakistan, for increasing the inflow of foreign investment it is necessary to control terrorist activities.

V. Conclusion

In this study we have tried to find out the impact of terrorism on domestic investment as well as foreign direct investment in Pakistan for the time frame of 1980-2015. The autoregressive distributed lag co-integration method is used to examine the long run relationship. The empirics show that there is a negative impact of terrorism on both domestic and foreign investment. Human capital and trade are also playing a vital role to enhance the investment level. If the evil of terror is not nipped in the start, it may spread like a bush fire and may engulf the whole nation and region like an epidemics or climate. Terrorism needs to be checked carefully. The government should force all the people to leave the country who are illegally present. The need is to take steps to stops the illegal flow of arms and money into the country from abroad. It is the moral responsibility of all the secret agencies of Pakistan and media should work in the coordination with one another and try their utmost to detect and identify the terrorists.

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