Does Corruption and Terrorism Affect Foreign Direct Investment Inflows into Pakistan?

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Abstract

The purpose of current research is to investigate the effects of terrorism, corruption and market size by Gross Domestic Product (GDP) growth rate on inward Foreign Direct Investment (FDI) in the context of Pakistan over the period 1973–2017. After checking the integration order of time series data using the most popular testAugmented Dickey Fuller (ADF), we implementedthe Autoregressive Distributed Lag (ARDL) bound testing method. The empirical results show that both corruption and terrorism have significant negative impacts, while market size has a significant positive effect on FDI inflows in Pakistan. The findings suggest that policy makers and the government must pay attention to these distressing determinants of FDI. A good control over corruption and terrorism will attract more FDI in Pakistan which will help Pakistan in achieving her macroeconomic goals such as enhancing economic growth and employment generation among others.

Keywords: Corruption;Terrorism; FDI; ARDL; Pakistan
JEL Classification: D73; F5; F2

Introduction

Foreign Direct Investment (hereafter FDI) reduces the gap of capital shortage, therebycontributes in economic growth and development. Net FDI has been acknowledged as a crucial source of income generation, business competition, capital inflows, employment creations, innovations, andthe transfer of technology, which are imperative in accelerating the process of economic development and growth. Modernization theorists assert that incoming FDI provides recipient economies with capital, encourages technology transfer, upgrades their corporate governance and manages talents which, consequently, help in augmenting the productivity of labour and bolster growth rate of the economy (Markusen&Venables, 1999; Azam& Ahmed, 2015; Azam *et al.,* 2019). It is also expounded by Mottaleb and Kalirajan (2010) that net FDI plays progressively vital role in the progress of capital scarce developing economies. This is not merely due to a committed source of incoming foreign capital, but also assists in the process of technology transfer and job creation. The eclectic paradigm theory of FDI (*Ownership, Location and Internalization* (*OLI*))presented by Dunning (1993; 2000) highlights the importance of various determinants of FDI and multinational enterprises activities.

Along with other factors determining net FDI, corruption also badly affects inward FDI to any country. Transparency International (1996, p.1) mentions that "corruption involves behaviour on the part of officials in the public

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sector, whether politicians or civil servants, in which they improperly and unlawfully enrich themselves, or those close to them, by the misuse of the public power entrusted to them." Jain (2001) refers corruption as "an act in which the power of public office is used for personal gain in a manner that violates the rules of the game." The detrimental influence of corruption is expressly high on world's deprived people, who are mostly dependent upon the public sector provision of services, and they cannot pay the additional cost connected with corruption and fraud (WB, 2004;Al-Sadig 2009). In fact, corruption increases the costs of investment operations in recipient countries. Because, as foreign investors assume investments, they are supposed to pay above and extra cost for bribes in order to acquire permits and licenses from government, thus, corruption proliferates the investment cost and cuts the inducements to invest.

In a similar vein, terrorism is also one of the growing worldwide problems which adversely affects inward FDI, thereby national economic development. Abadie and Gardeazabal (2008) expounds that terrorism influences the apportionment of productive investments around countries, spreads the uncertainty level, and decreases the predictable capital returns. The study adds that the impact of terrorism becomes obvious when the global economies become more accessible through the viable movement of factor of production.Hyder et al. (2015) mentioned thatterrorism has destructively affected Pakistan's economy, hence the terrorism is among the mostsubstantial and key contributors in decreasing economic growth of the country.Government of Pakistan (2017) mentioned that the effect of terrorism is significantly negativein overall economic growth process in all key economic sectors of Pakistan. Usual trading and economic activities were disordered, causing in greater cost of doing business and substantial deferrals in fulfilling the exports orders globally. It is evident that the direct and indirect terrorism cost experienced by Pakistan is estimated to USD 118.31billion equal to PKR 9869.16 billionduring the last 14 years.

It is evident that FDI inflows greatly contribute in the growth of Pakistan's economy by rising capital accumulation through the enlargement of production capacity, expansion of exports, creation of employment, promotion of business environment and development of managerial skill in Pakistan. According to the GoP (2017, 2019), Pakistan's economic growth has been persisted unstable. Past data suggests that growth rate dropped to 2% and increased again to around 9% in 1969 and 1970. Similarly, it went up to 7.5% in 2004-05 but declined to 5.6% next year and even declined to 5.5% in 2006-07. However, real GDP growth rate was recorded around 4% in 2013-14, while it constantly improved during the last four years to 5.28% in 2016-17. FDI inflows were recorded low during Jul-April FY2019. It declined by 51.7% in July-April FY2019 to USD 1.376 billion as compared to USD 2.849 billion in July-April FY2018.

The central objective of this research is to ascertain and quantify the effects of terrorism, corruption and market size through GDPgrowth rate on

incoming FDI based on Dunning (1993; 2000) theory in the context of Pakistan over the period 1973–2017. To the extent of author's best knowledge, this research is a fresh study that covers the imperative explanatory variables which have been overlooked by the other studies. Since this research is based on OLI theory of FDI, it is believed that it gives valuable insights regarding new FDI determinants in developing countries' context. We use longer period updated data and implement relatively more holistic empirical methodology for unknown parameters estimation. Therefore, empirical findings will guide policy makers formulating public policy to enhance more inward FDI in order to help financial problem of the country, generate employment opportunities, increase revenue and thereby boost economic growth and social welfare as well.

This research is organized as follows. Section 2 deals with erstwhile empirical research studies on FDI determinants with special focus on corruption and terrorism. Section 3 offers details regarding data used and employed methodology for estimation. Section 4 discusses findings. Finally, Section 5 presents concluding remarks.

Literature Review

The existing literature reveals that though there exist numerous research studies on factors that affect inward FDI for different countries, however, empirical studies in the context of developing country like Pakistan are still scarce. For example, Asiedu (2006) found that natural resources, big markets, sound infrastructure, openness to FDI, lower inflation, skilled population, lower corruption, stable and reliable political and legal systems encourage inward FDI in 22 African countries during 1984–2000.Ravi (2015) found that corruption in India has significantly affected inward FDI in a negative manner during 2004–2014, however,that is not true in case of China. Xaypanya et al. (2015) found that infrastructure facility and opennessto trade have significant positive impacts on inward FDI during 2000–2011, while FDI is negatively affected by inflation rate in ASEAN-5;yet, real exchange rate, GDP and foreign aid have no influence on FDI in these countries.The study of Bimal (2017) observed that market size, a more open trading regime, stable macroeconomic environment, a greater level of present FDI, and lesser political, financial, institutional and economic risks are inevitable to enhance inward flows of FDI in six South Asian countries during 1999–2013.Sabir et al. (2019) found that corruption variable has a positive and significant impact on inward FDI in developed economies during1996–2016.

Khattak et al. (2005) foundthat market size by GDP, openness to trade, indirect taxes, external debt, inflation rate, urbanization and sound health are the significantdeterminants that affect inward FDI in Pakistan during 1970-71 to 1999-2000. The results of the study of Azam and Lukman (2010) suggest that market size (GDP), openness to trade, domestic investment and external debt are the crucial factors that significantly

affectinward FDI in three Asian economies namely India, Indonesia and Pakistan during 1971–2005.Empirical findings of.Najaf and Ashraf (2016) found that interest rate, terrorism, political instability andexchange ratehave negative impacton FDIin Pakistan during 1981–2011.Ullah (2017) finds that terrorism has opposing impact on inward FDI in case of Pakistanduring 2001–2016. Recently the study of Zakaria et al. (2019) observed that the effect of terrorism on both FDI and local investment is significantly negative in Pakistan during 1972–2014. Some more empirical prior studies are given in Table 1.

Table 1
Compact prior studies on the determinant of inward FDI

Author (s)	Time periods, country(s)	Metho d(s)	DV	IV(s)	Findings
Omodero (2019)	1996–2017 Nigeria	OLS	*FDI*	Corruption Perception Index, exchange rate, ad inflation	Corruption has positive impact on FDI
Peres et al. (2018)	2002– 2012 110 countries	OLS, Instru mental variabl e	*FDI*	Governance (corruption and rule of law) GDP per capita (Market size), infrastructure, WTO, and Financial crises	Market size, infrastructure, rule of law have positive, while corruption and financial crises have negative impacts
Arawomo and Apanisile (2018)	1986 – 2014 Nigeria	ARDL	*FDI*	GDP per capital, openness, inflation, exchange rate, infrastructure, govtspending, remittances, political rights,	Market size and trade have positive, while Inflation and real interest rate are negative impacts
Ali et al., (2015)	1989–2014 Pakistan	ARDL	*FDI*	Stock market , terrorism by killed and injured in sectarian violence, and HDI	Terrorism found negative, while HDI and Stock market have positive impacts on FDI
Kinyanjui (2014)	2010– 2012 Kenya	OLS	*FDI*	Terrorism	Terrorism has negative impact on FDI
Azam, and Ahmad (2013)	1985–2011 33 developing countries	Fixed-effect	*FDI*	Corruption index, and GDP, inflation	Corruption index and inflation have negative, while GDP has positive impacts on FDI
Mohamed and Sidiropou los (2010)	1975–2006 36 countries 12 from MENA	Fixed-effects	*FDI*	Corruption, GDP, inflation, population growth, Govt. spending, and trade openness	Corruption and inflation have negative, while GDP, population and trade have positive effect on FDI
Azam and Khattak (2009)	1971–2005 Pakistan	OLS	*FDI*	Domestic investment, indirect taxes, inflation, trade, Govt. spending, infrastructure, and return on investment	Local investment, trade, Govt. consumption, and infrastructure, have positive effecton inward FDI.

Wei (2000)	1990-91 45 countries	OLS	*FDI*	Corruption	Corruption has negative impact on FDI

Source: Author's compilation, DV= dependent variable, IV= Independent variable(s), OLS=Ordinary Least Squares, 2SLS=Two Stage Least Squares, ARDL=Autoregressive Distributed Lag

Data and Methodology

Data Description

Time-series annual data over the period from 1973 to 2017 on growth rate of GDP and FDI is gathered from the World Development Indicators (2019). While, the data for corruption and terrorism are taken from Transparency International (TI) and Global Terrorism Database (2018). The FDI data is taken as percentage of GDP in each year, while the GDP growth is measured in percentage. The corruption is measured through Corruption Perception Index (CPI), whereas, terrorism is measured as total number of terrorism related incidents each year.

Model specification

The following multivariate regression model based on OLI theory by Dunning (1993; 2000),and also used by prior studies including Mohamed and Sidiropoulos (2010); and Peres et al. (2018) is used and can be written as follows:

$$FDI_t = \alpha_0 + \alpha_1 COR_t + \alpha_2 TER_t + \alpha_3 GDPG_t + \mu_t \qquad (3.1)$$

Where, FDI is net investment direct inflows as percentage of GDP, COR and TER represents corruption and terrorism in index respectively, GDPG is GDP growth rate, t for time, and μ is error term.

Estimation Techniques

Stationarity Testing

Before formal analysis of the data for the estimation of relationships among modelled variables, it is imperative to investigate the integration order of selected variables. Stationarity refers to the evidence of no unit root in a data serieswhich means that mean, variance and autocovariance remain constant over the given period (Brooks, 2014). Moreover, a stationary series at level form is represented by I(0). However, if the mean, variance or covariance of data series is not constant over time, the series refers to non-stationary (presence of unit root). Such series can be made stationary by taking its first and second difference, and are denoted by I(1) and I(2), respectively. For said purpose, ADF test of stationarity is employed in present study. Following is the functional form of ADF test as stated in Gujarati and Porter (2009) which is presented in Eq.(3.2):

$$\Delta Z_t = \beta_1 + \beta_{2t} + \delta Z_{t-1} + \sum_{i=1}^{n} \alpha_i \, \Delta Z_{t-1} + \varepsilon_t \quad \ldots \qquad (3.2)$$

where, z_t = variable series that are to be tested for stationarity, z_{t-1} = the lagged series, $\Delta z_{t-1} = (z_{t-1} - z_{t-2})$ and $\Delta z_{t-2} = (z_{t-2} - z_{t-3})$ show the first and second difference terms of the series, t shows the time subscript, whereas, ε_t

is the white noise error term. In the process of testing the integration order of data series, if the calculated ADF statistic value is greater than its critical value at 5 percent significance level, the null hypothesis of the presence of unit root is rejected and the stationarity of the series is concluded at given order.

Optimal Lag Length Selection for ARDL Model

The evidence of mixedintegration order of selected variable series favours the use of ARDL technique as proposed by Pesaran et al. (1996) for the estimation of model coefficients. This approach was subsequently modified by Pesaran et al. (2001) by introducing the bound test.This approach has numerous advantages; first, it does not necessitate data series to have same order of integration. Second, this approach guarantees reliable estimates in case of small sample (Pesaran& Shin, 1999). Third, this approach handles the endogeneity among variables (Pesaran& Shin, 2001).

The ARDL model involves the lagged terms of both the regressors and the regressand. Therefore, the selection of appropriate and optimal lag length is crucial for estimating the short as well as long-run model coefficients. The optimal ARDL model is demonstrated in Eq. (3.3):

$$\Delta FDI_t = \alpha_0 + \sum_{i=1}^{k} \alpha_1 \Delta FDI_{t-i} + \sum_{i=1}^{m} \alpha_2 \Delta COR_{t-i} + \sum_{i=1}^{n} \alpha_3 \Delta TER_{t-i} + \sum_{i=1}^{p} \alpha_4 \Delta GDPG_{t-i} + \beta_1 COR_{t-1} + \beta_2 TER_{t-1} + \beta_3 GDPG_{t-1} + \varepsilon_t \quad \ldots \quad (3.3)$$

where, *k, m*, *n* and *p* are the optimal number of lags which are automatically selected using Akaike Information Criterion (AIC).

The ARDL Bound Test

Having selected the optimal ARDL model using a standard lag length selection criterion, the next step is to determine if cointegration exists among endogenous and exogenous variables involved in the study. This approach of examining cointegration is more reliable than other available techniques of testing the existence of cointegration such as $Johansen\ and\ Juselius\ (1990)\ and\ Engle\ and\ Granger\ (1987)$ as it does not require any pre-requisite integration order for the series. Therefore, this approach is employed for investigating the presence of cointegration among selected endogenous and exogenous variables. This test relies on Wald or joint *F* statistic for testing cointegration as it tests the null hypothesis of no cointegration against alternative hypothesis of cointegration among selected variables. The *F* statistic is compared with the lower and upper (I_0& I_1) critical bounds. If calculated value of *F* statistic is higher than I_1, existence of cointegration is concluded. In contrast, if *F* statistic lies between $I_0$and I_1, then the test result remains inconclusive. In contrast, the conclusion of no cointegration is inferred if *F* statistic is lower than that of I_0.

Long-Run and Short-Run Coefficients Estimation

The estimation of long-and short-run model coefficients are in order. The long-run functional form for the model in present research is presented in Eq. (3.4).

$$\Delta FDI_t = \gamma_0 + \sum_{i=1}^{k} \gamma_1 FDI_{t-i} + \sum_{i=1}^{m} \gamma_2 COR_{t-i} + \sum_{i=1}^{n} \gamma_3 TER_{t-i} + \sum_{i=1}^{p} \gamma_4 GDPG_{t-i} + \varepsilon_t \quad (3.4)$$

After the estimation of long-run estimates, the short-run coefficients are estimated using model given in Eq. (3.5).

$$\Delta FDI_t = \delta_0 + \sum_{i=1}^{k} \delta_1 \Delta FDI_{t-i} + \sum_{i=1}^{m} \delta_2 \Delta COR_{t-i} + \sum_{i=1}^{n} \delta_3 \Delta TER_{t-i} + \sum_{i=1}^{p} \delta_4 \Delta GDPG_{t-i} + \delta_5 ECT + \varepsilon_t \quad (3.5)$$

where,$\delta_i$and $\gamma_i$are the short and long-run coefficients, respectively. *ECT* shows the error correction term which needs to be significant and negative and it shows the adjustment speed towards equilibrium. Therefore, its coefficient should be less than 1 in magnitude.

Results and Discussions

It is essential to confirm that none of the series is stationary at second difference since *F*-Statistic will no longer be valid in case of *I*(2) series. For said purpose, this study has adopted ADF (1981) test of stationarity. The findings of stationarity test are presented in Table 2.

Table 2
Test of Stationarity using ADF

	Level		1st Order Difference		
Variables	Intercept	Intercept & Trend	Intercept	Intercept & Trend	Decision
FDI_t	-2.822***	-3.399***	-4.388*	-4.339*	*I* (0)
COR_t	-2.360	-3.559***	-7.577*	-2.345	*I* (0)
TER_t	-2.108	-2.401	-2.719***	-2.618	*I* (1)
$GDPG_t$	-4.424*	-4.754*	-10.606*	-10.467*	*I* (0)

* ** *** shows level of significance at the 1, 5 and 10%

The findings of ADF test both at level and 1st difference using intercept and intercept and trend in the test equation are shown in Table 2.Table 2show that FDI, Corruption and GDP growth rate are stationary at level.Terrorism is stationary at 1st difference. Conclusively, it can be asserted that a mix integration order has been found for the study variables which supports to employthe ARDL bound testing approach for testing the cointegration and coefficient estimation.

Optimal ARDL Model Selection

Before the estimation of long and short-run regression coefficients, it is imperative to determine the optimal ARDL model. Since, ARDL model involves lagged values of endogenous as well as exogenous variables, therefore, it is vital to select the optimal ARDL model which minimized residual sum of squares. For optimal model selection, the AIC is used. The model selection summary is tabulated in Table 3. The selected optimal ARDL model based on AIC is ARDL (1,1,1,2). All the model fitness criteria are fine with this selected model because this model is selected where residual sum of squares is minimum.

Table 3
Optimal ARDL Model

Dependent Variable: FDI Selected Model: ARDL (1, 1, 1, 2)				
Variable	*Coefficient*	*Standard Error*	*t − value*	*Prob.*
FDI(-1)	0.148	0.128	1.160	0.273
COR	-0.464	0.189	-2.452	0.034
COR (-1)	-0.999	0.284	-3.522	0.006
TER	-0.001	0.0002	-2.867	0.017
TER(-1)	-0.001	0.0002	-4.273	0.002
GDPG	-0.206	0.077	-2.670	0.024
GDPG (-1)	0.325	0.068	4.781	0.001
GDPG (-2)	0.274	0.066	4.161	0.002
Constant	-1.422	0.600	-2.372	0.039
R^2	0.962	*Hannan − Quinn criterion*		0.467
Adj. R^2	0.932	*Durbin − Watson stat*		2.225
AIC criterion	0.391	*F − statistic*		31.668
Schwarz criterion	0.839	*Prob.(F − statistic)*		0.000

ARDL Bound Test

Having determined an optimal model based on a standard lag length selection criterion AIC, the next step is to determine if cointegration exists among study variables (Pesaran*et al.,* 1999; Pesaran*et al.*, 2001). Results given in Table 4confirm the existence of cointegration among study variables as *F*-statistic calculated is greater than I_1 bound at all permissible significance levels. Therefore, it is concluded that there is cointegration among selected variables.

Table 4*ARDL Bound Test*

Test Statistic	Value	K
F-statistic (FDI|COR, TER, GDPG)	20.75211	3
Critical Value Bounds		
Significance	*I0 Bound*	*I1 Bound*
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Long Run Coefficients

The long-run regression coefficients represent the response of dependent variable (*FDI*) with a change in included regressors. The dynamic ARDL model can be transformed to estimate the long-run relationships among variables. The estimates of long-run coefficientsare presented in Table 5. It can be noted from the findings that the effect of both corruption and terrorism are significant. The effect of corruption is negative and significantat 10% level. The coefficient specifies that one-point increase in the corruption perception index decreases the flow of inward FDI in Pakistan. This finding is in line with the claim of Mohamed and Sidiropoulos (2010) who found a negative link between corruption and inwardFDI. Likewise, the effect of terrorism on FDI is found negative with a significance level of 1 percent. Although, the coefficient attached to terrorism is smaller, it explains that as terrorist related incidents in Pakistan increases, it discourages FDI.These findingsconcurs with the findings ofAli et al. (2015), who also found that terrorism negatively influences FDI in different contexts. Moreover, the effect of GDP growth rate on FDI is also significantly positive in Pakistan. The positive relationship between GDP represents markets size and inward FDI indicates thatas the market size increase, FDI increases which are according to the OLI theory presented by Dunning (1993, 2000). Overall, findings of present research are matching with the research findings by Wei (2000), Al-Sadig (2009), Azam (2016), Peres *et al.* (2018), and Saini and Singhania (2018).

Table 5

Long-Run Estimates

Variable	*Coefficient*	*Standard Error*	$t-value$	*Prob.*
COR_t	-0.629***	0.302	2.087	0.064
TER_t	-0.0005*	0.0001	-3.461	0.006
$GDPG_t$	0.461*	0.071	6.517	0.000
Constant	-1.670*	0.723	-2.309	0.044

$*,**,***$ $show\ level\ of\ significance\ at\ 1\%, 5\%, and\ 10\%\ respectively$

Short-Run Coefficients

The *ECT* results given in Table 6shows the adjustment speed towards long-run equilibrium. The *ECT* fulfills all three criteria as it is significant with a negative and less than one value of the coefficient. A very high value of the coefficient, -0.852 shows that the adjustment speed towards equilibrium is 85.2 percent. The negative sign shows that the model will ultimately converge to the equilibrium in the long-run. The short-run coefficients are all significant at 5percent significance level. Also, the effect of corruption on FDI is negative in the short-run. In the same way, the impact of terrorism on FDI is found negative with a smaller coefficient of 0.001.

Table 6

Short-Run Estimates

Dependent Variable: FDISelected Model: ARDL (1, 1, 1, 2)

Variable	*Coefficient*	*Standard Error*	$t-value$	*Prob.*
D(CORt)	-0.46*	0.189	-2.452	0.034
D(TER$_t$)	-0.001*	0.0002	-2.867	0.017
D(GDPG$_t$)	-0.206*	0.077	-2.670	0.024
D(GDPG(-1))	-0.274*	0.066	-4.161	0.002
ECT	-0.852*	0.128	-6.652	0.000

$*$ *shows significant at the* 1% *level*

Summary and Conclusions

The present research is an effort to empirically estimate the effect of terrorism, corruption and GDP growth rate which represents market size on FDI inflows for Pakistan during 1973–2017.The finding of $ARDL$ bound test confirmsthat cointegration exists among selected variables namely corruption, FDI, GDP growth rate and terrorism. The long-run coefficient estimates reveal that the effect of both corruption and terrorism are statistically significant. The inward FDI is negatively affected by corruption. The estimated coefficient indicates that one-point rise in the corruption perception index dampens the FDI inflows. Similarly, the impact of terrorism on inward FDI is found negative and statistically significant, indicating that terrorism badly affects incoming FDI into Pakistan.The short-run estimates for the selected $ARDL$model shows that the effects of corruption and terrorism on FDI arealso found negative. The empirical results endorse prior studies that corruption and terrorism discourage, where market size encourages FDI inflows which are in accordance with the theoretical outlooks.

These findings reveal that corruption, terrorism and market size by GDP growth rate are the crucial determinants of incoming FDI into Pakistan. Therefore, these findings highlight the importance of good governance to combat terrorism and corruption in Pakistan which helps to attract an increased amount of FDI towards Pakistan.

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