



Research Article

Growth and Fiscal Consequences of Terrorism in Pakistan

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Abstract

This study empirically evaluates the growth and fiscal consequences of terrorism in Pakistan_ by assessing the terrorism and macroeconomic relation using different proxies for terrorism, i.e., incidents of terrorism, Injured Victims, and total Deaths from terrorist attacks_ by using annual time series data from 1981-2020. In this study, two models are used, i.e. model for proxies of terrorism and a model for terrorism index as well. The paper has quantified the short-run and long-run analysis by applying the Vector Auto Regressive Model (VAR) and Johansen Co-integration technique, respectively. In the short run, terrorism has negative implications for economic growth in Pakistan. The military spending showed a positive impact on the economic growth of Pakistan; an increase in defense expenditures will boost the country's economy in the short run. In the long run, investment activities showed a direct relationship with the economic growth of Pakistan. While the intuition is that government spending on security measures improve law & order situation in the country, which boosts economic activity in Pakistan.

Keywords: Economic Growth, Terrorism, Time Series, Pakistan.

Introduction

Terrorism is considered a global and factual phenomenon. The word "terrorism" is derived from the Latin word "terror," which means extreme fear or dread (Wilkinson & Wilkinson, 1974). Terrorism is defined as "The unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives" (U.S. Department of Justice Office of the Inspector General, 2005; Federal Bureau of Investigation, 2024). Terrorist organizations have been divided into three broad categories, i.e., political terrorism, nationalist/separatist terrorism, and religiously motivated terrorism (Institute for Economics and Peace, 2022). In the late 1960s, global terrorism became a leading tool of the political agenda. The Palestinian freedom fighters adopted it for the achievement of their legal political rights (Irshad, 2011). Some jihadist groups attacked the Pentagon & World Trade Center (WTC) on 11, September 2001. Since the attacks, the United States started the war on terrorism at the Global level (Campbell, 2007). In 2007-08, most terrorist activities globally were concentrated in Iraq and Afghanistan in response to the US and its allies' activities; most African countries have experienced a tremendous increase in terrorism and its allies' activities in the last five years (Campbell, 2007).

Terrorism History of Pakistan

The history of terrorism in Pakistan is not much different from that of other Asian countries. Before the 1970s, Pakistan was considered one of the most peaceful countries in South Asia. However, from the day of the Russian

attack in Afghanistan in 1979, the Pakistani community saw significant changes in the social fabric, and economic & political system (Michael, 2007). Due to Russian attacks in Afghanistan, thousands of Afghan migrants started illegal movement toward neighboring countries. As there was a boundary line condition between Pakistan and Afghanistan, most of terrorists in the form of refugees crossed the border and started illegal activities in Pakistan (Irshad, 2011). The land of the green flag became fertile land for terrorist groups in the eighties. These terrorism activities reached at its peak in Pakistan at the start of 21st century (Michael, 2007).

According to Khalid et al. (2021), after the Lal-Mosque (Islamabad) operation in July 2007, the security circumstances became threatening due to homegrown terrorist activities. Terrorists killed Benazir Bhutto (Ex. Prime Minister) and attacked some security and civilian institutions in 2007 and afterward (Abbasi, 2013). In 2009, Pakistan started a full-fledged military operation against terrorism (Yusuf, 2014). After a few years, terrorists attacked the military School (APS) in Peshawar in December 2014, in which almost 145 innocent children were killed. To counter such terrorist activities, Pakistan has started several operations like Rah e Nijat, Zarab ul Azab Rad ul Fisad, etc. (Khalid, 2020).

Terrorism and Economic Growth Nexus

A higher level of per capita income is a good sign of a healthy economic structure of a country (Thorn, 1968). Economic growth empowers consumers to consume more goods & services, to enjoy better living standards, and to raise life expectancy (Mahadea & Rawat, 2008). When there is economic growth, it means a higher level of national income & expenditures in a country (Devarajan et al., 1996). Terrorism or violence is harmful to the business activities of any economy. It badly influences economic growth. Zakaria et al. (2019) studied that when violence is at its peak, it loses investors' confidence domestically and globally, which ultimately decreases domestic as well as foreign investments. In 2019, Pakistan bore \$14.4 trillion in overall economic loss. This is 10.5 percent of total GDP (Institute for Economics and Peace, 2022). Terrorism destroyed the Pakistani economy badly. Pakistan faced many losses in terms of economic growth. It faced \$ 126.79 billion during the 2002-2018.

Different researches have been organized in the case of Pakistan showed that terrorism has destroyed pace of the country's economic growth (Khan & Yusof, 2017). However, they failed to identify the separate effects of terrorism's proxies & military expenditure on the economic growth of Pakistan. This study explored terrorism's effects on the economic growth of Pakistan, within the last four decades, using different proxies of terrorism. The paper also used the terrorism index to check the overall effects of terrorism on the growth of Pakistan. It's significantly helpful for the policy-makers & the investors to understand the terrorism's dynamics. It also provides support to related authorities and the government to make better and suitable policies and strategies to eliminate terrorism from Pakistan, which will not affect economic growth.

The remaining paper is structured as follows. The second section describes the literature review. Section 3 describes the theoretical framework for the research work. Section 4: provides the methodological framework. Section 5: provides the empirical results. The final section provides the paper's conclusion & offers policy implications.

Literature Review

The studies on the impacts of terrorist activities on economic growth are not a new phenomenon; it is as old as the curse of terrorism. The studies of terrorism are not only part of economic literature, but they also have an important implication on the subjects of political science and sociology. During the last four decades, Pakistan has played a vital role in the war against terrorism. Kazmi and Saleem (2020) revealed the impacts of terrorism on the economy in the case of Pakistan. The paper used annual time series data from 1970 to 2015. The study used GDP as a dependent variable while terrorism as main independent variable. The result shows that as terrorism increases by one incident, gross domestic product reduces by \$0.042 in the long run. The findings are also in line with many other studies. For example (Khan et al., 2016; Safdar, 2020) showed the inverse impact of terrorism on economic growth in the case of Pakistan. Unsal and Cinar, (2022) studied Economic Growth & Terrorism relation in the Middle East using fifteen Asian Countries' panel data from 2003 to 2019. GDP was used as a proxy of Economic Growth, and explanatory variables were the Terrorism index

(TRR), number of terrorist attacks, number of casualties & characteristics of the terrorist activities. Dumitrescu & Hurlin's panel causality test used to analyze the relationship b/w terrorism & economic growth. The result showed that there is an inverse relationship b/w terrorism and economic growth. Naz et al. (2021) studied the relationship between Economic Growth, Political Instability & terrorism in Pakistan between 1970 and 2019. For empirical analysis, they constructed indices for all variables and added some other new variables to the model. Findings showed that there is long run relationship among macroeconomic disturbance, Economic Performance, Political unrest & terrorism in Pakistan. The analysis showed that terrorism and economic growth are positively associated; this is due to the uneven distribution of income in society. When income is unevenly distributed, some angry groups become a part of such terror activities.

Bloomberg investigated terrorist activities' consequences on economic performance in one hundred and seventy-seven countries during 1968-2000. The study concludes that terrorist activities affect economic performance negatively. The acts of terrorism are most persistent in developed economies, such as in OECD countries, but the impacts of these activities are not as significant as in less developed countries. Gaibullov and Sandler (2008) also revealed the consequences of terrorism in terms of GDPpc in Asia during 1970-2004. The study investigated that terrorism has a significant effect on the economy. They found that terrorism has a stronger significant impact in developing countries than in developed ones because they have more resources and are more resilient to terrorism. Terrorist activities caused by internal disputes are estimated to be twofold in lowering economic growth as compared to international conflicts. The main effect of terrorism on economic efficiency is due to the crowding out of investment spending and the crowding in of public expenditures. Barro (1996) empirically checked stronger negative impacts of terrorism incidents on the economic performance for the period 1960-1990 for a hundred countries.

Defense expenditure is generally considered as the economy's public benefit spending. According to Lanrui et al. (2022), the military expenditure & economic growth nexus has been broadly discussed by different doctrines. Lim (1983) allocating resources to the military draws funds away from more impactful government functions, such as health and education. According to Lanrui et al. (2022) another school of thought considers that economic growth and military expenditure have a direct relationship to each other. According to Al-Hamdi & Alawin (2017), third school of thought considered that there is no relation b/w military expenditure & economic growth. Lanrui et al. (2022) studied the relationship between economic growth & security spending. Specific objective of the study was to highlight the relationship b/w economic growth & military spending from 1972 to 2018 by adopting the methodology of lag NARDL (non-linear autoregressive distribution). The findings showed that there is a negative relation between economic growth & military spending.

The economic growth and terrorism's relationship has great importance in last twenty years due to an increase in terrorist incidents after the 9/11 attacks. A number of states have been trapped in the grip of terrorism & have lost thousands of people, capital & faced harmful losses in economic growth due to the destruction of the infrastructure and disruption in the process of economic growth. Terrorist activities are considered one of the core hurdles in the economic growth of a country, as terrorism increases military expenditure and destroys human and physical capital, infrastructure, and investors' confidence, thus putting a halt to the economic progress of an economy.

Theoretical Framework

To understand the empirical method, the study describes a model in detail, which characterizes the link between Economic Activity, Terrorism, and Military Expenditure. The specific aims of the strategy are established on the ideas used in Yang et al. (2012), which were extracted from the literature of growth and public finance (Barro, 1990; Barro & Salami, 1992; Futagami et al., 1993; Khan & Yousaf, 2017). For our convenience, consider an economy that only includes a household and a government (closed economy). The only single source of supply of labor is households. While the supply of labor is considered inelastic, which is used for the production of a single commodity, it could be used for the payment of income tax, for the accumulation of capital, and for the household's consumption. Suppose there is no budget deficit and surplus,

i.e. balanced budget, and the tax revenue can be spent in two ways: for core infrastructure & military expenditure. The objective of the government is to improve the welfare of households by improving the efforts to save property and human lives, and minimizing the terrorists' fear. The government's military spending enters the households' utility function, as it boosts economic well-being by reducing the uncertainty and risk from the attacks of terrorists and increasing safety. Further assuming that the population is constant, the main objective of the consumer is thus to achieve maximum utility.

$$\text{Max } \int_0^{\infty} U(C, E)e^{-\rho t} dt \tag{1}$$

Where,

C = Consumption Per Capita

E = Military Spending

$\rho > 0$ = Rate of Time Preferences

The study further assumes a log-utility function, i.e., additively separable in military spending, the utility function is as follows:

$$U(C, E) = \ln C + \delta \ln E, \delta > 0 \tag{2}$$

Where,

δ = Impact of Military Expenditures on the Households' Welfare

The consumer's budget constraint is a flow equation, linking investment spending and the total output & consumption spending difference:

$$\dot{K} = (1 - \tau)Y - C \tag{3}$$

Where,

K = stock of capital

Y = output level

Over-dot = Steady change according to time τ = tax rate on fixed income

Let production be considered as constant returns to scale so that public services (S) and private capital stock (K) behave as inputs into the Cobb-Douglas form production function. Moreover, terrorism demolishes capital stock (θ), so the production function is as follows,

$$Y(K, S) = A(K(1 - \theta))^{1-\alpha} S^\alpha, \alpha \in (0,1), \theta \in (0,1) \tag{4}$$

Where,

α = input share of public services

By putting the model together, the consumer wants to maximize the discounted utility, subject to the resource constraints & production capacity.

Income tax is spent on infrastructure & military spending. Let (ϕ) & ($1 - \phi$) indicate the proportion of govt. expenditure in the core infrastructure & military spending, respectively. Then, from the balanced budget ($G + E = \tau Y$) assumption & relationship among core infrastructure spending and the expenditures on the flow of government infrastructure accumulation may be written as under:

$$\dot{S} = G = \phi \tau Y \tag{5}$$

However, the path of growth is balanced, so the public & private capital stock and private consumption will grow at the same pace (Barro, 1990). To obtain the transitional dynamics of the economy, 2 transformed variables are defined, (1) $X = \frac{s}{k}$ and (2) $Z = \frac{c}{k}$ & we apply them to private & public investment equations, to find out a two-equation system with transformed variables X and Z, as follows:

$$\dot{X} = F(X, Z, \phi) = [\phi \tau A X^{\alpha-1} - (1 - \tau) A X^\alpha + Z] X \tag{6}$$

$$\dot{Z} = J(X, Z, \phi) = [-\alpha(1 - \tau) A X^\alpha - \rho + Z] Z \tag{7}$$

In the above equations, the jump variables should be equal to unstable roots. Yang et al. (2012), proved this condition holds in both above equations & however, we can use this to analyze how the social welfare & balanced growth rate will respond to an increment in terrorism through high military spending and the destruction of human & physical capital.

At steady state growth, the economy is characterized by $\dot{X} = \dot{Z} = 0$, and X & Z are denoted by X^* and Z^* at their stationary levels. We can find the following steady-state equilibrium relationship from the above equations.

$$\frac{dX^*}{d\phi} = \frac{\tau X^*}{(1 - \alpha)[\phi\tau + (1 - \tau)\alpha X^*]} > 0 \tag{8}$$

$$\frac{dZ^*}{d\phi} = \frac{\tau A X^{\alpha*} (1 - \tau)\alpha^2}{(1 - \alpha)[\phi\tau + (1 - \tau)\alpha X^*]} > 0 \tag{9}$$

Let's suppose that the steady state growth rate is denoted by γ so that the following relationship holds $\frac{\dot{S}}{S} = \frac{\dot{K}}{K} = \frac{\dot{C}}{C} = \frac{\dot{Y}}{Y}$. By using a variable transformation $X = \frac{S}{K}$ with substitution, we can again write Equation (5) as:

$$\gamma = \frac{\dot{S}}{S} = \phi\tau A \frac{X^{*\theta-1}}{1 - \theta} \tag{10}$$

To draw intuition from a model, comparative static analysis can be used, specifically, by differentiating (equation-10) concerning (θ) & (ϕ) , we can understand how terrorism and government military spending affect growth and economic activity. However, the relationship among changes in (θ) , (ϕ) , & (Y) is given as under:

$$\frac{d\gamma}{d\phi} = \frac{\tau(1 - \tau)\alpha A X^{*\alpha}}{\phi\tau + (1 - \tau)\alpha X^*} > 0 \tag{11}$$

Which can be summarized as under?

Proposition 1: When the state increases expenditure to build core infrastructure side by side to counter-terrorism, economic growth will be.

Corollary: When the government increases spending to counter terrorism and build core infrastructure, economic growth will be reduced.

Thus, economic growth is the function of a composition of (ϕ) fiscal policy, investments and capital (Kt), the strength of terrorist activities (θ) , and the other structural variables (Tt), which are not captured by theory.

$$\gamma = F(\theta, \phi, Kt, \tau, T) \tag{12}$$

There are 2 major intuitions that emerge from this theoretical formulation. 1. When there are more terrorist activities in a country, this will rise uncertainty and fear for investors, leading to lower capital for growth and ultimately, suppressing economic growth. 2. When there is terrorism in a country, the government diverts its resources from development to non-developmental projects; so, this will also lead to lower economic growth in the country.

Methodology

Data Sources and Variable Description

GDPpc is a good measure of economic growth of a country (Thorn, 1968). It measured by dividing the total GDP of a country to its total population. This study used GDPpc as a proxy of economic growth & treated it as an endogenous variable of the study. The data of GDPpc is taken from the World Bank data source (WDI). Terrorism has treated as the main independent variable of the study. Different measures are used to measure terrorist activities. The study has used three proxies for terrorism. These proxies are listed in a Table 1.

Table 1. Data sources and variable description.

Variable	Definition	Data sources
Real gross domestic product (GDP) per capita	“GDP per capita is the sum of gross value added by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output, divided by mid-year population.” (WDI) is taken as a constant dollar price.	World Development Indicator (WDI)
Terrorism No. of incidents No. of injured victims No. of Deaths	“The unlawful use of force or violence against persons or property to intimidate or coerce a Government, the civilian population, or any segment thereof, in furtherance of political or social objectives.”	Global Terrorism Data Base (GTD)
Investment as a %age of GDP	Amount of investment projects as a %age of the GDP of Pakistan.	World Development Indicator (WDI)
Military Expenditures as a percentage of GDP	Military expenditures refer to the financial resources allocated by a country to fund its defense and military activities, including personnel, equipment, counter-terrorism operations, and research and development.	Economic Survey of Pakistan

Note: Author's presentation.

Empirical Methodology

The short-run model of the terrorism and economic growth nexus is as follows;

$$GDPpc_t = ECT_{t-1} + \beta_1 INC_t + \beta_2 INJ_t + \beta_3 DEATHS_t + \beta_4 INV_{GDP_t} + \beta_5 MIL_{EXP_t} + u_t$$

Whereas,

GDPpc = Gross Domestic Product per capita (Economic Growth)

Incidents = Numbers of terrorism incidents

Injuries = Numbers of Injured Victims from terrorist attacks

Deaths = Numbers of Deaths from terrorist attacks

MIL_EXP = Military expenditures

INV_GDP = Investment as Percentage of GDP

ECT= Error Correction Term

u = error term

t = time span consisting of years from 1981-2020

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are the coefficients of the number of terrorist incidents, the number of injured victims, and the number of Deaths from terrorist attacks, Investment as %age of GDP, and military expenditures as %age of GDP, respectively.

To harmonize the different dimensions of terror activities into a single variable, we are going to construct a baseline terrorism index (Table2), using the methodology and recommendations of the expert panel of the Institute for Economics and Peace (2014).

Table 2. Weights indicator, for terror index

Sr. No	Dimension	Scoring Weights
1	Aggregate Numbers of terrorism occurrence within a year	01
2	Aggregate Numbers of Injured Victims due to terrorism activities in a year	0.5
3	Total Numbers of Deaths from terrorists' attacks within a year	03

Table 3 indicates the formation of the terrorism index for the year 2012. The year in which the highest number of terrorist activities were found in the case of Pakistan.

Table 3. Terrorism index, 2012

Dimension	Weight	Number	Scoring	Terr. Index
Aggregate Numbers of terrorism occurrences within a year	1	1655	1655
Aggregate Numbers of Injured Victims due to terrorist activities in a year	0.5	4269	2134.5
Total number of deaths due to terror activities within a year	3	2784	8352
Terror index	12141.5

Note: Author’s own calculation.

The short run model is as under:

$$GDPpc_t = ECT_{t-1} + \alpha_1TERROR_t + \alpha_2INV_{GDP}_t + \alpha_3MIL_{EXP}_t + u_t$$

Whereas,

GDPpc = Gross Domestic Product per capita (Economic Growth)

TERROR = Terrorism Index (Numbers of terrorism incidents, Number of Injured Victims, and Numbers of Deaths from terrorists).

MIL_{EXP} = Military expenditures as %age of GDP

INV_{GDP} = Investment as %age of GDP

u = Error term

t = Time span consisting of years from 1981-2020

α₁, α₂ & α₃ are the coefficients of terrorism, military expenditures, and Investment as %age of GDP respectively.

Result and Analysis

The findings of the ADF test showed that all variables are stationary at 1st difference. This study used the Vector Auto Regressive Model (VAR) for short-run analysis. To test the existence of a long-period relationship b/w the variables, the paper used Trace statistics and the Maximum Eigenvalues test. The findings showed that there is long term relationship b/w variables. For long-run analysis, the Johansen Co-integration technique is used.

Short Run Results of Model 01

According to Black et al. (2009), The ECM is mostly used to investigate a short-run dynamic relationship between co-integrated variables & their speed of adjustment to a long-term equilibrium relationship. The negative value of ECM reduces some values of the dependent variable to bring it closer to an equilibrium. The ECM always lies b/w 0 & -1, which shows that there is a gradual reduction in the short-term regression, to align with the long term equilibrium. The Short Term Results of the Model 01 are shown in Table 4.

Table 4. Short run results of model 01.

Variables	Coefficient	t-statistic
ECM	-0.12	3.05
Incidents	-3.27	7.11
Injuries	-1.02	5.42
No. of deaths	3.40	5.94
Investment %age of GDP	-153.93	4.08
Milit. Exp. %age of GDP	281.70	6.92
Constant	884.94	
R-seq		0.58
Adj. R-seq		0.35

Note: Author's Calculation.

In short-run dynamics, the ECM term has a coefficient of -0.12 , indicating that around 12% of deviations from a long-term growth rate are caused by preceding years' shocks going back to the long-term equilibrium position in the current year. It is significant, less than one, and negative. The findings show that a negative & statistically significant relationship between terrorism incidents & economic growth in Pakistan exists. As the number of terror incidents increases by one (incident) due to terrorist activities, it depresses GDPpc by \$3.27. The same results are for the second proxy of terrorism, i.e., injured victims from terrorist activities. When the number of injured victims increases by one person due to such terror activities, the GDPpc decreases by \$1.02 in the short-run. The finding of this variable is also significant. There is a direct relationship between the number of mortalities due to terrorist activities & economic growth in Pakistan during the sample period. This is a very unrealistic result. We were expecting the short-run -ve relationship between deaths from terrorism & economic growth, but the results are against our expectations. Therefore, we are unable to find any support from the literature. It is future policy to identify the factors and why they are positive.

The finding shows that a negative and statistically significant relationship b/w investment as a percentage of GDP & economic growth in Pakistan in the short-run exist. When investment increases by one percent of GDP, the GDPpc reduces by \$153.93 in the short-run. It is due to the fact that Investment spending does not have any short-run benefits. When we invest in any mega project, it gives benefits after a long period. Gaibullov and Sandler (2008) showed that due to terrorist activities, growth-enhancing investment is crowding out for fewer growth-enhancing government expenditures in the form of counter-terrorism expenditures and defensive activities. It is because when there is terrorism in a country, it creates risk as well as uncertainty for investors; it distorts the equilibrium of resource allocation all over the country by changing the investment, savings, and consumption behavior of individuals. High terrorist activities destroy the infrastructure, create uncertainty, and restrict business activities, due to which the cost of doing business increases. This leads to smaller returns on investment and reduced business profits. Terrorism has had a frustrating effects Pakistan's economy. Due to systemic, uncertain, and widespread security challenges and the incapacity of the state to counter these activities & lack of security and safety to investors_ huge property, several factories, as well as lives have been burning for four decades; many enterprises have shut down and relocated. All of these activities restrict capital inflow & ultimately economic progress in Pakistan.

The result shows that a positive & statistically significant relationship b/w Military expenditures & economic growth in the case of Pakistan exists in the short-run. When Military expenditures increase by one percent of GDP, the GDPpc increases by \$281.70 in the short run. It is because as terrorist activities increase in a state, the government allocates a budget to counter such types of activities and to build defense/security infrastructure. Therefore, economic activities are generated in the short run.

Long Run Results of the Model 01

As stated above, the study investigated that there is one co-integration equation in the model, and it indicated that there is evidence of a long-term relationship b/w variables. To estimate long-term results Johansen co-integration technique has been used. The long-run findings of a model are shown in Table 5.

Table 5. Long run results of the model 01.

Johansen co-integration technique		
Variables	Coefficient	t-statistic
Incidents	3.28	7.10
Injuries	1.03	5.67
No. of deaths	-3.41	5.96
Investment %age of GDP	153.93	4.09
Milit. Exp. %age of GDP	-281.70	6.92

Note: Author's Calculation.

The long-run co-integrating equation is as follows:

$$GDPpc = 3.28 \text{ Incidents} + 1.03 \text{ injuries} - 3.40 \text{ deats} + 153.93 \text{ INV} - 281.70 \text{ Milit. exp}$$

The finding shows that an inverse & significant relationship b/w Deaths from terrorist attacks & economic growth exists in the long-term in Pakistan. When Deaths from terrorist attacks increase by one person, the GDPpc reduces by \$3.41 in the long run. There is a direct & significant relationship b/w terrorism incidents & injured victims with economic growth in Pakistan. As the number of terror incidents increases due to terrorist activities, it does not depress economic growth. The logic behind these results is that as terrorism incidents increase in a country, the foreign aid inflow starts to counter such terror activities, so the government uses these funds for development projects (Bearce, 2010). Therefore, economic activities generate in long period. As terrorist activities increased in Pakistan due to the 9/11 incidents and the U.S. operation in Afghanistan, the U.S. increased a significant amount of aid to counter these terrorist activities, so the government used these funds for development projects in the country.

The findings show that a direct & statistically significant relationship b/w investment as a %age of GDP & economic growth exists in the case of Pakistan in the long-term. When investment increases by one percent of GDP in a country, the GDPpc increases by \$153.93 in the long run.

Results showed that there is an inverse and statistically significant relationship b/w Military expenditures & economic growth in the case of Pakistan in the long run. It is because as terrorist activities increase in a state, the government allocates a budget to counter such types of activities and to build defense infrastructure. Therefore, the government cut the budget from mega development projects, so when such ongoing projects are not completed in time, economic growth slows down.

Short Run Results of Model 02

Table 6 shows the short-run relationship between economic growth & terror index _which includes the terrorism incidents, Injured Victims, and Deaths from terrorist attacks_ and other control variables, i.e., investment as % of GDP and military expenditures as %age of GDP. The short-run results of a model are shown in Table 6.

Table 6. Short Run Results of a Model o2

Variables	Coefficient	t-statistic
ECM	-0.14	4.35
Terrorism	-0.11	5.48
Investment in GDP	-108.23	2.15
Military exp. In GDP	256.63	4.56
Constant		268.89
R-seq		0.59
Adj. R-seq		0.45
F-Statistic		4.35

Note. Author's Calculation.

In short-run dynamics, the ECM term has a coefficient of -0.14 , indicating that around 14% of deviations from a long-term growth rate are caused by preceding years' shocks going back to the long-term equilibrium position in the current year. It is significant, less than one, and negative. The findings show that a negative and significant relationship b/w terrorism activities and output growth exists in Pakistan. As terrorist activities increase by one unit, it depresses GDPpc by \$0.11 in the short-run.

The findings show that a negative and statistically significant relationship b/w investment as a %age of GDP & economic growth in Pakistan in the short period. When investment increases by one percent of GDP in a country, it reduces GDPpc by \$108.23 in the short run. The results are in line with Yusuf and Mohd (2022).

The result shows that a positive & significant relationship b/w Military expenditures as a percentage of GDP & economic growth exists in the case of Pakistan in the short run. It is because as terrorist activities increase in a state, the government allocates a budget to counter such types of activities and to build defense/security infrastructure. Therefore, economic activities are generated in the short run.

Findings and Conclusions

The specific objective of this research work is to investigate the effects of terrorism on GDPpc in Pakistan by using annual time series data during the last four decades from 1981 to 2020. The study applied the Augmented Dickey-Fuller (ADF) test to check the stationarity of the data. Results of the unit root test for the variables under investigation show that all variables are stationary at 1st difference. The study applied the Johansen co-integration technique to find several co-integration equations; there is at most one co-integration equation found. For the short-period dynamics, the study applied the Vector Auto Regressive Model. The empirical findings reveal that GDPpc & number of terrorism incidents and injuries due to terrorism are negatively related, while the number of deaths from terrorism is positively related to economic growth. These results are surprising and against the prior expectation. Another exogenous variable, investment as a percentage of GDP, has an inverse effect on GDPpc, while military expenditures as a percentage of GDP have a positive relation with economic growth in the short period in the case of Pakistan. Results revealed that when there is a unit increase in the number of incidents and injured victims, the GDPpc decreased by \$3.27 & \$1.02, respectively, while when the number of deaths increased by 1 person, the economic growth increased by \$3.40, which is a surprising result. Gross Domestic Product (GDP) per capita decreased by \$153.93 when Investment increased by one percent of GDP, while military expenditures increased GDPpc by \$281.70 in the short-term in the case of Pakistan. All results are statistically highly significant. In the long run, terrorism incidents and injuries show a positive relationship, while deaths show a negative relationship with economic growth.

In the context of the above findings, the current study suggests some policies to minimize the effects of terrorism on the economic growth of Pakistan. Close attention needs to be paid to the long-term consequences of terrorism. Just bringing an increase in defense and military spending will not be sufficient to significantly

eradicate the menace of terrorism completely. To this end, efforts ought to be made to improve the quality of institutions for offsetting the adverse implications of terrorism for the fiscal actions of the government of Pakistan. Measures to reduce the risk and the economic consequences of further attacks should be both security-effective and growth-friendly.

Limitations

This paper has many more potential limitations. There is much space for further work on this phenomenon in the future. This study has focused on the impacts of the terrorists' proxies on economic growth separately in the context of Pakistan. Researchers can use it to conclude any region or the overall South Asia. Moreover, this provides a gap for researchers to determine the effects of deaths from terror incidents on economic growth, as it showed a positive relationship with economic growth, which is contradictory to prior expectations. Therefore, researchers can dig out the reasons why this is.

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