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Breaking Chains: Unraveling the Nexus of Poverty, Terrorism, and Economic Dynamics for a Resilient Future

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Abstract

For Pakistan, poverty is a persistent phenomenon as nearly 70% of the population is poor here. The four provinces of Pakistan; Sindh, Baluchistan, Khyber Pakhtunkhwa (KPK), and Punjab have diverse and unique characteristics. The purpose of the study is how poverty and economic inequalities are responsible for terrorism in different regions of Pakistan. Data was collected from four provinces of Pakistan, over the period 2001-2020. The data sources for the selected variables are the Planning & Development Commission of Pakistan, the labor force survey, and PSLM survey of the Federal Bureau of Statistics, and the Global terrorism database. The study employed the Cointegration analysis after checking the stationarity of the data. Finally, after determining the long-run relationship among the variables, we have used the between-group method of fully modified OLS (FMOLS). The overall findings reveal that any injuries, caused by terrorism incidents are not affected by multidimensional poverty (an index showing the deprivation of education, health, and housing). However, it is always considered that poverty and terrorism are closely interconnected. The findings from our study showed that poverty is not the reason behind terrorist activities. Our research findings indicate that the number of people killed, and injured through terrorist suicide attacks remains unaffected by the CPI. The overall impact of unemployment whether literate or illiterate harms injuries, killed by terrorist incidents. The research findings of our study also reflect the support of the population towards terrorist activities but this support starts diminishing with the participation of social protection. In Pakistan, the role of social protection policies seems negligible in controlling terrorist activities. In contrast, counteracting welfare policies increases the tendency of terrorism.

Keywords: Poverty, Terrorism, Pakistan, FMOLS

JEL classification: H50, H56, I32, Z3, Z32

Introduction

The term spatial poverty and inequality is defined as the inadequate quantities of goods and services depending on the area or location. The fact of poverty, inequality, and terrorism is a well-known reality as the hotbeds of terrorism are the poorest countries of the World. The term terror originated from “Terrere” which means “To frighten” in Latin. It was a concept when in 501 the warriors of the Cimbri tribe brought panic and a state of emergency in Rome. Pakistan is one of the developing countries and had many serious problems since its beginning after the separation from India. Pakistan has always been involved in economic, political, and geographical issues which gave birth to terrorism (Enders & Sandler, 2005). The roots of modern terrorism in Pakistan can be traced to the post-9/11 attacks when the US started a war against Talibanisation in Afghanistan. The phenomenon of poverty and inequality often refers to the income gap between the rich and poor in a society (Benabou, 1996). The persistent poverty and oppression can lead to hopelessness and despair and the individuals commit the act of terrorist

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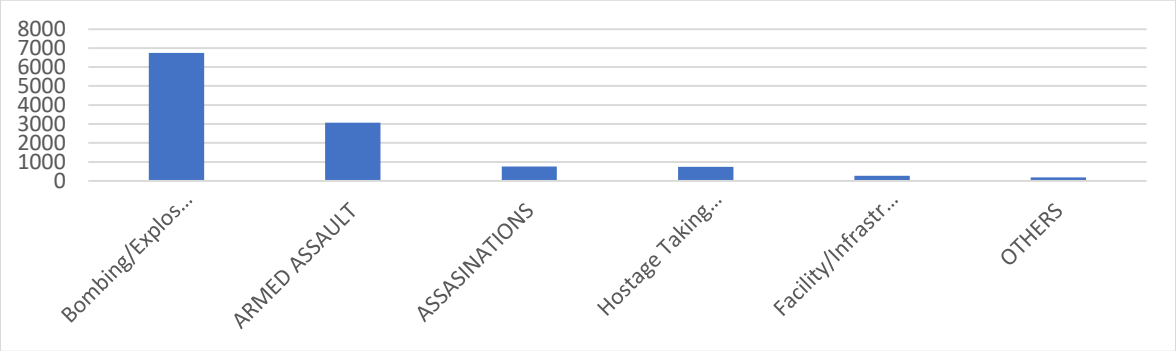
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activity against the ruling powerful class. For Pakistan, poverty is a persistent phenomenon as nearly 70% of the population is poor here (Cohen & Frazzini, 2008). The poor class lacks necessities such as primary health care, education, safe drinking water, and worse social services. The four provinces of Pakistan; Sindh, Baluchistan, Khyber Pakhtunkhwa (KPK), and Punjab have diverse and unique characteristics. Pakistan has a large number of Afghan refugees during the war against the US (Cohen & Frazzini, 2008). The notion of haves and haves-nots has inspired people to indulge in criminal activities. By the end of 2020, a total of 8,687 incidents of terrorism were recorded for the period 2001-2020, which was a mammoth 142% increase over the number of such incidents reported for the previous decade 1990-2001, which reported 3,590 incidents of anti-state violence. The one and half decade recorded a total of 11,738 fatalities and 28,061 injuries in these incidents. These incidents were primarily terrorist attacks, followed by bombings and armed assaults.

Figure 1: Attack Type No. Of Incidents in Pakistan (2001-2020)

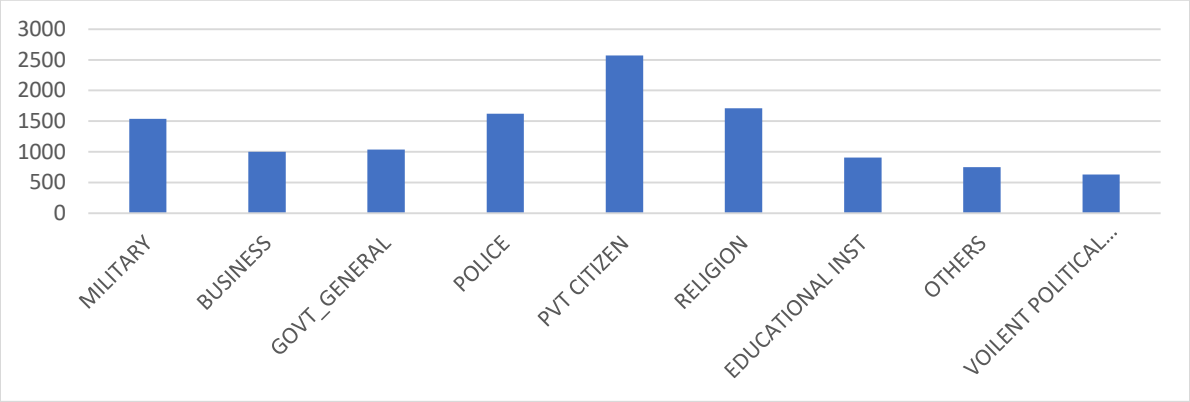


Source; Global Terrorism Index,

Since 2001, the physical and financial loss suffered by Pakistan has increased as it is playing a frontline state role by fighting the global war against terrorism. The economic situation and opportunities have been reduced for the people. According to a survey, the cost of terrorism for Pakistan in ten years (2001-2015) amounted to 34 billion dollars. The incidents of terrorism have brought a trade deficit of 20 billion US dollars and the portfolio of foreign debt has exaggerated to more than 50 billion US dollars. The target type of these terrorist attacks were mostly private citizens, military, government officials, and businesses. As we can see the highest target of terrorists is the private citizens, security forces (military and police), and religious.

Figure 2: Target Type no. of Incidents in Pakistan from 2001-2020

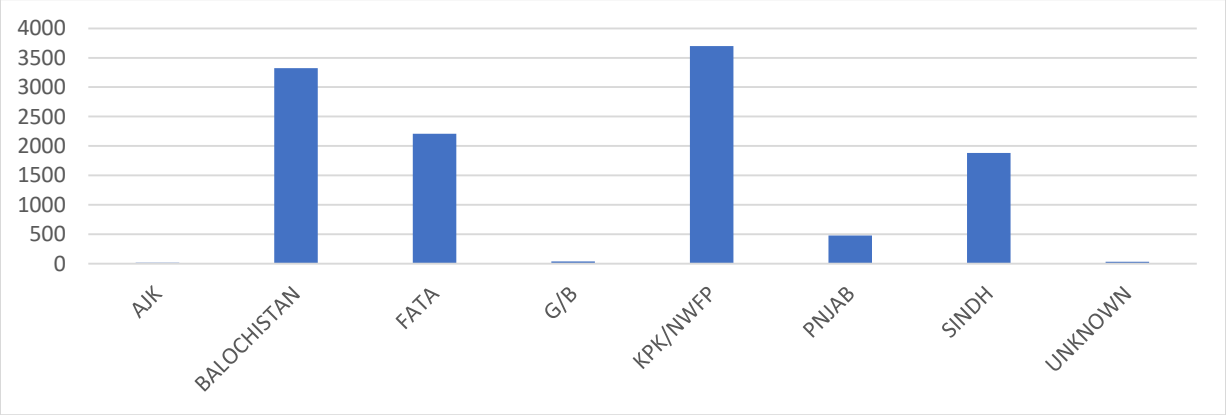
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Source; Global Terrorism Index

The per capita analysis for terrorist violence is different across the different provinces of Pakistan. Population Punjab has the largest whereas Baluchistan is the smallest province. The incidents of terrorism are highest in KPK, Baluchistan, and FATA. The following figures below show the fact that there are more incidents of terrorism, more injuries, and more killed people are there.

Figure 3: Province Wise No of Incidents in Pakistan from 2001-2016



Source; Global Terrorism Index

It is clear from the statistics that KPK and FATA have observed extensive situations of wildness and rebellions throughout the whole year of 20012. In KPK, there were 1,137 radical terrorist attacks. At least 1,438 persons were killed of which 1,005 were civilians and 435 were security forces personnel. The number of injured persons was 3,616 among them 2,777 were civilian and 828 were security persons. The districts of KPK like Peshawar, Kohat, Bannu Swat, Dir, and Charsada were the most affected areas. The motivation of terrorists includes ideology and money. If it is ideology-driven, then it is necessary to 'curb fundamentalism. But, if it is money based on fulfilling the needs of the family, then it has a mercenary nature. The rational treatment is to improve the economic conditions of those violent extremists (Muller & Seligson, 1987).

Economic conditions matter a lot in fighting the war against terrorism. It is believed that the countries having higher social welfare have fewer incidents of terrorism (Berman, 2000; Burgoon, 2006; Chen, 2003). There is plenty of literature that insists that welfare policies combat

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terrorism, poverty, and inequality. However, many studies in the literature did not agree with the fact that economic conditions matter in reducing terrorism (Chen, 2003). Terrorism activities in Pakistan are a serious ongoing threat inflicted many lives, crippled, and injured domestically. The objective of saving lives and injuries embarked on social protection strategies to stop the most vulnerable groups from indulging in terrorist activities. This study will try to explore whether poverty and economic deprivation affect suicide terrorism. And whether social welfare can be a policy tool to reduce terrorism in Pakistan. We focus on the multinational poverty index with terrorism incidents in the provinces of Pakistan. The social welfare has been measured by i) Middle-level enrolment rate (gross) for the age of 10 to 12, ii) Immunized children between the ages of 12 to 23 (%), iii) Households using the material for roof construction (%), iv) Household using a safe source of drinking water (%) and v) Households using fuel for cooking (%). By considering social welfare as a proxy of social protection, the study will explore its impact on terrorism while reducing poverty. Sketching the prevailing literature on the links between poverty and terrorism we have tried to link social welfare as a remedial measure to reduce terrorism in the study.

Pakistan's provinces differ in terms of the prevalence of poverty. In mountainous areas with few large urban centers and tiny, dispersed, and isolated settlements, poverty is prevalent and equally spread. Poverty is also more common in coastal regions and places with little rainfall. The multidimensional poverty is highest in Baluchistan and FATA whereas it is lowest in Punjab. Similarly, poverty in rural areas is higher than in urban centers of all four provinces. The KPP and FATA have evidence of the highest violence and revolts from 2001 to 2014. The geographic variation of poverty and development outcomes has sparked significant terrorist activities. The regional comparison between poverty and effective education as being root causes of terrorism is not clear and such explanations are incomplete. The relationship of poverty, economic inequalities, and terrorism in Pakistan has important policy implications.

Table 1: Multidimensional Poverty Index in Different Provinces of Pakistan

Province	MPI	Incidence (%)	Intensity (%)
Punjab	0.152	31.4	38.4
Sindh	0.231	43.1	53.5
KPK	0.25	49.2	50.7
Baluchistan	0.394	71.2	55.3
AJK	0.115	24.9	46.3
FATA	0.337	73.7	45.8
GB	0.209	43.2	48.3

Source: Pakistan Planning and Development Commission

Theoretical Literature

Many studies have engrossed the fundamental construction of the relationship between terrorism and poverty. However, the results of some studies are inconsistent with the fact that poverty causes terrorism. Yitzhaki (1982) revealed a straight link between inequality and

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terrorism by following the method of the theory of relative deprivation. This theory postulates that people assess their economic situation relative to other groups in society. Secondly, people mature their feelings of dissatisfaction and frustration when their economic position is associated negatively with representing a group (when they are relatively deprived). Third, this theory fixes their feelings more powerfully to participate in shared deeds. Ezcurra & Palacios (2016) studied the popular theory and estimated that poverty, non-equality, and poor economic development are the main causes of terrorism. This study considers the importance of poverty, unemployment, inflation, and economic growth as economic offerings.

One of the most important issues about terrorist attacks is whether terrorism has increased or not. It is a fateful day that in any medium-sized American city, the newspaper does not contain any information about the attack on any of the violence in the world. In major cities, news agencies and those who had to face events in foreign countries, get information on more than one instance of such violence. Ali (2007) studied that the majority of Ulema have considered the non-conventional and psychological war on the 9/11 case, however, it mainly describes terrorism related to religious, political, personal, and economic factors. It is the basis for doing and eliminating it. After the end of the Taliban government in 2001, these people returned home, but still large population remains in burden on Pakistan and the economy (Durand et al., 2013). The studies (Thorbecke & Charumilind, 2002) showed that unequal impression of resources negatively affects the level of education and health which aggravates the poor class to criminal activities. Developing countries are usually poor and unfair management agencies. It is not surprising that these countries get a big part of foreign aid for development projects but they are poor. Hussain (2010), studied that Pakistan has been facing the threat of terrorism since 1979 when the Soviets attacked the Afghans. Pakistan also has different linguistic, ethnic, political, and religious clatters which has increased terrorism activities in the country. Lee (2011) argued that terrorism is related to poverty, either between countries or people. This moral perspective has to take advantage of at least social sciences because studies at most individual levels of terrorism have concluded that these groups consist of people who are better educated and better educated by the average member of society. Malik & Zaman (2013) concluded that macroeconomic factors like population development, cost of living, poverty, and political instability cause terrorist incidents to flourish in Pakistan. However, inequality, unemployment, and trade openness have not had a long connection with terrorist incidents in Pakistan. The impact of poverty in Pakistan is a relatively small part of the causes of terrorism.

Empirical literature linking Poverty & Terrorism

Intuitively, some studies have certified that terrorist activities are more likely related to poverty and inequality. Such as Berrebi & Ostwald, (2016) predicted poverty, inequality, and delinquency are the major determinants of crime and terrorism in Nigerian provinces. Krueger & Malečková (2002) in their book “What makes terrorists” concludes that poverty and education have little evidence with terrorism. Overall, only 2% of all terrorist attacks from 2000 to 2006 have been against the citizens of least developed countries. Crenshaw & LaFree (2017) studied that the fatalities of terrorist attacks have little fundamental value to the terrorist cluster but represent a larger human audience whose reaction is to be found. The study ignored the other forms of violence such as spontaneity, mass involvement, and physical destruction. She concluded that that these are often the children of a social elite, who first change the terrorists, social hopes hope to encourage a less discreet class to approve extremist changes. Many jihadist

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organizations are from Middle East classists, often engineers. Al-Qaeda leader Amin al-Zawahiri is a medical doctor. Abu Bakr al-Baghdadi is allegedly a doctor in Islamic studies.

Ezcurra & Palacios (2016) are of the view that interregional poverty and inequality are responsible for increasing the incidents of domestic terrorism. These studies found a positive relationship between poverty, inequality, and military expenditures. Akhmat et al., (2014); and Piazza, (2006) found that unemployment, population, cost of inflation, extreme poverty, unequal distribution of resources, and political uncertainty exhibit a positive association with the terrorism incidence in South Asia. Piazza (2008) found that minorities with discrimination and terrorism have a positive relationship. In the empirical studies of Graff (2010) and Bengal, Lee's (2011) conclusion exhibits that extremist ideology and groups are nourished in the lower middle class. These studies proposed that the poor and weak states are vulnerable to terrorism actions. Estrada et al. (2015) examined a panel of 48 countries for the relationship between illegal inequality and domestic terrorism. The author felt that extraordinary poverty and inequality are responsible for increasing the incidence of internal terrorism. This search is strong enough to include additional advertising variable variables that may be related to individual non-equality and terrorist activities, such as GDP per person, unfair non-equality, population size, financial and political Degree of morality, or business openness. Caruso & Schneider, (2011); Freytag et al. (2011) found that income inequality is a significant predictor of political violence.

Literature linking Poverty and Social Protection with Terrorism

In a study conducted by Burgoon (2006), it was discovered that a nation's welfare initiatives are associated with a detrimental impact on transnational or overall terrorism events. Welfare initiatives effectively decrease the occurrence of transnational terrorism in nations, as shown by many estimators and controls. The results also indicate that enhancing social policies domestically and internationally may not only contribute to the redistribution of resources or the advancement of development objectives but also aid in the prevention of violent terrorist acts. Freytag et al. (2011) quantified socio-economic development by measuring the potential benefits that were forgone due to terrorism. In contrast to the prevailing empirical consensus, this research used negative binomial regression analysis on data from 110 nations spanning the years 1971 to 2007. The study's findings indicate that terrorism may be attributed to the low socio-economic development of a nation. Rice et al. (2010) examined the connection between terrorism, life satisfaction, and economic growth. The study has employed the OECD and some non-OECD countries from 2006 to 2011. The study specified the fact that terrorism reduces life satisfaction but it does not affect real economic growth. Also, the social cost of terrorism is higher than the economic cost of terrorism in the sample economies.

The literature with no relationship between poverty and terrorism relies on cross-country analysis in consideration of macroeconomic conditions at the country level. The underlying assumption in such analysis is that variations in a country's economic situation have a uniform impact on the level of terrorism generated by that country. Nevertheless, it is not practically possible to regulate social, cultural, or psychological sensitivity to economic circumstances within the scope of a multivariate regression analysis. So, in this scenario, it is difficult to classify economic activities and terrorism activities across the countries. Because of such concerns, this study will try to complete the analysis of poverty, inequality, and terrorism activities for the different regions within Pakistan. The regional inequality in Pakistan does not enable us to make a definitive judgment about its connection with terrorism. The phenomenon of poverty and inequality is not confined only to the income gap among individuals, families and

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groups in a society. Various forms of inequality and their link to terrorism will be discussed in this paper. A priority, however, has been given to 'economic and income inequality.

Model

We have employed the case of Pakistan to check the impact of poverty and social protection policies on terrorism. For that a set of panel data has been used over the time period 2001 to 2016 for the four provinces of Pakistan. The desired econometric model is as follows;

$$\boldsymbol{T_{it} = \alpha + \beta GINI_{it} + \gamma SP_{it+}\delta X_{it} + \tau_t + \varepsilon_{it}}$$

Where T is the bomb blasts, major incidents of terrorism or suicide attacks in region i over time t, $GINI$ is the inter-regional inequality, SP is the social protection indicators and X is the set of control variables, influencing terrorism domestically. The common attacks to all regions, $\boldsymbol{\tau}$ also control the time-specific effects.

Stationarity of the Data

Given that we are using the yearly data set for the provinces of Pakistan for the years 2001 through 2020. The stationarity of the data is a crucial quality of lengthy panel data that must be verified to conduct the Cointegration analysis over the appropriate equations indicated above. Ordinary least square (OLS) analysis is appropriate if the data are stationary or if there is no unit root; if not, the least square approach produces erroneous regression findings (Granger & Newbold, 1974). We use two crucial unit-root tests, namely In, Pesaran, and Shin (IPS), to carry out such an examination.

IPS Panel Unit Root

In, based on the average of the individual unit-root test statistics, Pesaran and Shin provided a fundamental testing process as well as a test for the heterogeneous coefficient of the lagged variable. Different parameters for the parametric values, residual variance, and lag durations are allowed by the IPS test, which offers distinct estimates for each cross-section. Model is provided by:

$$\Delta y_{i,t} = \alpha_i + \rho_i y_{i,t-1} + \sum_{k=1}^{n} \phi_k \Delta y_{i,t-k} + \delta_i t + \theta_t + u_{i,t}$$

With null and alternative hypotheses as:

$H_0 : \rho_i = 0$ For all i

$H_1 : \rho < 0$ For at least one i

Where null hypothesis states that all series are non-stationary under the alternative that a fraction of the series in the panel to be stationary.

Panel Co-Integration Tests

Two types of co-integrating tests are found in previous studies; one is the residual based test and other is the maximum likelihood-based test. The researcher put forward the residual-based tests for the null hypothesis of no co-integration and also for the hypothesis of co-integration. The center of focus behind test is to verify the presence of unit root in the residual of co-integrating regression. The existence of unit root in the residual of the regression equation means no co-integration between the elements of the model. On the other hand, it is evidence of co-integration if the residuals of the regression show unit root. Although these tests are only applied to check for the single co-integrating relation between the regressed and regressors it could not talk about the number of co-integrating relations if the variables are more than one. The second test is usually called a maximum likelihood-based test, as it is generally the

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customized type of the multi-variables co-integrating tests of Johansen to panel data. The main benefit of this test over the residual-based test is that by using this test we can conclude about the number of co-integrating associations among the variables of the model. Furthermore, these methods are free from the selection of those variables which are important to normalize the co-integrating vector.

Pedroni Test

Pedron introduced many tests for checking the co-integration in the panel data, which permit a substantial heterogeneity. The Pedroni test is different from the other tests of co-integration for panel data as in supposing the movements of the cross sections, in taking the null hypothesis of no co-integration. The advantage of the Pedroni test is that it allows for the multiple variables, the co-integrating vector, and the heterogeneity could differ in the panel across the cross-sectional units.

The general form of the Pedroni test is as follows;

$$y_{it} = a_i + \delta_t + \sum_{m=1}^{M} \beta_{it}\, X_{mit} + U_{it}$$

Pedroni introduced eleven co-integration tests for capturing the within" and "between" effects of the panel. He classified these tests into two sections, the first section consists of four "within" dimension tests for example, v-statistics, ρ-statistics, non-parametric t-statistics, and parametric t-statistics. The value of the result can be obtained by adding up the numerator and denominator for the N cross section individually.

Panel v-statistics:

$$T^2 N^{3/2} Z_{\hat{v}_{NT}} = \frac{T^2 N^{3/2}}{\left(\sum_{i=1}^{N}\sum_{t=1}^{T} L_{11i}^{-2}\, \hat{u}_{it}^2\right)}$$

Panel ρ-statistics:

$$T\sqrt{N}\hat{\rho}NT = \frac{T\sqrt{N}\left(\sum_{i=1}^{N}\sum_{t=1}^{T} \hat{L}_{11i}^{-2}\left(\hat{u}_{it-1}^2 - \Delta\hat{u}_{it}^2 - \hat{\lambda}_i\right)\right)}{\left(\sum_{i=1}^{N}\sum_{t=1}^{T} L_{11i}^{-2}\, \hat{u}_{it}^2\right)}$$

Panel t-statics (non-parametric):

$$Z_{tNT} = \sqrt{\tilde{\sigma}_{NT}^{2} \sum_{i=1}^{N}\sum_{t=1}^{T} \hat{L}_{11i}^{-2}\, \hat{u}_{it-1}^{2}} \left(\sum_{i=1}^{N}\sum_{t=1}^{T} \hat{L}_{11i}^{-2}\left(\hat{u}_{it-1}^{2}\Delta\hat{u}_{it}^{2} - \hat{\lambda}_i\right)\right)$$

Panel t-statics (parametric):

$$Z_{tNT} = \sqrt{\tilde{\sigma}_{NT}^{*2} \sum_{i=1}^{N}\sum_{t=1}^{T} \hat{L}_{11i}^{-2}\, \hat{u}_{it-1}^{*2}} \left(\sum_{i=1}^{N}\sum_{t=1}^{T} \hat{L}_{11i}^{-2}\left(\hat{u}_{it-1}^{*2}\Delta\hat{u}_{it}^{*2} - \hat{\lambda}_i\right)\right)$$

The second section has three "between" dimension tests as parametric ρ-statistics, non-parametric t-statistics, and parametric t-statistics, for these tests the results can be computed by dividing the numerator by denominator sooner than adding the N cross sections.

The group ρ-statistics (parametric):

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$$T\sqrt{N}\,\overline{Z}\;\;\overline{\rho}\,NT = T\sqrt{N}\,\frac{\sum_{t=1}^{T}\left(\hat{u}_{it-1}^{2}\Delta\hat{u}_{it}^{2} - \hat{\lambda}_{i}\right)}{\sum_{i=1}^{N}(\sum_{t=1}^{T}\hat{u}_{it-1}^{2})}$$

The group *t*-statistics (non-parametric):

$$\sqrt{N}\,\overline{Z}_{tNT-1} = \sqrt{N}\sum_{i=1}^{N}\left(\sqrt{\tilde{\sigma}_{i}^{2}\sum_{t=1}^{T}\hat{u}_{it-1}^{2}}\right)\sum_{t=1}^{T}\left(\hat{u}_{it-1}^{2}\Delta\hat{u}_{it}^{2} - \hat{\lambda}_{i}\right)$$

The group *t*-statistics (parametric):

$$\sqrt{N}\,\overline{Z}_{tNT-1}^{*} = \sqrt{N}\sum_{i=1}^{N}\left(\sqrt{\tilde{S}_{i}^{*2}\sum_{t=1}^{T}\hat{u}_{it-1}^{*2}}\right)\sum_{t=1}^{T}\left(\hat{u}_{it-1}^{*2}\Delta\hat{u}_{it}^{*2}\right)$$

Data Description

Unemployment Rate

Unemployment rate is the unemployed population expressed as a percentage of the labor force. It is comprised of all persons who are ten years of age and above who during the orientation period were: literate and illiterate. The data source of unemployment rate for literate and illiterate persons is labor force survey of Pakistan.

Female Participation Rate

Female labor force participation rate is the percentage proportion of total population. It is the ratio of unemployed and employed persons to total population of ten years and old. The female labor force participation across the provinces of Pakistan has been taken from the labor force surveys, federal Bureau of statistics.

Consumer Price Index

Inflation rate is measured as annual percent change of average consumer price index. Data for inflation are averages for the year and index is based on 2000=100. The consumer price index across the provinces of Pakistan has been taken from the federal bureau of statistics.

Multidimensional Poverty Index

Poverty is the condition where the basic need of the people is not fulfilled like the shelter, food, clothing, health and education. The multi-dimensional Poverty Index has been used as a proxy of poverty in Pakistan which captures the stark deprivation of education health and living standards. The data source for the poverty measure is Pakistan Planning and Development Commission.

Social Welfare Index

A composite index of social welfare has been constructed by using the following indicators from PSLM Surveys for different years across the four provinces of Pakistan.

i) Middle level enrolment arte (gross) for the age of 10 to 12
ii) Immunized children between the ages of 12to23 (%)
iii) Households using material for roof construction (%)
iv) Household using safe source of drinking water (%)
v) Households using fuel for cooking (%)

We have used the principal component methodology to construct the social protection index.

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Incidents of Terrorism

Variables	At Level			1ST Difference		
	Individual Intercept	Individual Intercept and trend	None	Individual Intercept	Individual Intercept and trend	None
	Prob.-value	Prob.-value	Prob.-value	Prob.-value	Prob.-value	Prob.-value
INC	0.00	0.02	0.00	-	-	-
INJ	0.00	0.07	0.00	-	-	-
KLL	0.05	0.35	0.00	-	-	-
MPI	0.01	0.57	0.13	-	-	-
LF	1.00	0.02	1.00	-	-	-*
CPI	1.00	0.383	1.00	0.00	0.00	0.05
FLP	0.01	0.14	0.98	-	-	-
UM1	0.11	0.00	0.89	-	-	-

Terrorism is the deliberate use or the act of threatening to use violence by individuals or sub-national organizations in order to achieve a political or social goal via instilling fear in a wide audience, extending beyond the immediate target (Enders & Sandler, 2005).

Injuries of Terrorism

The number of injuries has been estimated from the global terrorism database by filtering the number of confirmed non-fatal injuries.

Fatalities of Terrorism

The number of fatalities during the incidents of terrorism follows the conventions of the "Total Number of Injuries" described above.

Empirical Investigation and Discussion of the Results

Table 2: Unit test result

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UM2	0.00	0.00	0.00	-	-	-
POP	0.99	0.01	1.00	0.00	0.00	0.14
SPI	0.51	0.88	0.02	0.34	0.39	0.05

Source: Author's own calculations

The unit root test performed through Levin, Lin and Chu (2002), as it narrates the selection of bandwidth. The LLC have computed for individual fixed effects as regressors. Automatic selection has been adopted for lag difference term and Bandwidth selection by using Schwarz criterion and Newey –West method and Bartlett kernel respectively. The results show that variables are stationary at level; I (0). Only the CPI variables are stationary at first difference; I (1). In case of cyclical components variables are stationary by default at level; I (0), for all HP and Band pass filtered data.

Co-integration Test

After determining the stationarity I (0), of all the included variables, the study further verify the existence of the long run relationship between the selected variables through Johansen co-integration approach. Which postulates that "that is there is at least one linear combination of the Variables that is I (0)". In Johansen co-integration approach the Padroni methodology used to explore the long run relationship. This methodology was first developed by Padroni itself, our study used to find out the stability in spatial poverty and social protection in the presence of terrorist violence in Pakistan. The results of the Padroni co-integration test in table below.

Through the value of ρ-statistics and v-statistics the existence of strong long-term relationship determines. The Pedroni tests are all one sided except v statistic which have a critical value of -1.64. This shows that if the statistical value of these statistics, is greater than -1.64, we will reject the null hypothesis of no co-integration. Whereas the v-statistics has a critical value of 1.64; so, if v statistics is greater than 1.64 then we reject null of no co integration (Lee, 2011). For the panel of 4 grouped of provinces of Pakistan, the estimated standardized ρ-statistics and v-statistics provide strong evidence that there exists a strong long run relationship between the series of consideration.

Table 3: Padroni Co-Integration

H_1: common AR Coeff (within-dimension)		
	Statistic	**prob**
P v-test	3.308	0.0005
P rho-test	2.822	0.997
P PP-test	-4.788	0.000
P ADF-test	-1.404	0.080
H_1: individual AR coeff (between-dimension)		
	Statistic	**Prob**
Group rho-test	-6.229	0.00
Group ADF-test	-1.704	0.04
Group PP-test	-6.66	0.00
ADF	-2.987	0.001

Source: Author's own calculations

Fully Modified Ordinary Least Squares Method (FMOLS)

The study employed the FMOLS technique to determine the long run relationship between the spatial poverty, social protection and terrorist violence in Pakistan. The FMOLS

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technique has an edge over the EG techniques. It produces the correct results which overcome the issue of inference. Even, it produces the valid t-test for long-run estimates. In our research findings the ADF and Johansen co-integration test supported the presence of long-run equilibrium relationships among the selected variables of the model. So, the next step is to measure the long run elasticities using FMOLS method. Tables 5.8 to 5.10 reports the estimating results from FMOLS analysis.

Table 4: Panel Fully Modified Least Squares (FMOLS) Dependent variable: INC

Variable	Coeff./p-value	Coeff/p-value
MPI	-0.03***	-0.02***
	0.00	0.00
CPI	-9.46E-06	-0.00***
	0.95	0.01
FLP	1.99***	2.29***
	0.00	0.00
UM1	0.09*	0.212***
	0.07	0.00
UM2	-0.69***	-0.73***
	0.00	0.00
POP	1.35***	-2.41***
	0.00	0.02
SPI		2.76***
		0.00
Adjusted R-squared	0.38	0.47

Source: Author's own calculations

The empirical findings show the presence of Cointegration between multidimensional poverty and number of incidents of suicide attempt. The poverty has negative significant impact on incidents. This effect seems consistence under the effect of social protection index (SPI). The number of terrorism's incident is elucidated -2% to -3 % by poverty index. The CPI has negative insignificant impact on suicide but with the social protection index the effect of CPI become significant but remain negative. The CPI explained terrorism by 0%. Female labor participation has positive and statistically significant impact on terrorist incident with or without the effect of SPI. The role FLP to elucidated terrorism from 199% to 229%. The -terrorist incidents positively enhance among unemployed literate people as compared to unemployed illiterate. The terrorist attack explained by unemployment literate with minimal ranges 9% to 21%, whereas it is elucidated by -7% to -7.3% through unemployment illiterate. The population effect on suicide terrorist attack has positive significant and this effect become negative with the indulgence of SPI. The range of population effect on terrorism varies from 135% to -24%. The social protection index itself have high positive impact (276%) on terrorist's incidents. Which reflect the existence of social protection societies are not playing their imminent role to combat suicide attack through terrorism.

Table 5: Panel Fully Modified Least Squares (FMOLS) Dependent variable: INJ

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Variable	Coeff. /p-value	Coeff/p-value
MPI	-0.8793***	-0.76***
	0.00	0.00
CPI	-0.00	0.00
	0.30	0.312
FLP	73.54***	80.93***
	0.00	0.00
UM1	-4.21*	-0.40
	0.05	0.85
UM2	-21.43***	-23.35***
	0.00	0.00
POP	97.98***	-1.34
	0.00	0.80
SPI		45.87***
		0.00
Adjusted R-squared	0.45	0.44

Source: Author's own calculations

The FMOLS results reveals a significant negative effect of multidimensional poverty index variable (MPI) on injuries happened in terrorist suicide attacks. It means 1 % increase in MPI cause a 76% reduction in injuries of terrorist attack. Under the social protection (SPI) effect the result of MPI with INJ become identical. The effect of CPI become negative insignificant with or without the effect of SPI on injuries. It only explained the injuries due to terrorism activities by 0%. It has been observed that female labor participation has positive and statistically significant impact on injuries without or under the effect of SPI. It highly explained the injuries occurred through suicide becoming attack ranges 75% to 80%. The role of unemployed literate become negative insignificant on the injuries and only explained its effect ranges -42% to -40%. Even the illiterate unemployment has negative but high significant impact from -214% to -233%. The population effect on injuries from suicide terrorist attack has positive significant (135%) and this effect become negative insignificant (-241%) with the indulgence of SPI. The social protection index has positive impact on injuries due to terrorism. The number of people who get injured in terrorism are not get protection from any social welfare foundation.

Table 6: Panel Fully Modified Least Squares (FMOLS) Dependent variable: KLL

Variable	Coeff. /p-value	Coeff/p-value
MPI	-0.45**	-0.76***
	0.00	0.00
CPI	-0.00	0.00
	0.68	0.24
UMI	34.99**	41.82***
	0.00	0.00
UM2	-10.85***	-28.10***
	0.00	0.00

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POP	20.34***	-9.63***
	0.00	0.00
SPI		17.02***
		0.00
Adjusted R-Squared	0.38	0.30

Source: Author's own calculations

The FMOLS results depicts a significant negative effect of multidimensional poverty index variable (MPI) on number of killed in terrorist suicide attacks. The effect of MPI remain consistent with the effect of SPI. The MPL effect explained the number of people killed in terrorist attack is -45% to -76%. The effect of CPI is negative insignificant on number of people killed. But under the effect of SPI, the effect of CPI become positive and it explained the KLL with a low coefficient (0%). It has been observed that female labor participation has positive and statistically significant impact on people killed in suicide attack. This result remains consistent under the effect of SPI. FLP elucidated the number of people killed in terrorist attack by 349% to 418%. The role of unemployed literate become negative insignificant on the killed by terrorist attacks ranges from -1% to -11%. Even the illiterate unemployment has negative but significant impact on number of people killed in suicide attacks (-108% to -281%). The population effect on killed from suicide terrorist attack has positive significant and this effect become negative insignificant with the indulgence of SPI (203% to -96.3%). The social protection index has positive impact which reflect that the existence of social protection institute may combat terrorist activities up to certain level but can't control the ratio of killing people through suicide bombing.

The overall findings reveal that any injuries, killed through terrorism's incident are not affected by the multidimensional poverty (an index show the deprivation of education, health and housing). It means people are who living in poverty are not moving towards terrorist activities. However, it is always considered that poverty and terrorism are closely interconnected (Crenshaw & LaFree, 2017). The Poverty can be the reason of social economic issues. It destroys the system of the society, and the people form middle-class easily convince to join the terrorist groups. The findings from our study showed that poverty is not the reason behind the terrorist activities (Malik & Zaman, 2013).The inflation symbolizes the average annual change in consumer price index (CPI). Whereas on other side it is considered as "changes in purchasing power of individuals which can affect the standard of living". Our research findings indicate that the number of people killed, injured through terrorist' suicide attack remain unaffected by the CPI (Caruso & Schneider, 2011). The study findings deviate from other research work (Estrada et al., 2015).

Unemployment is also usually considered as a proxy for a "broader social welfare". The more of unemployment rate assumed the lessor of social welfare. Or we can say more of the individual's f unemployed higher the chances to get involved in terrorist's attack. Many of the previous researches explores the leading role of unemployment appears to enhance the participation of violence activities (Durand et al., 2013). The overall impact of unemployment whether literate or illiterate have negative impact on injuries, killed by terrorist incident (Caruso & Schneider, 2011). The participation of female in the labor force can be driver of terrorism, as it creates gender conflicts and motivate the opponent gender to deviate in the labor force. Studies found that the reduction in female labor force participation may cause the enhancement of terrorist attacks and ultimately build a gap in labor force participation among male and female

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(Berrebi & Ostwald, 2016). In our study the positive effect of FLP reflect that the women participation increased in labor supply is only the way to compensate the loss arise from male income. To replace the “missing men" the demand for female labour input increased (Ali, 2007). The research findings of our study reflect the support of population towards terrorist activities but this support start diminishes with the participation of social protection. As we have seen in our results that the economic conditions (inflation, unemployment, poverty and labor) have no material importance for terrorism so it means economic policies are basically unrelated to combat terrorism. The social welfare policies in any country expected to lessen the economic issues along with, it preferences to diminish terrorism (Burgoon, 2006).

Conclusion and Recommendations

The objective of the study is to estimate the long-run relationship between spatial poverty, social protection and terrorism incidence in Pakistan. The study further explores the influencing of this mentioned relationship among the four provinces of Pakistan over a period of 2001-2015. The data is analyzed through unit root test, Johannsen Cointegration test and fully modified ordinary least squares method (FMOLS). The econometric findings depict that all the socioeconomic effects (poverty, inflation, population growth, unemployment) are not the main cause of terrorism. The people are who living in poverty are not moving towards terrorist activities even through poverty and terrorism are closely interconnected. In our study social welfare are not playing a dominant role to lessen the unemployment rate. The overall impact of unemployment whether literate or illiterate have negative impact on injuries, killed by terrorist incident. The participation of female in the labor force can be driver of terrorism, as it creates gender conflicts and motivate the opponent gender to deviate in the labor force. Studies found that the reduction in female labor force participation may cause the enhancement of terrorist attacks and ultimately build a gap in labor force participation among male and female. The research findings of our study reflect the support of population towards terrorist activities but this support start diminishes with the participation of social protection. In Pakistan, the role of social protection policies seems negligible to controlling the terrorist activities. In contrast, the counteracting welfare's policies increases the tendency of terrorism. It is considered that strong economy is an influential antidote to terrorism. In Pakistan, military and civilian intelligence must have showed their effort to eradicate the terrorism. They also make an effective poverty programs and neutral justice system that will promote social justice. With this the social grievances of Pakistanis can mitigate, who can be engage for terrorist groups.

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Appendix

Abbreviations

IEP	**Institute of Economics and Peace**
GTD	Global Terrorism Database
KPK	Khyber Pakhtunkhwa
US	United States
SPI	Social Protection Index
FDI	Foreign Direct Investment
FEM	Fixed Effect Method
MPI	Multidimensional Poverty Index
AJK	Gross National Income
FATA	Gross National Product
CH	Collier and Hoffler
SWI	Social Welfare Index
IPS	Im, Pesaran and Shin
LLC	Levin, Lin & Chu
UR	Unemployment Rate
FPR	Female Participation Rate
OLS	Ordinary Least Square
REM	Random Effect Method
FEM	Fixed Effect Method
CPI	Consumer Price Index
VAR	Vector Autoregressive
VECM	Vector Error Correction Mechanism
FMOLS	Fully Modified Ordinary Least Square
PSLM	Pakistan Social & Living Standards
LFS	Labor Force Survey