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The Root Causes of Domestic Terrorism in Nigeria: An Empirical Investigation

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Abstract - **Terrorism is the premeditated use or threat to use violence by individuals or sub-national groups against non-combatants in order to obtain a political or social objective through the intimidation of a large audience beyond that of the immediate victims. Nigeria as a developing country is having its own share of act of terrorism. With its multifaceted problems of mass unemployment, illiteracy, poor health, low infrastructure and poverty, Nigeria's inability to secure her citizens has become more glaring than ever. However, the root causes of terrorism in the country have yet to be examined. In this paper, the Ordinary Least Squares (OLS) technique was explored to estimate the behavioural equation for the period 1970 to 2015. Following a detailed time series analysis, the findings reveal that economic, political and environmental factors are prevalent regarding the root causes of terrorism in Nigeria, confirming the need for a redoubling of public policy efforts towards mitigating the associated risk. Government should continue to ensure that capital expenditure and recurrent expenditure are properly managed in a manner that it will raise the nation's production capacity and accelerate economic growth. Likewise, intelligence capabilities should be enhanced with emphasis on the combination of technology with human intelligence gathering.**
Keywords: **Ordinary Least Squares, Domestic Terrorism, Nigeria**

I.INTRODUCTION

For over40 years, the world has witnessed more than 20,000 terrorist incidents, ranging from the hostage takeover during the 1972 Munich Olympics to the 2002 and 2005 tourist bombings in Bali(Barth et al, 2006), to the 2013Boston Marathon bombings in United States. Enders and Sandler (1993, 1999 and 2000) define terrorism as the premeditated use or threat to use violence by individuals or sub-national groups against noncombatants to obtain political and social objectives through the intimidation of a large audience beyond that of immediate victims. The essential ingredients of terrorism, then, are violence and ideological, social and political motive. Generally terrorist acts appear to be random and disperse in order to cause tension to the widest possible audience and to create a general atmosphere of fear so that government officials can be forced to reach an accommodation with the terrorists. Even though the effects of terrorism on various sectors and the overall economy have been assessed in many literature (Yildirim, Öcal and Korucu, n.d.), the total impact of terrorism cannot be captured as it entails important social and political costs that are difficult to estimate.

Generally existing literature agrees that terrorism is expected to hinder economic growth through various channels, such as increase in productions and transaction costs, decrease intourism revenues, decrease in foreign direct investments and international trade. Blomberg etal(2004) report that terrorism leads to a diversion of spending from investment togovernment expenditures. Additionally, Abadie and Gardeazabal (2008) introduce terrorism ascatastrophic risk in a standard endogenous growth model and report that an increase in theintensity of terrorism leads to a fall in net foreign investment positions.

Post-independence Africa today ranks seventh in global terrorists' incidence, third in global terrorists' injuries and fourth in global fatalities recorded for between1997 and 2007. Africa, unarguably, is no stranger to terrorism.Despite its prevalence, terrorism has manifested in different ways in Africa. In some Africancountries, terrorism and its impacts and reaches are limited and contained within nationalterritories. In some others, terrorism is boundary-blind (Oyeniyi, 2010).

Terrorist activities have been on the upswing in Nigeria, a country that has suffered attacks from suicide bombers masquerading as Islamic adherents. Daily the Nigerian economy wobbles under the weight of terrorism that has damaged investors' confidence and sent the economy on a downward slide (Umejei, 2011).Counter terrorism initiatives in combating the scourge of terrorism have proved abortive.To complicate the situation, most of the foreign missions advise their citizenry to be wary of doing business in the country because of what they believe is a high security risk.A survey released by UK-based global analysts, Maplecroft, showed that Nigeria is the 19th most at risk country from terrorist attack (Bakare, 2011).

Although economic loss can be the result of the consequences of concrete significant attacks or of the mere threat of terrorism,the scope of this study is limited to the occurrence of terrorism in Nigeria irrespective of the terrorist groups. As such, the objective of this study is to

empirically investigate the determinants of terrorism in Nigeria from 1970 to 2012. It is important to note that there is a difference in domestic and international terrorism. Much of the transnational terrorism today seems to be generated from grievances against rich countries. Terrorists may decide to attack national of rich countries or their property to attract international publicity. That might result in the fact that transnational terrorism may affect mainly rich countries. The same cannot be said about domestic terrorism (Abadie, 2006). The origins and immediate effects of domestic terrorism are circumscribed to the host country (Rosendorff and Sandler, 2005). Therefore, to understand the country-level determinants of domestic terrorism it is important to look primarily within countries, and analyze how characteristics of the environment, that is, structural factors at the national and local level, affect the emergence of domestic terrorism (Polo, 2012). An understanding of the causes of domestic terrorism in Nigeria is essential if an effective strategy is to be crafted to combat it. The rest of the paper is structured as follows. Section ii provides an overview of terrorism in Nigeria. The literature review and theoretical framework are shown in section iii. Section iv presents the analytical procedure for the study and also describes the data, specifications the model and indicates the estimation Technique. The results of the empirical analysis are reported in Section v. Section vi summarizes the main conclusions of the paper and gives policy recommendation.

II. HISTORICISING DOMESTIC TERRORISM IN NIGERIA

Domestic terrorism has had an uneven growth in Nigeria. This came about as a result of revolutionary movements and violent inter-ethno-religious clashes. Osaghae and Suberu (2005) stated that, ethnic and violent clashes can be traced to colonialism and its attendant policies. Colonialism brought about socio-economic inequality through the institutionalization of classes and thereby class struggle (Njoku, 2011). A state of mutual suspicion existed among the major ethnic groups in Nigeria. And violent clashes among these groups has economic undertone. The various ethnic groups are keen to control the central government because all resources are centralized, thus making positions in the central government highly lucrative (Osaghae and Suberu, 2005). Furthermore, Falola (2009), in his book, Colonialism and Violence in Nigeria, argued that the root cause of violent activities in Nigeria today, such as Jos crisis, the Niger Delta violence in the southern and northern part of Nigeria respectively, can be traced to colonialism. At that time, the natives challenged colonial rule through violence. Therefore, a "public culture" was created in the Nigerian polity, in which the citizenry were inclined to commit acts of violence in response to exploitative colonial policies. Some of the notable violent protests during the colonial rule were the Aba women riot of 1929, and the Ekumeku wars, in which the guerilla form of resistance was used against the British occupation of Nigeria (Falola, 2009).

These violent activities by the colonial people in Africa and Nigeria, in particular during the colonial period, can be traced to the policies of the colonial authorities, during and after the period of the great depression from 1929 to 1939 (Njoku, 2011). Before the depression of the 1930s, the economic depression in the 1870s was the major factor that led to the colonialism in some parts of Nigeria (Ochonu, 2009). The economic depression of the 1930s was felt in various ways. There was the "falling export prices for crops and tin and declining trade profits and revenue, as British firms either ceased importing European manufacturers or sought tax relief"(Ochonu, 2009). This economic development had an established economic pattern where the agricultural and other reserves are accumulated from the taxes paid the colonialist. The colonial authorities responded by introducing austerity measures aimed at cutting salaries, firing some workers, expanding taxation, an aggressive revenue drive, public works were suspended, price controls, and expansion of export crops (Ochonu, 2009).

The people of Nigeria were prematurely integrated into the world market. According to Ochonu, "they were placed in the web of uncertainty, volatile and exploitative world market." He further stated that "during the depression, the British colonial authority implemented contradictory policy of both incorporation and imperial closure of colonially mediated globalization and deglobalization."

These economic policies of the colonial authority, which affected the income of colonial subject, stirred up all forms of violent and domestic terrorism against colonial authorities. These problems are attributed to the negative effect of globalization or pre-modern globalization. This is based on the fact that by the 1920s and the 1930s, the colonized nation's economy had been fully integrated with the world economy, forming a center- peripheral-like relationship. Thus, the economic depression in Western developed states affected the colonial states (Njoku, 2011).

Furthermore, in the 1980s, another economic depression hit the nation; that is, in the period of the "oil doom" there was a sharp drop in the sale of crude oil, which was rapidly becoming the major export earning of the country at that time. Responding to the economic crisis, the government, under the advice of the IMF, introduced the structural adjustment program (Libcom.org, 2006). This austerity measure, which was aimed at wage cuts, dismissal, cuts in government expenditures, etc., resulted in severe hardship among the populace. The end product became violent protests and domestic terrorism towards the government. "In 1988, in response to an increase in the price of fuel, riots broke out in Jos and Sokoto state, which turned out to more intense…."(Libcom.org, 2006). Moreover, in May and June of 1989, several towns such as Lagos, Ibadan, Benin City, and Port Harcourt revolted against the IMF's plans, which

resulted in destruction of hundreds of lives and property worth millions of naira (the Nigerian currency)(Libcom.org, 2006).

The economic crisis in the 1980s saw the emergence of groups who were involved in terrorist activities in the country. They include: Ogoni Youth, Niger Delta Volunteer Force, (NDVF), Odua People Congress (OPC), Arewa Youth Consultative forum, Movement for the Actualization of the Sovereign State of Biafra (MASSOB), Movement for the Survival of the Ogoni People (MASOP), Movement for the Emancipation of the Niger Delta (MEND), Ijaw Youth Council (IYC), Egbesu Boys of Africa (EBA), Niger Delta Vigilante (NDV), Isoko National Youth Movement (INYM), Egi Women Movement (see Table 1 in Appendix for police record of some cases of kidnapping and piracy by some of these groups in the Niger-Delta). "Several factors underline the growth and development of these groups… economic recession of the 1980s, falling commodity prices, OPEC price increases, privatization, economic liberalization, deregulation, currency devaluation, cold war politics, trade barriers" (Libcom.org, 2006) (see Table 2 in Appendix for the casualty rate of some of the terrorist groups in Nigeria).

In another vein, this period also witnessed state terrorism. The response by the government to these violent protests was brutal. Several military administrators from the 1980s through the 1990s responded violently to these protests, thereby creating an atmosphere of fear(Njoku, 2011). Ogundiya and Amzat posited that certain incidences capture the fact that, in suppressing opposition to economic policies by the military government, diverse acts of state terrorism were carried out successfully. For instance, Ken Saro Wiwa, the leader of the Movement for the Survival of the Ogoni People (MASOP), was executed by the then military ruler General Sanni Abacha; the assassination of Dele Giwa, an editor and environmental activist, through a letter bomb in October 1986; the assassination of Kudirat Abiola in June 4 1999; and the assassination of Moshood Abiola in July 7, 1998(Ogundiya and Amzat, 2008).

A major challenge of domestic terrorism that is currently facing the country is the emergence of dreaded Islamic sect popularly called Boko Haram in the Northern part of Nigeria. Ideologically, Boko Haram proposes that interaction with the Western world is forbidden, and also advocates the establishment of a Muslim state of Nigeria (Zumve, Ingyoroko and Akuva, 2013). The activities of the Islamic group especially since 2009 in the area have not only constituted a major security threat to the nation, but has also make the area the most dangerous place to live in the country (Abimbola and Adesote, 2012). It is important to state from the outset that an attempt to forcefully impose religious ideology or belief on the Nigerian society since her independence in 1960 especially in the Northern part is not new. The first major attempt in the post colonial period was led by the leader of the Maitatsine sectarian group in 1980s and eventually led to large scale uprisings (Abimbola and Adesote, 2012). Thus, it can therefore be said that the emergence of this dreaded Islamic sect popularly known as the Boko Haram had its root and inspiration from colonial period as well as from the "Maitatsine" uprisings of the early 1980s in particular (Abimbola and Adesote, 2012). Although Boko Haram could be compared in terms of philosophy or ideology and objectives to the Maitatsine sectarian group, its organizational planning, armed resistance, and modus operandi is Taliban (Danjibo, 2009).Table 3 captures in summary the terror-related deaths and destruction perpetrated by the Boko Haram from July 2009 to April 2012(also, see Appendix for images of terrorism in Nigeria).

III. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Terrorism represents a major threat to all states and human security, but not all countries and regions appear equally vulnerable, nor do they face the same type and level of risk (Polo, 2012). Although there already exists a significant body of research on terrorism, most existing systematic research on terrorism focuses exclusively on transnational terrorism, where either the perpetrators, venue, or victims or origins of attacks involve different countries, as opposed to domestic, home-grown, or home-directed terrorism within a single country (Sandler and Enders, 2008; Enders, Sandler and Gaibulloev, 2011; Savun and Phillips, 2009; Krieger and Meierrieks, 2010). Existing literature on domestic terrorism is in fact primarily qualitative and often based on case-studies that only consider conflict cases and where the findings are difficult to generalize (Sanchez-Cuenca and de la Calle, 2009). The near exclusive transnational focus is unfortunate, as domestic terrorist attacks outnumber transnational attacks about four to one, and domestic attacks have generated a much larger number of deaths and victims (Enders and Sandler, 2006; La Free and Dugan, 2004; Savun and Phillips, 2009).

As a result of the focus on transnational terrorism little is still known about the causes of domestic terrorism, and how these may differ from transnational attacks. There are strong reasons to suspect that the explanatory frameworks for transnational terrorism are inadequate for understanding domestic terrorism (Polo, 2012). If so, generalizing from research on transnational terrorism to domestic terrorism may yield misleading conclusions and flawed policy prescriptions for counterterrorism efforts (Berrebi and Lakdawalla, 2007; Feldmann and Perälä, 2004; Piazza, 2008; Crenshaw, 1981; Eubank and Weinberg, 1994, 1998; Li, 2005; Young and Findley, 2011; Chenoweth, 2010; Piazza, 2011; Polo, 2012). Therefore, to understand the country-level determinants of domestic terrorism it is important to look primarily within countries, and analyze how characteristics of the environment affect the emergence of domestic terrorism (Polo, 2012).

The country of focus in this current study is Nigeria and an economic theoretical framework is adopted in understand the determinants of domestic terrorism, this is because domestic terrorism is homegrown and home-directed: its origins and immediate effects are circumscribed to the host country (Rosendorff and Sandler, 2005). An economic view on terrorism assumes that terrorists are rational actors (Schneider, Brück and Meierrieks, 2011). The average terrorist behaves more or less as a homo economicus, considering their response to incentives, their narrow self-interest and the rationality of their expectations (Caplan 2006). As rational actors they commit terrorist actions in order to maximize their utility, given certain benefits, costs and constraints linked to these actions (Sandler and Enders 2004).The calculus of terrorists includes their marginal benefits and costs. The utility-maximizing level of terrorism is the level where the marginal costs equal the marginal benefits of terrorism. Benefits from terrorism arise from obtaining the tactical and strategic goals of terrorism. The costs of terrorism are linked to e.g. the use of resources and to the opportunity costs of violent behavior (Frey and Luechinger, 2004). Aggregate' factors that are country-specific impact the terrorists' cost-benefit matrices and thus their behavior. Such determinants may either raise the price of terrorism or the opportunity costs of terrorism, causing a decline in terrorist activity. Alternatively, the price of terrorism, and thus the opportunity costs of terrorism, may be decreased, resulting in an increase in violent behavior. The empirical literature on terrorism roots surveyed in the following picks up this idea (Schneider et al, 2011).

In general, this literature aims at finding the roots of terrorism. Basically, the idea is that certain poor or unfavorable conditions morph into violence (terrorism) via the aforementioned cost-benefit effects. Here, a central question is whether economic (e.g., poverty) or political (e.g., repression) factors are root causes of terrorism (Schneider et al, 2011). Of course, eventually finding the root causes of terrorism should be particularly interesting for counter-terrorism, e.g., when deciding whether to focus on economic or political development. However, while some researchers (e.g., Krueger, 2007; Krueger and Laitin, 2008) argue that political conditions matter clearly more to terrorism than economic ones, other studies come to less conclusive (or contradicting) conclusions. Also, non-economic and non-political factors (e.g., ethnic conflict and geography) have also been found to matter to terrorism. That is, the empirical evidence offers ample support for a number of distinct schools of thought emphasizing the relative importance of certain terrorism determinants on theoretical grounds: economic deprivation, socio-economic change over long-run socio-economic conditions, political and institutional order, semi-open societies (partial democracies), Economic and political integration, Political transformation and political instability, contagion(Gurr, 1970; Robison et al, 2006; Ehrlich and Liu, 2002; Ross, 1993; Kirk, 1983; Kurrild-Klitgaard et al., 2006; Campos and Gassebner, 2009; Rotberg, 2002; Huntington,1996; Bernholz, 2006; Bergesen and Lizardo, 2004; Li and Schaub, 2004).

Some studies try to gain information about the causes of terrorism by analyzing individual Behavior. In general, their findings suggest that on an individual level violent activity is not correlated with poor economic conditions or low levels of education. By contrast, higher income and better education seem to promote participation in terrorist activity (as does a young age) (Krueger and Maleckova, 2003; Bueno de Mesquita, 2005; Berrebi, 2007; and Krueger, 2008).

IV.ANALYTICAL PROCEDURES

The following analytical framework is derived from the utility theory following Bueno de Mesquita (2005).Consider amodel of the relations between three actors: the government (*G*), a terrorist organization (*T*), and a group of potential terrorists which is a subset of a population.

Individuals (sympathizers or potential terrorists) can decide whether to engage in economic activity or to volunteer for a terrorist organization. If an individual*i* decides to engage in economicactivity, the utilitygained is given by:

$$U^{e}_{i} = (1 - \tau(a))\, f(\gamma, \theta_i) \quad \ldots..(1)$$

where $f(\cdot)$ is increasing, concave in γ and θ_i, and represents the utility from economic gains. γ is a parameter that accounts for factors—beyond personal characteristics (θ_i) and the effects of government crackdowns (τ)— that influence economic opportunity, such as the general state of the economy. Let's assume further that $f(\gamma, 0) = 0$ for all γ. That is, the absolutely lowest ability people ($\theta = 0$) have no economic opportunity.

If an individual decides to become a terrorist, the individual receives two types of benefits: ideological benefit having to do with fighting back against a regime blamed for the loss of freedom, dignity, and rights. This benefit is an increasing function of government crackdowns given by $e(a)$, where $e(\cdot)$ is positive for all a and $e'(\cdot)>0$ (Bueno de Mesquita, 2005).The second benefit an individual receives from joining a terrorist organization is a function of his or her effectiveness and success as a terrorist. In particular, individuals have a greater preference for being a terrorist if they are likely to be successful at furthering the organization's goals or if they have a chance of being promoted within the organization (Adams, 1987).

Let's assume further, that the greater the level of counter-terror, the less likely any individual is to carry out successful attacks (i.e., the expected payoff from success as a terrorist decreases as the level of government counter-terror increases).Consequently, this payoff is given by $u(a,$

θ_i), where $u(\cdot)$ is nonnegative for all a and θ, $\frac{\partial u}{\partial \theta} > 0$, $\frac{\partial u}{\partial a} < 0$, and $u(\cdot)$ is concave.

In general, an individual who becomes a terrorist gains utility:

$$U^{v}_{i} = e(a) + u(a, \theta_i) \quad \ldots\ldots\ldots\ldots(2)$$

In addition to accepting volunteers the terrorist organization invests resources r in costly terrorist activity. The impact of terrorist violence is a function of the amount of resources devoted to terror, the average quality of the terrorists, and the level of counter-terror(Bueno de Mesquita, 2005). It is given by:

$$v(r, \bar{\theta}, a) \quad \ldots\ldots\ldots(3)$$

$v(\cdot)$ is increasing and concave in both r and θ while it is decreasing and concave in a.

It is assumed that:

$$\frac{\partial^2 v(r, \bar{\theta})}{\partial r \, \partial \bar{\theta}} > 0 \text{ and } \frac{\partial^2 v(r, \bar{\theta})}{\partial r \, \partial a} < 0$$

The intuition here is that investments in terrorism are more productive, the higher the quality of operatives and less efficient the greater the level of counter-terror. There are opportunity costs associated with devoting scarce resources to political violence given by c(r), where $c(\cdot)$ is increasing and strictly convex.

The terrorist organization's overall expected utility is given by:

$$U^{T} = v(r, \bar{\theta}, a) - c(r) \quad \ldots.(4)$$

The government seeks to avoid terrorist attacks. It also bears a cost for engaging in counter-terror given by $k(a)$,where $k(\cdot)$ is increasing and convex(Bueno de Mesquita, 2005). The government's utility, then, is given by:

$$U^{G} = -v(r, \bar{\theta}, a) - k(a) \quad \ldots\ldots\ldots(5)$$

The following maximization problem is solved once the terror organization has chosen its operatives (which determines θ):

$$\max_{r} v(r, \bar{\theta}, a) - c(r) \quad \ldots\ldots\ldots(6)$$

The first order condition characterizes the optimum (since the objective function is concave):

$$\frac{\partial v(r^*, \bar{\theta}, a)}{\partial r} = c'(r^*) \quad \ldots\ldots\ldots(7)$$

The left-hand side of Equation (1) represents the marginal benefit to the terrorist organization of increasing the level of resource commitment. The right-hand side represents the marginal opportunity costs of increasing the level of resource commitment. Setting these equal implicitly defines the optimal level of resource commitment:

$$r^*(a, \bar{\theta}) \quad \ldots\ldots\ldots(8)$$

Some facts about the terror organization's behavior is that the amount of resources (r^*) devoted to terrorism increases the quality of the operatives ($\bar{\theta}$); the terrorist organization chooses the highest ability volunteers available; greater ideological motivation and economic downturns increase mobilization.

In general, the occurrence of terrorism depends on the extent to which government cracks down on terrorist organizations. Government crackdowns can lead to either increased or decreased mobilization. Crackdowns increase mobilization if the marginal effects on economic opportunity and ideology are greater than the marginal effect on the ability of terrorists to carry out effective attacks. Otherwise they decrease mobilization. Following equations 2, 4 and 5, the occurrence of terrorism (T) is given by:

$$T = U^{T} + U^{v} - U^{G} \quad \ldots\ldots\ldots(9)$$

A.Estimation Model, Data and Estimation Techniques

When considering dependent variables, there are several measurements for terrorism such as: 1) the number of terrorist incidents per year; 2) the number of victims per incident (Caruso and Schneider, 2011). The first dependent variable, namely the number of terrorist incidents per year, is expected to capture the choice of perpetrating some terrorist attack. In any case, they can be considered *preconditions* for terrorism, namely: *factors that set the stage for terrorism over the long run*, as defined in Crenshaw (1981). The second dependent variable is the number of victims per incident, which is intended to capture the brutality of terrorism. In particular, brutality of terrorism is somehow a measure of terrorist output. Due to issues of data availability, the dependent variable used in this paper is the occurrence of terrorism (T) and it is based on the chronological data on terrorism incidents. The variable is constructed using binary.

According to Godovicova (2012), there exists no single root cause of terrorism, or even a common set of causes. Invariably, there are a huge number of potential factors explaining terrorism and the specification of the terrorism function varies according to the country or region concerned, the time period of the study, the type of the data (time series or panel data) and the nature of terrorism. The choice of the explanatory variables included in this paper is

sensitive to problems, such as, the degree of freedom loss, data reliability, collinearity problems, etc. The intent in this paper is to empirically test variables resulting in domestic terrorism occurrence in Nigeria. Using generic terms from literature, a multiple regression model is developed as follows after equation 9:

Domestic Terrorism = λ_0 + α_1(economic) + α_2(social) + α_3(political) + α_4(demographic) + α_5(geographic) + α_6(environmental) + λ …..(10)

Where λ_0 is a constant term, α_1… α_6 are coefficients that will be estimated empirically. The error term is given as λ. A linear relationship is used because of its simplicity and easiness of using for regression analysis. The signs of the respective economic coefficients are expected to be negative, likewise is the geographic variable coefficients. The expected sign of the coefficients of social variables is positive. So also are the coefficients of political, demographic, and environmental variables expected to be positive.

However, substituting specific measures for generic categories, equation 10 becomes a little complex:

Domestic Terrorism = λ_0 +α_1(GDP per capita, human development index, inequality of income) + α_2(poverty level/unemployment rate) + α_3(political stability) +α_4(population growth) +α_5(mineral resources) + α_6(urbanization) + λ ……..(11)

To assess alternative explanations, additional control and robustness variables will be added to the base model.

Data for all the variables are obtained from various statistical sources. The data set was restricted to the period: 1970- 2015. The choice of period was guided by the frequency and intensity of terrorist attacks in the country. Most of the data are expressed in logarithms to capture multiplicative effects of the selected determinants. To investigate the data univariate properties and to determine the degree to which they are integrated, both the augmented Dickey-Fuller (ADF) (1979) and Phillips-Perron (PP) (1988) unit-roots tests have been employed. Secondly, the paper examines the causal relationship between the dependent and explanatory variables by employing the Granger causality tests for co-integrating systems. Such an exercise will provide an understanding of the interactions among the variables in the system and will shed light on the directions of the causality. To actually estimate the basic specification in equation (10), Ordinary Least Squares (OLS) method was used.

V. EMPIRICAL RESULTS AND DISCUSSIONS

The summary of the statistics used in this empirical study is presented in Table 4 in Appendix. As may be observed, LOG(HDI) has the lowest mean value of -0.948307 while LOG(GOVX) leads with a maximum value of 15.16321. In terms of minimum value, LOG(OPEN) showed the least, i.e., -3.912023 and has the highest standard deviation (2.897208). The analysis was also fortified by the values of the skewness and kurtosis of all the variables involved in the model. The skewness is a measure of the symmetry of the histogram while the kurtosis is a measure of the tail shape of the histogram. The bench mark for symmetrical distribution i.e. for the skewness is how close the variable is to zero while in the case of kurtosis, when it is three is called mesokurtic but values lower than that is called platykurtic and above is referred to as leptokurtic. The result of the Jarque-Bera also confirms the normality distribution assumption of the model.

As a prelude to estimation of the model, the correlation for the variables is examined in Table 5 (see Appendix). The correlation coefficients among the variables are relatively high especially between urbanization rate (LOG(UBAN)) and government expenditure (LOG(GOVX)) and between trade openness (OPEN) and government expenditure (LOG(GOVX)). Similarly, this high correlation is displayed between Human development index (LOG(HDI)) and occurrence of terrorism (TERR) and also between urbanization rate (LOG(UBAN)) and oil export (LOG(OEXP)) which is a proxy for natural resources.

Concerning the unit roots, results of both the ADF and PP tests are reported in Table 6.1 and 6.2 (see Appendix). The result in Table 6.1 shows that besides human development index (HDI) and poverty level (POVL), all the other variables were not stationary at levels. This can be seen by comparing the observed values (in absolute terms) of both the ADF and PP test statistics with the critical values (also in absolute terms) of the test statistics at the 1% level of significance. Since the result from table 6.1 provides strong evidence of non stationarity, hence, the null hypothesis is accepted, as such, it is sufficient to conclude that there is a presence of unit root in the variables at levels. Based on the result, all the variables were differenced once and both the ADF and PP test were conducted on them again and the results presented in Table 6.2. The result reveals that all the variables are stationary at first difference, on the basis of that, the null hypothesis of non-stationary is rejected and it is safe to conclude that the variables are stationary, implying that the variables are integrated of order one, i.e. 1(1).

To investigate the causal relationship among the variables, this paper adopts the Granger Causality test. As presented in table 7, the results show that there is a feedback causal relationship between LOG(POPG) and LOG(GDPC); POLS and LOG(GOVX); LOG(POVL) and LOG(GOVX); LOG(OEXP) and LOG(GOVX) . Unidirectional relationship is seen between LOG(GDPC) and LOG(UNEM) without a feedback effect, running from LOG(UNEM) to LOG(GDPC). Similarly, a unidirectional relationship is observed between LOG(UNEM) and LOG(GOVX), the causality runs from LOG(UNEM) to

LOG(GOVX). The causality result also revealed a unidirectional relationship without feedback effect between TERR and LOG(POVL). The paper found no causal link between LOG(OEXP) and TERR; and LOG(UBAN) and TERR. More of the unidirectional and independent relationships of the variables are shown in Table 7 in Appendix.

Table 8 (see Appendix) shows the regression estimates for the study from column 1 through 5. Column 1 reports Ordinary Least Squares (OLS) estimates of the coefficients in equation (11). The most important economic explanations of terrorism generally focus on poor economic conditions and lack of economic opportunities. As part of the economic factors, variables such as GDP per capita, human development index and Gini coefficient were incorporated. The coefficient on log GDP per capita in column (1) shows no significance but the coefficient on LOG(HDI) shows that a 1% increase in human development index is associated with a 1.95% increase in terrorism. This is contrary to economic expectation. The Human Development Index measures the well-being of the inhabitants of the country along three different dimensions: health, education, and income. It is constructed using country data on life expectancy at birth, adult literacy and school enrollment ratio, and GDP per capita.

Though the LOG(HDI) is wrongly signed as indicated in column (1) in Table 8, a plausible explanation for this is that economic growth in Nigeria is largely driven by capital-intensive sectors, it has not translated into sufficient job creation and poverty remains high. As a result, Nigeria has a low Human Development Index (HDI). The country has made some progress towards attainment of the Millennium Development Goals (MDGs), albeit slowly and unevenly (ADBG, 2013). According to UNDP (2007), Nigeria's more than 140 million people will be better-off if the 6% average growth of the economy is matched with more productive and stable jobs and a more equitable distribution of income. On the other hand, the gini coefficient (LOG(GINI)) which shows the income distribution is statistically insignificant at any of the conventional levels.

To understand how the characteristics and quality of the country's political environment influence the risk of domestic terrorism, political stability variable (POLS) was included. It is a dummy variable that captures the political regimes in Nigeria over the years. It assumes the value of 1 for year of civilian rule and 0 for military rule. These political regimes differ considerably in their ability to satisfy the grievances of groups within the society (Lijphart, 1977; Powell, 1982; Aksoy and Carter, 2011). As a consequence, groups who feel excluded from the political process and lack viable alternatives may ultimately resort to terrorist violence as a means to express their grievance and advance their political goals. From column 1 in Table 8 (see Appendix), the coefficient of POLS variable shows a positive and statistically insignificant relationship with terrorism.

The presence of widespread poverty favors the recruitment process undertaken by terrorist organizations because the opportunity cost for individuals is very low. To control for this social factor, there was need to introduce the variable poverty level (LOG(POVL)). From the result in column 1 of Table 8, the coefficient showed a positive but statistically insignificant relationship with terrorism. It is well-known that certain geographic characteristics may favor terrorist activities. Some areas of the country are endowed differently in terms of mineral resources. To control for the effect of geographic factors on terrorism, mineral resources is proxy by oil export (LOG(OEXP)). The result shows that this variable does not show a statistically significant impact on terrorism at conventional test levels, even though it is correctly signed.

To control for environmental factors, urbanization rate was added to the baseline specification. From social point of view urbanization (LOG(UBAN)) encourages crimes (including terrorism) as the rate of crime is higher in large cities and in urbanized areas. The positive relationship between urbanization rate and terrorism is in conformity with the expected result. Unfortunately, it happened to be statistically insignificant at any conventional test levels as depicted in column 1 in Table 8. To control for the effects of demographic factors on terrorism, population growth rate (POPG) was considered in the baseline specification as show in column 1 in Table 8. Several studies support the hypothesis that more populous countries are more likely to produce terrorism. The result of the regression analysis in this paper shows a correctly positively signed but statistically insignificant coefficient on LOG(POPG).

In column (2) specification, inflation rate was added to the other economic development indicators such as human development index, income equity, per capita GDP. Inflation denotes the average annual change in consumer price index. On one hand, it proxies changes in purchasing power of individuals which can affect the standard of living and in turn lead to terrorism. The result in column 2 in Table 8 shows that inflation (LOG(INFL) has an insignificant relationship with terrorism at any conventional levels even though it is correctly positively signed. Most of the coefficients of variables in the baseline model in column 1 were very slightly affected but there signs remained when inflation variable was injected in the model.

Column 3 provides more evidence when government total expenditure(LOG(GOVX)) was inserted in the specification in an attempt to add to the control variables on political factor. The coefficient showed an inverse relationship with terrorism, implying that 1% increase in government expenditure reduces terrorism occurrence by -0.199564%. The coefficient on LOG(GOVX) is correctly signed in line with economic expectation and statistically significant at 1% level. There are several possible interpretations for the strong statistical impact that government expenditure has showed on terrorism. This is because in Nigeria,

government expenditure has continued to rise due to the huge receipts from production and sales of crude oil, and the increased demand for public (utilities) goods like roads, communication, power, education and health. Government is trying her best to meet the increasing need to provide both internal and external security for the people and the nation.

As a result of the inclusion of LOG(GOVX) in column 3 specification, other variables such as LOG(GDPC), LOG(UBAN), LOG(INFL) that did not show statistical significance developed significant relationship with terrorism. In addition, the magnitude of the coefficients of the variables increases considerably in contrast with the results in column 2. For example, the coefficient on GDP per capita became correctly signed. It showed that a 1 percent increase in the log of GDP per capita is associated with a decrease of around -0.196051 percent in the occurrence of terrorism.

Still from column 3, a 1 percent increase in urbanization rate translates into a .3 - .4 percent increase in the occurrence of terrorism. Nigeria since independence has become an increasingly urbanized and urban-oriented society (Mongabay.com., 2012). Following the pattern of other countries, rapid urbanization and migration to the cities are major factors that contribute to higher crime rates as well as terrorism. The inclusion of LOG(GOVX) in column 3 specification showed a negative relationship between inflation rate and terrorism. This result should be treated with caution. Though inflation targeting has been the strategy of Central Bank of Nigeria, yet inflation has not reduced. The standard of living is decreasing such that it can encourage terrorism. Besides the changes experienced on the coefficients of the above variables when LOG(GOVX) was incorporated in the specification in column 3 of Table 8, all other coefficients remained non-significant at conventional test levels.

Column (4) reports the coefficients for the same regression as in column (3), but this time unemployment rate was added as control variable under social factors. Unemployment is commonly assumed as a proxy for a broader social welfare. The higher is the rate in unemployment the lower is assumed to be social welfare. Moreover, the higher is the number of unemployed individuals, the higher might be the number of potential terrorist because of a lower opportunity cost (Caruso and Schneider, 2010). The result presented in column 4 shows that unemployment rate (LOG(UNEM)) showed a non-significant relationship with terrorism. The coefficient carried a wrong sign (negative) and was found to be statistically insignificant at any conventional test levels. Other variables that showed significance and those that were not significant in column 3 showed the same characteristics in column 4 even though there were slight increases and decreases in the magnitude of their coefficients.

In an attempt to see whether international factors do matter in domestic terrorism in Nigeria, trade openness was incorporated in column 5 specification shown in Table 8. The degree of openness is commonly assumed to be a channel of economic growth. Therefore it is expected to have the same negative sign on terrorism as expected of GDP per capita. Definitely, the result revealed an inverse relationship with terrorism but statistically, this relationship was not significant at any of the conventional test levels. Other variables that showed significance and those that were not significant in column 3 showed the same features in column 5. However, some slight increases and decreases in the magnitude of their coefficients were observed. So also were the changes in their significant levels.

VI. CONCLUSION AND RECOMMENDATIONS

Terrorism is a very complex and diverse issue; therefore to examine its root cause is a challenging task. Moreover, generalizing from research on transnational terrorism to domestic terrorism may yield misleading conclusions and flawed policy prescriptions for counterterrorism efforts. As such, this paper investigates domestic terrorism in Nigeria by employing annual data for the time period 1970-2012. Generally, the paper runs a regression with the dependent variable representing the occurrence of terrorism and various independent variables representing economic, political, social, demographic, geographic and environmental variables for the country. The aim is to see if there is a statistically significant relationship between the independent variables and the occurrence of terrorism. As usual the econometric results of the estimations are mixed. The results show that economic factor such as Human Development Index; political factor like political instability, environmental factor like urbanization favor the presence of terrorism. On the other hand, economic factors like GDP per capita and inflation; political factor like government expenditure discourages terrorism.

At this juncture, this paper sounds a note of caution that adequate and consistent data for the period of study was not available on the number of terrorist incidents per year and the number of victims per incident. Because of this limitation, attention was limited to the occurrence of terrorism which is a dummy variable. The data was constructed using a limited amount of best available information. Also, due to unavailability of data, many control variables were dropped from the model which would have allowed for a wider understanding of the effect of other factors on terrorism. The weaknesses with the data sets used in the paper highlight the importance of testing the roots of domestic terrorism in Nigeria with an alternative data set, variety of models and more advanced econometric techniques.

Nonetheless, the results in this paper shows the occurrence of terrorism originating from some factors, confirming the

need for a redoubling of public policy efforts towards examining how to best mitigate the associated risk. Thus, some policy implications are stated as follows:

Firstly, government should continue to ensure that capital expenditure and recurrent expenditure are properly managed in a manner that it will raise the nation's production capacity and accelerate economic growth. The foregoing can be achieved by increasing funds that are meant for anti-corruption agencies like the Economic and Financial Crime Commission (EFCC), and the Independent Corrupt Practices Commission (ICPC) in order to arrest and penalize those who divert and embezzle public funds. Also, there is a high need to diversify the Nigerian economy into the non-oil sector. This would help expand the sources of growth and make it broad based, both socially and geographically. Further development of agriculture, manufacturing and services could broaden growth, create employment and reduce poverty. These will in turn reduce terrorism.

The policy makers should try to keep inflation within acceptable limits so that the real income of consumers does not lose its purchasing power. To achieve this, the money authorities should shift from a regime of monetary targeting to inflation targeting. Although, inflation targeting cannot be single-handedly pursued by the Apex bank in Nigeria, there is need for fiscal discipline. Fiscal and monetary policies should be complementary for the activities of the monetary authorities to be effective.

To curtail political instability, a political system of government that gives more power to the federating units rather than concentrating so much power at the centre should be embraced. In that regard, emphasis must be focus on strengthening and encouraging the institutions. For example, the culture of foisting candidates on the electorate during elections must stop. Elections must be free and fair and a system should be put in place that ensures only patriotic and unscrupulous individuals hold positions of responsibility. Similarly, the judicial system should be strengthen by ensuring that justice is dispensed no matter whose ox is gored. Nepotism and a culture of impunity must also be eschewed from the national psyche and life. Nigeria must be an egalitarian nation and not a country where there are two sets of rules-one for the rich and another for the poor (Okereke, 2013).

The policy makers should make some planned districts for adjusting the urbanization into those districts. These districts should have more chance of employment and more capacity to absorb the rapid urbanization. Secondly, government should create job opportunities in rural areas as well. This process will reduce the burden of unemployed persons in urban areas and finally reduce crimes

Government must enhance its intelligence capabilities with emphasis on the combination of technology with human intelligence gathering. Security personnel have to be trained and re-trained to be efficient and effective in their duties. Very importantly, there has to be trust between the police and every citizen. However, intelligence collection must be expanded beyond Nigeria shores.

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APPENDIX

TABLE 1 POLICE RECORD OF SOME CASES OF KIDNAPPING AND PIRACY IN THE NIGER-DELTA

S.No.	Action Date	MNC/OIL Servicing Company	Youth Group/Ethnic Group State	Ascertained Purpose	Outcome
1	Hostage taking of 10 workers/April 2002	Shell	Militant youth gang, Ekeremor LGA, Ijaw/Bayelsa state	Ransom demand for NGN 3.1m	Resulted from failure to yield to alleged frivolous demands
2	Kidnap of staff/June 29-July 2003	Oil servicing company working for shell	Ijaw youth militants in Bomadi/Burutu LGAs/Delta state	Demand for NGN 25.4m	State government intervention/negotiated release after 14 days
3	Kidnap of 9 crew & 4 military escorts of oil barges/November 11-13 2003	-	Ijaw militants	Ransom /other demands	Release 2 days later after threats by state government/security agencies
4	Kidnap of 14 workers/November 2003	Chevron Texaco	Militant Ijaw youths/Bayelsa	Ransom demands	Intervention of state government
5	Kidnap of 19 oil workers	Nobel drilling/prospecting	Ijaw militias/Delta state	Ransom demands	Intervention of state government
6	Kidnap of 7 workers November 28-December 2003	Bredero Shaw Oil servicing company. (Shell)	Militant Ijaw youths Delta state	Ransom demands for USD 5m	State government intervention/negotiation
7	Murder of 7 workers & military personnel/April 2004	Chevron Texaco	Militant youths along Benin River area/Delta state	-	-

Source: Ikelegbe (2005)

TABLE 2 GROUPS AND CASUALTY RATE, 1995 TO 2005

Group	Region	1999	2000	2001	2002	2003	2004	2005	Total no of deaths
OPC	South-west	1,800	620	350	420	230	110	105	3635
Bakassi Boys (Anambra)	South-east	900	820	920	450	620	910	805	5425
Bakassi Boys (Abia)	South-east	800	900	960	833	800	920	400	5613
Bakassi Boys (Imo)	South -east	600	680	520	642	350	250	190	3232
Arewa Youth (Consultative Forum)	Northern Nigeria	120	700	320	110	125	180	125	1680
Mambilla	Middle belt	80	210	78	96	102	89	54	709
NDVF	Niger Delta	200	350	500	350	200	180	300	2080
Ijaw Youth or Egbesu Boys	Niger Delta	300	700	560	183	230	120	70	2163
MASSOB	Eastern Nigeria	50	300	230	180	217	80	122	1179
Total		4850	5280	4438	3264	2874	2839	2171	25716

Source: Oyeniyi (2007)

TABLE 3 MAJOR INCIDENTS OF BOKO HARAM ATTACKS FROM 2009 TO 2012

S. No.	Data	Incidents (Nature and Location)	Casualty Figures
1	July 26, 2009	Boko Haram (BH) launched attack on Police Station in Bauchi triggering a five day uprising that spread to Maiduguri	Not Available (NA)
2	September 7, 2010	BH attacked a prison in Bauchi and freed 700 inmates former sect members inclusive	5 guards killed
3	October 11, 2010	Bomb/Gun attack on a Police Station in Maiduguri by the group	3 persons injured
4	December 24, 2010	Bomb attack in Jos	8 people killed instantly
5	December 28, 2010	BH claims responsibility for the Christmas eve bombing in Jos	38 people died in all
6	December 31, 2010	Attack on Mammy market at Army Mogadishu Barracks, Abuja	11 people died
7	April 11, 2011	BH attacked Police Station in Bauchi	N.A
8	April 9, 2011	BH bombed a Polling Centre in Maiduguri	N.A
9	April 20, 2011	Bombing in Maiduguri	1 Policeman killed
10	April 22, 2011	BH attacked a Prison in Yola and freed 14 prisoners	N.A
11	April 24, 2011	Four bombs detonated in Maiduguri	3 people killed
12	May 29, 2011	Bombing of Army Barracks in Bauchi and Maiduguri	15 people killed
13	May 31, 2011	Assassination of Abba Anas Ibn Umar Garbai, brother of the Shehu of Borno in Maiduguri	1 person killed
14	June 1, 2011	Assassination of Abba El-Kanenu-Shehu of Borno's brother in Maiduguri	1 person killed
15	June 7, 2011	Parallel Gun and bomb attacks on a church and police stations in Maiduguri	5 people killed
16	June 16, 2011	BH bombed Police Headquarters in Abuja	Casualty reports vary
17	June 26, 2011	Bomb attack on a Bar in Maiduguri	25 people killed
18	August 16, 2011	Bombing of United Nations Office Complex in Abuja	Over 34 people killed
19	December 25, 2011	Bombing of St. Theresa Catholic Church, Madalla	Over 46 people killed
20	January 6, 2012	BH attacked some Southerners in Mubi	13 people killed
21	January 21, 2012	Multiple bomb blasts rocked Kano city	Over 185 people killed
22	January 29, 2012	Bombing of a Police Station at Naibawa area of Yakatabo, Kano State	N.A
23	February 8, 2012	Bomb blast rocked Army Headquarters in Kaduna	N.A
24	February 15, 2012	Attack on Koton Karfe Prison, Kogi State in which 119 prisoners were freed	1 Warder killed
25	February 19, 2012	Bomb blast near Christ Embassy Church, in Suleija, Niger State	5 people injured
26	February 26, 2012	Bombing of Church of Christ in Nigeria, Jos	2 people killed and 38 injured
27	March 8, 2012	An Italian – Franco Lamolinara; and a Briton Christopher McManus expatriate staff of Stabilim Visioni Construction Company abducted since mid-2011 were killed by a splinter group of BH.	2 people killed
28	March 11, 2012	Bombing of St. Finbarr's Catholic Church Rayfield, Jos	11 people killed and many injured
29	April 26, 2012	Bombing of three media Houses: (a) This Day, Abuja, (b) This Day; The Sun and The Moments in Kaduna	5 people killed and 13 injured Abuja.3 people killed and many injured in Kaduna.
30	April 29, 2012	Attack on Bayero University, Kano	16 people killed and many injured
31	April 30, 2012	Bomb explosion in Jalingo	11 people killed and several others wounded

TABLE 4 DESCRIPTIVE STATISTICS

	LOG(UNEM)	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	TERR	LOG(GINI)	LOG(HDI)	POLS	LOG(POVL)	LOG(OEXP)	LOG(UBAN)	LOG(POPG)
Mean	**1.733989**	**2.622156**	**6.063567**	**11.55147**	**1.211670**	**0.767442**	**3.703469**	**-0.948307**	**0.441860**	**3.657114**	**9.504501**	**1.185547**	**0.960060**
Median	**1.686399**	**2.557227**	**5.909549**	**11.10622**	**1.814825**	**1.000000**	**3.691376**	**-0.855666**	**0.000000**	**3.666122**	**9.382864**	**1.193922**	**0.996949**
Maximum	**3.173878**	**4.287853**	**7.740664**	**15.16321**	**5.197004**	**1.000000**	**3.839452**	**-0.695149**	**1.000000**	**6.320768**	**11.14948**	**1.335001**	**1.043804**
Minimum	**0.693147**	**0.500775**	**5.115716**	**8.613049**	**-3.912023**	**0.000000**	**3.611458**	**-1.469676**	**0.000000**	**2.708050**	**6.576470**	**0.993252**	**0.662688**
Std. Dev.	**0.579128**	**0.864795**	**0.612226**	**2.378542**	**2.897208**	**0.427463**	**0.073481**	**0.224611**	**0.502486**	**0.729471**	**1.019207**	**0.092049**	**0.105636**
Skewness	**0.891040**	**-0.151209**	**1.159258**	**0.220919**	**-0.119526**	**-1.266108**	**0.234136**	**-1.392023**	**0.234146**	**0.847970**	**-0.494918**	**0.016772**	**-1.608022**
Kurtosis	**3.893022**	**3.080507**	**4.215383**	**1.439765**	**1.555244**	**2.603030**	**1.604714**	**3.777568**	**1.054825**	**5.138433**	**3.775269**	**2.333972**	**4.744990**
Jarque-Bera	**7.118827**	**0.175471**	**12.27771**	**4.711284**	**3.842170**	**11.77072**	**3.880933**	**14.97031**	**7.172052**	**13.34632**	**2.832294**	**0.796787**	**23.98671**
Probability	**0.028456**	**0.916003**	**0.002157**	**0.094833**	**0.146448**	**0.002780**	**0.143637**	**0.000561**	**0.027708**	**0.001264**	**0.242647**	**0.671398**	**0.000006**
Sum	**74.56154**	**112.7527**	**260.7334**	**496.7130**	**52.10181**	**33.00000**	**159.2492**	**-40.77719**	**19.00000**	**157.2559**	**408.6936**	**50.97852**	**41.28258**
Sum Sq. Dev.	**14.08637**	**31.41056**	**15.74245**	**237.6134**	**352.5403**	**7.674419**	**0.226776**	**2.118897**	**10.60465**	**22.34935**	**43.62886**	**0.355869**	**0.468679**
Observations	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**	**43**

TABLE 5: CORRELATION MATRIX

	LOG(UNEM)	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	TERR	LOG(GINI)	LOG(HDI)	POLS	LOG(POVL)	LOG(OEXP)	LOG(UBAN)	LOG(POPG)
LOG(UNEM)	1.000000												
LOG(INFL)	-0.242345	1.000000											
LOG(GDPC)	0.224890	-0.059440	1.000000										
LOG(GOVX)	0.279639	0.086527	0.357367	1.000000									
LOG(OPEN)	0.078308	0.263466	0.112470	0.899721	1.000000								
TERR	0.012307	0.264233	0.132681	0.605579	0.697094	1.000000							
LOG(GINI)	-0.331778	0.365685	-0.063731	0.669211	0.799774	0.602597	1.000000						
LOG(HDI)	0.071197	0.341495	0.303303	0.757953	0.831989	0.895115	0.687629	1.000000					
POLS	0.441809	-0.048448	0.559182	0.629490	0.434694	0.489795	0.155232	0.518592	1.000000				
LOG(POVL)	-0.043974	0.267534	0.103771	0.798005	0.863622	0.676612	0.759630	0.755490	0.329380	1.000000			
LOG(OEXP)	0.371657	0.231647	0.701122	0.762331	0.651339	0.565309	0.378257	0.751246	0.672976	0.535767	1.000000		
LOG(UBAN)	0.270054	0.190679	0.483106	0.946434	0.846561	0.694585	0.621583	0.833414	0.627987	0.762113	0.860139	1.000000	
LOG(POPG)	-0.611364	0.220148	-0.436545	-0.577040	-0.287937	-0.030301	0.008286	-0.114680	-0.499270	-0.258969	-0.488821	-0.529703	1.000000

Source: Computed by the researcher using Eviews 4.0.

TABLE 6.1 UNIT ROOT TEST FOR STATIONARITY AT LEVELS

Variables	ADF (Intercept)	ADF (Intercept and Trend)	PP (Intercept)	PP (Intercept and Trend)
UNEM	-0.306863 (-3.596616)*	0.496742 (-4.262735) *	-0.449032 (-3.596616)*	-1.008620 (-4.192337)*
INFL	-3.502597(-3.596616)*	-3.449449 (-4.192337)*	-3.355927(-3.596616)*	-3.271319(-4.192337)*
GDPC	-2.502918(-3.596616)*	-2.594805(-4.192337)*	-2.493387(-3.596616)*	-2.581028(-4.192337)*
GOVX	0.954130(-3.596616)*	4.112767(-4.252879)*	0.539527(-3.596616)*	-1.165344(-4.192337)*
OPEN	-2.232916(-3.596616)*	-2.823098(-4.192337)*	-2.232916(-3.596616)*	-2.823098(-4.192337)*
TERR	-1.840175(-3.596616)*	-1.645215(-4.192337)*	-1.834560(-3.596616)*	-1.645215(-4.192337)*
GINI	-1.758458(-3.600987)*	-1.599295(-4.198503)*	-1.519510(-3.596616)*	-1.100373(-4.192337)*
HDI	-7.825370(-3.615588)*	-2.091216(-4.192337)*	-3.552370(-3.596616)*	-1.443989(-4.192337)*
POLS	-2.282445(-3.596616)*	-3.075318(-4.192337)*	-2.232189(-3.596616)*	-3.123200(-4.192337)*
POVL	-5.720181(-3.596616)*	-6.176618(-4.192337)*	-5.728159(-3.596616)*	-6.176636(-4.192337)*
OEXP	0.551954(-3.596616)*	-0.793413(-4.192337)*	0.726336(-3.596616)*	-0.702928(-4.192337)*
UBAN	-1.419016(-3.596616)*	-3.199481(-4.192337)*	-1.440334(-3.596616)*	-3.209878(-4.192337)*
POPG	-1.672438(-3.596616)*	-2.229717(-4.192337)*	-1.725972(-3.596616)*	-2.229717(-4.192337)*

Note: * denotes significance at 1% level. Figures within parenthesis indicate critical values.
Source: Author's Estimation using Eviews 4.0.

TABLE 6.2 UNIT ROOT TEST FOR STATIONARITY AT FIRST DIFFERENCE

Variables	ADF (Intercept)	ADF (Intercept and Trend)	PP (Intercept)	PP (Intercept and Trend)
UNEM	-6.288228 (-3.600987)*	-2.244060(-4.262735)*	-6.291327(-3.600987)*	-6.563179(-4.198503)*
INFL	-6.330409(-3.605593)*	-6.280754(-4.205004)*	-11.48461 (-3.600987)*	-13.38827(-4.198503)*
GDPC	-3.542123(-2.945842) **	-3.390824(-3.202445) ***	-7.567119(-3.600987)*	-7.280231(-4.198503)*
GOVX	6.061500(-3.653730)*	3.152119(-4.273277)*	-4.139363(-3.600987)*	-4.152959(-3.523623)**
OPEN	-7.139956(-3.600987)*	-7.050718(-4.198503)*	-7.198083(-3.600987)*	-7.104929(-4.198503)*
TERR	-6.403124(-3.600987)*	-6.492103(-4.198503)*	-6.403127(-3.600987)*	-6.508819(-4.198503)*
GINI	-4.480735(-3.600987)*	-4.541301(-4.198503)*	-4.380819(-3.600987)*	-4.311334(-4.198503)*
HDI	-5.148030(-3.610453)*	-6.548844(-4.211868)*	-7.221411(-3.600987)*	-11.60187(-4.198503)*
POLS	-7.695598(-3.600987)*	-7.597783(-4.198503)*	-7.773712(-3.600987)*	-7.671575(-4.198503)*
POVL	-7.361506(-3.605593)*	-7.267079(-4.205004)*	-37.90616(-3.600987)*	-39.04857(-4.198503)*
OEXP	-6.898364(-3.600987)*	-7.209556(-4.198503)*	-6.878397(-3.600987)*	-7.208186(-4.198503)*
UBAN	-7.181967(-3.600987)*	-7.225526(-4.198503)*	-7.238223(-3.600987)*	-7.250539(-4.198503)*
POPG	-4.915900(-3.600987)*	-4.671687(-4.198503)*	-4.915900(-3.600987)*	-4.763273(-4.198503)*

Note: * , ** and *** denote significance at 1%, 5% & 10% level, respectively. Figures within parenthesis indicate critical values.
Source: Stationarity test results from analysis using Eviews 4.0.

TABLE 7 PAIRWISE GRANGER CAUSALITY TESTS

Null Hypothesis:	Obs	F-Statistic	Probability	Decision	Causality
LOG(INFL) does not Granger Cause LOG(UNEM)	41	2.19242	0.12633	Accept	Independent
LOG(UNEM) does not Granger Cause LOG(INFL)		0.37461	0.69021	Accept	
LOG(GDPC) does not Granger Cause LOG(UNEM)	41	2.49902	0.09632	Reject	Unidirectional
LOG(UNEM) does not Granger Cause LOG(GDPC)		0.18029	0.83577	Accept	
LOG(GOVX) does not Granger Cause LOG(UNEM)	41	2.29528	0.11529	Accept	Unidirectional
LOG(UNEM) does not Granger Cause LOG(GOVX)		4.85489	0.01359	Reject	
LOG(OPEN) does not Granger Cause LOG(UNEM)	41	2.35995	0.10887	Accept	Independent
LOG(UNEM) does not Granger Cause LOG(OPEN)		0.18552	0.83146	Accept	
TERR does not Granger Cause LOG(UNEM)	41	0.02171	0.97854	Accept	Independent
LOG(UNEM) does not Granger Cause TERR		0.02225	0.97801	Accept	
LOG(GINI) does not Granger Cause LOG(UNEM)	41	0.35631	0.70269	Accept	Unidirectional
LOG(UNEM) does not Granger Cause LOG(GINI)		2.50426	0.09588	Reject	
LOG(HDI) does not Granger Cause LOG(UNEM)	41	0.24205	0.78629	Accept	Independent
LOG(UNEM) does not Granger Cause LOG(HDI)		0.06588	0.93635	Accept	
POLS does not Granger Cause LOG(UNEM)	41	1.52123	0.23215	Accept	Independent
LOG(UNEM) does not Granger Cause POLS		0.24704	0.78242	Accept	
LOG(POVL) does not Granger Cause LOG(UNEM)	41	1.10157	0.34329	Accept	Independent
LOG(UNEM) does not Granger Cause LOG(POVL)		1.27954	0.29051	Accept	
LOG(OEXP) does not Granger Cause LOG(UNEM)	41	1.86299	0.16986	Accept	Independent
LOG(UNEM) does not Granger Cause LOG(OEXP)		0.44300	0.64556	Accept	
LOG(UBAN) does not Granger Cause LOG(UNEM)	41	1.04566	0.36189	Accept	Independent
LOG(UNEM) does not Granger Cause LOG(UBAN)		0.55010	0.58167	Accept	

LOG(POPG) does not Granger Cause LOG(UNEM)	41	5.47454	0.00840	Reject	Unidirectional
LOG(UNEM) does not Granger Cause LOG(POPG)		1.02455	0.36919	Accept	
LOG(GDPC) does not Granger Cause LOG(INFL)	41	0.59631	0.55619	Accept	Independent
LOG(INFL) does not Granger Cause LOG(GDPC)		0.08914	0.91492	Accept	
LOG(GOVX) does not Granger Cause LOG(INFL)	41	0.23011	0.79561	Accept	Independent
LOG(INFL) does not Granger Cause LOG(GOVX)		0.63140	0.53763	Accept	
LOG(OPEN) does not Granger Cause LOG(INFL)	41	0.64984	0.52814	Accept	Independent
LOG(INFL) does not Granger Cause LOG(OPEN)		0.20646	0.81442	Accept	
TERR does not Granger Cause LOG(INFL)	41	0.29372	0.74726	Accept	Independent
LOG(INFL) does not Granger Cause TERR		0.13166	0.87706	Accept	
LOG(GINI) does not Granger Cause LOG(INFL)	41	0.40912	0.66729	Accept	Unidirectional
LOG(INFL) does not Granger Cause LOG(GINI)		3.26067	0.04995	Reject	
LOG(HDI) does not Granger Cause LOG(INFL)	41	0.03693	0.96378	Accept	Independent
LOG(INFL) does not Granger Cause LOG(HDI)		0.37128	0.69246	Accept	
POLS does not Granger Cause LOG(INFL)	41	0.43285	0.65199	Accept	Independent
LOG(INFL) does not Granger Cause POLS		0.77673	0.46746	Accept	
LOG(POVL) does not Granger Cause LOG(INFL)	41	0.31614	0.73096	Accept	Independent
LOG(INFL) does not Granger Cause LOG(POVL)		0.63346	0.53656	Accept	
LOG(OEXP) does not Granger Cause LOG(INFL)	41	0.24811	0.78160	Accept	Independent
LOG(INFL) does not Granger Cause LOG(OEXP)		0.47592	0.62517	Accept	
LOG(UBAN) does not Granger Cause LOG(INFL)	41	1.89343	0.16525	Accept	Unidirectional
LOG(INFL) does not Granger Cause LOG(UBAN)		2.99292	0.06275	Reject	
LOG(POPG) does not Granger Cause LOG(INFL)	41	0.90268	0.41446	Accept	Independent
LOG(INFL) does not Granger Cause LOG(POPG)		0.95440	0.39457	Accept	
LOG(GOVX) does not Granger Cause LOG(GDPC)	41	1.21548	0.30845	Accept	Independent
LOG(GDPC) does not Granger Cause LOG(GOVX)		2.03077	0.14600	Accept	
LOG(OPEN) does not Granger Cause LOG(GDPC)	41	2.13279	0.13324	Accept	Independent
LOG(GDPC) does not Granger Cause LOG(OPEN)		0.11118	0.89509	Accept	
TERR does not Granger Cause LOG(GDPC)	41	0.75834	0.47578	Accept	Independent
LOG(GDPC) does not Granger Cause TERR		0.44572	0.64385	Accept	
LOG(GINI) does not Granger Cause LOG(GDPC)	41	0.48072	0.62225	Accept	Unidirectional
LOG(GDPC) does not Granger Cause LOG(GINI)		3.08412	0.05804	Reject	
LOG(HDI) does not Granger Cause LOG(GDPC)	41	0.81808	0.44931	Accept	Independent
LOG(GDPC) does not Granger Cause LOG(HDI)		1.60162	0.21560	Accept	
POLS does not Granger Cause LOG(GDPC)	41	0.50060	0.61032	Accept	Independent
LOG(GDPC) does not Granger Cause POLS		1.81650	0.17718	Accept	
LOG(POVL) does not Granger Cause LOG(GDPC)	41	0.00405	0.99595	Accept	Independent
LOG(GDPC) does not Granger Cause LOG(POVL)		0.01552	0.98460	Accept	
LOG(OEXP) does not Granger Cause LOG(GDPC)	41	0.32438	0.72507	Accept	Independent
LOG(GDPC) does not Granger Cause LOG(OEXP)		0.06283	0.93920	Accept	

LOG(UBAN) does not Granger Cause LOG(GDPC)	41	1.92850	0.16009	Accept	Independent
LOG(GDPC) does not Granger Cause LOG(UBAN)		1.32540	0.27835	Accept	
LOG(POPG) does not Granger Cause LOG(GDPC)	41	5.07912	0.01140	Reject	Feedback
LOG(GDPC) does not Granger Cause LOG(POPG)		2.96649	0.06419	Reject	
LOG(OPEN) does not Granger Cause LOG(GOVX)	41	2.21918	0.12336	Accept	Independent
LOG(GOVX) does not Granger Cause LOG(OPEN)		0.57034	0.57036	Accept	
TERR does not Granger Cause LOG(GOVX)	41	3.20184	0.05250	Reject	Unidirectional
LOG(GOVX) does not Granger Cause TERR		0.03978	0.96104	Accept	
LOG(GINI) does not Granger Cause LOG(GOVX)	41	6.89327	0.00292	Reject	Unidirectional
LOG(GOVX) does not Granger Cause LOG(GINI)		0.44690	0.64311	Accept	
LOG(HDI) does not Granger Cause LOG(GOVX)	41	1.61389	0.21319	Accept	Independent
LOG(GOVX) does not Granger Cause LOG(HDI)		0.19481	0.82385	Accept	
POLS does not Granger Cause LOG(GOVX)	41	9.80739	0.00040	Reject	Feedback
LOG(GOVX) does not Granger Cause POLS		3.83616	0.03088	Reject	
LOG(POVL) does not Granger Cause LOG(GOVX)	41	5.34909	0.00925	Reject	Feedback
LOG(GOVX) does not Granger Cause LOG(POVL)		2.64905	0.08447	Reject	
LOG(OEXP) does not Granger Cause LOG(GOVX)	41	3.71687	0.03408	Reject	Feedback
LOG(GOVX) does not Granger Cause LOG(OEXP)		2.89450	0.06829	Reject	
LOG(UBAN) does not Granger Cause LOG(GOVX)	41	0.30566	0.73853	Accept	Unidirectional
LOG(GOVX) does not Granger Cause LOG(UBAN)		5.26179	0.00989	Reject	
LOG(POPG) does not Granger Cause LOG(GOVX)	41	4.55753	0.01721	Reject	Unidirectional
LOG(GOVX) does not Granger Cause LOG(POPG)		1.36696	0.26779	Accept	
TERR does not Granger Cause LOG(OPEN)	41	0.55851	0.57694	Accept	Independent
LOG(OPEN) does not Granger Cause TERR		0.08092	0.92244	Accept	
LOG(GINI) does not Granger Cause LOG(OPEN)	41	3.42646	0.04343	Reject	Unidirectional
LOG(OPEN) does not Granger Cause LOG(GINI)		0.42275	0.65845	Accept	
LOG(HDI) does not Granger Cause LOG(OPEN)	41	0.74185	0.48337	Accept	Independent
LOG(OPEN) does not Granger Cause LOG(HDI)		0.87597	0.42514	Accept	
POLS does not Granger Cause LOG(OPEN)	41	1.94552	0.15765	Accept	Unidirectional
LOG(OPEN) does not Granger Cause POLS		2.90440	0.06771	Reject	
LOG(POVL) does not Granger Cause LOG(OPEN)	41	2.04692	0.14390	Accept	Independent
LOG(OPEN) does not Granger Cause LOG(POVL)		2.37839	0.10711	Accept	
LOG(OEXP) does not Granger Cause LOG(OPEN)	41	0.97743	0.38604	Accept	Independent
LOG(OPEN) does not Granger Cause LOG(OEXP)		0.64228	0.53201	Accept	
LOG(UBAN) does not Granger Cause LOG(OPEN)	41	1.07608	0.35164	Accept	Independent
LOG(OPEN) does not Granger Cause LOG(UBAN)		0.31851	0.72926	Accept	
LOG(POPG) does not Granger Cause LOG(OPEN)	41	0.00768	0.99236	Accept	Independent
LOG(OPEN) does not Granger Cause LOG(POPG)		0.18672	0.83047	Accept	
LOG(GINI) does not Granger Cause TERR	41	0.51450	0.60213	Accept	Independent
TERR does not Granger Cause LOG(GINI)		1.34148	0.27422	Accept	

LOG(HDI) does not Granger Cause TERR	41	1.87067	0.16869	Accept	Independent
TERR does not Granger Cause LOG(HDI)		0.00708	0.99294	Accept	
POLS does not Granger Cause TERR	41	0.00000	1.00000	Reject	Independent
TERR does not Granger Cause POLS		0.19446	0.82413	Accept	
LOG(POVL) does not Granger Cause TERR	41	0.00392	0.99609	Accept	Unidirectional
TERR does not Granger Cause LOG(POVL)		2.81696	0.07301	Reject	
LOG(OEXP) does not Granger Cause TERR	41	0.89255	0.41848	Accept	Independent
TERR does not Granger Cause LOG(OEXP)		1.80943	0.17832	Accept	
LOG(UBAN) does not Granger Cause TERR	41	0.23426	0.79236	Accept	Independent
TERR does not Granger Cause LOG(UBAN)		0.52723	0.59473	Accept	
LOG(POPG) does not Granger Cause TERR	41	1.32585	0.27823	Accept	Independent
TERR does not Granger Cause LOG(POPG)		0.22049	0.80320	Accept	
LOG(HDI) does not Granger Cause LOG(GINI)	41	0.29086	0.74936	Accept	Independent
LOG(GINI) does not Granger Cause LOG(HDI)		0.12047	0.88686	Accept	
POLS does not Granger Cause LOG(GINI)	41	0.13153	0.87717	Accept	Unidirectional
LOG(GINI) does not Granger Cause POLS		2.68575	0.08181	Reject	
LOG(POVL) does not Granger Cause LOG(GINI)	41	1.15300	0.32707	Accept	Unidirectional
LOG(GINI) does not Granger Cause LOG(POVL)		2.86401	0.07010	Reject	
LOG(OEXP) does not Granger Cause LOG(GINI)	41	0.32982	0.72120	Accept	Independent
LOG(GINI) does not Granger Cause LOG(OEXP)		0.07106	0.93154	Accept	
LOG(UBAN) does not Granger Cause LOG(GINI)	41	0.18031	0.83576	Accept	Independent
LOG(GINI) does not Granger Cause LOG(UBAN)		0.63264	0.53699	Accept	
LOG(POPG) does not Granger Cause LOG(GINI)	41	0.74638	0.48127	Accept	Independent
LOG(GINI) does not Granger Cause LOG(POPG)		0.74404	0.48235	Accept	
POLS does not Granger Cause LOG(HDI)	41	0.07898	0.92422	Accept	Independent
LOG(HDI) does not Granger Cause POLS		0.55494	0.57894	Accept	
LOG(POVL) does not Granger Cause LOG(HDI)	41	0.08572	0.91804	Accept	Unidirectional
LOG(HDI) does not Granger Cause LOG(POVL)		2.86772	0.06988	Reject	
LOG(OEXP) does not Granger Cause LOG(HDI)	41	3.30217	0.04823	Reject	Unidirectional
LOG(HDI) does not Granger Cause LOG(OEXP)		1.19946	0.31311	Accept	
LOG(UBAN) does not Granger Cause LOG(HDI)	41	0.91486	0.40968	Accept	Independent
LOG(HDI) does not Granger Cause LOG(UBAN)		0.08921	0.91485	Accept	
LOG(POPG) does not Granger Cause LOG(HDI)	41	0.95659	0.39375	Accept	Independent
LOG(HDI) does not Granger Cause LOG(POPG)		0.54523	0.58442	Accept	
LOG(POVL) does not Granger Cause POLS	41	0.40273	0.67146	Accept	Unidirectional
POLS does not Granger Cause LOG(POVL)		5.85801	0.00627	Reject	
LOG(OEXP) does not Granger Cause POLS	41	2.27742	0.11713	Accept	Independent
POLS does not Granger Cause LOG(OEXP)		0.56619	0.57266	Accept	
LOG(UBAN) does not Granger Cause POLS	41	1.47902	0.24138	Accept	Independent
POLS does not Granger Cause LOG(UBAN)		0.51270	0.60318	Accept	

LOG(POPG) does not Granger Cause POLS	41	0.46682	0.63073	Accept	Independent
POLS does not Granger Cause LOG(POPG)		1.30686	0.28320	Accept	
LOG(OEXP) does not Granger Cause LOG(POVL)	41	0.70274	0.50189	Accept	Independent
LOG(POVL) does not Granger Cause LOG(OEXP)		0.38533	0.68300	Accept	
LOG(UBAN) does not Granger Cause LOG(POVL)	41	2.32861	0.11194	Accept	Independent
LOG(POVL) does not Granger Cause LOG(UBAN)		1.79252	0.18109	Accept	
LOG(POPG) does not Granger Cause LOG(POVL)	41	0.18444	0.83235	Accept	Independent
LOG(POVL) does not Granger Cause LOG(POPG)		0.76158	0.47430	Accept	
LOG(UBAN) does not Granger Cause LOG(OEXP)	41	2.29917	0.11489	Accept	Unidirectional
LOG(OEXP) does not Granger Cause LOG(UBAN)		3.48571	0.04132	Accept	
LOG(POPG) does not Granger Cause LOG(OEXP)	41	3.44814	0.04265	Reject	Unidirectional
LOG(OEXP) does not Granger Cause LOG(POPG)		0.39357	0.67751	Accept	
LOG(POPG) does not Granger Cause LOG(UBAN)	41	0.12500	0.88288	Accept	Independent
LOG(UBAN) does not Granger Cause LOG(POPG)		1.24164	0.30099	Accept	

Source: extracted from computer output

TABLE 8 REGRESSION ESTIMATES

	(1)	(2)	(3)	(4)	(5)
Economic variables:					
GDP per capita (GDPC)	-0.091139 (0.078205)	-0.095667 (0.080643)	-0.196051 (0.071677)**	-0.240123 (0.083487)*	-0.249696 (0.092305)**
Human Development Index (HDI)	1.950367 (0.368798)*	1.949081 (0.373839)*	1.661721 (0.319199)*	1.720340 (0.323993)*	1.750605 (0.348649)*
Inequality of Income (GINI)	-0.706338 (0.716565)	-0.675170 (0.733444)	0.704836 (0.702196)	0.224352 (0.843266)	0.217285 (0.856650)
Inflation (INFL)		-0.012112 (0.039643)	-0.070530 (0.036107)**	-0.074795 (0.036314)**	-0.073659 (0.037127)**
Social variables:					
Poverty level (POVL)	0.017632	0.018589	0.113864	0.096831 (0.071797)	0.100357 (0.074132)
Unemployment (UNEM)	(0.077837)	(0.078958)	(0.069915)	-0.081164 (0.079025)	-0.084033 (0.080983)
Political variables: Political stability (POLS)	0.156444 (0.084278)***	0.152831 (0.086239)***	0.292187 (0.079860)*	0.296934 (0.079925)*	0.291625 (0.083643)*
Government expenditure (GOVX)			-0.199564 (0.050326)*	-0.190463 (0.051058)*	-0.178982 (0.067872)**
Demographical variables: Population growth rate (POPG)	0.212174 (0.496973)	0.239449 (0.511585)	-0.298183 (0.446489)	-0.473582 (0.477678)	-0.452518 (0.491633)

Geographical variables:					
Mineral resources (OEXP)	-0.109899 (0.078209)	-0.101268 (0.084157)	-0.057418 (0.070849)	-0.030145 (0.075605)	-0.024137 (0.080116)
Environmental variables:					
Urbanization (UBAN)	0.435400 (1.126315)	0.399782 (1.147577)	3.809514 (1.284519)*	3.713532 (1.286817)*	3.609809 (1.365211)**
International variables:					-0.009345
Trade openness					(0.035657)
R-squared	.85	.85	.90	.91	.91
Number of observations	43	43	43	43	43

Source: Eviews 4.0 Regression Output
Notes: standard errors are shown in parentheses.
* indicates statistical significance at the 1% level.
** indicates statistical significance at the 5% level.
*** indicates statistical significance at the 10% level.

Fig. 1 Fighters of the Emancipation of the Niger Delta (MEND)
Source: Hashim et al. (2012)