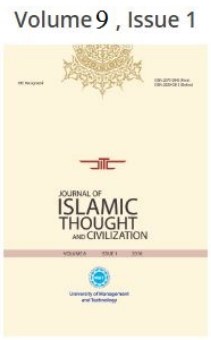


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Muhammad Qasim

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# A Comparative Analysis of Terrorism among Muslim and Non-Muslim Countries in the Perspective of Economic Activity

**Tariq Hussain***
Department of Economics,
University of Lahore, Pakpattan Campus, Pakistan

**Muhammad Qasim**
Department of Economics,
University of Lahore, Pakpattan, Pakistan
Ph.D. Scholar,
National College of Business Administration and Economics (NCBA&E),
Lahore, Pakistan

## Abstract

Terrorism has become a threatening and fear-provoking phenomenon in the present times. The occurrence of terrorists' activities is carried on without discrimination of Muslim and Non- Muslim countries. The study aims to investigate the trends and severity of terrorism in both Muslim and Non-Muslim countries. A sample of forty five Muslim and one hundred and thirty Non-Muslim countries will be analysed. The role of strong economic indicators in reducing the surge of terrorism will be accessed and the relationship of Gross Domestic Product (GDP) per capita with terrorism will also be calculated. Panel Ordinary Least Square (OLS) technique will be used to examine the relationship among these variables and Per Capita GDP In both types of countries, terrorist activities will be evaluated through number of attacks, killings and injured persons. Besides this, correlation will be applied to examine the association among number of attacks, killings and injured persons. Descriptive statistics evidently indicates huge losses in the form of number of attacks, killings and injured people. From 1980s to 2015, total terrorist attacks, killed persons and injured persons are 67518, 188775 and 272683 respectively in Muslim countries. In the same way, in Non-Muslim countries, from 1980s to 2015, total terrorist attacks, killed persons and injured persons are 86914, 159386 and 167828 respectively. Number of injuries and killings are comparatively higher in Muslim countries whereas Non-Muslim countries have higher number of attacks. Elevated correlation is found among number of attacks, killings and injured persons. However, the correlation among per capita GDP and the other variables found negative. OLS findings as well show negative relationship among per capita GDP and number of attacks, killings and injured persons. With the increase in per capita GDP, terrorism can be minimized or reduced. Improvement in economic activity can also diminish terrorism outcomes particularly in developing countries.

**Keywords:** Terrorism, Trends, Severity, GDP, Muslim and Non-Muslim Countries

**JEL**: C61, D74, C43, O47

*Correspondence concerning this Article should be addressed to Dr. Tariq Hussain, Assistant Professor, Head Department of Economics, University of Lahore, Pakpattan (Pakistan), at htariq066@gmail.com.

## Introduction

The study about the measurement, implications and determinants of terrorism has been a vigorous field of research for social scientists since 1960s. At first, political scientists studied terrorism descriptively and historically due to some data constraints. They focused on definition of terrorism, trends, identification of terrorist groups and their movements.[1] Terrorists are rational actors.[2] Rationality is based on predictability not desirability of terrorists' tactics or goals.[3] Since 9/11 attacks quantitative analysis of terrorism has increased. Historically, terrorist attacks in Muslim and non-Muslim countries rose from 1968 to the mid-1980s with about 500 incidents per year.[4]

Some researchers measured distributional nature of degree, frequency and severity of different terrorist attacks among different countries and within countries. Most of them evaluated number of attacks and injuries. However, terrorism as a political tool has a long history.[5] In modern era different motivated groups of terrorism have had access to extremely destructive weapons.[6] Access to such weapons

[1]Martha Crenshaw, "The Causes of Terrorism," *Comparative Politics* 13, no. 4 (1981): 379; Paul Wilkinson, *Terrorism and the Liberal State* (Halsted, 1977), 2; *Terrorism versus Democracy: The Liberal State Response* (Routledge, 2006), 5.

[2]William M. Landes and Richard A. Posner, "Salvors, Finders, Good Samaritans, and Other Rescuers: An Economic Study of Law and Altruism," *The Journal of Legal Studies* 7, no. 1 (1978): 83.

[3]Max Abrahms, "What Terrorists Really Want: Terrorist Motives and Counterterrorism Strategy," *International Security* 32, no. 4 (2008):78; Abraham Kaplan and Boaz Ganor, *The Counter-Terrorism Puzzle: A Guide for Decision Makers* (Routledge, 2017), 11; Andrew H. Kydd and Barbara F. Walter, "The Strategies of Terrorism," *International Security* 31, no. 1 (2006): 49.

[4]Bruce Hoffman, *Inside Terrorism* (New York: Columbia University Press, 2006), 6; Zan Strabac and Ola Listhaug, "Anti-Muslim Prejudice in Europe: A Multilevel Analysis of Survey Data from 30 Countries," *Social Science Research* 37, no. 1 (2008): 268; Adrian Cherney and Kristina Murphy, "Being a 'Suspect Community'in a Post 9/11 World–the Impact of the War on Terror on Muslim Communities in Australia," *Australian and New Zealand Journal of Criminology* 49, no. 4 (2016):480.

[5]Roger D Congleton, "Terrorism, Interest-Group Politics, and Public Policy: Curtailing Criminal Modes of Political Speech," *The Independent Review* 7, no. 1 (2002): 47; Laura Graham, "Civil Protest Is a Crucial Tenet of Any Free Democracy—and in the Us It's Protected by the Constitution's First Amendment. But a Wave of New Anti-Protest Laws May Infringe on This Hard-Won Constitutional Right—One That Could Scarcely Be More Deeply Rooted in the American Political Psyche," in *The Political Elite and Special Interests*, ed., Rachel Bozek (New York: Greenhaven Publishing, 2017): 123-125; Walter Enders and Todd Sandler, "Distribution of Transnational Terrorism among Countries by Income Class and Geography after 9/11," *International Studies Quarterly* 50, no. 2 (2006): 367.

[6]Martin Shubik, "Terrorism, Technology, and the Socioeconomics of Death," *Comparative Strategy* 16, no. 4 (1997): 399; Chia-Yuan Yang, "The Influence of Team Empowerment and Task-Technology Fit in Anti-Terrorism Internal Compliance Program Team Performance," *成功大學國際經營管理研究所碩士在職專班學位論文* (2017): 1; Timothy J. List, "What Are We Missing? A Call for Red Teaming within the Domestic Maritime Domain for Anti-Terrorism Programs" (Monterey, California: Naval Postgraduate School, 2015), 4.

has resulted in severe terrorist attacks. The frequency statistics indicate that small and large events both have been observed. On the other hand, different social scientists investigated different determinants and causes of terrorism among and within countries. Economic discrimination, religious persecution, nationalist/separatist motives, religious fundamentalism, political ideologies, and other grounds are important root causes of terrorism.[7] After 9/11, there is a general belief that poverty enhances terrorism; however,[8] rsearches exposed little relationship between lack of market opportunities and terrorism. For a cross-section sample of countries,[9] application of cross sectional regression found that low income was not associated with more terrorism in countries where civil and political liberties were controlled.[10] A nonlinear relationship was found between income and terrorism in which middle income was more conducive to terrorism. Economic activity of an economy due to some institutional arrangements is also considered a significant determinant of different terrorism variables like number of attacks, injuries, causalities and killings, however they may affect differently to different terrorism variables. A strong economy can also reduce causalities and killings due to quality of health arrangements. Normally, economically strong countries have comparatively good governance which may reduce terrorism. On the other hand, some Muslim and Non-Muslim countries have same level of GDP per capita but possess different terrorism outcomes. Pakistan and Zambia may be an appropriate example in this case. According to statistics, the total number of killings and injuries due to terrorism attacks in Pakistan from 1970 to 2015 are 21597 and 38012 respectively. Wherever, Zambia has only 70 killings and 62 injuries due to terrorism attacks. It depicts that in addition to economic activity there are some other factors which may be held responsible for differences in terrorism outcomes. Religious differences is also an important detriment to guage the levels of terrorism among the different countries of the world. Hence, it is important to make a comparison among Muslim and Non-Muslim countries about the trends and severity of terrorism to observe the differences in terrorism outcomes. Additionally, investigation of the role of economic activity in the determination of terrorism outcomes across the Muslim and Non-Muslim countries is also critical and is a topic that has been hardly explored by researchers and scholars.

This study focuses on the above mentioned research questions. It explores different terrorism outcomes in Muslim and Non-Muslim countries over the period of time and investigates howeconomic activity contributes in determining terrorism outcomes among Muslim and Non-Muslim countries. By exploring the empirical

[7]Paul Wilkinson, *Terrorism and the Liberal State*; *Terrorism Versus Democracy: The Liberal State Response*, op. cited; Mario Arturo Ruiz Estrada, et al., "The Economic Impact of Terrorism: A New Model and Its Application to Pakistan," *Journal of Policy Modeling* 37, no. 6 (2015):1065.

[8]Alan B. Krueger and Jitka Malečková, "Education, Poverty and Terrorism: Is There a Causal Connection?" *Journal of Economic perspectives* 17, no. 4 (2003): 119; Walter Enders, Gary A Hoover, and Todd Sandler, "The Changing Nonlinear Relationship between Income and Terrorism," *Journal of Conflict Resolution* 60, no. 2 (2016): 195.

[9]Krueger and Malečková, "Poverty and Terrorism," 120.

[10]Enders, Hoover, and Sandler, "Income and Terrorism," 196.

answers of above mentioned questions this study will significantly contribute in the limited pool of literature already available on the given topic. This study will not only compare trends and severity of terrorism in Muslim and Non-Muslim countries but will also confirms the role of economic activity in the determination of terrorism activities. For this purpose, the rserachers will analyse the frequency and severity of terrorism attacks, injuries and killings in Muslim and non-Muslim countries. Frequency and severity will be accessed by investigating yearly and decade wise attacks, injuries, causalities and killings. Average tendency of terrorism will be measured by calculating average number of attacks, average number of injuries, average number of causalities and average number of killings in both Muslim and non-Muslim countries. Degree of terrorism will be compared among Muslim and non-Muslim countries by using different proxy variables applying descriptive statistics. Alos, association of Gross Domestic Product (GDP) per capita with different terrorism variables will be estimated by the researchers by applying panel regression among one hundred and twenty-five countries.

## 2. Review of Literature

There are a number of studies regarding the relationship among terrorism and diverse perspectives of different fields such as terrorism and macro level aspects, terrorism and economic growth, terrorism and democracy etc. Terrorists' attacks have negative impacts on economic progress[11] but the significance of terrorism for growth can be varying from country to country.[12] Whereas[13] it was found that growth causes terrorism. However, it is also found that growth and terrorist activities have no link as such.[14] Studies also highlight that increase in public spending regarding terrorism

[11]S. Brock Blomberg, Nzinga H Broussard, and Gregory D Hess, "New Wine in Old Wineskins? Growth, Terrorism and the Resource Curse in Sub-Saharan Africa," *European Journal of Political Economy* 27, no. s1 (2011):s50; Syed Jawad Hussain Shahzad et al., "Relationship between Fdi, Terrorism and Economic Growth in Pakistan: Pre and Post 9/11 Analysis," *Social Indicators Research* 127, no. 1 (2016):179; Seung-Whan Choi, "Economic Growth and Terrorism: Domestic, International, and Suicide," *Oxford Economic Papers* 67, no. 1 (2014):157; Khusrav Gaibulloev and Todd Sandler, "Growth Consequences of Terrorism in Western Europe," *Kyklos* 61, no. 3 (2009): 411; Alberto Abadie and Javier Gardeazabal, "The Economic Costs of Conflict: A Case Study of the Basque Country," *American Economic Review* 93, no. 1 (2003): 113; Shabir Hyder, Naeem Akram, and Ihtsham-ul Haq Padda, "Impact of Terrorism on Economic Development in Pakistan," *Pakistan Business Review* 16, no. 4 (2015): 704.

[12]Maryam Fatima et al., "Terrorism and Its Impact on Economic Growth: Evidence from Pakistan and India," *Middle-East Journal of Scientific Research* 22, no. 7 (2014): 1033.

[13]Thomas Gries, Tim Krieger, and Daniel Meierrieks, "Causal Linkages between Domestic Terrorism and Economic Growth," *Defence and Peace Economics* 22, no. 5 (2011):493.

[14]James A. Piazza, "Rooted in Poverty?: Terrorism, Poor Economic Development, and Social Cleavages," *Terrorism and political Violence* 18, no. 1 (2006): 159; Fatima et al, "Terrorism and Its Impact on Economic Growth," 1033; Krueger and Malečková, "Poverty and Terrorism,"120; Choi, "Economic Growth, Terrorism and Suicide," 157;Tilman Brück, *The Economic Analysis of Terrorism* (Routledge, 2007), 10; Sanjeev Gupta, et al., "Fiscal

decrease growth prospects; both views were found positive and negative regarding democracy. One group argued that democracy reduced terrorism as.[15] Whereas,[16] another found that democracy plays a significant role in terrorist activities. In contrast some policy makers found that terrorist activities also have some adverse consequences for democracy.[17]

Analysis of the relationship between GDP per capita and terrorism highlights that attacks are more common in middle-income economies. These terrorist attacks occured in lower income economies as a result of different uprisings, religion based movements and announcements made by nationalists. Moreover, the techniques of attacks in intercontinental terrorism are quite different than regional. Lorenz curve is used to demonstrate the domestic and intercontinental terrorist assaults. In this study, nonlinear smooth transition regressions are used to find out the relation among GDP per capita and terrorist attacks. The findings of nonlinear are more robust. However,[18] to formulate a procedure for stopping terrorism, a model will be derived which will centre on the premise that once a terrorist attack occurs, it is followed by another immediate attack. As preventive steps are taken immediately by the government agencies, different units of terrorist groups fail in enhancing their capacities, increasing the number of immediate terrorist attacks. Definite terrorist assaults frequently lead to unexpected raise in positive counteract terrorism appraises. Hence policy makers should keep this view in mind while preparing long run policies. The authorities should focus on short run measures besides long run policies.[19]

This study focuses on two sectors of the economy i.e industry and agriculture and three types of terrorist forms including domestic, transnational and suicide. The study focuses on 127 countries and the time span for the study is 1970-2007. Negative Binomial regression approach will be used to analyze the effects of economic development on terrorism. As countries achieved higher level of industrial growth, they faced lower level of attacks of domestic and transnational attacks whereas faced

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Consequences of Armed Conflict and Terrorism in Low-and Middle-Income Countries," *European Journal of Political Economy* 20, no. 2 (2004): 403.

[15]William Eubank and Leonard Weinberg, "Terrorism and Democracy: Perpetrators and Victims," *Terrorism and political violence* 13, no. 1 (2001): 155; Jeffrey Ian Ross, "Structural Causes of Oppositional Political Terrorism: Towards a Causal Model," *Journal of Peace Research* 30, no. 3 (1993): 317; Alex P Schmid, "Terrorism and Democracy," *Terrorism and Political Violence* 4, no. 4 (1992): 14.

[16]Quan Li and Drew Schaub, "Economic Globalization and Transnational Terrorism: A Pooled Time-Series Analysis," *Journal of Conflict Resolution* 48, no. 2 (2004): 230; Scott E. Atkinson, Todd Sandler, and John Tschirhart, "Terrorism in a Bargaining Framework," *The Journal of Law and Economics* 30, no. 1 (1987): 1.

[17]Simplice A. Asongu and Jacinta C. Nwachukwu, "The Impact of Terrorism on Governance in African Countries," *World Development* 99 (2017): 253; Peter Chalk, "The Response to Terrorism as a Threat to Liberal Democracy 1," in *War on Terrorism*, ed. Alan O' Day (Routledge, 2017), 83-98; Enders, Hoover, and Sandler, "Income and Terrorism," 195.

[18]Michael Jensen and Gary LaFree, "Final Report: Empirical Assessment of Domestic Radicalization (Eadr)," *College Park, MD: National Consortium for the Study of Terrorism and Responses to Terrorism* 8 (2016): 2-8.

[19]Choi, "Economic Growth, Terrorism and Suicide," 157.

higher level of suicide attacks. It is evident that growth is not the ultimate solution of terrorism as a number of suicide attacks happened in industrialized nations. However, growth is beneficial in case of terrorist attacks as suicide attacks happened in a few industrialized countries. On the other hand, few studies reported the trends of terrorism among different regions of the world.[20]

To Analyze the nature of terrorism and its different components; the diagnostic writings started with an initial study related to US sky jacking work in 1978. But after 9/11 attacks, terrorism secured significant importance and it became the central focus of writers, philosophers and researchers. No doubt, terrorism activities have increased rapidly since 9/11 attack.

This study focuses on major five areas; assaults trends, economic penalties, counter terrorism policies, reasons and the connection between terrorist attacks and moderate democratic countries. Besides this, the nature of attacks at national and International level is also discussed in the present study, along with the network and connections of these terror attacks. The need of the hour is to develop counter terrorist organizations.

Terrorism affects foreign capital which has been explored by various researchers. Studies[21] highlight that terrorism can sway the contention of Intercontinental investors, with grave implications on the international economy. Terrorists' attacks have a large impact on the allocation of productive capital across countries. Terrorist activities can be added in an endogenous growth model and can help in evaluating the risk of inflow of FDI. It is found that terrorism have suppressed the net inflow of foreign capital and can lead to robustness affecting the GDP per capita, country risk indexes and governance. Moreover, one percent increase in terrorist activities decreases five percent of net inflow of foreign direct investment (FDI).[22]

To examine the attempts of terrorism and the consequences of these attacks, it is vital to test the two main reasons of terrorist attacks. Number one reason is deprivation and the other rseason is geopolitical dynamics. The OLS approach reveals that deprivation resulted into terrorist attacks in Eurasia. These attacks occurred in low income countries where democracy was absent and low level of literacy was prevalant. Geopolitical element is also a significant factor of terrorism in Eurasia. Geopolitical factors, like the numeral of embassies, the geographic location, power and food assets, and net immigration are associated with the number of terrorist assaults.[23]

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[20]Todd Sandler, "Terrorism and Counterterrorism: An Overview," *Oxford Economic Papers* 67, no. 1 (2015): 1.

[21]Abadie and Gardeazabal, "The Economic Costs of Conflict," 113.

[22]Ana Bela Santos Bravo and Carlos Manuel Mendes Dias, "An Empirical Analysis of Terrorism: Deprivation, Islamism and Geopolitical Factors," *Defence and Peace Economics* 17, no. 4 (2006): 329.

[23]Quan Li, "Does Democracy Promote or Reduce Transnational Terrorist Incidents?" *Journal of Conflict Resolution* 49, no. 2 (2005): 278.

Different studies have also inspected the ways through which democracy have effected transnational terrorist activities. Analysing the democratic effects on international terrorism in 119 countries from 1975-1997, it is found that transnational terrorist activities can be minimized in the presence of democracy, however, the government needs to intiate different steps such as press independence etc. The proportional demonstration structure also experiences less international terrorist occurrences.

## 3. Theoretical Framework and Methodology

Terrorism can be defined as intercontinental danger of non-state actors to achieve their economic, societal, political and religious targets.[24] Terrorism has many forms as national, International and suicide. Terrorist clusters are considered as coherent creatures. These groups assign their limited resources as manpower and armaments in ways through which to take full advantage of their anticipated payoff.[25] The success of terrorist groups depends upon a number of factors as their resources, techniques, and environment and counter terrorists' attacks policy of the countries.[26] There are a number of theoretical considerations regarding terrorism, including economic, political, geographical, left or right wings, nationalists and religious groups etc. As the economy progresses and moves forward, it creates more and more job prospects for their working class. As growth increases, a number of opportunities are generated for the deprived segments of the population. The chase of economic benefits becomes the target of working class instead of engaging themselves in dangerous terrorist activities.[27] It is found that terrorists' attacks are mainly destructive to economic growth in less developed economies, however not in the developed economies of the world. However, trade openness can boost terrorist cluster endurance, particularly for international terrorist assaults. Behind the veil of trade these terrorists groups can transfer their weapons and manpower to the targeted country.[28] In the same way, the increased industrial growth raises the income of industrial workers, however the income of agriculture sector increases at the same pace. Thus, income inequality generates in societies and can increase terrorist

[24]Gary LaFree and Laura Dugan, "Introducing the Global Terrorism Database," *Terrorism and Political Violence* 19, no. 2 (2007): 181.

[25]Todd Sandler, John T. Tschirhart, and Jon Cauley, "A Theoretical Analysis of Transnational Terrorism," *American Political Science Review* 77, no. 1 (1983): 36; William F. Shughart and F. William, "Terrorism in Rational Choice Perspective," *The Handbook on the Political Economy of War*, eds. Rachel L. Mathers, Christopher Coyne (Cheltenham: Edward Elgar Publishing, 2011): 126-153.

[26]Claude Berrebi and Darius Lakdawalla, "How Does Terrorism Risk Vary across Space and Time? An Analysis Based on the Israeli Experience," *Defence and Peace Economics* 18, no. 2 (2007):113.

[27]Blomberg, Broussard, and Hess, "Growth, Terrorism and the Resource Curse in Sub-Saharan Africa," s50; Andreas Freytag, et al., "The Origins of Terrorism: Cross-Country Estimates of Socio-Economic Determinants of Terrorism," *European Journal of Political Economy* 27, no. 1 (2011): S5. ibid; Daniel Meierrieks and Thomas Gries, "Causality between Terrorism and Economic Growth," *Journal of Peace Research* 50, no. 1 (2013): 91.

[28]Quan Li, "Does Democracy Promote or Reduce Transnational Terrorist Incidents?" 278.

activities.[29] This phenomenon also becomes the cause of political instability.[30] Researches indicate that terrorism and terrorist clusters are likely to take advantage of an on-growing breach among the rich and the poor. Terrorists needs some particular ground to fulfill their vicious objectives such as locality of a country. Geographical location and conditions of the countries also plays a significant role in terrorism. The countries rich with jungles and mountains become attractive places for terrorist groups.[31] Terrorist groups in landlocked countries find it difficult to flourish. Besides this, ethnic groups favor the encouragement of the terrorist activities.[32]

Terrorist clusters require ideologies to survive for a long time span. Once nationalists were at their peaks, but left their ground for leftists back in the 1970s.[33] Likewise, in 1990s, religious groups were dominant among terrorist groups.[34] Degree of terrorism may vary in Muslim and non-Muslim countries. It is important to quantify and compare trends and the degree of terrorism in Muslim and Non-Muslim countries.

General perception is that Muslim countries have suffered a lot as compared to non-Muslim countries at the hands of terrorism. This study investigates the trends and degree of terrorism in both Muslim and non-Muslim countries. This study investigates the relationship of Gross Domestic Product (GDP) per capita with different terrorism variables.

## 3.1. Methodology

Methodological procedure including measurement and description of variables, econometric models to estimate the association among number of attacks, injuries, GDP per capita and killings have been discussed in this section.

### 3.1.1. Terrorism in Muslim and Non-Muslim Countries

This study analyzes trends in terrorism in both Muslim and non-Muslim countries. Terrorism is measured by number of attacks, injuries and killings in both Muslim and non-Muslim countries. To evaluate and to compare degree of terrorism

[29]Tim Krieger and Daniel Meierrieks, "Does Income Inequality Lead to Terrorism? Evidence from the Post-9/11 Era," (2015): 1-2-3; "Does Income Inequality Lead to Terrorism?" (2016); Pinar Derin-Güre and Adem Yavuz Elveren, "Does Income Inequality Derive the Separatist Terrorism in Turkey?" *Defence and Peace Economics* 25, no. 3 (2014): 311.

[30]Estrada et al., "The Economic Impact of Terrorism," 1065; Piazza, Rooted in Poverty? 1033; Shrabani Saha and Ghialy Yap, "The Moderation Effects of Political Instability and Terrorism on Tourism Development: A Cross-Country Panel Analysis," *Journal of Travel Research* 53, no. 4 (2014): 509; Raul Caruso and Friedrich Schneider, "The Socio-Economic Determinants of Terrorism and Political Violence in Western Europe (1994–2007)," *European Journal of Political Economy* 27, no. 1 (2011): S37.

[31]James D Fearon and David D Laitin, "Ethnicity, Insurgency, and Civil War," *American Political Science Review* 97, no. 1 (2003):75.

[32]Atin Basuchoudhary and William F Shughart, "Human Capital and the Productivity of Suicide Bombers," *Defence and Peace Economics* 21 (2010): 1-2.

[33]Edgar Jones, "The Reception of Broadcast Terrorism: Recruitment and Radicalisation," *International Review of Psychiatry* 29, no. 4 (2017): 320.

[34]Hoffman, *Inside Terrorism,* 32.

descriptive statistics will be applied. Average number of attacks, injuries and killings in different decades for both Muslim and non-Muslim countries have calculated.

### 3.1.2. Association among Number of Attacks, Injuries, GDP Per Capita and Killings

To compare the degree of correlation among number of attacks, injuries, GDP per capita and killings in both Muslim and non-Muslim countries partial correlation coefficient will be used. Calculated correlation matrix will be provided in the section of empirical results.

### 3.1.3. Econometric Models

Present study has investigated the relationship between number of attacks, injuries, GDP per capita and killings by applying panel regression. Following four regression models have been used;

1. Killings (KIL)= f (Number of attacks (NAT), injuries (INJ), GDP per capita (GPP))

$$KIL_{it} = \alpha + \beta_1 NAT_{it} + \beta_2 ING_{it} + \beta_3 GPP_{it} + e_{it} \dots\dots\dots\dots\dots (1)$$

2. Killings= f (GDP per capita)

$$KIL_{it} = \alpha + \beta_1 GPP_{it} + e_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

3. Injuries= f (GDP per capita)

$$INJ_{it} = \alpha + \beta_1 GPP_{it} + e_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

4. Number of Attacks= f (GDP per capita)

$$NAT_{it} = \alpha + \beta_1 GPP_{it} + e_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

### 3.1.4. Data Collection

Data of all variables related to terrorism (number of attacks, injuries and number of killings) are collected from Global Terrorism Data base (GTD) published by University of Maryland. However, data of GDP per capita is arranged from World Development Indicator (WDI) published by World Bank.

### 3.1.5. Data Analysis

Degree of terrorism is measured on the basis of number of attacks, number of injuries and killings for both Muslim and non-Muslim countries through application of descriptive statistics like mean, correlation matrix. The relationship among the variables is calculated by applying panel regression. All data is analyzed according to the objectives of this study with the help of E-Views.

## 4. Empirical Findings and Discussion

Present study investigates the trends of terrorism in Muslim and non-Muslim countries Forty five Muslim and one hundred and thirty countries have been selected for the analysis. Moreover, panel regression is applied to observe the degree of relationship of GDP per capita with all terrorism proxy variables. Empirical results and discussion are given below:

### 4.1. Statistics of Terrorism in Muslim and Non-Muslim Countries

This section of empirical results is related trends and degree of terrorism in both Muslim and non-Muslim countries. Summary statistics of Muslim countries is given in table 1 and non-Muslim countries is given in table 2.

#### 4.1.1. Statistics of Terrorism in Muslim Countries

**Table 1.** Trend of Terrorism in Different Decades

| Sr. | Decade Wise | Total Number of Attacks | Killed Persons | Injured Persons |
|---|---|---|---|---|
| 1 | 1980s | 1180 | 1587 | 2341 |
| | Average | 9.83 | 13.23 | 19.51 |
| 2 | 1990s | 2680 | 7242 | 13741 |
| | Average | 10.85 | 29.32 | 55.63 |
| 3 | 2000s | 7945 | 20433 | 25180 |
| | Average | 21.13 | 52.93 | 65.23 |
| 4 | 2010s | 15104 | 48513 | 92478 |
| | Average | 39.33 | 123.13 | 234.72 |
| 5 | 2011-2015 | 40602 | 110977 | 138958 |
| | Average | 213.69 | 560.49 | 701.81 |
| 6 | 1980-2015 | 67518 | 188775 | 272683 |
| | Average | 50.88 | 139.42 | 201.24 |

Source: Authors' Calculation

It is evident from the table that terrorism resulted into huge loses for the Muslim countries. All three indicators highlight alarming situation in Muslim countries. Number of attacks, killed person and injured persons have increased over the course of time. From 1980s to 2015, total terrorist attacks, killed persons and injured persons were 67518, 188775 and 272683 respectively.

#### 4.1.2. Statistics of Terrorism in Non-Muslim Countries

**Table 2.** Trend of Terrorism in Different Decades

| Sr. | Decade Wise | Total Number of Attacks | Killed Persons | Injured Persons |
|---|---|---|---|---|
| 1 | 1980s | 642 | 502 | 470 |
| | Average | 6.83 | 5.34 | 5 |
| 2 | 1990s | 936 | 1464 | 1235 |
| | Average | 8.59 | 13.43 | 11.33 |
| 3 | 2000s | 1392 | 5508 | 3914 |
| | Average | 8.34 | 32.4 | 22.89 |
| 4 | 2010s | 318 | 1521 | 985 |
| | Average | 1.96 | 9.22 | 5.96 |
| 5 | 2011-2015 | 527 | 3125 | 1470 |
| | Average | 7.03 | 42.03 | 19.6 |
| 6 | 1980-2015 | 86914 | 159386 | 167828 |
| | Average | 21.99 | 39.66 | 41.77 |

Source: Authors' Calculation

It is obvious from the table that terrorism has resulted into huge losses for the Non-Muslim countries as well. All three indicators highlights critical situation in Non-Muslim countries. Number of Attacks, Killed person and injured persons have increased over the course of time. From 1980s to 2015, total terrorist attacks, killed persons and injured persons were 86914, 159386 and 167828 respectively.

### 4.2. Correlation Matrix

**Table 3.** Correlation Analysis

| | INJ | KIL | LOGGPP | NAT |
|---|---|---|---|---|
| **INJ** | 1.000000 | 0.840088 | -0.039257 | 0.825656 |
| **KIL** | 0.840088 | 1.000000 | -0.057448 | 0.837903 |
| **LOGGPP** | -0.039257 | -0.057448 | 1.000000 | -0.044900 |
| **NAT** | 0.825656 | 0.837903 | -0.044900 | 1.000000 |

Source: Authors' Calculation

Correlation among number of injured persons, killed persons, GDP per capita and number of attacks variables is also estimated. Correlation among injured persons, killed persons and number of attacks is high and positive, whereas GDP per capita has negative correlation with all other variables. Negative correlation of GDP per capita with all variables regarding terrorism indicated that economic activity played a vital role in minimizing terrorism.

### 4.3. Empirical Estimates of Number of Attacks, Injuries, GDP Per Capita and Killings

In this section relationship among killed persons, injured persons, GDP and number of attacks has been evaluated. The results are given in the following table:

**Table 4.** The Relationship among Number of Attacks, Injuries GDP per capita and Number of Killings

Dependent variable: Number of Killings

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **INJ** | 0.327337 | 0.008542 | (38.3200) | 0.0000* |
| **LOGGPP** | -3.93528 | 1.433046 | (-2.7461) | 0.0061* |
| **NAT** | 1.33825 | 0.035945 | (37.2302) | 0.0000* |
| **C** | 32.02532 | 12.20091 | (2.6248) | 0.0087* |

Source: Authors' Calculation (Note) *t* statistics in brackets $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The analysis has been carried-out through pooled ordinary least square method. All variables are significant at 1 percent level of significance. Also there is a positive relationship among all the variables, except GDP per capita. It shows that with increase in GDP per capita, killings of innocent at the hands of terrorism decreases.

### 4.4. GDP Per Capita and Terrorism

Present section describes the association between GDP per capita and terrorism. For terrorism number of attacks, injuries, and killings are used as proxy variables. Sub-section 4.4.1 evidence the relationship of GDP per capita with killings. Association of GDP per capita with injuries is given in sub-section 4.4.2. Sub-section 4.4.3 is related to the relationship between GDP per capita and number of attacks.

#### 4.4.1. GDP Per Capita and Killings

In this model relation among killed persons and GDP is evaluated. The results are given in the following table.

**Table 5.** GDP and Killed Persons
Dependent Variable: Killings

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **LOGGPP** | -12.09 | 2.9594 | (-4.084) | 0.000* |
| **C** | 170.16 | 25.151 | (6.7656) | 0.000* |

Source: Authors' Calculation (Note) *t* statistics in brackets $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The analysis is carried out through pooled ordinary least square method. GDP per capita is significant and shows a negative coefficient sign. It highlights that increase in GDP per capita minimizes the killing rate among both Muslims and non-Muslims countries.

#### 4.4.2. GDP Per Capita and Injuries

In this model relation among injured persons and GDP is evaluated. The results are given in the following table.

**Table 6.** GDP and Injured persons
Dependent Variable: Injured Persons

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **LOGGPP** | -11.7268 | 4.212501 | (-2.7838) | 0.0054* |
| **C** | 185.6634 | 35.79701 | (5.18656) | 0.0000* |

Source: Authors' Calculation (Note) *t* statistics in brackets $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The estimation is carried out through pooled OLS. The relation between injured persons and GDP is estimated. GDP per capita is significant and shows a negative coefficient sign. It highlights that with increase in GDP per capita the injured persons rate minimized among both Muslim and non- Muslim countries.

#### 4.4.3. GDP Per Capita and Number of Attacks

In this model relation among number of attacks and GDP is evaluated. The results are given in the following table.

**Table 7.** GDP and Number of Attacks
Dependent Variable: Number of Attacks

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **LOGGPP** | -3.1627 | 1.010497 | (-3.1298) | 0.0018* |
| **C** | 57.4213 | 8.571505 | (6.6990) | 0.0000* |

Source: Author's Calculation (Note) *t* statistics in brackets $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The analysis is conceded through pooled OLS. The relation among number of attacks and GDP is estimated. GDP per capita is significant and showa s negative coefficient sign. It highlights that with increase in GDP per capita the number of attacks minimized among both Muslim and Non- Muslim countries.

## 5. Concluding Remarks

Terrorism has now become a burning issue for both Muslim and Non-Muslim countries. The brutalities of terrorism have been evaluated in this study. It is vivid that terrorism has now becomes the root cause of bloodshed among 130 Non-Muslim and 45 Muslim countries. Descriptive statistics evidently shows huge losses in the form of number of attacks, killings and injured persons. From 1980s to 2015, total terrorist attacks, killed persons and injured persons were 67518, 188775 and 272683 respectively in Muslim Countries. In the same way, in Non-Muslim countries, from 1980s to 2015, total terrorist attacks, killed persons and injured persons were 86914, 159386 and 167828 respectively.

Number of injuries and killings were comparatively higher in Muslim countries, whereas Non-Muslim countries had higher number of attacks, which means that Non-Muslim countries had better institutional arrangements to control injuries and killings. Correlation matrix was used for both Muslim and Non-Muslim countries. Correlation along with injured persons, killed persons and number of attacks elevated and was affirmative, while GDP per capita had a negative correlation with all other variables.

The findings highlighted that negative correlation of GDP per capita with all other variables concerning terrorism specified that economic performance played a significant role in decreasing terrorists' activities. Likewise, pooled ordinary least square approach found that the relation among killed persons, injured persons, GDP and number of attacks was significant. However, GDP per capita had a negative coefficient sign, which means that with increase in GDP per capita inome, the killing ratio declined. One percent increase in GDP per capita minimized 12.09 percent causalities among both Muslim and Non-Muslim countries.

The results are in accordance with the findings of different studies.[35] Besides this, with the increase of GDP per capita, the number of injured persons and number of attacks also diminished from 11.72 and 3.16 respectively. Thus, both Muslim and Non-Muslim countries need to focus on appropriate measures to reduce terrorist attacks. Governments should try to resolve this issue on top priority basis and protect human lives from the vicious objectives of terrorist organizations. One of the central findings of the study is that GDP per capita plays a significant role in terrorism, which means that terrorists' seditious activities can be curtailed with the increase of GDP per capita. With increase in GDP per capita, people can lead better lives and can improve their standard of living as well.

[35]Choi, "Economic Growth, Terrorism and Suicide," 157.

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