Terrorism and Poverty: Double Trouble for Macroeconomic Performance in African Countries

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Abstract

This article investigates poverty and terrorism as allies in hindering economic growth in African countries. This study uses data for 22 African countries from 1970 to 2013 i.e. 44 years. Data for terrorism, poverty and national income is taken from GTD and WDI. Panel cointegration techniques of dynamic fixed effect, mean group and pooled mean group are applied to quantify the long-run impact of terrorism and poverty on macroeconomic performance. Moreover, robustness is checked by using various estimators of slope parameters including POLS, FMOLS and DOLS. Empirical findings reveal that both poverty and terrorism have a long-run negative impact the macroeconomic performance. Recommendations for the double trouble are made at the end.

Keywords: Terrorism, Poverty, Macroeconomic Performance, PMG, MG, DFE.
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1. Introduction

In these high times growth without development is lame and development without eradication of poverty and mitigation of terrorism is blind. Undeniably, poverty and terrorism both are the burning issues during recent times. Countries around the globe are adding into their efforts for poverty eradication and reduction of terrorism and Africa is no exception to it. Social instability, internal insurgencies and political upheavals are various reasons for existing levels of poverty and terrorism in Africa.

By poor, one simply means lack of access to resources which are necessary to actively participate in the socio-economic life of the society. Sen (2000), defines poverty as 'deprivation of opportunity'. Though, there is a few definitions of terrorism, but there is common consensus that any act to attain illegal, socio-political, religious, ideological or personal gain through violent and destructive techniques is considered as an act of terrorism. World Terrorism Index Report (2014) defines terrorism as the threatened or actual use of illegal force and violence by a non-state actor to attain political, economic, religious, or social goal(s) through fear, coercion, or intimidation. Empirical studies on Africa by Miguel et al. (2004), Blomberg et al. (2004), Serganti (2004) and Akhmet et al. (2014) have recorded that economic conditions as important determinants of terrorism. Furthermore, Meierrieks and Gries (2013), found terrorism as detrimental to growth for African, for the post–Cold War era. Given these evidences both of the factors; poverty and terrorism are considered as hazardous for the health of economy.

Since 9/11 episode, the whole world is under threat due to its war against various terrorist organizations, and Africa is no exception to it. According to Global Terrorism Report, (2014), Africa experienced 978 deadly terrorist attacks in 2011, 11133 in 2012 and 17958 in 2013. It includes both domestic and transnational terrorist incidents. In African countries, though poverty is prevailing since longer time but terrorism is now fueling it by leaving people destitute through destruction of property, shelter, markets and collapse of business activities. Most of the countries in Africa are referred to as fourth world which according to Hans Singer (1980), are poorer in the list of world poor countries. Lipset's law (1960), about poverty-terrorism nexus seems true for poor African countries, which counts for large scale terrorism not only within the African region but also, across the globe.[4]

Both facets of terrorism; national and transnational have now become a plague distressing the African countries as a whole with some discrimination. Though poverty was already prevailing

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[4] Terrorist activities domestically started in Africa prior to the 9/11 attack and it sort its roots in 1961, with the formation of Umkhonto We Sizwe (Spear of the Nation), (abbreviated as MK, founded by African National Congress (ANC) under the leadership of Nelson Mandela), in order to fight against the government oppression. In 1963, KM published its manifesto under the title of "We are at War" in which its formation was justified as a group of freedom fighters rather than a bunch of terrorists. The first bomb blown up by MK fighters was the Church Street bomb in 1963 in Pretoria near the South African Air Force Headquarters which resulted in 19 demises and 217 injuries. After this a series of terrorist activities was carried out on by the armed group of the ANC. Transnational terrorism was felt in Africa in 1976 when Palestinian terrorists hijacked a commercial plane of Air France, carrying 248 passengers taken to Uganda. Israeli Defense Forces carried out a raid in order to resolve the issue but this fueled the situation and in reaction, almost four years later the Palestinian Liberation Organization blew-up the Jewish-owned Norfolk Hotel in Nairobi, in which 15 were killed and 80 were injured. Thus terrorism in Africa can also be viewed as a 'tit for tat' process.

in African countries, but recently terrorism has also emerged as an economic evil to be eradicated along with poverty.

Given the above facts and figures, this study is of much importance as it investigates the role of poverty and terrorism, simultaneously, as obstacles to economic growth in African economies. Accordingly, International Financial Institutions (IFIs) are helping countries around the globe to fight poverty and terrorism. This paper aims to quantify the long-run relationship of terrorism and poverty with Macroeconomic performance, which is stated under the following proposition: Terrorism *and poverty have long-run relationship with macroeconomic performance in African countries.* To attain this objective, this paper starts with the review of empirical literature, designs an analytical framework, which are followed by estimable model, empirical estimations, results and interpretation and policy recommendations.

2. Review of Literature
Since the dreadful terrorist attack on the World Trade Center, terrorism is no longer considered a national phenomenon rather transnational one. Much has been said about terrorism and its determinants since it attracted attention of researchers. Common consensus exists that both terrorism and poverty have important bearing on economic growth. Ray (1998), proposes that economic prosperity is though not sufficient but necessary condition for a nation to develop and poverty is a deadly issue in the way of economic prosperity. Terrorism not only hinders economic growth by distorting the markets but also translates into passive production processes, recessionary trends, rising poverty and increasing level of income inequality. If a person is capable of getting a handsome living then he will contribute positively to the community. Whereas, terrorist activities will do the reverse. It is therefore, the backward and forward linkages to the development process get affected, resulting into less impressive development.

Empirical literature on the nexus of economic growth, poverty and terrorism is quite less, though theoretically it is in abundance. The global debate on terrorism poverty nexus is mostly considered after the proposition of Lipset in 1960, according to which poor people are more exposed to terrorism due to their harsh upbringing and authoritarian family patterns. Thus, relative deprivation among poor suggests a unidirectional causality running from poverty to terrorism. Due to the existence of large scale terrorism and poverty in Africa, the two can be considered as double trouble for growth. So, poverty and terrorism are related to a certain extent. There are a handful country level studies which highlight roots of terrorism in poor economic performance and some view poverty as a limiting factor for the economic growth. Collier and Hoeffler (1998, 2001, 2002), by their empirical investigations proved that, young men have incentive to take up arms when income opportunities are worse for them in agriculture or in the formal labor market, in comparison to the higher expected income as a fighter. They argue that civil wars are fundamentally driven by such economic opportunities rather than by political grievances.

Kruger and Maleckova (2003), refute any causal link between poverty, education and terrorism for Lebanon, Palestine and Israel. They consider terrorism as a political phenomenon rather than an economic one, while civil liberties were taken into account. They view poverty as an indirect pull factor behind civil conflicts in poor countries. Though their study rejected any direct link between poverty and transnational terrorism, yet the connection between terrorism and poverty at

national level was identified a fertile area for future research. It is expected that there results were biased and did not depict the true picture of normal circumstances, negating a very famous maxim 'everything is fair in war and love'. Because, during the time of their study areas of West Bank, Gaza Strip and Lebanon were extremely suffering from political uplift and severe religious insurgencies. These abnormal circumstances question the accuracy and authenticity of their research. These were the reasons that there results were opposite than that of Collier and Hoeffler (2000), Fearon and Laitin (2001), and Miguel (2003), who found low GDP per capita in different countries responsible to trigger terrorist activities.

Miguel et al. (2004), used International Peace Research Institute data, for 41 African countries from 1981 to 1999, regarding civil armed conflicts. OLS and 2SLS have been used and a negative relationship between civil armed conflicts and economic growth. Rainfall variation has been used as an instrumental variable for economic growth to declare their analysis robust. Their findings reveal that, a negative growth shock of five percentage points increases the likelihood of conflict by one-half the following year. Thus economic conditions were clearly considered as direct stimulus behind civil conflicts in sub-Saharan Africa.

Blomberg et al. (2004), in their analysis of unbalanced panel data of 177 countries from 1968 to 2000, via structural VAR model, suggest that economic variables are important determinants of terrorism. They find that incidents of terrorism have significant negative impact on growth with an exception of ones that are negligible and temporary. Their study disagrees with the notion that terrorist attacks associated with either external wars or internal conflict have a significant impact on economic growth. The findings of Alesina et al. (1996), Collier & Hoeffler (2004), and Sergenti (2004), have concluded that poverty and poor economic conditions are responsible of terrorism up to a greater extent.

Abadie (2006), by incorporating both national and transnational terrorism found that terrorism has no relationship with economic variables. He concluded that countries in some intermediary political freedom are more prone to terrorism, especially a transition from the traditional authoritarian regime to democratic one is expected to be accompanied by oppression and temporary conflicts. This was consistent to the research of Krueger and Laitin (2003), and Piazza (2004), who, using data of U.S. State Department also found no significant impact of poverty on transnational terrorism. This insignificant relationship can attributed under-representation of terrorism data because transnational terrorism is a minor fraction of overall terrorism.

Berrebi (2007), investigating the link between poverty, education and terrorism, using data from Hamas and Palestinian Islamic Jihad (PIJ) documentary sources between 1980s and May 2002 concluded that both higher education and standard of living are positively correlated with terrorism in Palestine. Koseli (2007) finds poverty and income inequality as root cause of terrorism in Turkey. He considers poverty as a motivating force to join terrorist outfits in various states of Turkey. Harbeson (2008), claims African terrorism, as a consequence of relatively weak states, ethnic and religious diversity, socio-economic discrimination, poverty, and a lot of ungoverned spaces. Similarly, Zaidi (2010), in his survey regarding determinants of terrorism, find a positive link between poverty and radicalization. In his study, considering the demographics of different provinces of Pakistan, poverty is held responsible for terrorism.

Caruso et al. (2010), using GTD data set for the period 1994-2007 for 12 Western European countries, confirmed a positive association between number of fatalities in terrorist attacks and GDP per capita. Elu and Price (2011), depicted that remittances have positive link behind terrorism in sub-Saharan Africa. Using data for the period of 1970-2006, they revealed that a quarter of one million dollar of remittances is responsible behind one terrorist attack in Africa. Enders et al. (2013), by considering various countries of different regions, over a time series from 1970 to 2010. They formulated a terrorism Lorenz curve to show domestic and transnational terrorist attacks. A nonlinear relationship was found between GDP per capita and terrorism over time. Their results revealed that prior the 1990s, terrorism was concentrated in middle-income countries, which is now engulfing the low income countries suffering from socio-economic and religious grievances.

Shahbaz (2013), using annual frequency data from 1971 to 2010, via ARDL model, confirmed the cointegration between inflation, economic growth and terrorism in Pakistan. He concluded that an increase in the inflation and economic growth raises the number of terrorist incidents in Pakistan. They found a bidirectional causality between inflation and terrorism in case of VECM Granger causality. Later on, Shahbaz et al. (2014), while studying income inequality and domestic terrorism nexus for Pakistan, concluded that income inequality is a stimulus behind domestic terrorism.

Akhmat et al. (2014), using panel data from 1980-2011 for South Asian countries and by applying FMOLS and DOLS found that poverty is positively correlated with terrorism but has negative impact upon GDP per capita. However, they found other economic variables, (population, unemployment, inflation, poverty, inequality and political instability) having positive association with terrorism in South Asia. Their results show that 1% increase in poverty rate, is responsible to increase terrorism incidents by 0.758% in FMOLS and 0.654% in case of DOLS estimators. Though their results might not depict the true picture, as both of the techniques applied for empirical testation are not suitable to mitigate the problems of heterogeneity and endogeneity, especially in case of such a heterogeneous panel data.

Burdette (2014), studied the poverty-terrorism hypothesis and proposed that though poverty might not cause terrorism in the very first place, but it is not irrelevant too. Poverty, though, is indirectly linked with terrorism but it has crucial role in contributing to an individual or group's tendency to take part in terrorism. Poverty can help spur radicalization by reinforcing other sources of disaffection and can also increase probability of terrorism by hampering the efficiency of governments to employ counterterrorism measures. This study adds to literature by empirically co-examining the restrictive roles of poverty and terrorism in macroeconomic performance of African countries.

3. Analytical Framework
Poverty denies people the minimum affordable goods and services for a decent life which are crucial to participate in the life of an economy. There are two types of poverty: temporary and chronic. Temporary poor suffer from anxiety, stress, mental and psychological disorders, but they have hope to come out of poverty in the near future and same is not true for permanently poor people. This loss of hope stimulates people to remain idle or to destroy others by destructive means as they think that all their miseries are due to rich people and perhaps it is true

to some extent. This type of poverty will no doubt lead the poor to initiate terrorist activities to take revenge from the elite class. Similar conflict is also lime lighted by Karl Marx in his famous class conflict view between the haves and have-nots. This is mostly the case behind terrorism in Africa along with religious, ethnical, political and ideological conflicts. Poverty is a stimulus behind terrorism in African region. This study also conforms to the Lipset paradox regarding poverty-terrorism nexus for Africa. This poverty-terrorism nexus, however, can also be self-perpetuating by increasing the poverty via losses to economy.

Burdette (2014), says that poverty is relevant to terrorism. He concludes three important ways upon which poverty can effect terrorism. Firstly, poverty fuels terrorism by generating regional disparities accompanied by large scale income inequalities thus individuals' grievances in shape of relative deprivation, result in productivity loss. Secondly, this socio-economic deprivation becomes a catalyst by declining the opportunities and compelling young people to participate in terrorism. Thirdly, poverty is a reason to join violent extremism through unemployment and idleness, which is more counterproductive. This was verified by Smelser (2007), and Norwegian Defense Research Establishment (FFI). Piazza (2011), concludes that minorities' economic discrimination is a significant predictor of domestic terrorism. He considered socio-economic deprivation responsible to compel unemployed people towards terrorism.

Moreover in Africa, the weak control of government over the terrorist outfits, regional disparities and conflicts, weak law and order situation, relative deprivation among individuals and religion embodied socio-economic grievances have been common push factors behind rapidly increasing poverty and increasing terrorism, especially during last few decades.

Figure 1: Terrorism and Poverty as pull factors of Macroeconomic Performance.
Source: Authors' Formulation

As Figure 1 shows, poverty and terrorism have reverse relationship with macroeconomic performance; which means that an upward movement along the economic ladder would also result into decrease in terrorism and poverty.

4. Econometric Modelling

To estimate the impact of terrorism and poverty on macroeconomic performance in African countries, we use following econometric model as in equation 1.

$$ln(\text{YPC}_{i,t}) = \alpha_i + \beta_i \cdot (N_{i,t}) + \beta_j \cdot (P_{i,t}) + \varepsilon_{i,t} \tag{1}$$

$$\varepsilon_{i,t} = \rho_i \left(\varepsilon_{i,t-1} \right) + \omega_{it} \tag{2}$$

Where
YPC = GDP per capita
P = Poverty head count ratio
N = Total number of terrorist activities per year

$\varepsilon_{i,t}$ is the disturbance term from the panel regression and ρ_i shows the autoregressive vector of residuals for the ith country. This paper uses variables for GDP per capita and poverty head count ratio, taken from World Development Indicators (WDI), and number of terrorist activities per year from Global Terrorism Database (GTD). The number of countries selected for the analysis are 22 and the time span is covered from 1970-2013. The selection of years and countries is on the basis of data availability.[5]

5. Empirical Estimation

In order to examine the long run relationship between macroeconomic performance, terrorism and poverty following analytical tools are used.

5.1. Panel Unit Root Tests

Dataset is composed of 44 years which creates a substantial length of time series and stationarity should be investigated via unit root test. To confirm the presence of unit root in time series variables, we have employed some different yet popular tests. Stated as: Levin et al. (2002) (LLC), Im et al. (2003) (IPS) and Maddala and Wu (1999) (MW) tests. The LLC is based on homogeneity of the autoregressive parameter, while the IPS is grounded on heterogeneity of the autoregressive parameters. Thus, pooled regression is not associated with IPS tests. MW tests, on the other hand, are based on Fisher type unit root tests that are not restricted to the sample sizes for different samples (Maddala and Wu, 1999). Breitung (2000) suggests a substitute test to LLC involving unbiased estimators. Results from all these tests are given in Table 1. The selection of the appropriate lag length was made using the Schwarz Bayesian Information Criterion.

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[5] Countries included are: Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Ghana, Guinea-Bissau, Lesotho, Madagascar, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Rwanda, Senegal, Sierra Leone, Swaziland, Tunisia, Uganda and Zambia.

Table 1: Unit Root Tests

	Intercept &		Intercept &		Intercept &	
	No Trend	**Trend**	**No Trend**	**Trend**	**No Trend**	**Trend**
	YPC		**N**		**P**	
LLC	I(1)	I(1)	I(0)	I(0)	I(1)	I(1)
Breitung	–	I(1)	–	I(0)	–	I(1)
IPS	I(1)	I(1)	I(0)	I(0)	I(1)	I(1)
MWADF	I(1)	I(1)	I(0)	I(0)	I(1)	I(1)
MWPP	I(1)	I(1)	I(0)	I(0)	I(0), I(1)	I(0), I(1)

5.2. Panel Cointegration Tests

Eberhardt & Teal (2011) recommend the use of macro-panel data techniques when time span is more than 20 years. Here t = 44, therefore, macro-panel data techniques are suitable. Since the variables are not integrated of same order (as found in Table 1), Pedroni and Kao tests of cointegration can be misleading. We employ MG, DFE and PMG, attributed to Pesaran & Smith (1995), Pesaran & Smith (1997) and Pesaran & Smith (1999) to investigate the long run relationship. These estimators are independent of the order of integration. For recent deployment of these estimators, see Mehmood & Raza (2014a); Mehmood & Raza (2014b); Mehmood et al. (2014a) and Mehmood, Rehman & Rizvi (2014) among others. Moreover, these are explained as follows:

Table 2: Cointegration Results			
	YPC = f(N, P)		
	MG	**DFE**	**PMG**
	Long Run Parameters		
$N_{i,t}$	-0.0355 (0.791)	-0.0209 (0.002)	**-0.0315 (0.000)**
$P_{i,t}$	-0.2923 (0.071)	-0.0885 (0.149)	**-0.2166 (0.000)**
	Average Convergence Parameter		
φ_i	-0.1308 (0.000)	-0.0647 (0.000)	**-0.0565 (0.001)**
Speed of Adjustment	7.6 years	15.5 years	17.7 years
	Short Run Parameters		
ΔN	0.0002 (0.887)	-0.0005 (0.222)	**-0.0008 (0.670)**
ΔP	-0.0765 (0.036)	-0.0431 (0.000)	**-0.0202 (0.427)**
C	0.9037 (0.000)	0.4485 (0.000)	**0.4221 (0.000)**
p-value	(Hausman)$_{MG/DFE}$ = 0.999		
	(Hausman)$_{MG/PMG}$ = 0.919		
Remarks	PMG is more Efficient & Consistent as compared to both DFE and MG		
Note: In parenthesis, p-values of parameters are given.			

Hausman test is used to choose the most suitable technique out of MG, DFE and PMG. Firstly, it chooses between DFE and MG, which reveals that MG is a better estimation technique. Secondly, it chooses between MG and PMG, which reveals that PMG is a better estimation technique.

Results in the Table 2 reveal the comparison of panel cointegration estimation using MG, DFE and PMG. All three alternative methods of cointegration (MG, DFE and PMG) show long run relationship between terrorism, poverty and income per capita. It is evident from error correction terms (φ_i) that are less than unity and negative in terms of signs with statistical significance at 1%. However, the most efficient of these estimators is chosen via Hausman test, which is PMG.

5.3. Robustness
To find the robustness of slope parameters, we use Pooled ordinary least squares (POLS), dynamic ordinary least square (DOLS), and fully modified ordinary least square (FMOLS), in addition to three estimators in Table 2. The slope parameters of terrorist attacks and poverty are listed in Table 3.

Table 3: Estimation of Slope Parameters						
Dependent variable is YPC and independent variables are N and P						
Technique	Variable	Coefficient ($\hat{\beta}$)	Standard Error	Statistics	p-value	Inference
POLS	$N_{i,t}$	-0.0197	0.0039	-5.12	0.000	Negative & significant
	$P_{i,t}$	-0.4722	0.0290	-16.28	0.000	Negative & significant
DFE	$N_{i,t}$	-0.0355	0.1341	-0.26	0.791	Negative & insignificant
	$P_{i,t}$	-0.2923	0.1618	-1.81	0.071	Negative & significant
FMOLS	$N_{i,t}$	-0.0070	0.0017	-4.12	0.000	Negative & significant
	$P_{i,t}$	-0.1162	0.0206	-5.64	0.000	Negative & significant
DOLS	$N_{i,t}$	-0.0065	0.0017	-3.78	0.000	Negative & significant
	$P_{i,t}$	-0.1665	0.0245	-6.80	0.000	Negative & significant
MG	$N_{i,t}$	-0.0209	0.0069	-3.05	0.002	Negative & significant
	$P_{i,t}$	-0.0885	0.0613	-1.44	0.149	Negative & insignificant
PMG	$N_{i,t}$	-0.0315	0.0067	-4.71	0.000	Negative & significant
	$P_{i,t}$	-0.2166	0.0340	-6.38	0.000	Negative & significant
Note: FMOLS and DOLS estimates are found with Bartlett Kernel and Newey-West fixed bandwidth.						

In Table 3, POLS, DFE, FMOLS, DOLS, MG and PMG are used for estimating the slope parameters for poverty and number of terrorist attacks. All of the estimation techniques yield slope parameters with negative signs. Moreover, all of the slope parameters are statistically significant at 10% level of significance except for terrorism in DFE and poverty in MG. This stability of signs of slope parameters show the robustness of the estimated results.

6.1. Results and Interpretations
Both terrorism and poverty have been found as limiting factors for macroeconomic performance in Africa, because of their long-run negative impact on macroeconomic performance. The outcomes of our analysis thus rely upon the PMG estimator. It can be interpreted as an increase of one terrorism incidence decreases Y by 3.15% in Africa. On the other hand, 29.2% decrease in the income of an African individual confirms its likelihood to fall into the poor segment of the society. The speed of adjustment via average convergence parameter is also found. It reveals that if a terrorist attack happens then the economy will experience its shocks for almost 18 years. In addition, short run relationship between the variables is also witnessed. It further solidifies the cointegration results.

6.2. Policy Recommendation

In Africa, the double trouble syndrome seems to hold as per empirical findings in this paper. To get out of the trench of terrorism, African countries need to improve their economic conditions via mitigation of poverty. On the basis of these arguments, this study recommends not to follow the traditional wisdom of eliminating terrorism via war against it rather by improving institutional quality and targeted surgical operations. In fact, war on terrorism itself becomes an act of terrorism by triggering a chain of conflicts and rivalries. We based our argument on Meierrieks and Gries (2011) that found causality running from poverty to terrorism in African countries. It shows poverty as the root cause of terrorism and hence declined macroeconomic performance. 'Anti-terrorism embodied poverty-reduction policies' along with 'dispute resolution committees' are suggested to overcome the plight of declining macroeconomic performance in African countries. The said policies may achieve the desirable target of mitigating terrorism via reduced poverty and conflicts which, in turn, can improved macroeconomic performance. Awareness campaigns through state controlled narratives can also raise the tolerance level of masses by moderating them away from harmful forms of extremism. Future research can focus at country case studies to unveil the determinants of terrorism. Moreover, role of education can also be investigated in this context.

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