



Simultaneous Equations Modeling for Terrorism, Poverty, and Economic Growth: Evidence from Pakistan

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ABSTRACT

Terrorism is one of the biggest threats for the developed and developing countries that required unified policies to combat with this evil, however, before devising any sustained policies, it is imperative to look for country's socio-economic issues that may restrain this effort in vein. This study examines the relationship between terrorism incidence, poverty issues and economic growth in the context of Pakistan by using the time period of 1980-2015, in order to propose an integrated economic framework for long-term sustained growth. The study used time series cointegration techniques, including, unit root, cointegration, robust least square regression, granger causality and impulse response function for robust inferences. The results show that unemployment and population growth both decreases country's economic growth that put a strain on country's sustained efforts for long-term growth. The improvement in the education status of the residents substantially decline the poverty, however, it does not translated in to labor market, where unemployment increases poverty in country. Although, the study results do not show the positive association between unemployment and terrorism incidence in a country, however, it is evident from the results that there is a positive association between education and number of attacks in a country, which support the Krueger and Maleckova's demand side theory of terrorism. Krueger and Maleckova's terrorism demand theory provoked that educated individuals are more preferable to the terrorist organizations due to have a better skills to plan the terrorist activities. The study concludes that Pakistan government should have to provide better education and employment opportunities to reduce the unwanted thoughts of terrorism activities in a country.

Keywords: Terrorism Incidence, Poverty, Unemployment, Economic Growth, Pakistan

JEL Classifications: C32, I31

1. INTRODUCTION

Terrorism has become a major problem for world's peace and security. There is a need of collaboration at national and international level to reduce the terror threats (UNODC, 2017). Terrorism negatively affected economic growth, as government diverts its attention from more productive expenditures to less productive expenditures and spend largely on defense and law and order. Terrorism detracts foreign direct investment (FDI) inflows, which affect largely country's business sector and infrastructure (Shahbaz et al., 2013).

Poverty and income inequality severally affected the country's economic resources. The countries that have an unequal distribution of income shows less growth rate as compared to the countries which have an equitable income distribution.

Poverty and economic growth jointly connected with each other (United Nations New York, 2009). There is high level of poverty in Sub-Saharan African countries. The numbers of poor were 389 million in 2016. The estimates show that peoples is less educated, occupied in rural areas and dependent upon agricultural products, which become less opportunity to acquire economic resources (World Bank, 2016).

According to Global Terrorism Index (2015), Iraq ranks 1st, Afghanistan ranks 2nd, Nigeria ranks 3rd, Pakistan ranks 4th in terrorism incidence. In 2014, ten countries were greatly affected by terrorism. There were 30.4% deaths in Iraq, 23% in Nigeria, 13.8% in Afghanistan, 5.4% in Pakistan, 5.2% in Syria, 2.5% in Somalia, 2% in Ukraine, 2% in Yemen, 1.8% in Central African Republic, 1.7% in South Sudan, and 12.3% rest of the world. Terrorism has negative impact on economic performance of the country but it

varies from country to country. The adverse effects of terrorism are very small on high income countries but very high in low income countries. The reason is that the rich countries can use their resources to combat terrorism but low-income countries are poor and they have no institutions able to respond the adverse effects of terrorism.

After 9/11 terrorist attacks on the U.S, war against terrorists had started in Afghanistan. This activity negatively affected Pakistan’s economy. After, the war against terrorism, number of Afghan refugees entered in Pakistan; as a result there was an increase in terrorist attacks in a country (Economic Survey of Pakistan, 2015-16). Figure 1 shows poverty estimates of different regions of the world.

In 2015, Government has been made Rs. 963.4 billion expenditures on 17 pro poor sectors of the economy of Pakistan. In 2016, Rs. 1123 billion were spent on different sectors to improve their efficiency. Pakistan has faced cost of US\$ 118.31 billion due to terrorism activities from 2002 to 2016. Figure 2 shows the estimate of cost due to terrorism from 2002 to 2016 in Pakistan (Economic Survey of Pakistan, 2015-16).

The following are the objectives of the study, i.e.,

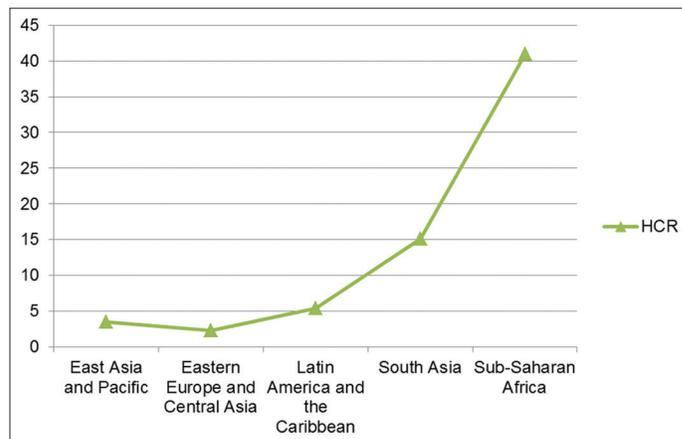
1. To examine the impact of macroeconomic factors on terrorism in Pakistan.
2. To examine the impact of terrorism incidence on Pakistan’s economic growth, and
3. To examine the impact of macroeconomic factors on poverty.

These objectives are substantially been achieved by sound economic policies and pro-poor growth strategies that helpful to reduce terrorism incidence in a country.

2. LITERATURE REVIEW

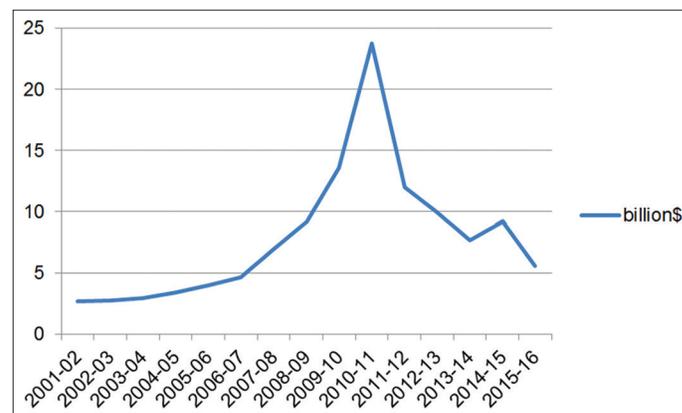
Literature on terrorism, poverty and economic growth is widely discussed in development economics, which provoked for strategic moves in order to reduce terrorism incidence and find out the root cause that flair the terrorism intensity in a country. Enders and Hoover (2012) investigated the nonlinear relationship between terrorism and global poverty. The results showed that domestic terrorism is strongly affected by poverty, though it has a little effect on transnational terrorism. The study concludes that the incidence of terrorism increases when the gap between rich and poor income increases, hence it is a dire need to redistribute income in a judicious way that would helpful to reduce income inequality in a country. Krueger and Malečková (2003) explored the causal relationship among education, poverty and terrorism in the context of Lebanon, Palestine and Israel. The results rejected the orthodox myth about poverty and confirmed that there has no direct causation with the incidence of terrorism across countries. Gaibullov and Sandler (2011) examined the adverse effect of transnational and domestic terrorism on growth in the context of 51 African countries for the period of 1970-2007. The results showed that income per capita has a direct relationship with the domestic terrorism, while it has an indirect relationship with the transnational terrorism. Meierrieks and Gries (2013) investigated the causal relationship between terrorism and economic growth taking data from 160 countries for the time

Figure 1: Estimates of regional poverty in 2013



Source: World Bank (2016)

Figure 2: Estimated cost due to terrorism in Pakistan (2002-2016)



Source: Economic survey of Pakistan (2015-16)

period 1970-2007. They found that there were political instability and variations in growth of Latin American countries, so there was high level of terrorism in these countries. Blomberg et al. (2004) examined the macroeconomic consequences of terrorism in the context of 177 countries for the time period 1968-2000. They found that terrorism has negative effect on economic growth; however, the intensity of terrorism on economic growth is significantly lower in developed countries as compared to developing countries. The study concluded that there is a need of effective policy measures to reduce the risk of terrorism across countries.

Gries et al. (2011) investigated the causal relationship between economic growth and domestic terrorism for seven western European countries. The results argued that economic performance of the country strongly influences the domestic terrorism; hence there is a need of effective policies that increase the market efficiency and improve economic performance to reduce terrorism. Younas (2014) argued that whether globalization reduces the negative impact of terrorism on growth or it is true inversely. The study is taken a data from 120 developing countries for the period of 1976-2008 and found that international openness reduces the negative effects of terrorism on economic growth. The study concluded that impacts of terrorism on growth vary from country to country. Shahbaz et al. (2013) examined the causality relationship between

terrorism and economic growth in the context of Pakistan for the time period of 1973 to 2010. The study found that there is a causal relationship between terrorism and economic growth, as terrorism Granger cause to economic growth but not vice versa. Araz-Takay et al. (2009) examined the nonlinear relationship between terrorism and economic performance of Turkey from 1987 to 2004. The results confirmed that terrorism negatively affected the economic performance of Turkey. Ismail and Amjad (2014) examined the relationship between terrorism incidence and economic indicators such as gross domestic product (GDP) per capita, inflation and unemployment in Pakistan and also investigated the direction of causality between the variables. The results show that there is a two way relationship between terrorism and inflation, which shows the mutual interdependence between the two variables. There is a one way relationship between terrorism and economic growth, and between economic growth and unemployment in a country. Goldstein (2005) investigated the relationship between unemployment, inequality and terrorism in a panel of 105 countries and confirmed the strong association between unemployment and terrorism, while this relationship is disappeared in case of economic growth and terrorism, which does not show significant association between them. The results conclude that level of terrorism will decrease if income inequality reduces. Barros et al. (2008) investigated the terrorism against the United States in Africa during the time period 1978-2002. The findings showed that the countries where there exist a high level of poverty and low level of political and economic freedom, the terrorism against USA citizens increases. The results of Burgoon (2006) study showed that there exist a strong relationship between economy’s welfare efforts and terrorism in pooled cross-sectional countries, i.e., as economy’s welfare policies increases, the level of terrorism reduces. The study concluded that level of terrorism reduces when there is an effective and targeted policy measures adopted that helpful to reduce income inequality and poverty in an economy. Choi and Luo (2013) investigated the relationship between poverty, economic sanctions, and international terrorism in 152 countries. The results showed that economic sanctions have a positive relationship with international terrorism while other factors remaining constant. Piazza (2007)

analyzed the relationship between democracy promotion state failure and terrorism incidence by taking sample of 19 countries during the period 1972-2003. The results showed that the severe political instability leads to high level of terrorism across countries. Testas (2004) investigated the determinants of terrorism in 37 Muslim countries and found that repression and education are positively related with terrorism, while income is negatively associated with terrorism incidence in Muslim countries.

Akhmat et al. (2014) explored the factors of terrorism in the context of South Asia from 1980 to 2011. The findings showed that GDP per capita have a negative relationship with terrorism, while population growth, income inequality, political instability, inflation, and unemployment increases terrorism incidence in South Asia. Nasir et al. (2011) examined the factors of terrorism for South Asian countries. The results showed that political structure, economic conditions, income inequality, and literacy rate are the factors that cause terrorism. Boehmer and Daube (2013) examined the effect of economic development on domestic terrorism and found that modest economic development leads to terrorism. The economies which are highly democratic are less correlated with terrorism. Greenbaum et al. (2007) investigated the relationship between terrorism, employment and business activities in the context of Italy during 1985-1997. The results showed that terrorism negatively influence employment and business activities in a country. Table 1 shows the recent literature on terrorism, poverty, and economic growth in different economic settings.

The cited literature identified different economic factors of terrorism incidence, which need to be resolved by sound economic policies for sustained growth.

3. METHODOLOGY

3.1. Meta Analysis

Table 2 shows the meta analysis of the current studies that helpful to identify the main economic factors that affect terrorism incidence across countries.

Table 1: Recent literature on terrorism and economic growth

Authors	Country	Time period	Results
Khan and Estrada (2016)	Islamic states of Iraq and Syria	2004-2013	Negative impact of terrorism on economic growth
Kanu (2016)	Nigeria	-----	Strong relationship between corruption and terrorism
Feridun (2016)	Turkey	1980-2006	Education has a negative impact on terrorism, while no evidence found between poverty and terrorist attacks
Ali and Li (2016)	Pakistan	2001-2014	Poverty has negative relation with terrorism, while unemployment, literacy rate, population density, inflation rate has a positive relationship with terrorism incidence
Khan et al. (2016)	India	2004-2013	Terrorism hurts the country’s economic growth
Shahzad et al. (2016)	Pakistan	1988-2001 and 2002-10	There is bidirectional causality between economic growth and FDI. Terrorism has a negative impact on FDI inflows.
Krieger and Meierrieks (2016)	114 countries	1985-2012	Income inequality is associated with terrorism incidence.
Okafor and Piesse (2017)	38 countries	2005-2014	(i) The number of refugees and youth unemployment has a positive impact on terrorism incidence (ii) FDI and remittances have a negative impact on terrorism incidence (iii) Governance and Foreign aid has a negative impact on terrorism incidence

Table 2: Meta analysis of 9 current studies

Authors	Number of terrorists attacks	GDP	FDI inflows	Political stability	Poverty	Education	Exchange rate	Inflation	Trade	Labor force	Socioeconomic conditions	Democratic quality	Unemployment
Najaf and Ashraf (2016)	✓	✓	✓	✓			✓	✓	✓				
Ullah (2017)	✓	✓	✓				✓			✓			
Enders et al. (2016)	✓	✓		✓								✓	
Mehmood and Mehmood (2016)	✓										✓		
Feridun (2016)	✓					✓							
Dauda (2017)		✓			✓								
Okafor and Piesse (2017)	✓		✓										✓
Bezic et al. (2016)	✓		✓										
Bakar and Afolabi (2017)		✓	✓	✓					✓				

GDP: Gross domestic product, FDI: Foreign direct investment

Table 2 shows 14 macroeconomic indicators that influenced terrorism incidence or influenced by terrorism in a country. The main factors include economic growth, FDI inflows, political stability, poverty, education, exchange rate, inflation, trade domestic investment, electric power consumption, labor force, socio-economic conditions, democratic quality, and unemployment.

3.2. List of Variables

Table 3 shows the list of variables that is used in this study for robust inferences.

3.3. Data Source

The data is taken from world development indicators published by World Bank (2015) and various issues of Economic Survey of Pakistan.

3.4. Software Application

The study used eviews version 9 to estimate the parameter for conclusive findings.

3.5. Econometric Framework

The study used linear regression equation used for estimation purpose, i.e.,

$$WGDP = \beta_0 + \beta_1 \text{TERROR} + \beta_2 \text{POV} + \beta_3 \text{EDU} + \beta_4 \text{UEMP} + \beta_5 \text{POP} + \epsilon \tag{1}$$

In addition, the study used two more equations in a schematic fashion of simultaneous modeling, i.e.,

$$\text{TERROR} = \beta_0 + \beta_1 \text{POV} + \beta_2 \text{EDU} + \beta_3 \text{FDI} + \beta_4 \text{TINV} + \beta_5 \text{UEMP} + \beta_6 \text{POP} + \epsilon \tag{2}$$

$$\text{POV} = \beta_0 + \beta_1 \text{TERROR} + \beta_2 \text{EDU} + \beta_3 \text{GDP} + \beta_4 \text{UEMP} + \epsilon \tag{3}$$

Where,
 GDP=Gross domestic product,
 TERROR=Number of terrorist attacks,
 FDI=Foreign direct investment inflows,
 POV=Poverty,
 EDU=Education,
 UEMP=Unemployment,
 TINV=Total investment,
 ε=Error term.

3.5.1. Descriptive statistics

Descriptive statistic is used to summarize the data. It includes measures of central tendency (i.e., mean, median, mode) and measures of central dispersion (i.e., standard deviation, variance, minimum value, maximum value, skewness and kurtosis).

3.5.2. Correlation matrix

Correlation matrix is a simple table of coefficients of sets of variables. This table shows level of correlation between coefficients. It is also called symmetric matrix and/or pearson correlation matrix. The relationship between two or more variables is called multiple correlations, which signify the magnitude and direction between the variables.

Table 3: List of variables

Variables	Symbols	Measurement	Variables used in other studies
Gross domestic product	GDP	Per capita GDP	Najaf and Ashraf (2016), Ullah (2017), Enders et al. (2016)
Number of terrorist attacks	TERROR	In numbers	Ullah (2017), Enders et al. (2016), Mehmood and Mehmood (2016), Feridun (2016), Mehmood and Mehmood (2016), Okafor and Piesse (2017), Bezic et al. (2016)
Foreign direct investment	FDI	% of GDP	Najaf and Ashraf (2016), Ullah (2017), Bakar and Afolabi (2017), Bezic et al. (2016), Okafor and Piesse (2017), Mehmood and Mehmood (2016)
Education	EDU	Number of elementary school graduates (% of overall population)	Feridun (2016)
Poverty	POV	Headcount ratio	Feridun (2016), Dauda (2017)
Unemployment	UEMP	Unemployment rate as % of total labor force	Okafor and Piesse (2017)
Total investment	TINV	Gross fixed capital formation in %	Abadie and Gardeazabal (2008)

GDP: Gross domestic product, FDI: Foreign direct investment

3.5.3. Assessment of unit root test

This test facilitates to assess the stationary properties of the given variables. There are number of unit root tests available in the conventional time series econometric techniques, however, this study used Augment-Dickey Fuller (ADF) test due to high power of significance. The null hypothesis of no unit root process is evaluated against the alternative hypothesis that gives different outcomes, i.e., (i) whether the variable's series at level stationary, we conclude it with zero order of integration, i.e., I (0) variable, (ii) variable series at different stationary, we conclude it with first order of integration, i.e., I (1) variable, and (iii) variable series at second different stationary, i.e., order of integration is I (2).

3.5.4. Assessment of Johanson cointegration test

The Johanson cointegration test is used to check whether the model contain any long-run relationship between the variables. The trace and Eigen value tests confirmed the number of cointegration equations in the model. The null hypothesis of "no cointegration" is evaluated against its alternative hypothesis of "cointegration" relationship between the variables.

3.5.5. Robust least square regression

The robust least square regression is the extension of simple least square regression, which works on three dimensions of the variables, first this technique facilitates to minimize the possible outliers from the dependent variable by using "S-estimation," secondly, it minimize the exogenous variable's outliers by using "M-estimation," finally, it deals both the endogenous and exogenous variables to remove the possible outliers from the given models by using "MM-estimation."

3.5.6. Granger causality test

The study used F-statistics to find the causal relationships between the studied variables. The study hypothesize the following causality outcomes, i.e.,

1. Whether terrorism Granger cause macroeconomic factors (one way causation),
2. Whether macroeconomic factors Granger cause terrorism (revert hypothesis),
3. Both the variables Granger cause each other (two-way causation), and

4. No causation exists between the two variables (neutrality hypothesis).

3.5.7. Impulse response function (IRF)

IRF is used for long-run shocks between the variables in a forecasting framework. The study used 10 years forecasting relationship between terrorism and macroeconomic factors and observes the positive and negative shocks between the variables over a next 10 years time period.

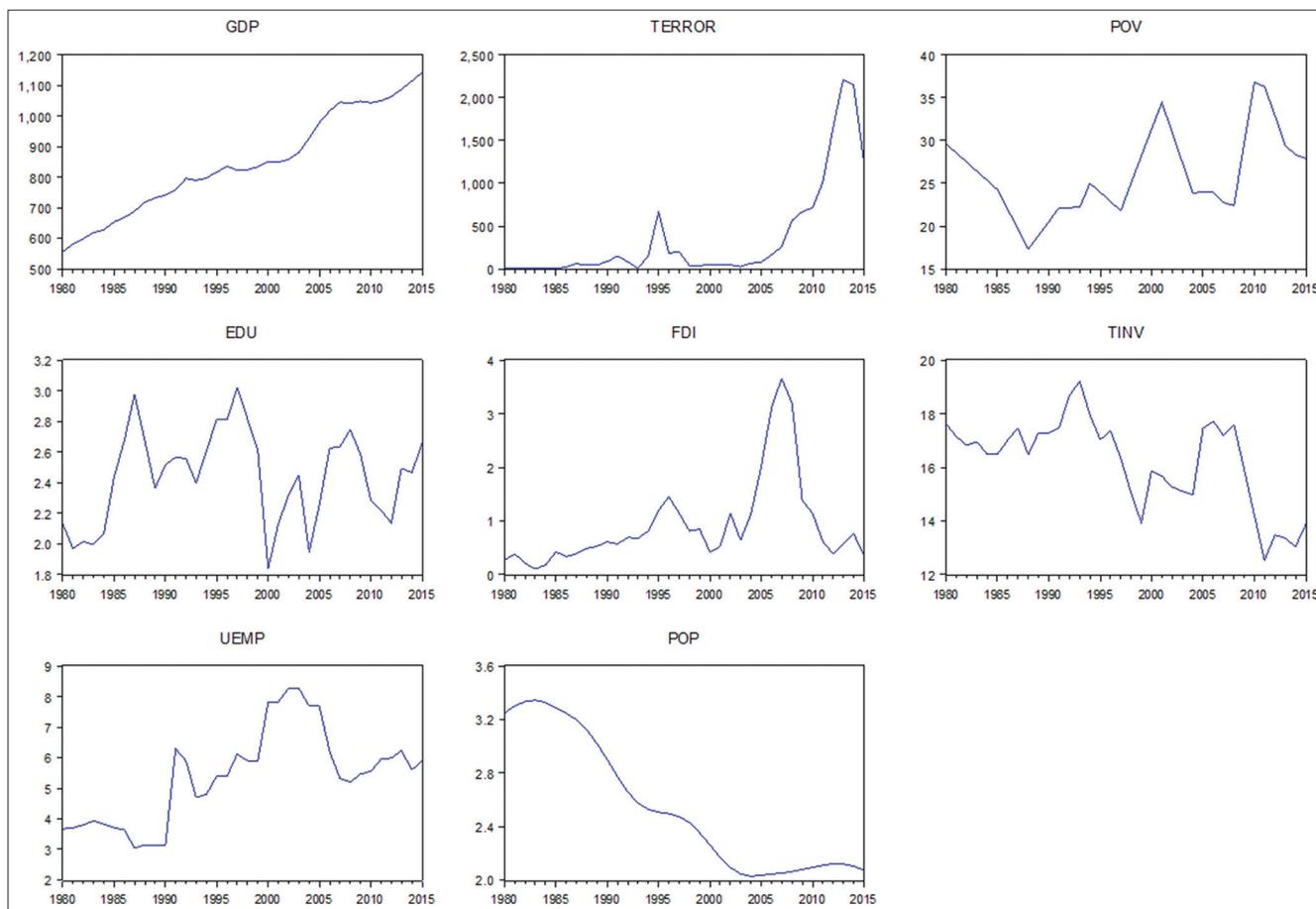
4. RESULTS AND DISCUSSIONS

Figure 3 shows the plots of level data to access the rough sketch for trend analysis between the studied variables for ready reference.

Table 4 shows thee descriptive statistics of the studied variable. The minimum and maximum values of GDP is about 556.2833 US\$ and 1142.752 US\$, with an average value of 845.9593 US\$. GDP has positively skewed distribution with considerable peak. Terrorism incidence has average number of counts are 354.4167. It has positively skewed distribution. The head count ratio has a minimum value of 17.320 and maximum value 36.800. It has considerable peak of distribution. The number of elementary school graduates in % of total population is about an average value of 2.439s with negatively skewed distribution. FDI inflows have positively skewed distribution with high peak. The minimum and maximum values of domestic investment are about 12.520 and 19.235 with an average value of 16.209. It has a negatively skewed distribution. The average value of unemployment rate is about 5.3935 with minimum and maximum values of 3.040% and 8.270%. Population has a mean annul growth of 2.545% with at high peak of distribution.

Table 5 shows the estimates of correlation matrix. Terrorism incidence has a positive and significant correlation with GDP, while poverty headcount significantly increases along with an increase of economic growth and terrorism incidence in a country. Education and terrorism both has an insignificant correlation with the economic growth and poverty headcount respectively. FDI inflows increase economic growth and education, while it

Figure 3: Plots of level data



Source: World Bank (2015) and various issues of economic survey of Pakistan

Table 4: Descriptive statistics

Methods	GDP	TERROR	POV	EDU	FDI	TINV	UEMP	POP
Mean	845.9593	354.4167	25.98745	2.439826	0.922102	16.20952	5.393055	2.545030
Maximum	1142.752	2213.000	36.80000	3.022300	3.668323	19.23542	8.270000	3.344131
Minimum	556.2833	1.000000	17.32000	1.837820	0.102667	12.52063	3.040541	2.027808
Skewness	0.090429	2.063407	0.508560	-0.162793	2.008994	-0.583974	0.194159	0.505921
Kurtosis	1.927147	6.282913	2.712028	2.186802	6.421240	2.479746	2.172378	1.666565
Observations	36	36	36	36	36	36	36	36

Source: World Bank (2015) and various issues of economic survey of Pakistan. GDP: Gross domestic product, TERROR: Terrorism incidence, POV: Poverty headcount, EDU: Education, FDI: Foreign direct investment inflows, TINV: Total domestic investment, UEMP: Unemployment, POP: Population annual growth

decreases along with an increase in terrorism incidence and poverty headcount in a country. Total investment has a positive correlation with the education and FDI inflows but negatively correlated with the economic growth, terrorism incidence and poverty headcount. The unemployment rate is affected by high poverty incidence and it is negatively correlated with terrorism incidence and FDI inflows in a country. Finally, population growth has a negative and significant correlation with economic growth, terrorism incidence, FDI inflows, and education, while it has a positive correlation with the total investment in a country. Thus, the estimates of correlation matrix provide a fair analysis between the variables that one may assess the magnitude and direction between the variables for more conclusive findings.

Table 6 shows the unit root test by ADF method and found that GDP, Terrorism incidence, FDI inflows, total investment,

unemployment, and population is differenced stationary variables and accompanied with first order of integration, i.e., I (1) variables, while the remaining variables, including, poverty and education both are level stationary and holding a property of zero order of integration, i.e., I (0) variable, thus we confined that there is a mixture of order of integration exists between the variables series, hence, we have to minimize possible outliers that deviated the variables series from its actual trend, hence, the study utilized robust least square regression with MM-estimation technique, which observe possible outliers from endogenous and exogenous variable's series.

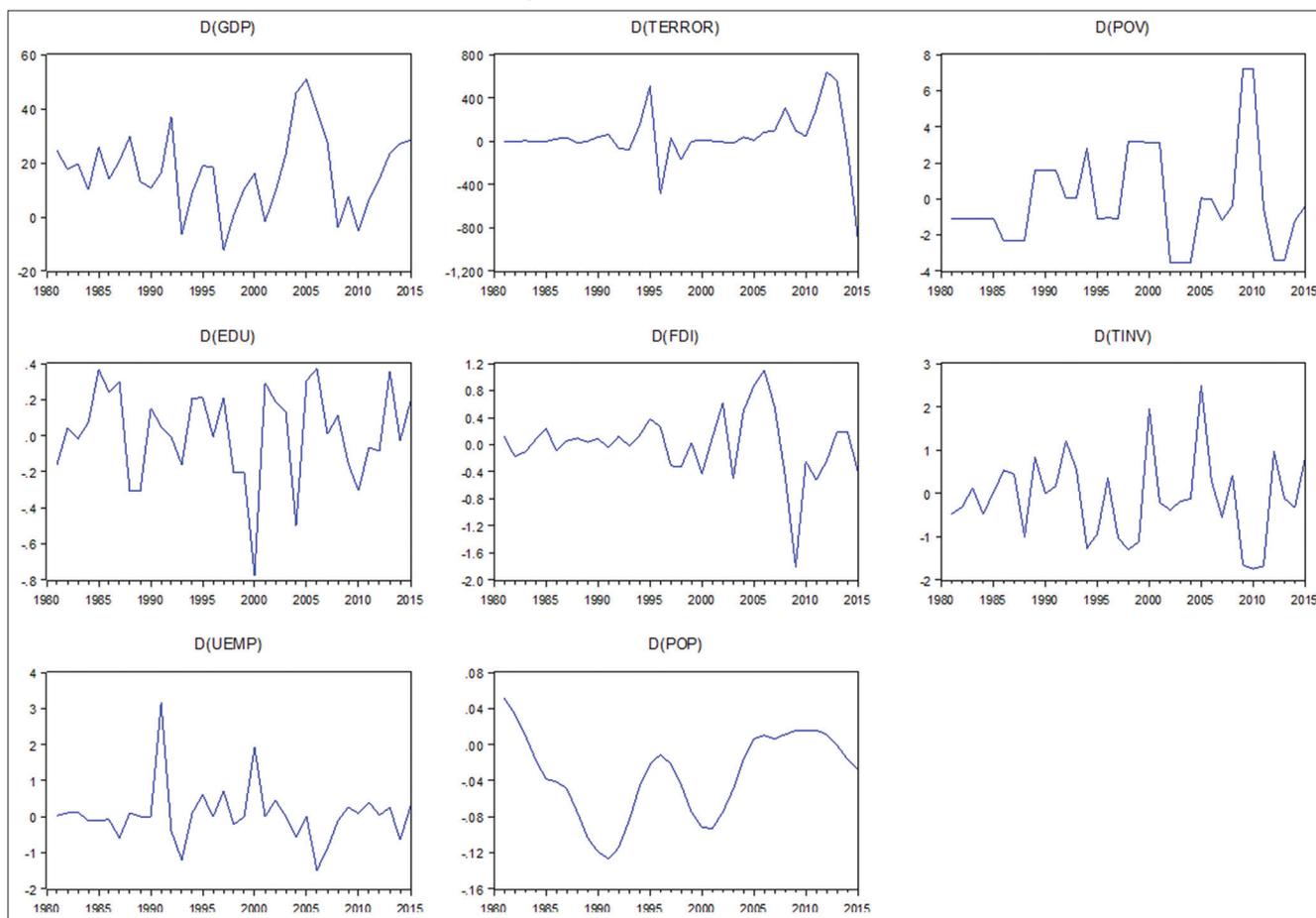
Figure 4 shows the trend of variables at their first difference to access the stationary movements over a period of time for ready reference.

Table 5: Estimates of correlation matrix

Correlation probability	GDP	T	POV	EDU	FDI	TINV	UEMP	POP
GDP	1.000000							
T	0.700790	1.000000						
POV	0.357908	0.397542	1.000000					
EDU	0.180654	0.068288	-0.521883	1.000000				
FDI	0.506391	-0.000514	-0.177413	0.336896	1.000000			
TINV	-0.561014	-0.669007	-0.658014	0.161028	0.202399	1.000000		
UEMP	0.566787	0.159554	0.440833	-0.140171	0.259315	-0.384661	1.000000	
POP	-0.911187	-0.463335	-0.400157	-0.113153	-0.539016	0.474511	-0.804800	1.000000
	0.0000	0.0044	0.0156	0.5111	0.0007	0.0035	0.0000	-

Below the coefficient values, there is a probability values for the said correlation. GDP: Gross domestic product, TERROR: Terrorism incidence, POV: Poverty headcount, EDU: Education, FDI: Foreign direct investment inflows, TINV: Total domestic investment, UEMP: Unemployment, POP: Population annual growth

Figure 4: Plots of differenced data



Source: World Bank (2015) and various issues of economic survey of Pakistan. GDP is gross domestic product, TERROR is terrorism incidence, POV is poverty headcount, EDU is education, FDI is FDI inflows, TINV is total domestic investment, UEMP is unemployment, and POP is population annual growth. “D” shows first difference data

Table 7 shows the estimates of Johanson cointegration test for three different models. The first model is related with economic growth, where GDP is the function of terrorism incidence, poverty, education, unemployment, and population. The trace

statistics show that there are 5 cointegration equations that are significant at 5% level of confidence, thus, it concludes that the given model has a cointegrated relationship between the variables.

Table 8 shows the estimates of cointegration for Equation (2), where terrorism incidence is the subset of poverty, education, FDI inflows, total investment, unemployment, and population. The results confirmed the four cointegration equations, thus it fairly accept the alternative hypothesis of “cointegration” holds between the given variables series.

Table 9 shows the Johanson cointegration estimates for Equation (3), where poverty is the function of terrorism incidence, education, economic growth, and unemployment and found two cointegration equations, thus its favor the alternative hypothesis of ‘cointegration’ relationship between the variables.

After thorough investigation of cointegration process, the study employed robust least square regression i.e., MM-estimation

techniques to handle the possible outliers from both the exogenous and endogenous variables from all three prescribed equations for policy conclusions. Table 10 shows the estimates of robust least square regression for Equation (1).

The results show that there is a positive and significant relationship between terrorism incidence and economic growth, i.e., if there is 1% increase in terrorism incidence, GDP increases by 0.038%. The result implies that as terrorism incidence increases, the war for terrorism in the form of foreign receipts increases, which substantially increases the base of economic growth of a country. The foreign receipts utilized for war on terrorism and spend some portion on education, knowledge sharing, symposium, and general awareness about terrorism vulnerability, which ultimately involve the whole community to progress against war on terrorism in a country. The unemployment and population growth both have a negative relationship with country’s economic growth, which required strong policy implications to provide healthy atmosphere in a country with educational awareness and population control strategies to provide conducive environment for sustained economic growth. Table 11 shows the estimates of robust least square regression for Equation (2).

The results show that there is a significant and positive relationship between education and terrorism incidence in a country. The result provoked that the person who joins terrorist’s organizations are mostly educated and well-heeled. Krueger and Maleckova (2003) argued that educated people are mostly involved in terrorist activities because educated people have better skills as compared to illiterate so they are preferable by

Table 6: Unit root estimates by ADF test

Variables	Level	First difference
GDP	-0.008062 (0.9513)	-3.511769 (0.0137)
TERROR	-2.202790 (0.2090)	-3.228374 (0.0269)
POV	-3.270085 (0.0244)	-4.425169 (0.0013)
EDU	-2.753787 (0.0754)	-5.493661 (0.0001)
FDI	-2.619387 (0.0990)	-3.860501 (0.0057)
TINV	-1.562667 (0.4906)	-5.099634 (0.0002)
UEMP	-1.695569 (0.4247)	-5.648229 (0.0000)
POP	-1.797310 (0.3737)	-0.964974 (0.7509)

Critical values: 1%=-3.639407, 5%=-2.951125, 10%=-2.614300. Small bracket shows probability values. GDP: Gross domestic product, TERROR: Terrorism incidence, POV: Poverty headcount, EDU: Education, FDI: Foreign direct investment inflows, TINV: Total domestic investment, UEMP: Unemployment, POP: Population annual growth, ADF: Augment-Dickey Fuller

Table 7: Johanson cointegration estimates for Equation (1)

Hypothesized number of CE (s)	Eigenvalue	Trace statistic	0.05 critical value	Probability
None*	0.835521	159.3841	95.75366	0.0000
At most 1*	0.676731	98.01507	69.81889	0.0001
At most 2*	0.505678	59.61986	47.85613	0.0027
At most 3*	0.427991	35.66458	29.79707	0.0094
At most 4*	0.376634	16.67213	15.49471	0.0331
At most 5	0.017579	0.603009	3.841466	0.4374

Trace test indicates 5 cointegrating equations at 5% significance level

Table 8: Johanson cointegration estimates for Equation (2)

Hypothesized number of CE (s)	Eigenvalue	Trace statistic	0.05 critical value	P**
None*	0.941799	253.9714	125.6154	0.0000
At most 1*	0.848724	157.2801	95.75366	0.0000
At most 2*	0.671084	93.06596	69.81889	0.0002
At most 3*	0.584943	55.25951	47.85613	0.0086
At most 4	0.363898	25.36197	29.79707	0.1489
At most 5	0.218485	9.980498	15.49471	0.2822
At most 6	0.045934	1.598766	3.841466	0.2061

*Trace test indicates 4 cointegrating equations at 5% significance level

Table 9: Johanson cointegration estimates for Equation (3)

Hypothesized number of CE (s)	Eigenvalue	Trace statistic	0.05 critical value	P**
None*	0.658904	86.19565	69.81889	0.0014
At most 1*	0.512327	49.62551	47.85613	0.0338
At most 2	0.430821	25.20974	29.79707	0.1541
At most 3	0.152991	6.048715	15.49471	0.6898
At most 4	0.011790	0.403232	3.841466	0.5254

*Trace test indicates 2 cointegrating equations at 5% significance level

Table 10: Robust least square regression estimates for Equation (1)

Dependent variable: LOG (GDP)				
Method: Robust least squares				
Variable	Coefficient	Standard error	Z-statistic	P
C	7.795066	0.268078	29.07764	0.0000
LOG (TERROR)	0.038510	0.005807	6.631936	0.0000
LOG (POV)	-0.037541	0.053266	-0.704778	0.4809
LOG (EDU)	-0.056821	0.074573	-0.761952	0.4461
LOG (UEMP)	-0.138527	0.046286	-2.992819	0.0028
LOG (POP)	-0.921585	0.093446	-9.862211	0.0000
Robust statistics				
R-squared	0.822493	Adjusted R-squared		0.792908
Rw-squared	0.974435	Adjust Rw-squared		0.974435
Akaike info criterion	39.91681	Schwarz criterion		52.93061
Deviance	0.040704	Scale		0.035988
Rn-squared statistic	920.6739	P (Rn-squared stat)		0.000000
Non-robust statistics				
Mean dependent var	6.720831	SD dependent var		0.202674
SE of regression	0.040508	Sum squared resid		0.049228

GDP: Gross domestic product, TERROR: Terrorism incidence, POV: Poverty headcount, EDU: Education, UEMP: Unemployment, POP: Population annual growth. Bold value shows significance values. SE: Standard error, SD: Standard deviation

Table 11: Robust least square regression estimates for Equation (2)

Dependent variable: LOG (TERROR)				
Method: Robust least squares				
Variable	Coefficient	SE	Z-statistic	P
C	27.15042	13.68942	1.983314	0.0473
LOG (POV)	-0.546481	1.996400	-0.273733	0.7843
LOG (EDU)	5.469210	2.322357	2.355025	0.0185
LOG (FDI)	-0.731617	0.604991	-1.209303	0.2265
LOG (TINV)	-3.324792	3.460330	-0.960831	0.3366
LOG (UEMP)	-3.043270	1.433655	-2.122735	0.0338
LOG (POP)	-12.92221	3.655959	-3.534562	0.0004
Robust statistics				
R-squared	0.613665	Adjusted R-squared		0.533734
Rw-squared	0.786012	Adjust Rw-squared		0.786012
Akaike info criterion	51.10498	Schwarz criterion		63.45589
Deviance	32.93074	Scale		0.926398
Rn-squared statistic	70.44855	P (Rn-squared stat.)		0.000000
Non-robust statistics				
Mean dependent var	4.374190	SD dependent var		2.025269
SE of regression	1.164251	Sum squared resid		39.30891

TERROR: Terrorism incidence, POV: Poverty headcount, EDU: Education, FDI: Foreign direct investment inflows, TINV: Total domestic investment, UEMP: Unemployment, POP: Population annual growth. Bold value shows significance values, SE: Standard error, SD: Standard deviation

terrorist’s organizations. There is a negative and significant relationship between (i) unemployment and terrorism incidence and between (ii) population and terrorism incidence in a country. The results rejected the orthodox belief that terrorism incidence is blamed for high mass population growth and unemployment in a country. Table 12 shows the estimates of robust least square regression for Equation (3).

The results show that higher education reduces the incidence and impact of poverty vulnerability in a country, as if there is 1% increase in education enrolment, poverty incidence decreases by -0.880%, thus it shows the effectiveness and generalizability of education among the masses, where education yield higher maturity to reduce poverty. On the other hand, the results supported the negative impact of unemployment on high poverty incidence, which required strong policy intervention to provide healthy opportunities to the resident to get an employment opportunity.

The statistical test includes adjusted R-squared that shows ‘goodness-of-fit of the model. Equation (1), (2), and (3) estimates shows that about 79%, 53% and 40% adjusted R-squared value explained the explanatory power of variables towards the ‘response’ variable respectively. Table 13 shows the estimates of Granger causality for ready reference.

The results confirmed the unidirectional causality between (i) GDP and population, (ii) GDP and total investment, (iii) GDP and poverty, (iv) education and poverty, (v) poverty and total investment, and (vi) total investment and education., while there is a bidirectional causality between FDI and GDP. FDI inflows Granger cause poverty and unemployment that shows one-way causation between the variables, however, this relationship is not averted. It is surprising that the causal relationships between terrorism incidence and other macroeconomic factors does not show any causal relationship between them, thus supported the ‘neutrality’ hypothesis. Table 14 shows the estimates of IRF for ready reference.

Table 12: Robust least square regression estimates for Equation (3)

Dependent variable: LOG (POV)				
Method: Robust least squares				
Variable	Coefficient	SE	Z-statistic	P
C	3.253324	1.825194	1.782454	0.0747
LOG (TERROR)	0.020532	0.026299	0.780699	0.4350
LOG (EDU)	-0.880902	0.206095	-4.274244	0.0000
LOG (GDP)	0.054602	0.298700	0.182798	0.8550
LOG (UEMP)	0.191736	0.112326	1.706961	0.0878
Robust statistics				
R-squared	0.470220	Adjusted R-squared		0.401861
Rw-squared	0.571069	Adjust Rw-squared		0.571069
Akaike info criterion	33.57175	Schwarz criterion		44.80127
Deviance	0.492421	Scale		0.135339
Rn-squared statistic	34.89819	P (Rn-squared stat.)		0.000000
Non-robust statistics				
Mean dependent var	3.241753	SD dependent var		0.180141
SE of regression	0.134041	Sum squared resid		0.556975

GDP: Gross domestic product, TERROR: Terrorism incidence, EDU: Education, POV: Poverty, UEMP: Unemployment. Bold value shows significance values, SE: Standard error, SD: Standard deviation

Table 13: Estimates of granger causality

Pairwise granger causality tests			
Null hypothesis	Obs	F-statistic	P
TERROR does not granger cause GDP	34	1.49010	0.2421
GDP does not granger cause TERROR		2.54395	0.0960
POV does not granger cause GDP	34	2.23286	0.1253
GDP does not granger cause POV		4.21095	0.0248
EDU does not granger cause GDP	34	2.04872	0.1471
GDP does not granger cause EDU		0.09723	0.9076
FDI does not granger cause GDP	34	2.68768	0.0850
GDP does not granger cause FDI		3.81808	0.0337
TINV does not granger cause GDP	34	2.01511	0.1515
GDP does not granger cause TINV		11.4661	0.0002
UEMP does not granger cause GDP	34	0.89216	0.4207
GDP does not granger cause UEMP		2.59056	0.0922
POP does not granger cause GDP	34	0.35374	0.7050
GDP does not granger cause POP		2.68388	0.0852
POV does not granger cause TERROR	34	2.17450	0.1318
TERROR does not granger cause POV		1.33649	0.2785
EDU does not granger cause TERROR	34	0.54000	0.5885
TERROR does not granger cause EDU		0.37586	0.6900
FDI does not granger cause TERROR	34	0.81276	0.4535
TERROR does not granger cause FDI		0.68773	0.5107
TINV does not granger cause TERROR	34	0.53245	0.5928
TERROR does not granger cause TINV		1.50540	0.2388
UEMP does not granger cause TERROR	34	0.26782	0.7669
TERROR does not granger cause UEMP		0.13043	0.8782
POP does not granger cause TERROR	34	1.50008	0.2399
TERROR does not granger cause POP		2.10008	0.1407
EDU does not granger cause POV	34	3.77396	0.0349
POV does not granger cause EDU		1.35421	0.2740
FDI does not granger cause POV	34	10.3894	0.0004
POV does not granger cause FDI		0.26174	0.7715
TINV does not granger cause POV	34	1.01742	0.3741
POV does not granger cause TINV		3.03747	0.0634
EMP does not granger cause POV	34	0.41600	0.6636
POV does not Granger Cause UEMP		1.75469	0.1908
POP does not granger cause POV	34	3.15300	0.0577
POV does not granger cause POP		0.34297	0.7125
FDI does not granger cause EDU	34	2.06589	0.1450
EDU does not granger cause FDI		0.64282	0.5331
TINV does not granger cause EDU	34	2.84475	0.0745
EDU does not granger cause TINV		0.40000	0.6740
UEMP does not granger cause EDU	34	0.14633	0.8645

(Contd...)

Table 13: (Continued)

Pairwise granger causality tests			
Null hypothesis	Obs	F-statistic	P
EDU does not granger cause UEMP		0.61339	0.5484
POP does not granger cause EDU	34	0.03021	0.9703
EDU does not granger cause POP		2.48815	0.1006
TINV does not granger cause FDI	34	0.51999	0.6000
FDI does not granger cause TINV		4.49764	0.0199
UEMP does not granger cause FDI	34	2.88815	0.0718
FDI does not granger cause UEMP		0.24620	0.7834
POP does not granger cause FDI	34	1.42090	0.2578
FDI does not granger cause POP		0.21130	0.8108
UEMP does not granger cause TINV	34	0.17123	0.8435
TINV does not granger cause UEMP		1.89881	0.1679
POP does not granger cause TINV	34	2.39048	0.1094
TINV does not granger cause POP		4.63182	0.0180
POP does not granger cause UEMP	34	3.36751	0.0484
UEMP does not granger cause POP		1.88630	0.1698

GDP: Gross domestic product, TERROR: Terrorism incidence, EDU: Education, POV: Poverty, UEMP: Unemployment, FDI: Foreign direct investment inflows, TINV: Total domestic investment, UEMP: Unemployment, POP: Population annual growth. Bold value shows significance values

The estimates of IRF show that till 2022-2026, terrorism has negative shocks to GDP while in the preceding forecasted values during 2017-2021, this result would be positive. The negative shocks of poverty to GDP will be 2018-2022 and 2024-2026. The positive shocks of education to GDP will be from 2017 to 2018, 2020-2022, and for 2026. The negative shocks for GDP to FDI inflows will be from 2018 to 2020, 2023, and 2026. The investment to GDP has a positive shock for the years 2017, 2020, 2022, and 2026. The positive shocks for unemployment to GDP will be from 2017 to 2018, 2021-2022, and 2025-2026. Finally, there will be negative shocks between population and GDP till from 2019 to 2026. The policies to stabilize macroeconomic factors with terrorism incidence are prerequisite for sustained economic growth.

5. CONCLUSIONS

The objective of the study is to develop and interactive economic model where terrorism, poverty, and economic growth is the

Table 14: Estimates of IRF

Period	Response of DLOG (GDP)							
	$\Delta \ln(\text{GDP})$	$\Delta \ln(\text{TERROR})$	$\Delta \ln(\text{POV})$	$\Delta \ln(\text{EDU})$	$\Delta \ln(\text{FDI})$	$\Delta \ln(\text{TINV})$	$\Delta \ln(\text{UEMP})$	$\Delta \ln(\text{POP})$
2017	0.016388 (0.00202)	0.000000 (0.00000)	0.000000 (0.00000)	0.000000 (0.00000)	0.000000 (0.00000)	0.000000 (0.00000)	0.000000 (0.00000)	0.000000 (0.00000)
2018	0.007557 (0.00443)	0.004433 (0.00356)	-0.004564 (0.00358)	0.006962 (0.00403)	-0.003811 (0.00349)	-0.002363 (0.00314)	0.002871 (0.00347)	0.000496 (0.00173)
2019	0.003584 (0.00484)	0.002677 (0.00386)	-0.004925 (0.00428)	-0.000138 (0.00402)	-0.002377 (0.00406)	-0.001201 (0.00349)	-0.005341 (0.00415)	-0.000385 (0.00256)
2020	0.002161 (0.00452)	0.001697 (0.00323)	-0.002716 (0.00400)	0.001206 (0.00344)	-0.000435 (0.00354)	8.03E-05 (0.00279)	-0.000404 (0.00381)	-0.000493 (0.00283)
2021	0.001280 (0.00419)	0.000508 (0.00275)	-0.001271 (0.00345)	0.002921 (0.00283)	0.000851 (0.00306)	-0.000299 (0.00207)	0.003023 (0.00301)	-0.000640 (0.00289)
2022	-0.000162 (0.00355)	-1.49E-05 (0.00222)	0.000504 (0.00296)	0.000135 (0.00238)	0.000181 (0.00264)	9.32E-05 (0.00161)	0.000357 (0.00248)	-0.000944 (0.00285)
2023	0.000157 (0.00265)	-0.000306 (0.00192)	0.000314 (0.00263)	-0.001636 (0.00202)	-0.001062 (0.00215)	-0.000420 (0.00139)	-0.001033 (0.00191)	-0.001424 (0.00274)
2024	-8.13E-05 (0.00186)	-0.000222 (0.00146)	-0.001006 (0.00223)	-0.000162 (0.00165)	0.000604 (0.00192)	-0.000963 (0.00127)	-0.000276 (0.00173)	-0.001601 (0.00263)
2025	-0.000764 (0.00144)	0.000335 (0.00127)	-0.000693 (0.00181)	0.000850 (0.00139)	0.001147 (0.00166)	-0.000395 (0.00116)	0.000629 (0.00139)	-0.001104 (0.00246)
2026	-0.000300 (0.00125)	0.000477 (0.00104)	-0.000122 (0.00158)	-5.36E-05 (0.00119)	-0.000112 (0.00153)	0.000441 (0.00105)	0.000299 (0.00130)	-0.000580 (0.00225)

GDP: Gross domestic product, TERROR: Terrorism incidence, POV: Poverty headcount, EDU: Education, POP: Population annual growth, FDI: Foreign direct investment inflows, TINV: Total domestic investment, UEMP: Unemployment, POP: Population annual growth, IRF: Impulse response function

sub-sect of different factors that aligned with country’s economic progression. The study used number of promising factors, including FDI inflows total investment, unemployment, education, and population growth under simultaneous equations modeling by using the consistent time series data from 1980 to 2015. The results of robust least square regression show that terrorism incidence increases along with an increase in economic growth, while high unemployment and population growth decreases country’s GDP. It is evident that education positively correlated with the terrorism incidence while unemployment and population does not supported the terrorism incidence in a country. The impact of education is positive to decrease poverty incidence while unemployment increases poor vulnerability in a country. Thus, it is required to proposed pro-poor growth policies that helpful to reduce terrorism incidence and poverty vulnerability in a country. The study emphasized the need for pro-growth and pro-poor policies, which is desirable for reduction of human’s vulnerability. Terrorism incidence is the paramount concern for the global policy makers; therefore, it is advisable to improve educational standards to enhance human’s ability for healthy activities. The high mass population growth is considered the main factor that increase human’s suffering in the form of unemployment that leads to the poverty and increases terrorism incidence in a country, hence it is desirable to control unwanted population growth and provide healthy opportunity to the residents to acquire good job to escape out from the poverty.

REFERENCES

Abadie, A., Gardeazabal, J. (2008), Terrorism and the world economy. *European Economic Review*, 52(1), 1-27.

Akhmat, G., Zaman, K., Shukui, T., Sajjad, F. (2014), Exploring the root causes of terrorism in South Asia: Everybody should be concerned. *Quality and Quantity*, 48(6), 3065-3079.

Ali, G., Li, Z. (2016), Role of economic factors in terrorism in Pakistan. *Quality and Quantity*, 50(5), 2237-2250.

Araz-Takay, B., Arin, K.P., Omay, T. (2009), The endogenous and non-linear relationship between terrorism and economic performance: Turkish evidence. *Defence and Peace Economics*, 20(1), 1-10.

Bakar, N.A.A., Afolabi, L. (2017), Causality nexus between trade political instability, FDI and economic growth: Nigeria experience. *International Journal of Trade and Global Markets*, 10(1), 75-82.

Barros, C.P., Faria, J.R., Gil-Alana, L.A. (2008), Terrorism against American citizens in Africa: Related to poverty? *Journal of Policy Modeling*, 30(1), 55-69.

Bezić, H., Galović, T., Misević, P. (2016), Impact of terrorism on FDI of the EU and EEA countries. *Proceedings of Rijeka School of Economics*, 34(2), 333-362.

Blomberg, S.B., Hess, G.D., Orphanides, A. (2004), The macroeconomic consequences of terrorism. *Journal of Monetary Economics*, 51(5), 1007-1032.

Boehmer, C., Daube, M. (2013), The curvilinear effects of economic development on domestic terrorism. *Peace Economics, Peace Science and Public Policy*, 19(3), 359-368.

Burgoon, B. (2006), On welfare and terror: Social welfare policies and political-economic roots of terrorism. *Journal of Conflict Resolution*, 50(2), 176-203.

Choi, S.W., Luo, S. (2013), Economic sanctions, poverty, and international terrorism: An empirical analysis. *International Interactions*, 39(2), 217-245.

- Dauda, R.S. (2017), Poverty and economic growth in Nigeria: Issues and policies. *Journal of Poverty*, 21(1), 61-79.
- Economic Survey of Pakistan. (2015-16), Annexure IV, Impact of War in Afghanistan and Ensuring Terrorism on Pakistan's Economy. Available from: http://www.finance.gov.pk/survey/chapters_16/Annexure_IV_War_on_terror.pdf. [Last accessed on 2017 Mar 25].
- Enders, W., Hoover, G.A. (2012), The nonlinear relationship between terrorism and poverty. *The American Economic Review*, 102(3), 267-272.
- Enders, W., Hoover, G.A., Sandler, T. (2016), The changing nonlinear relationship between income and terrorism. *Journal of Conflict Resolution*, 60(2), 195-225.
- Feridun, M. (2016), Impact of education and poverty on terrorism in turkey: An empirical investigation. *Applied Research in Quality of Life*, 11(1), 41-48.
- Gaibulloev, K., Sandler, T. (2011), The adverse effect of transnational and domestic terrorism on growth in Africa. *Journal of Peace Research*, 48(3), 355-371.
- Global Terrorism Index. (2015), Measuring and Understanding the Impact of Terrorism. Online Available from: <http://www.economicsandpeace.org/wp-content/uploads/Global-Terrorism-Index-2015.pdf>. [Last accessed on 2017 Mar 26].
- Goldstein, K.B. (2005), Unemployment, inequality and terrorism: Another look at the relationship between economics and terrorism. *Undergraduate Economic Review*, 1(1), 1-21.
- Greenbaum, R.T., Dugan, L., LaFree, G. (2007), The impact of terrorism on Italian employment and business activity. *Urban Studies*, 44(5-6), 1093-1108.
- Gries, T., Krieger, T., Meierrieks, D. (2011), Causal linkages between domestic terrorism and economic growth. *Defence and Peace Economics*, 22(5), 493-508.
- Ismail, A., Amjad, S. (2014), Co integration-causality analysis between terrorism and key macroeconomic indicators: Evidence from Pakistan. *International Journal of Social Economics*, 41(8), 664-682.
- Kanu, I.A. (2016), The culture of political corruption and the emergence of terrorism in Nigeria. *African Scholar Journal of Humanities and Social Sciences*, 4(4), 42-52.
- Khan, A., Estrada, M.A.R. (2016), The effects of terrorism on economic performance: The case of Islamic State in Iraq and Syria (ISIS). *Quality and Quantity*, 50(4), 1645-1661.
- Khan, A., Estrada, M.A.R., Yusof, Z. (2016), Terrorism and India: An economic perspective. *Quality and Quantity*, 50(4), 1833-1844.
- Krieger, T., Meierrieks, D. (2016), Does Income Inequality Lead to Terrorism? Poverty and Shared Prosperity 2016 Taking on Inequality. *Global Poverty*. Ch. 2. Washington, DC: World Bank. Available from: <http://www.worldbank.org/en/publication/poverty-and-shared-prosperity>. [Last accessed on 2017 Apr 15].
- Krueger, A.B., Malečková, J. (2003), Education, poverty and terrorism: Is there a causal connection? *The Journal of Economic Perspectives*, 17(4), 119-144.
- Mehmood, S., Mehmood, B. (2016), Terrorism as a deterrent to political stability in south asian countries: Empirical evidence. *Science International Lahore*, 28(5), 4917-4919.
- Meierrieks, D., Gries, T. (2013), Causality between terrorism and economic growth. *Journal of Peace Research*, 50(1), 91-104.
- Najaf, K., Ashraf, S. (2016), Impact of terrorism, gas shortage and political instability on FDI inflows in Pakistan. *Scientific Journal of Pure and Applied Sciences*, 5(3), 390-397.
- Nasir, M., Ali, A., Rehman, F.U. (2011), Determinants of terrorism: A panel data analysis of selected South Asian countries. *The Singapore Economic Review*, 56(2), 175-187.
- Okafor, G., Piesse, J. (2017), Empirical investigation into the determinants of terrorism: Evidence from fragile states. *Defense and Peace Economics*, 1, 1-15.
- Piazza, J.A. (2007), Draining the swamp: Democracy promotion, state failure, and terrorism in 19 Middle Eastern countries. *Studies in Conflict and Terrorism*, 30(6), 521-539.
- Shahbaz, M., Shabbir, M.S., Malik, M.N., Wolters, M.E. (2013), An analysis of a causal relationship between economic growth and terrorism in Pakistan. *Economic Modelling*, 35, 21-29.
- Shahzad, S.J.H., Zakaria, M., Rehman, M.U., Ahmed, T., Fida, B.A. (2016), Relationship between FDI, terrorism and economic growth in Pakistan: Pre and post 9/11 analysis. *Social Indicators Research*, 127(1), 179-194.
- Testas, A. (2004), Determinants of terrorism in the Muslim world: An empirical cross-sectional analysis. *Terrorism and Political Violence*, 16(2), 253-273.
- Ullah, I. (2017), Econometric analysis of foreign direct investment and terrorism in Pakistan. *Saudi Journal of Business and Management Studies*, 2(1), 52-59.
- United Nations New York. (2009), Rethinking Poverty: Report on World Social Situation 2010, Ch. I. Rethinking Poverty: Which Way Now? Online Available from: <http://www.un.org/esa/socdev/rwss/docs/2010/fullreport.pdf>. [Last accessed on 2017 Apr 22].
- UNODC. (2017), United Nations Office on Drugs and Crime and Terrorism Prevention. Online Available from: <https://www.unodc.org/unodc/en/terrorism/>. [Last accessed on 2017 Apr 18].
- World Bank. (2015), World Development Indicators. Washington, D.C.: World Bank.
- World Bank. (2016), Poverty and Inequality. Online Available from: <http://www.go.worldbank.org/PO3NNJYO00>. [Last accessed on 2017 Apr 23].
- Younas, J. (2014), Does globalization mitigate the adverse effects of terrorism on growth? *Oxford Economic Papers*, 67(1), 133-156.