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Development and Terrorism in Nigeria: Co-Integration and Causality Analysis of Macroeconomic Factors

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Abstract

This paper is a cointegration and causality analysis of macroeconomic factors and terrorism in Nigeria using time series data spanning between 1970 and 2016. The stochastic characteristics of each time series was examined using Augmented Dickey Fuller (ADF) test. The result reveals that LOG(GOVX), LOG(INTR), POLX, DLOG(GDPC) and DLOG(OPEN) were in line with the apriori expectation. With this development, some recommendations were made amongst which are that trade openness rate should be all time kept at peak benchmark by adopting tight trade openness while strategic macroeconomic policies should be instituted in order to encourage domestic private investment to enhance the growth of the economy. Nigerian political system has to be stabilized and the government should step up its intelligence gathering capacity as well as training security agents to forcefully combat terrorist group.

Keywords: Terrorism, Economic Deprivation, Cointegration, Causality, Nigeria.

1. Introduction

Economic development is a broader concept than economic growth. Development reflects social and economic progress and requires economic growth. Growth is a vital and necessary condition for development, but it is not a sufficient condition as it cannot guarantee development(Economic Online, 2017).One of the most compelling definitions of development is that proposed by Amartya Sen. According to Sen (2001), development is about creating freedom for people and removing obstacles to greater freedom. Greater freedom enables people to choose their own destiny. Obstacles to freedom, and hence to development, include poverty, lack of economic opportunities, corruption, poor governance, lack of education and lack of health.

Economic development in Nigeria has been rocked back and forth by various political, socio-cultural, financial and infrastructural setbacks (Nigerian Finder, n.d.). However, since her return to civil rule in 1999, it has faces some national security challenges across the six geo-political zones in the country. The spate ofbomb blasts, kidnapping, pipeline vandalisation and other forms of criminalities in recent times in various parts of the country are emerging trends of domestic terrorism (Abimbola and Adesote, 2012). A number of analysts have variously attributed the disturbing trend to political dissatisfaction, ethnic and religious differences, perceived societal neglect and pervasive poverty among the people. Nigeria is rich but its people are poor(World Bank, 1996). The unfortunate trend of rapidly growing population of poor people is further exacerbated by the worsening of the conditions of living of poor people, i.e., the poor are becoming poorer than they used to be(Manson et al, 2004). Poverty is caused by both microeconomic and macroeconomic as well as social-cultural factors. The conventional wisdom is that poverty creates terrorism but several empirical studies have challenged this view.

The primarily aim of this paper is to provide some empirical evidence regarding macroeconomic factorsand their effects ondomestic terrorism in Nigeria. The paper shall attempt to provide a plausible answer to the question: Does economic deprivation lead to terrorism? The paper is structured as follows: Section 2 reviews related literature. An overview of the Nigeria's is presented in Section 3. The methodology of the study is discussed in Section 4. An econometric analysis is presented in Section 5. Section 6 then summarizes and concludes.

2. Review of Related Literature

Quantitative studies of terrorism have increased dramatically in the past decade. Many articles in this body of literature sought to explain terrorism as the result of poor economic development in a country. Factors such as poverty, employment, and development are frequently employed as economic variables in empirical terrorism research. Based on a sample of 112 countries from 1975 to 1997, Li and Schaub (2004) findings show that the economic development of a country and greater trade openness reduce the number of terrorist incidents inside the country. Their finding that economic development decreases the likelihood of terrorism is an interesting example of an economic indicator's effect on terrorism. Revolutionary communiqués frequently justify violence based on altruistic motives to rectify grievances on others' behalf (Ehrlich and Liu, 2002; Goldman, 1978; Hoffman, 2006; Sageman, 2008) - in this case the impoverished. Public consensus and terrorist rhetoric both contend poor economic conditions within a state produce motivating grievances. Although terrorist ideology may explain economic deprivation with a global narrative, virtual perceptions do not replace more corporal, proximate knowledge and opponents. Violent reactions are posited to occur. Gurr (1970) suggests that collective violence emerges as a result of relative deprivation theory. Specifically, he holds that "the greater the intensity and scope of relative deprivation, the greater the magnitude of collective violence."

Blomberg and Hess (2008) provide a more nuanced empirical analysis of economic development as a determinant of terrorism. They find that economic development is positively correlated with transnational terrorism, particularly in higher income countries. However, in lower income countries this trend reverses, and economic development is negatively related to transnational terrorism. The authors point to the importance of considering terrorist groups' political motivations. They say "interestingly, radicalism, separatism, and other ideological motivations for terrorism that appear to be intrinsically noneconomic may actually stem from underlying economic conditions" (Richardson, 2011). They make the case that economic factors are important in different ways for higher- and lower-income countries. This could be due to a phenomenon similar to relative deprivation theory, in which those of different economic brackets view changes in economic factors differently. The authors provide two theories for this phenomenon. The "take-off" effect suggests that good policies deter terrorism for the most disadvantaged. As countries develop, Blomberg suggests that terrorism becomes a "luxury good" enjoyed by dissident groups for political purposes. However, the authors do not look at economic changes within a given country (Richardson, 2011).

Economic recessions can increase the probabilities of internal and external conflicts and visa versa (Elbakidze and Jin, 2007). Blomberg, Hess and Weerapana (2004) find that economic recessions, represented by negative per capita GDP growth, could increase the probability of terrorist activities in democratic high-income countries. They argue that during economic recessions in high-income countries groups that are unhappy with current socio-economic status quo, but are unable to influence political and institutional situation, resort to terrorist activities to increase their voice in the economy. Li and Schaub (2004) study the effects of economic globalization on the frequency of transnational terrorist incidents within a country's borders. They find that trade, foreign direct investment, and portfolio of investment of a country have no direct positive effect on the number of terrorist events initiated within the country. However, economic development of a country and its trading partners has a negative effect on the number of international terrorist incidents within a country. Therefore, if trade and foreign direct investment promote economic development, then these variables must indirectly reduce transnational terrorism. Li (2005) shows that democratic participation and economic development measured by GDP per capita reduces transnational terrorism while government constraints increase the number of terrorist incidents. Alesina et al. (1996) find that to some extent low economic growth measured by GDP per capita could lead to government turnovers through coups.

A number of papers examine public opinion surveys in Middle Eastern countries to measure the public support for terrorism in light of an individual's economic standing (Krueger and Maleckova (2003), Tessler and Robbins (2007)). Other studies investigate the economic status and level of educational attainment of terrorists themselves to test the hypothesis that poverty and ignorance drive men to violent professions. Berrebi (2003) and Krueger and Maleckova (2003) examine biographies of terrorists to assess their educational and economic background.

From the above it is observed that most of the studies focused on the relationship between economic variables and terrorism. However, these studies failed to examine the issue ofcausality between the variables. This is important because causality enable us to have a comprehensive view of whether the direction of causality runs in both directions one direction between the variables. The paper attempt to look at the direction of causation between economic factors and terrorism in Nigeria from 1970 to 2015.This paper seeks to provide new evidence on this topic in the light of country level economic characteristics and domestic terrorism.

3. Overview of Terrorism and Economy Performance: Nigeria

In Nigeria today, many terrorist networks have sprouted in many parts of the country, MEND, Boko Haram and MASSOB to mention just but a few, have been unleashing terror to the Nigerian public. The government is extremely concern in curtailing the activities of these extremist as well as other crime perpetrators ranging from mobile phone theft, cult activities, drug trafficking, gang related offences, fraud, kidnapping for ransom, organized crime and others (Okonkwo and Enem, 2011). Table 1 (see Appendix) shows categories of militia groups in the Niger Delta where MEND and MASSOB originated. Table 2 and 3 (see Appendix) show attacks blamed on two terrorist groups in Nigeria and images of terrorism are shown in Appendix.

The Economist Intelligence Unit (EIU) 2008 Country Profile on Nigeria states that the country displays the characteristics of a dual economy: an enclave oil sector with few links to the rest of the economy, except via government revenue, exists alongside a more typical developing African economy, heavily dependent on traditional agricultural, trade and some limited manufacturing. During the colonial era cash crops were introduced, harbours, railways and roads were developed, and a market for consumer goods began to emerge. At independence in 1960 agriculture accounted for well over half of GDP and was the main source of export earnings and public revenue, with the agricultural marketing boards playing a leading role (EIU, 2008).

However, the rapid development of the oil sector in the 1970s meant that it quickly replaced the agricultural sector as the leading engine of growth. According to official Nigerian government estimates, the oil sector accounts for 70-80% of federal government revenue (depending on the oil price), around 90% of export earnings and about 25% of GDP, measured at constant basic prices(EIU, 2008). Agriculture (including livestock, forestry and fishing), which is still the main activity of the majority of Nigerians, constitutes about 40% of GDP(EIU, 2008). In recent years it has become clear that the manufacturing sector has also continued to decline, to well under 5% of GDP, while the services sector and the retail and wholesale sectors have continued to grow and now account for the majority of the remaining 30% of GDP(EIU, 2008).

The International Crisis Group report ‘Nigeria: Want in the Midst of Plenty’, published in July 2006, adds that the country has abundant human and natural resources but still struggles with mass impoverishment. Agriculture, once its primary hard currency earner, has collapsed, and food imports now account for a sixth of the trade bill. Manufacturing is a smaller proportion of the economy – about 6 per cent – than at independence. The landscape is dotted with oversized industrial projects of limited utility and capacity. Despite the country’s oil wealth, extreme poverty – defined by the World Bank as living on less than $1 per day – now affects 37 per cent of the population. Nine out of ten Nigerians live on less than $2 daily. Corruption, a boom and bust cycle of oil prices and failure to diversify the economy have left the country in ‘a development trap’ (ICG, 2006).Nigeria's macroeconomic performance from 1990 to 2012 is illustrated in Table 4.

Table 4: Nigeria's macroeconomic performance from 1990 to 2012

Economic Indicators	**1990**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
GDP growth (%)	8.2	5.4	4.6	3.5	9.6	6.6	5.8	5.3	5.7	6.0	6.7	7.67	8.6	7.8
Oil sector growth (%)	5.6	11.1	5.2	-5.2	23.9	3.3	-1.7	-3.7	-5.9	-6.2	-1.3	-	-	-
ector growth (%)	8.6	4.4	2.9	4.5	5.2	7.8	8.4	9.5	9.2	9.0	8.3	-	-	-
reserves (% of GDP)	NA	NA	NA	NA	7.7	11.4	24.4	36.5	42.6	52.99	62.48	-	-	-
External debt/GDP	106.5	64.9	57.3	72.1	61.1	84.5	69.2	7.4	4.0	17.5	9.28	-	-	-
Domestic debt/GDP	31.3	32.2	36.6	26.1	28.6	25.3	20.8	18.6	19.2	15.23	12.85	-	-	-
Overall BOP/GDP	–2.1	6.9	0.5	-10.3	-2.3	5.2	10.5	12.7	1.4	8.02	9.12	-	-	-
Inflation rate (%)	7.5	6.9	18.9	12.9	22.2	15	17.9	8.2	5.9	11.6	11.5	13.40	11.20	12.70
official rate (Naira/US$)	7.9	101.7	111.9	121	127.8	132.8	132.8	128.5	127.4	139.27	142.89	150.30	155.30	155.23

Sources:

(i) CBN Annual Reports and Statement of Accounts (various years)

(ii) CBN Statistical Bulletin vol. 17, December 2006.

(iii) National Bureau of Statistics (NBS), 2005

(iv)Trading Economics (2013).

4. Methodology and Data Source

Granger causality tests and impulse response analysis of vector autoregressive models (VAR) are used to assess the relationshipbetween macroeconomic variables and terrorism in Nigeria. The data set consists of time series spanning 1970 through 2016. The choice of the period is due to data availability. The variables under consideration areGDP per capita (*GDPC*), inflation rate (*INFL*), trade openness(*OPEN*), government total expenditure (*GOVX*), interest rate (*INTR*), macroeconomic policy index (*POLX*) and terrorism (dummy variable). The data were obtained from the publication of Central Bank of Nigeria, journals, newspapers and websites.

4.1 Specification of Model and Analytical Procedure

The general model of the study hypotheses that terrorism in Nigeria is a function of economic variables such as GDP per capita, inflation rate, trade openness, government total expenditure, interest rate, macroeconomic policy. The specification is given by:

TERR = *f*(GDPC, OPEN, INFL, GOVX, INTR, POLX) ………...(1)

where TERR is a dummy variable which takes the value of 1 if terrorist attack occurs in a year and 0 if otherwise, GDPC is per capita GDP, INFL is inflation rate, OPEN stands for degree of openness, GOVX is government expenditure, INTR is interest rate, POLX is policy index. The policy index dummy took on the value of unity in civilian rule years and zero in military rule years.

Hereafter, a vector autoregressive (VAR) model is specified to examine the effects of shocks from economic variables to terrorism from which variance decomposition and impulse responses are derived to provide information on impulse responses of one variable over the other (Adrangi and Allender, 1998; Adebiyi and Oladele, 2005;Omojimite, 2012).

Following Adebiyi (2006), let's consider a bivariate autoregression (AR (1)) model. Let yt be a measure of economic variables and zt be terrorism. A VAR system can be written as follows:

$$\begin{bmatrix} y_t \\ z_t \end{bmatrix} = A_0 + A_1[L]\begin{bmatrix} y_{t-1} \\ z_{t-1} \end{bmatrix} + \begin{bmatrix} u_{yt} \\ u_{zt} \end{bmatrix} \quad \text{……….(2)}$$

A_0 is s vector of constants, A (L) a 2 x 2 matrix polynomial in the lag operator L, and u_{it}serially independent errors for i. Suppose the structural equations can be represented as follows:

$$y_t = b_{10} - b_{12}z_t + b_{11}y_{t-1} + b_{11}y_{t-1} + u_{yt} \quad \text{…………(3)}$$

$$z_t = b_{20} - b_{21}y_t + b_{22}y_{t-1} + b_{23}z_{t-1} + u_{zt} \quad \text{…………(4)}$$

which can be rewritten as:

$$y_t + b_{12}z_t = b_{10} + b_{11}y_{t-1} + b_{13}z_{t-1} + u_{yt} \quad \text{…………(5)}$$

$$z_t + b_{21}y_t = b_{20} + b_{22}y_{t-1} + b_{23}z_{t-1} + u_{zt} \quad \text{…………(6)}$$

and in matrix form: $$\begin{bmatrix} 1 & b_{12} \\ b_{21} & 1 \end{bmatrix}\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} b_{10} \\ b_{20} \end{bmatrix} + \begin{bmatrix} b_{11} & b_{13} \\ b_{22} & b_{23} \end{bmatrix}\begin{bmatrix} y_{t-1} \\ z_{t-1} \end{bmatrix} + \begin{bmatrix} u_{yt} \\ u_{zt} \end{bmatrix} \quad \text{……….(7)}$$

Let $B = \begin{bmatrix} 1 & b_{12} \\ b_{21} & 1 \end{bmatrix}$; $Z = \begin{bmatrix} y_t \\ z_t \end{bmatrix}$; $V_0 = \begin{bmatrix} b_{10} \\ b_{20} \end{bmatrix}$; and $V_1 = \begin{bmatrix} b_{11} & b_{13} \\ b_{22} & b_{23} \end{bmatrix}$

This allows for a more compact form of the structural equation as follows: $BZ_t = V_0 + V_1Z_{t-1} + u_{it}$

Assuming that B is invertible, we pre-multiply the equation by $B^{-1}$to obtain:

$$Z_t=A_0 +A_1Z_{t-1}+ \square_{it} \qquad \ldots\ldots\ldots\ldots\ldots(8)$$

where $A_0 = B^{-1}V_0$; $A_1= B^{-1}V_1$; *and* $e_t = B^{-1}u_{it}$

Given the a_{ij} is the element of the i^{th} row and j^{th} column, we can now write our VAR instandard form:

$$y_t= a_{10} + a_{11}y_{t-1} + a_{12}z_{t-1} +\varepsilon_{yt} \qquad \ldots\ldots\ldots\ldots\ldots(9)$$

$$z_t= a_{20} + a_{21}y_{t-1} + a_{22}z_{t-1} + \varepsilon_{zt} \qquad \ldots\ldots\ldots\ldots\ldots(10)$$

and the matrix form: $\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} a_{10} \\ a_{20} \end{bmatrix} + \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} + \begin{bmatrix} \varepsilon_{yt} \\ \varepsilon_{zt} \end{bmatrix}$ …………..(11)

Note that the errors are a composite of two errors $u_{yt}$and u_{zt} since $\varepsilon_t = B^{-1}u_{it}$ i.e.

$\begin{bmatrix} \varepsilon_{yt} \\ \varepsilon_{zt} \end{bmatrix} = \begin{bmatrix} 1 & b_{12} \\ b_{21} & 1 \end{bmatrix}^{-1} \begin{bmatrix} u_{yt} \\ u_{zt} \end{bmatrix}$so that:

$$\varepsilon_{yt} = \frac{u_{yt}-b_{12}u_{zt}}{1-b_{12}b_{21}} \qquad \ldots\ldots\ldots\ldots\ldots(12)$$

$$\varepsilon_{zt} = \frac{u_{yt}-b_{12}u_{zt}}{1-b_{12}b_{21}} \qquad \ldots\ldots\ldots\ldots\ldots(13)$$

Since the u_{it}*s are white noise, so are the* e_t*s (Adebiyi,2006).*

From Equations 12 and 13, we can see that policy errors can be caused by exogenous y and policy disturbances. Let $\sum_u$ be the 2x2 variance-covariance matrix of u_{it} and $\sum_e$ that of e_{it}. Then $\sum_e = B\sum_u B^1$. To determine the impact of policy on output, we need tolook at the effect of u_{zt} but unless $b_{21} =0$, e_{zt} is not equal to u_{zt} and therefore does notprovide a measure of the policy shock. If we estimate our VAR in Equations 6 and 7 as itis, B and $\sum_u$ will not be identified without further restrictions since estimation of thereduced form in Equations 9 and 10 will yield less parameters than the structural form inEquations 1and 2. One of the most common restrictions is to assume that the structural shocks are uncorrelated so that the off diagonal elements in the covariance matrix are zero (Simatele, 2003). Two results obtained from VARs that are useful for analyzing transmission mechanisms are impulse response functions and forecast error variance decompositions. The impulse responses tell us how growth rate of gross domestic product responds to shocks in real educational expenditure and other policy variables, while the variance decompositions show the magnitude of the variations in growth rate in real GDP due to real capital educational expenditure and other policy variables. If we assume a stable system (like Simatele, 2003), we can iterate Equation 5 backwards and let n approach infinity and solve to obtain:

$$Z_t= \lambda +\sum_{i=0}^{\infty} A_1^{\,i} \varepsilon_{t-1}$$

Where the λ*s are the means of* y_t *and* z_t *and use Equation 8 to get*

$$\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} \mu_y \\ \mu_z \end{bmatrix} + \frac{1}{1-b_{12}b_{21}} \sum_{i=0}^{\infty} \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} 1 & -b_{12} \\ -b_{21} & 1 \end{bmatrix} \begin{bmatrix} u_{yt} \\ u_{zt} \end{bmatrix} \qquad \ldots\ldots\ldots\ldots\ldots\ldots (15)$$

We define the 2x2 matrix as F (i) with elements $F_{jk}(i)$ such that $F(i) = \frac{A_1^i}{1-b_{12}b_{21}}\begin{bmatrix} 1 & -b_{12} \\ -b_{21} & 1 \end{bmatrix}$ and we write in

moving average form as $\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} u_y \\ u_z \end{bmatrix} + \sum_{i=0}^{\infty} \begin{bmatrix} F_{11}(i) & F_{12}(i) \\ F_{21}(i) & F_{22}(i) \end{bmatrix} \begin{bmatrix} u_{yt-1} \\ u_{zt-1} \end{bmatrix}$ or in a more compact form $Z_t = \mu$

$+\sum_{i=0}^{\infty} F(i) u_{t-i}$ …..(16)

$F_{jk}(i)$ are the impulse response functions. As we vary (i), we get a function describing theresponse of variable j to an impulse in variable k (Simatele, 2003).To derive the forecast error variance decompositions, we use Equation 12 to make a forecast of z_{t+1}. The one-step-ahead forecast error is $Fu_{t+1}$and in general the n-periodforecast error $Z_{t+n} - E_t Z_{t+n}$is: $Z_{t+n} - E_t Z_{t+n} = \sum_{i=0}^{\infty} F(i) u_{t-1}$ ………….(17)

and the mean square error (MSE)$(Z_{t+n} - E_t Z_{t+n})^2 = \square\ \square^{\square}{}_z \sum_{1=0}^{\infty} F(i)$ ………………(18)

where σ_z^2 *is the variance of* Z_{t+n}.

To show that the decomposition more explicitly, let us narrow down on y_t, $(y_{t+n} - E_t y_{t+n})^2 = \sigma_y^2 \sum F(i)^2$.

The share of σ_z^2 due to u_{yt} and u_{zt} are: $\frac{\square^{\square}{}_y [F_{11}(0)^2 + F_{11}(1)^2 + \ldots + F_{11}(N-1)^2]}{\sigma_y^2 (n)^2}$ ………..(19)

$$\frac{\sigma^2_z [F_{11}(0)^2 + F_{11}(1)^2 + \ldots + F_{11}(N-1)^2]}{\sigma_y^2 (n)^2} \quad \text{……….(20)}$$

Since the variance decomposition tells us the share of the total variance attributed to agiven structural shocks, for an exogenous sequence y, u_{zt} will not explain any of the forecast error variance of y_t.

Granger causality tests are conducted to determine whether the current and lagged values of one variable affect another. One implication of Granger representation theorem is that if two variables, say X_t and Y_t are co-integrated and each is individually 1(1), then either X_t must Granger-cause $Y_t$or Y_t must Granger-cause X_t. This causality of co-integrated variables is captured in Vector Error Correction model (VEC).
However, in order to avoid spurious regression results, stationarity of variables and cointegration among them are tested prior to estimation of VAR models and Granger causality regressions. The Augmented Dickey-Fuller (ADF) test for order of integration was adopted. The ADF test relies on rejecting a null hypothesis of unit root in favour of the alternative hypothesis of stationarity. The general form of the ADF is estimated by the following regression:

$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{i=1}^{n} a \Delta y_i + e_t$ ……………(21)

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{m=1}^{n} a\Delta y_i + \delta_t + e_t \qquad \text{..............(22)}$$

Where: y_t = time series, it is a linear time trend; Δ = first difference operator; a_0 = constant; n = optimum number of lags in dependent variable; e_t = random error term.

5. Empirical Result and Discussion

Tables 5a and 5b show unit root tests for the variables in levels and in differences. Variables are expressed in logarithms form. According to the tests, time series are integrated processes of first order, I(1). The cointegration relationship between variables was also established using two likelihood ratio tests, a trace test and maximum eigenvalue test. The result of the cointegration test is reported in Table 6. Trace test indicates 4 cointegrating equation(s) at the 5% level and 3 cointegrating equation(s) at the 1% level. On the other hand, Max-eigen value test indicates 2 cointegrating equation(s) at the 5% level and 1 cointegrating equation(s) at the 1% level. Since there is growing evidence in favour of the Trace Statistics compared to the maximum Eigen value statistics (Kasa, 1992) as such the trace test result is accepted. The evidence of cointegration among the variables, indicate that there is a long-run relationship among the variables. Since the variables are cointegrated the equations of the VARs also include lagged values of the variables to capture their long-run relationships.

Table 7 shows the estimate of an unrestricted VAR. The VAR estimates do not present the p-values for testing the corresponding parameters. However, based on each value of the t-statistics, it is easy to conclude whether or not a lagged variable has a significant adjusted effect on the corresponding dependent variable, by using a critical point of $|t_0|$ >2 or 1.96. Corresponding to the exogenous variable TERR(-1) H_0: is accepted based on the t-statistic of 2.78723. Hence, it has a significant adjusted effect on TERR. In order words, one year previous terrorism has a positive significant effect on current year terrorism. This is applicable to LOG(INFL(-1)) and LOG(INFL); LOG(GDPC(-1)) and LOG(GDPC). On the other hand, LOG(INFL(-2)) has a negative significant effect on LOG(GOVX) and LOG(INTR). Similarly, LOG(GOVX(-1)) has a negative significant effect on LOG(INFL) but LOG(GOVX(-2)) has a positive significant effect on LOG(INFL) rather. LOG(INTR(-2)) showed also a positively significant relationship with LOG(INFL). A closer examination of the VAR results in Table 7, POLX(-1) depicted a positive effect on LOG(GDPC) and negative effects on LOG(GOVX) and LOG(OPEN). LOG(OPEN(-1)) showed an inverse effect on LOG(GOVX) and positive effect on LOG(OPEN). Still from the results, LOG(OPEN(-2)) showed a positive significant effect on POLX. The remaining endogenous variables in Table 7showed insignificant effects.

In analyzing the appropriateness of the estimated VAR in Table 7, Figure 1 reports inverse roots of the characteristic AR polinominal. VAR model is stationary if all roots have absolute value less than one and lie inside the unit circle. As shown on the graph, all roots are lying inside the unit circle, so this suggests that the model is stable, e. g. the influence of the shock for some variables may decrease over time. Pairwise Granger causality tests was carried out to tests if the endogenous variable can be treated as exogenous. According to that test all variables in the VAR model may be treated as exogenous.The lag exclusion tests suggests that jointly all two lags of some of the endogenous variables were not statistically significant.

A major requirement in conducting Johansen (1995) co integration tests and estimation of a VAR system, either in its unrestricted or restricted Vector Error Correction (VEC) forms, is the choice of an optimal lag length. In this paper, this choice was made by examining the lag structure in an unrestricted VAR originally specified with three lags, using a combination of VAR lag order selection criteria. Table 8 presents the evidence based on the VAR Lag Order Selection Criteria, while Figure 2 presents the inverse roots of the AR characteristic polynomial associated with the lag orders specified by the selection criteria. As shown in Table 3, while the LR, FPE, SC and HQ criteria suggests the use of one lag, the AIC criterion suggests that three lags should be accommodated in the VAR. The correct lag length will depend on the criteria or measure we use. This is typical of these tests and researchers often use the criterion most convenient for their needs. The SC criterion is generally more conservative in terms of lag length than the AIC criterion. Here in this paper a lag length of 3 is assumed for convenience.

Figure 2 displays pairwise cross-correlograms for the estimated residuals using 12 lag intervals. The dotted lines in the plots of the autocorrelations are the approximate two standard error bounds computed as $\pm 2/(\sqrt{T})$. If the autocorrelation is within these bounds, it is not significantly different from zero. Note that Figure 2 presents 49 correlograms, which show that five or six of the corresponding population autocorrelations (or autocorrelation parameters) are significant. For example, the first graph shows that one of the autocorrelations is outside the interval with two standard error bounds and the second graph shows that two of the autocorrelations are outside the interval.

Table 9 reports the multivariate extensions of the Jarque-Bera residual normality test, which compares the third and fourth moments of the residuals to those from the normal distribution. Concerning factorization of the residuals that are orthogonal to each other, a Cholesky was chosen**.** This is the inverse of the lower triangular Cholesky factor of the residual covariance matrix. The resulting test statistics depend on the ordering of the variables in the VAR. The results show that Halve the components in Table 8 displaced negative skewness while the rest showed positive skewness. The skewness of a symmetric distribution, such as the normal distribution, is zero. Positive skewness means that the distribution has a long right tail and negative skewness implies that the distribution has a long left tail. The kurtosis of a normal distribution is 3. The result shows that most of the components have kurtosis less than 3, that is, the distribution is flat (platykurtic) relative to the normal.Although a very few of the component have small probability values,generally, the Jarque-Bera statistic shows that most of the component are insignificant meaning that the hypothesis that residuals are normally distributed is accepted.

An impulse response function traces the effect of a one-time shock to one of the innovations on current and future values of the endogenous variables as seen in Tabel 10 (see Appendix). A shock to the i-th variable not only directly affects the i-th variable but is also transmitted to all of the other endogenous variables through the dynamic (lag) structure of the VAR. Table 10 reveals that past terrorism shocks in the 10 year period has a positive relationship with current terrorism. LOG(INFL) shocks has a negative relationship with current Terrorism in the early five years, thereafter turns positive. On the other hand, LOG(GDPC) shocks showed a positive relationship with terrorism up to the third year. Beyond this period, a one standard shocks from LOG(GDPC) attracted significant negative response to terrorism. At first LOG(GOVX) displayed negative relationship till the fourth year with terrorism. Beyond the fourth period LOG(GOVX) showed positive significant relationship, thereafter, the relationship became insignificant. LOG(OPEN) shocks started with a negative significant relationship with terrorism. Along the line it produces a negative insignificance and later turned negatively significant in the fourth period. It displayed positive significant relationship with terrorism in the fifth period but the relationship positively insignificant all through till the tenth period. An interesting observation in the result is that past LOG(INTR) shocks throughout the periods showed a positive significant relationship with terrorism. Although POLX started off in the first four years with a positive significant relationship with terrorism, thereafter, it turned negative.See Table 10(in Appendix) for more of the shocks and impulse response of other endogenous variables.

While impulse response functions trace the effects of a shock to one endogenous variable on to the other variables in the VAR, variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR. Tables 11 shows the results of the variance decomposition within a future 10-period horizon. The columns give the percentage of variance in the variables that are due to innovations associated with specified variables, with each row adding up to 100.

TERR own innovation accounted from 100% to 70% of the variation in TERR within the ten year period. For the later part of the ten year period, especially the eighth period, its own innovation accounted for 71.8% variation in TERR, LOG(GDPC) accounts for as much as 17.2%, LOG(INTR) accounted for 7.3%, LOG(OPEN) accounted for 2.1%, LOG(INFL) accounted for 1.4%, LOG(GOVX) accounted for 0.3% and POLX accounted for 0.1% of variation in TERR in the same period. This dominance in variations was also exhibited by LOG(INFL), LOG(GDPC) and LOG(GOVX)due to their own innovations.

Other interesting features of the results in Table 11 are noted.For example, shocks to LOG(INTR) variable in the first year accounted for 91.4% variation in LOG(INTR) while 5.1%, 0.1%, 0.8% , 2.1%, 0.4%, 0.0% were accounted for by TERR, LOG(INFL), LOG(GDPC), LOG(GOVX), LOG(OPEN) and POLX respectively. From the fifth year upward, variation in LOG(INTR) is determined mostly by TERR. This result supports the fact that a unidirectional causality runs from TERR to LOG(INTR).Variations in LOG(OPEN) are largely due to its own innovations up to the seventh period, thereafter, TERR, LOG(INFL), LOG(GDPC), LOG(GOVX), LOG(INTR) and POLX accounted for most of the variation in LOG(OPEN).Apart from its own innovation that accounts for over 53.8% of the variation in POLX in the first year, TERR, LOG(INFL), LOG(GDPC), LOG(GOVX), LOG(OPEN) and LOG(OPEN) respectively accounted for 22.8% , 0.0%, 0.1%, 20.1% , 0.1% and 3.2% of variation in POLX in the same period. It is however worthy of note, that most (over 50%) variation in TERR from the second year upward were mostly due to variations in LOG(GOVX), LOG(GDPC), LOG(INFL) and TERR.

The results of the Pairwise Granger causality tests alternated between bi-directional, no causality and uni-directional between the variables, depending on the lag length allowed. The outcome in respect of two-lag length is presented in Table 12 (see Appendix). It reveals that causality runs from LOG(INTR) to LOG(GOVX) and there is no evidence of bi-directional causality between these two variables. The probability values and F-statistics are given; the low probability values suggested that the nullhypothesis can be rejected. This result can be attributed to the fact that interest rate policy in Nigeria is perhaps one of the most controversial of all financial policies. The reason for this may not be farfetched because interest rate policy has direct bearing on many other economic variables which in turn influence government spending. Interest rates play a crucial role in the efficient allocation of resources aimed at facilitating growth and development of an economy and as a demand management technique for achieving both internal and external balance.

Consequently, a unidirectional causality runs from TERR to LOG(GOVX). This is because fighting terrorismhas become one of the major concerns in Nigeria and the government isspending more on combating the scourge. Government spending 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. Besides, there is increasing need to provide both internal and external security for the people and the nation. The war against terror in Nigeria raised military expenditure to a staggering $2.327 billion(N372.3 billion) in 2012 alone (Naij,2013), ranking Nigeria among countries at war in Africa.

Causality results between POLX and LOG(GOVX) reveals that a bi-directional causality runs from POLX to LOG(GOVX). This finding implies that macroeconomic policies (government fiscal (expenditure and revenue) policies and the monetary policy (inflation management, interest rate policy and foreign exchange management) influences government expenditure.Generally, as observed by Sanusi (2002),macroeconomic policies in Nigeria have been inconsistent over the long-run as periods of internal and external imbalances were more pronounced than periods of strong underlying macroeconomic fundamentals.

Also, a unidirectional causality was found running from LOG(INTR) to LOG(OPEN). This result aligns with De Fiore and Liu (2002) that showed the conditions under which inflation-targeting interest rate rules lead to equilibrium uniqueness in an open economy.In an open economy, an increase in the real interest rate is transmitted to aggregate demand through an inter-temporal substitution effect and also through terms of trade effect. The behaviour of interest rate is important for economic growth of Nigeria in view of the empirical nexus between interest rates and investment, and investment and growth.

Additionally, unidirectional causality was found running from TERR to LOG(INTR) implying that terror variable exerts a positive and significant impact on macroeconomic variable like interest. This accords Cukierman (2004) that by raising the probability of death; an increase in terror reduces investment, production and consumption. In parallel the increase in death raises the interest rate and reduces total wealth. However,causality was also seen to runs from LOG(OPEN) to POLX. But interestingly there is was no causality found between TERR and POLX. Also, Granger causality does not run either-way, from POLX to LOG(INTR), indicating non-existence causation. Generally, it could be noted that there is existence of dynamic relationship existing amongLOG(OPEN), POLX , LOG(INTR), LOG(GOVX). However, worthy of note is that Causality ran from TERR to LOG(GOVX) andLOG(INTR).

Since the results in Table 6 (see Appendix)showed that the variables have a long run relationship, a long runstatic regression is then estimated by applying error correction. The results of unit root test shows that the error correction term (ECM) is stationary at level 1(0)). Table 13 contains the multivariate regression results of the overparameterised model. The results indicate that DLOG(INFL) is statistically insignificant. This necessitates the dropping of the variable from the model and hence the results contained in table 14(see Appendix), which is the focus of the discussion. The improved results as contained in Table 14 show that with the exception of the constant term, all the coefficients are statistically significant. A closer look at the result reveals that LOG(GDPC), LOG(OPEN), LOG(INFL), DLOG(GOVX) and DLOG(INTR) went contrary to the theoretical expectation. On the other hand, LOG(GOVX), LOG(INTR), POLX, DLOG(GDPC) and DLOG(OPEN) were in line with the apriori expectation. The result shows that 1 percent increase in LOG(GOVX), reduces the occurrence of terrorism (TER) by 0.18 percent and it is significant at 1% level. On the other hand, LOG(INTR) shows a positive relationship with terrorism. Terrorism rises by 0.616936 percent given a 1 percent increase in LOG(INTR). Likewise, a 1 percent increase in POLX increase the occurrence of terrorism by 0.340240 percent and statistically significant at 1 percent level. The result from Table 14 also revealed an inverse relationship between DLOG(GDPC) and terrorism. Precisely, a 1 percent increase in DLOG(GDPC) is associated with a 0.142587 percent decline in terrorism. Similarly, a 1 percent increase in DLOG(OPEN) leads to a 0.075312 reduction in the occurrence of terrorism.

The R2 0.937818 (93.78%) implies that 93.78 percent of total variation in terrorism explained by the regression equation. Coincidentally, the goodness of fit of the regression remained high after adjusting for the degrees of freedom as indicated by the adjusted R2 (R 2=0.912088 or 91.21%). The F-statistic 36.44775, which is a measure of the joint significance of the explanatory variables, is found to be statistically significant at 1 percent as indicated by the corresponding probability value (0.000000). The Durbin-Watson statistic of 1.80 seems to suggest lesser degree of autocorrelation. The results of the error correction models as contained in

Tables 14 provides evidence for equilibrium to be restored after short-run disturbances as indicated by the statistically significant coefficients of the error correction terms (ECM). But the error correction term happened not to be correctly signed.

6. Conclusion

This paper is a cointegration and causality analysis of macroeconomic factors and terrorism in Nigeria. The econometric investigation was based on a cointegration approach and the Granger Causality test, using time series data from 1970 to 2016. The analysis starts with examining stochastic characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) test. Then, the effects of stochastic shocks to one of the innovations on current and future values of the endogenous variables are explored, using VAR models and impulse response analysis. Since the results of Johansen cointegration revealed that there is a long-run relationship among the stationary variables, a long run static regression was then estimated by applying error correction.

The result reveals that LOG(GDPC), LOG(OPEN), LOG(INFL), DLOG(GOVX) and DLOG(INTR) went contrary to the theoretical expectation. On the other hand, LOG(GOVX), LOG(INTR), POLX, DLOG(GDPC) and DLOG(OPEN) were in line with the apriori expectation. This implies that LOG(GOVX) has an inverse relationship with terrorism. On the other hand, LOG(INTR) shows a positive relationship with terrorism. So also is LOG(INTR). Likewise, a 1 percent increase in POLX increase the occurrence of terrorism by 0.340240 percent and statistically significant at 1 percent level. The result also revealed an inverse relationship between DLOG(GDPC) and terrorism. Similarly, a 1 percent increase in DLOG(OPEN) leads to a 0.075312 reduction in the occurrence of terrorism.

The main limitation of the VAR modeling approach used in this paper is its consumption of degrees of freedom in the model estimation. A future extension of the study could be to use the Bayesian VAR (BVAR) approach in order to reduce the number of parameters that need to be estimated. However, from a policy perspective, the results suggest that government expenditure should be properly managed and directed at more productive sectors rather than non-productive ventures. This can bring about employment and foster economic growth which will in turn reduce poverty and lead to reduction of the occurrence of terrorism. In addition, a mechanism should be provided for Small and Medium Enterprises to have access to loans with long payback period. In this vein, policy to promote access to microfinance services can be promoted by making access to microcredit less difficult for the poor people by reducing the interest rate charged.

Also, trade openness rate should be all time kept at peak benchmark by adopting tight trade openness in order to ensure economic growth via fiscal sustainability. In addition, strategic macroeconomic policies should be instituted in order to encourage domestic private investment to enhance the growth of the economy. Nigerian political system has to be stabilized and the government should step up its intelligence gathering capacity as well as training security agents to forcefully combat terrorist group.

References

Abimbola, J. O., and Adesote, S. A. (2012)Domestic Terrorism and Boko Haram Insurgency in Nigeria, Issues and Trends: A Historical Discourse". *Journal of Arts and Contemporary Society*,4(1),11-29. Retrieved from http://www.cenresinpub.org/pub/Sept%20Edition%202012/JACS/Page%2011-19_842_.pdf

Adebiyi, M. A.(2006). Education-Economic Growth Paradox in Nigeria: An Autoregressive Model Retrieved from http://ssrn.com/abstract=876244.

Adebiyi, M.A., and Oladele, O. (2005). Public Education Expenditures and Defence Spending in Nigeria: An

Empirical Investigation, http://www.saga.cornell.edu/saga/educonf/ade.Assessed August 12, 2011.

Adrangi, B., and Allender, M. (1998).Budget Deficits and Stock Prices: International evidence. *Journal of Economics*,22 (2-3),57-66.

Ajayi, A.I. (2012).Boko Haram and Terrorism in Nigeria: Exploratory and Explanatory Notes.*Global Advanced Research Journal of History, Political Science and International Relations*, 1(5),103-107.

Alesina, A., Ozler,S., Roubini, N., and Swagel, P. (1996).Political Instability and Economic Growth.*Journal of Economic Growth*, 1(1),189-211.

Berrebi, C. (2003). Evidence About the Link Between Education, Poverty and Terrorism Among Palestinians, Working Papers 856, Princeton University, Department of Economics, Industrial Relations Section.

Blomberg, S. B., and Hess, G. D. (2008).From (no) Butter to Guns? Understanding the Economic Role in Transnational Terrorism. Terrorism, Economic Development, and Political Openness.Ed. Philip Keefer and Norman Loayza. New York: Cambridge UP, pp, 83-115.

Blomberg, B. S., Hess, G. D., and Weerapana, A. (2004).Economic Conditions and Terrorism.*European Journal of Political Economy*, 20(2),463-478.

CBN Annual Reports and Statement of Accounts (various years).

CBN Statistical Bulletin vol. 17, December 2006. http://www.cenbank.org/OUT/PUBLICATIONS/STATBULLETIN/RD/2008/STABULL-2006.PDF

Chinwokwu, E. C. (2012). History and Dynamics of Terrorism in Nigeria: Socio-political Dimension.*International Journal of Innovative Research and Development*,1(11), 419- 446

Cukierman, A. (2004). Comment on: Macroeconomic Consequences of Terror: Theory and the case of Israel. *Journal of Monetary Economics*, (51), 1003–1006.

De Fiore, F., and Liu, Z. (2002),Openness and equilibrium determinacy under interest rate rules. European Central Bank, Working Paper Series, No. 173.Retrieved fromhttp://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp173.pdf

Economic Online (2017). Economic Development.http://www.economicsonline.co.uk/Global_economics/Economic_development.html

Ehrlich, P.R., and Jianguo, L. (2002).Some Roots of Terrorism.*Population and Environment* , 24(2), 183-92.

EIU. (2008). Economist Intelligence Unit Country Profile on Nigeria,.http://www.refworld.org/pdfid/493e3bb12.pdf

Elbakidze, L., and Jin, Y. (2007). Socio-economic Antecedents of Transnational Terrorism: Exploring the Correlation.Available online: http://agecon2.tamu.edu/people/faculty/mccarl-bruce/689homeland/documents/terrorpaper.pdf

Forest, J.J.F. (2012). Confronting the Terrorism of Boko Haram in Nigeria. JSOU Report 12-5. Available online: http://cco.dodlive.mil/files/2012/09/Boko_Haram_JSOU-Report-2012.pdf. Accessed on 2nd , May, 2016.

Gambrell, J. (2011). Muslim sect’s attacks kill 39 in Nigeria: Catholic Church bombed just after Christmas Mass. The Columbus Dispatch.Available online:http://www.dispatch.com/content/stories/national_world/2011/12/26/muslim-sects-attacks-kill-39-in-nigeria.html.Accessed on 2nd , May, 2016.

Goldman, E. (1978).The Psychology of Political Violence. In the Terrorism Reader, edited by Walter Laqueur, 193-98. New York: New American Library.

Gurr, T. R.(1970).Why Men Rebel. Princeton, NJ: Center of International Studies, Princeton UP.

Hoffman, B. (2006). Inside Terrorism. Third Ed. New York: Columbia University Press.

IndianVision (2012). Indian killed in a Nigerian Terror Attack.Available online: http://www.indiavision.com/news/article/international/271520/. Accessed on 2nd , May, 2016.

International Crisis Group reports (ICG)(2006). Nigeria: Want in the Midst of Plenty. Africa Report No 113, Available online:www.crisisgroup.org.Accessed on 2nd , May, 2016

Johansen, S. (1995). Likelihood Based Inferences in Cointegrated Vector Autoregressive Models. Oxford University Press. Oxford.

Kasa, K. (1992). Common Stochastic Trends in International Markets.*Journal of Monetary Economics*., 29(1), 95 – 124.

Krueger, A.B., and Maleckova, J. (2003). Education, Poverty, Political Violence and Terrorism: Is there a Causal Connection? *Journal of Economic Perspectives*, 17(4), 119-144.

Li, Q. (2005). Does Democracy Promote or Reduce Transnational Terrorist Incidents?*Journal of Conflict Resolution*, 49(2), 278-297.

Li, Q., and Schaub, D. (2004). Economic Globalization and Transnational Terrorism: A Pooled Time-Series Analysis, *Journal of Conflict Resolution*, 48(2), 230-258.

Manson, N., Oguijiuba,O., and Adeola, A. (2004).The Impacts of Trade Liberalization on Poverty in Nigeria: Microsimulations in a CGE model. A Proposal for the Poverty and Economic Policy(PEP) Research Network.

Naij(2013).Nigeria's Anti-Terror War Gulped N372 Billion in 2012 – Report. Available online: http://news.naij.com/34638.html. Accessed on 2nd , May, 2016.

National Bureau of Statistics (NBS) (2005). Nigerian Statistics.Available online: http://www.nigerianstat.gov.ng/pages/download/71. Accessed on 23rd , March, 2016.

Nigerian Finder (n.d.). Economic Development in Nigeria. http://nigerianfinder.com/economic-development-in-nigeria/

Nigerians Report (2011). Islamic Terrorists Attacking Christians on Christmas Day in Nigeria.Available online: http://www.nigeriansreport.com/2011/12/islamic-terrorists-attacking-christians.html#sthash.28cm4rWa.dpuf. Accessed on 4th , April, 2016.

Okonkwo, R. O., and Enem, F. O. Combating crime and terrorism using data mining techniques.Nigeria Computer Society (NCS): 10th International Conference – july 25-29, 2011. Available online: http://www.ncs.org.ng/wp-content/uploads/2011/08/ITePED2011-Paper10.pdf. Accessed on 23rd , March, 2016.

Omojimite, B. U. (2012).Public Education and Defence Spending in Nigeria: Implications for Economic Growth. *Journal of Educational and Social Research*, 2 (1),59-72

Onuoha, F. C. (2013). Jama'atuAnsarulMusilimina Fi Biladis Sudan: Nigeria's Evolving Terrorist Group. Report Aljazeeral Centre for Studies.Available online: http://studies.aljazeera.net/ResourceGallery/media/Documents/2013/3/14/2013314103734423734Nigerias%20Evolving%20Terrorist%20Group.pdf. Accessed on 23rd , March, 2016.

Richardson,C. (2011).Relative Deprivation Theory in Terrorism: A Study of Higher Education and Unemployment as Predictors of Terrorism.*politics.as.nyu.edu/docs/IO/4600/Clare_Richardson_terrorism.pdf*

Sageman, M. (2008).Leaderless Jihad: Terror Networks in the Twenty-First Century. Philadelphia: University of Pennsylvania Press.

Sanusi, J. O. (2002).Central Bank and the Macroeconomic Environment in Nigeria. Being a lecture delivered to participants of the senior executive course no. 24 of the National Institute for Policy and Strategic Studies (NIPSS), Kuru.Available online: http://www.cenbank.org/OUT/SPEECHES/2002/GOVADD-19AAUG.PDF. Accessed on 3rd , July, 2016.

Sen, A. (2001). Development as Freedom (2nd ed.). Oxford New York: Oxford University Press. *ISBN 9780192893307*.

Simatele, M.C.H. (2003). Financial Sector Reform and Monetary Policy in Zambia. Ph.D Dissertation. Economic Studies, Department of Economics, School of Economics and Commercial Law, Gotebora University.

Tessler, M., and Michael, D. H. R. (2007).What Leads Some Ordinary Arab Men and Women to Approve of Terrorist Attacks Against the United States?*Journal of Conflict Resolution*, 51(2), 305-328.

Trading Economics (2013).Nigeria GDP Growth Rate. http://www.tradingeconomics.com/nigeria/gdp-growth

World Bank(1996). Nigeria:Poverty in the Midst of Plenty: The Challenge of Growth with Inclusion.Available online: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPA/0,,contentMDK:20204610~menuPK:435735~pagePK:148956~piPK:216618~theSitePK:430367~isCURL:Y,00.html. Accessed on 23rd , March, 2016.

Appendix

Table 1: Categories of Militia Groups in the Niger Delta.

Private Militia	**Ethnic Militia**	**Pan-Ethnic Militia**
Niger Delta People Volunteer Force (NDPVF)	The MeinbutusArugbo Freedom Fighter	Movement for the Emancipation of the Niger Delta (MEND)
Adaka Marines	Iduwini Volunteer Force (IVF)	The Coalition for Militant Action in the Niger Delta (COMA)
Martyrs Brigade	Egbesu Boys of Africa	The Niger Delta People Salvation Front
Niger Delta Volunteers	-	-
Niger Delta Militant Force Squad (NDMFS)	-	-
Niger Delta Coastal Guerillas (NDCGS)	-	-

Source**:** Forest (2012)

Table 2: Attacks Blamed on the JAMBS

Date	**location**	**Target(s)**	**Description**	**remarks**
26 Nov. 2012	Garki, Abuja	Headquarters of the Special Anti-Robbery Squad (SARS)	Attack and freeing of some inmates in the detention facility of the SARS headquarters	JAMB claimed that the attack was in compliance with a Quranic injunction that urged believers to fight for the oppressed andthe feeble. It promised similar attacks against detention centres across the country

19 Dec. 2012	Katsina State	Francis Colump	Kidnapping of Francis, a French citizen working for the French company Vergnet	JAMBS claimed that the reason for kidnapping Colump is the stance of the French government and the French people on Islam, specifically citing France's major role in the (planned) intervention in northern Mali
19 Jan. 2013	Okene, Kogi State	Convoy of Mali-bound Nigerian soldiers	Ambushing of a truck conveying Mali-bound Nigerian soldiers, resulting in the death of two soldiers and injuring of five others	JAMBS claimed it attacked the soldiers because of Nigeria's contribution of troops to Mali
17 Feb. 2013	Jamaare (Bauchi state)	Seven expatriates working with a Lebanese construction company, Setraco Nig. Ltd	Those abducted were four Lebanese, one Briton, a Greek citizen and an Italian	JAMBS claimed responsibility for the kidnapping, citing 'the transgressions and atrocities done to the religion of Allah by the European countries

Source: Onuoha(2013)

Table 3: Cases of Domestic Terrorism arising from Bomb Explosions in Nigeria 1986-2012

Date	**Place**	**State**	**Terrorist Group**	**Casualty**
19/10/1986	Parcel bomb, Lagos	Lagos	Nil	1
31/5/1995	Venue of launching of family support Ilorin	Kwara	Nil	No record
18/1/1996	Durbar Hotel Kaduna	Kaduna	Nil	1
19/1/1996	Aminu Kano Airport, Kano	Kano	Nil	No record
11/4/1996	Ikeja cantonment	Lagos	Nil	No record
25/4/1996	Airforce base	Lagos	Nil	No record
14/11/1996	MMIA	Lagos	Nil	2
16/12/1996	Col. Marwa convey	Lagos	Nil	No record
18/12/1996	Lagos state task force on environment bus in Lagos	Lagos	Nil	No record
7/1/1997	Military bus at Ojuelegba, Lagos	Lagos	Nil	No record

12/2/1997	Military vehicle Fakka D608 at Ikorodu road, Lagos	Lagos	Nil	No record
7/5/1997	Nigerian army 25 seater bus at Yaba, Lagos	Lagos	Nil	No record
12/5/1997	Eleiyele, Ibadan	Oyo	Nil	No record
16/5/1997	Onitsha	Anambra	Nil	5
6/8/1997	Port Harcourt	Rivers	Nil	1
2/9/1997	Col. InuaBawa convey, Akure	Ekiti	Nil	No record
18/12/1997	Gen. OladipoDiya at Abuja airport	Abuja	Nil	1
22/4/1998	Evan square	Lagos	Nil	3
23/4/1998	Ile-Ife	Osun	Nil	5
27/1/2002	Lagos	Lagos	Nil	1000
31/7/2002	Port Harcourt	Rivers	Nil	1
25/11/2006	25/11/2006 PDP Secrtariat, Yenagoa	Bayelsa	Nil	1
5/12/2006	Goodluck Jonathan campaign office	Bayelsa	Nil	No record
23/12/2006	Port Harcourt	Rivers	Nil	No record
12/7/2009	Atlas Cove, Lagos	Lagos	MEND	5
2/5/2010	Yenagoa	Bayelsa	MEND	No record
1/10/2010	Eagle square	Abuja	MEND	8
12/11/2010	Alaibe house Opokuma	Bayelsa	MEND	1
24/12/2010	Jos	Plateau	Boko haram	38
27/12/2010	BarkinLadi	Plateau	Boko haram	No record
29/12/2010	Yenagoa	Bayelsa	MEND	1
31/12/2010	Mugadishu barracks	Abuja	Boko haram	32
2/2/2011	Aba	Abia	Nil	2
3/3/2011	Suleja	Niger	Boko haram	16
16/3/2011	Yenagoa	Bayelsa	Nil	No record
1/4/2011	Butshen-tanshi	Bauchi	Boko haram	No record
6/4/2011	kaduna	kaduna	Boko haram	4
7/4/2011	UnguwarDoki, Maiduguri	Borno	Boko haram	10
8/4/2011	INEC office suleja	Niger	Boko haram	14
8/4/2011	Kaduna	Kaduna	Boko haram	1
9/4/2011	Unguwandoki polling station	Kaduna	Boko haram	5
9/4/2011	INEC collating centre	Borno	Boko haram	No record
22/4/2011	Kaduna	Kaduna	Boko haram	3
14/5/2011	London chiki Maiduguri	Borno	Boko haram	2
19/5/2011	Lagos road Maiduguri	Borno	Boko haram	No record
28/5/2011	Lagos park Zuba/Mammy market	Abuja & Bauchi	Boko haram	18
29/5/2011	Zuba near Abuja	Abuja	Boko haram	8
3/6/2011	Maiduguri	Borno	Boko haram	No record
7/6/2011	Beside St. Patrick church Maiduguri	Borno	Boko haram	10
10/6/2011	Kaduna	Kaduna	Boko haram	No record
16/6/2011	Police force headquarters	Abuja	Boko haram	3
16/6/2011	Damboa Maiduguri	Borno	Boko haram	3
26/6/2011	Beer garden Maiduguri	Borno	Boko haram	25

3/7/2011	Beer garden Maiduguri	Borno	Boko haram	20
10/7/2011	All christian fellowship church Suleja	Niger	Boko haram	No record
26/8/2011	United Nations Office	Abuja	Boko haram	23
6/9/2011	Baga road & Ward Maiduguri	Borno	Boko haram	No record
17/12/2011	Shuwai Area of Maiduguri	Borno	Boko haram	3
22/12/2011	Pompomari near Emir of DamaturuPalaca	Yobe	Boko haram	2
22/12/2011	Timber shed along Bada road Maiduguri	Borno	Boko haram	No record
25/12/2011	St. Theresa Catholic Church, Madalla near Suleja	Niger	Boko haram	43
25/12/2011	Near Mountain of Fire Ministry, Jos	Plateau	Boko haram	12
25/12/2011	SSS Office Damaturu	Yobe	Boko haram	4
26/12/2011	Near Islamic School in Sapele	Delta	Nil	No record
28/12/2011	Near a Hotel in Gombe	Gombe	Boko haram	No record
6/1/ 2012	Attack on some Southerners in Mubi	Adamawa	Boko haram	13
21/1/ 2012	Multiple bomb blasts rocked Kano city	Kano	Boko haram	Over 185 people killed
29/1/ 2012	Bombing of a Police Station at Naibawa area of Yakatabo	Kano	Boko haram	No record
8/2/ 2012	Bomb blast rocked Army Headquarters	Kaduna	Boko haram	No record
15/2/ 2012	Attack on KotonKarfe Prison which 119 prisoners were freed	Kogi	Boko haram	1 Warder killed
19/2/ 2012	Bomb blast near Christ Embassy Church, in Suleija	Niger	Boko haram	5 people injured
26/2/ 2012	Bombing of Church of Christ in Nigeria, Jos	Plateau	Boko haram	2 people killed and 38 injured
11/2/ 2012	Bombing of St. Finbarr's Catholic Church Rayfield, Jos	Plateau	Boko haram	11 people killed and many injured
29/2/ 2012	Attack on Bayero University	Kano	Boko haram	16 people killed and many injured
30/2/ 2012	Bomb explosion in Jalingo	Taraba	Boko haram	11 people killed and several others wounded

Source: Chinwokwu (2012), Ajayi (2012)

Table 5a: Unit Root Test Results: Levels

Variable	**INFL**	**GDPC**	**GOVX**	**OPEN**	**INTR**	**POLX**	**TERR**	**ECM**
Unit root	ADF	ADF	ADF	ADF	ADF	ADF	ADF	ADF

Trend, constant	-4.001558*	-2.014036	-3.089160	-2.237038	-1.104306	-3.075318	-1.645215	-4.666189*
Constant	-4.131647 *	-1.993456	-1.495412	-1.479380	-1.506191	-2.282445	-1.840175	-4.650278*
Without trend, constant	-0.747000	0.194820	4.693380	-0.791717	0.658856	-1.380933	0.000000	-4.724776*

Source: Authors' Computation from Computer Output.

Note: * Null Hypothesis Rejection at 1%; ** * Null Hypothesis Rejection at 5%; and *** Null Hypothesis Rejection at 10%

Table 5b: Unit Root Test results: First Difference

Variable	**INFL**	**GDPC**	**GOVX**	**OPEN**	**INTR**	**POLX**	**TERR**	**ECM**
Unit root	ADF	ADF	ADF	ADF	ADF	ADF	ADF	ADF
Trend, constant	-6.302564*	-5.861418*	-0.985064	-7.243676*	-10.30788*	-7.597783*	-6.492103*	-10.28363*
Constant	-6.361749 *	-5.898550*	-6.976280*	-7.277774*	-10.25756*	-7.695598*	-6.403124*	-10.15246*
Without trend, constant	-6.446588	-5.933521*	-1.133636	-6.969205*	-10.20175*	-7.745967*		-10.41274*

Source: Authors' Computation from Computer Output.

Note: * Null Hypothesis Rejection at 1%; ** * Null Hypothesis Rejection at 5%; and *** Null Hypothesis Rejection at 10%

Table 6: Johansen Cointegration Test

Unrestricted Cointegration Rank Test				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.829696	199.4871	124.24	133.57
At most 1 **	0.666851	128.6802	94.15	103.18
At most 2 **	0.542003	84.71358	68.52	76.07
At most 3 *	0.485237	53.47791	47.21	54.46
At most 4	0.266711	26.91597	29.68	35.65
At most 5	0.246280	14.50736	15.41	20.04
At most 6	0.076837	3.197961	3.76	6.65
*(**) denotes rejection of the hypothesis at the 5%(1%) level				
Trace test indicates 4 cointegrating equation(s) at the 5% level				
Trace test indicates 3 cointegrating equation(s) at the 1% level				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value

None **	0.829696	70.80688	45.28	51.57
At most 1 *	0.666851	43.96663	39.37	45.10
At most 2	0.542003	31.23567	33.46	38.77
At most 3	0.485237	26.56194	27.07	32.24
At most 4	0.266711	12.40861	20.97	25.52
At most 5	0.246280	11.30940	14.07	18.63
At most 6	0.076837	3.197961	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level

Max-eigenvalue test indicates 2 cointegrating equation(s) at the 5% level

Max-eigenvalue test indicates 1 cointegrating equation(s) at the 1% level

Source: Researchers' computation, 2013, adapted from regression result using E-view 4.1

Table 7: Unrestricted VAR

Standard errors in ( ) & t-statistics in [ ]

	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
TERR(-1)	0.648374	-0.876486	-0.083424	0.216857	1.441724	0.234786	0.173192
	(0.23262)	(0.87056)	(0.44221)	(0.19225)	(1.11221)	(0.26842)	(0.42412)
	[2.78723]	[-1.00681]	[-0.18865]	[1.12801]	[1.29626]	[0.87468]	[0.40836]
TERR(-2)	-0.085913	0.233596	-0.006201	0.001090	-1.687271	0.394876	-0.595555
	(0.27010)	(1.01080)	(0.51345)	(0.22322)	(1.29139)	(0.31167)	(0.49245)
	[-0.31808]	[0.23110]	[-0.01208]	[0.00488]	[-1.30655]	[1.26698]	[-1.20938]
LOG(INFL(-1))	-0.024428	0.537972	0.021890	0.044991	0.033758	0.076149	-0.098971
	(0.04438)	(0.16607)	(0.08436)	(0.03667)	(0.21217)	(0.05121)	(0.08091)
	[-0.55046]	[3.23935]	[0.25948]	[1.22676]	[0.15911]	[1.48710]	[-1.22325]
LOG(INFL(-2))	-0.014808	-0.164937	0.099237	-0.075244	0.033552	-0.120743	-0.131330
	(0.03966)	(0.14843)	(0.07540)	(0.03278)	(0.18964)	(0.04577)	(0.07231)
	[-0.37334]	[-1.11119]	[1.31617]	[-2.29549]	[0.17693]	[-2.63820]	[-1.81611]
LOG(GDPC(-1))	0.122650	0.018809	0.723194	0.108755	-0.275171	0.025742	0.322924
	(0.09075)	(0.33963)	(0.17252)	(0.07500)	(0.43391)	(0.10472)	(0.16546)
	[1.35147]	[0.05538]	[4.19197]	[1.45004]	[-0.63417]	[0.24582]	[1.95167]
LOG(GDPC(-2))	0.074634	0.186357	-0.179784	-0.007099	0.589393	0.048637	0.038924
	(0.08964)	(0.33547)	(0.17041)	(0.07408)	(0.42859)	(0.10344)	(0.16343)

	[0.83259]	[0.55551]	[-1.05503]	[-0.09582]	[1.37519]	[0.47021]	[0.23816]
LOG(GOVX(-1))	-0.082239	-2.578577	0.084675	0.709434	0.473362	-0.166581	0.196477
	(0.26951)	(1.00859)	(0.51233)	(0.22273)	(1.28856)	(0.31098)	(0.49137)
	[-0.30515]	[-2.55662]	[0.16528]	[3.18518]	[0.36736]	[-0.53565]	[0.39986]
LOG(GOVX(-2))	-0.018075	2.458224	0.085219	0.328262	-0.032975	0.150961	-0.327225
	(0.29360)	(1.09875)	(0.55812)	(0.24264)	(1.40375)	(0.33878)	(0.53529)
	[-0.06156]	[2.23730]	[0.15269]	[1.35288]	[-0.02349]	[0.44560]	[-0.61130]
LOG(OPEN(-1))	0.030028	0.260626	-0.165487	-0.073313	0.495004	-0.042773	-0.029550
	(0.04005)	(0.14990)	(0.07614)	(0.03310)	(0.19151)	(0.04622)	(0.07303)
	[0.74967]	[1.73870]	[-2.17339]	[-2.21475]	[2.58478]	[-0.92545]	[-0.40464]
LOG(OPEN(-2))	0.030169	-0.313288	0.057226	0.036928	0.005242	0.076727	0.194024
	(0.04406)	(0.16489)	(0.08376)	(0.03641)	(0.21066)	(0.05084)	(0.08033)
	[0.68472]	[-1.89996]	[0.68322]	[1.01413]	[0.02488]	[1.50913]	[2.41526]
LOG(INTR(-1))	0.180906	0.373271	-0.478087	0.065513	0.367369	0.273585	0.247065
	(0.15685)	(0.58697)	(0.29816)	(0.12962)	(0.74991)	(0.18098)	(0.28596)
	[1.15340]	[0.63593]	[-1.60346]	[0.50542]	[0.48989]	[1.51165]	[0.86398]
LOG(INTR(-2))	0.140221	1.225664	0.294857	0.173627	1.008236	0.248524	-0.026945
	(0.13828)	(0.51750)	(0.26287)	(0.11428)	(0.66115)	(0.15956)	(0.25212)
	[1.01402]	[2.36844]	[1.12168]	[1.51930]	[1.52497]	[1.55752]	[-0.10687]
POLX(-1)	-0.027296	1.031574	0.278190	-0.391291	-1.433729	-0.135993	0.227890
	(0.13009)	(0.48686)	(0.24731)	(0.10751)	(0.62201)	(0.15012)	(0.23719)
	[-0.20981]	[2.11884]	[1.12488]	[-3.63943]	[-2.30501]	[-0.90591]	[0.96080]
POLX(-2)	0.063025	-1.156955	-0.209922	-0.065763	0.325293	-0.191429	0.334786
	(0.18562)	(0.69464)	(0.35285)	(0.15340)	(0.88746)	(0.21418)	(0.33842)
	[0.33954]	[-1.66555]	[-0.59493]	[-0.42870]	[0.36654]	[-0.89376]	[0.98927]
C	-0.392792	-0.853405	1.143827	-1.230586	-8.831539	0.628751	-0.264580
	(0.66329)	(2.48225)	(1.26090)	(0.54816)	(3.17130)	(0.76537)	(1.20931)

	[-0.59219]	[-0.34380]	[0.90715]	[-2.24493]	[-2.78483]	[0.82150]	[-0.21879]
R-squared	0.888515	0.547731	0.819996	0.997768	0.945602	0.912387	0.765947
Adj. R-squared	0.828485	0.304201	0.723070	0.996566	0.916311	0.865211	0.639919
Sum sq. resids	0.717852	10.05363	2.594115	0.490287	16.40990	0.955814	2.386196
S.E. equation	0.166162	0.621834	0.315870	0.137321	0.794450	0.191734	0.302947
F-statistic	14.80115	2.249132	8.460071	830.1494	32.28278	19.34008	6.077576
Log likelihood	24.74733	-29.36089	-1.589779	32.56343	-39.40489	18.87819	0.122885
Akaike AIC	-0.475480	2.163946	0.809258	-0.856753	2.653897	-0.189180	0.725713
Schwarz SC	0.151437	2.790862	1.436174	-0.229836	3.280814	0.437737	1.352630
Mean dependent	0.804878	2.724202	6.101589	11.69422	1.451717	2.326163	0.463415
S.D. dependent	0.401218	0.745474	0.600238	2.343343	2.746197	0.522244	0.504854
Determinant Residual Covariance		1.57E-08					
Log Likelihood (d.f. adjusted)		-38.85718					
Akaike Information Criteria		7.017423					
Schwarz Criteria		11.40584					

Source: Researchers' computation, 2013, adapted from regression result using E-view 4.1

Table 8: Results of VAR lag order selection criteria.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-233.0032	NA	0.000384	12.00016	12.29571	12.10702
1	-17.89726	344.1694*	9.86E-08*	3.694863	6.059294*	4.549767*
2	24.46435	52.95201	1.73E-07	4.026783	8.460091	5.629727
3	86.07665	55.45107	1.83E-07	3.396167*	9.898353	5.747153

Source: Researchers' computation, 2013, adapted from regression result using E-view 4.1

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Table 9: VAR Residual Normality Tests

Orthogonalization: Cholesky (Lutkepohl)

Component	Skewness	Chi-sq	df	Prob.
1	1.900810	24.68936	1	0.0000
2	0.060026	0.024621	1	0.8753

3	-0.302136	0.623788	1	0.4296
4	0.163287	0.182194	1	0.6695
5	-0.061474	0.025824	1	0.8723
6	-0.302005	0.623247	1	0.4298
7	-0.198038	0.267996	1	0.6047
Joint		26.43703	7	0.0004

Component	Kurtosis	Chi-sq	df	Prob.
1	8.607204	53.71126	1	0.0000
2	1.124734	6.007561	1	0.0142
3	1.719795	2.799830	1	0.0943
4	1.525991	3.711702	1	0.0540
5	1.372508	4.524916	1	0.0334
6	2.142370	1.256530	1	0.2623
7	1.748928	2.673851	1	0.1020
Joint		74.68565	7	0.0000

Component	Jarque-Bera	df	Prob.
1	78.40062	2	0.0000
2	6.032182	2	0.0490
3	3.423618	2	0.1805
4	3.893896	2	0.1427
5	4.550740	2	0.1028
6	1.879776	2	0.3907
7	2.941846	2	0.2297
Joint	101.1227	14	0.0000

Source: Own Computations using E-view 4.1

Note: Variables are as defined in equation 2

Table 10: Impulse Response

			Response of TERR:				
Period	**TERR**	**LOG(INFL)**	**LOG(GDPC)**	**LOG(GOVX)**	**LOG(OPEN)**	**LOG(INTR)**	**POLX**
1	0.166162	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.126029	-0.018968	0.028931	-0.005092	0.020525	0.031695	-0.006066

3	0.102592	-0.024122	0.055941	0.003605	0.024617	0.044336	0.002790
4	0.085424	-0.015267	0.068273	-0.003002	0.014174	0.034688	-0.003369
5	0.068695	-0.006630	0.061605	-0.005506	0.017739	0.030102	0.000835
6	0.054544	0.001900	0.049156	-0.006652	0.014151	0.027564	-0.001585
7	0.040870	0.008096	0.038236	-0.008960	0.013367	0.027399	-0.000888
8	0.032848	0.008929	0.029206	-0.009668	0.011324	0.027005	-0.001115
9	0.027275	0.007712	0.022966	-0.010127	0.008641	0.025329	-0.002735
10	0.024195	0.006140	0.018273	-0.010257	0.006939	0.022357	-0.003693

Response of LOG(INFL):

Period	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	-0.148760	0.603779	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.007438	0.329946	-0.044796	-0.157136	0.181346	0.123998	0.229260
3	0.001847	-0.030133	-0.012030	0.030640	0.030094	0.296118	0.054848
4	-0.097648	-0.008060	0.101258	-0.044233	-0.092023	0.118495	-0.051405
5	-0.001751	-0.037987	0.039894	-0.041258	0.006248	0.014694	-0.000359
6	0.042238	-0.023995	-0.025055	-0.021557	-0.015133	-0.024945	-0.064057
7	0.024141	0.024594	-0.036773	-0.030234	0.017519	-0.013131	-0.033526
8	0.045206	0.024472	-0.030720	-0.022399	0.023174	0.013294	-0.007036
9	0.046134	0.010538	-0.004130	-0.017838	0.011899	0.033379	-0.002104
10	0.044438	-0.002056	0.018607	-0.014835	0.008066	0.033514	0.005844

Response of LOG(GDPC):

Period	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.082616	-0.037369	0.302575	0.000000	0.000000	0.000000	0.000000
2	0.067582	-0.020141	0.255855	0.010231	-0.120873	-0.072661	0.061826
3	0.002302	0.015403	0.165251	0.050263	-0.102575	-0.013325	0.077488
4	-0.048731	0.043408	0.086279	0.034868	-0.079764	-0.039731	0.080645
5	-0.063092	0.001040	0.021461	0.045654	-0.022203	-0.019878	0.068881
6	-0.086869	-0.014257	-0.008357	0.043689	-0.023701	-0.032904	0.020735
7	-0.098118	-0.010816	-0.025904	0.033185	-0.009091	-0.042981	0.004095
8	-0.090709	-0.002963	-0.041704	0.026852	-0.011624	-0.048628	-0.010959
9	-0.084251	0.007662	-0.047899	0.019889	-0.015624	-0.043164	-0.017256
10	-0.072286	0.012772	-0.047184	0.015254	-0.020546	-0.034574	-0.017069

Response of LOG(GOVX):

Period	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	-0.024546	0.004700	-0.006364	0.134878	0.000000	0.000000	0.000000
2	-0.029482	0.020033	0.045199	0.033115	-0.052215	-0.009067	-0.086962
3	-0.027846	0.007354	0.026643	0.039570	-0.030826	0.007409	-0.059023

4	-0.008551	0.028622	0.018458	0.024778	-0.081486	0.005581	-0.107233
5	0.004265	0.048190	0.010693	0.004804	-0.070433	0.012838	-0.093220
6	0.043495	0.041261	0.004275	0.003096	-0.073631	0.029153	-0.096814
7	0.067518	0.036838	0.014497	-0.003541	-0.075964	0.042553	-0.102075
8	0.096122	0.029478	0.027664	-0.007588	-0.070221	0.051683	-0.099310
9	0.123269	0.022822	0.041131	-0.010217	-0.066358	0.058793	-0.100836
10	0.143827	0.020642	0.054337	-0.013421	-0.059687	0.065333	-0.099350

Response of LOG(OPEN):

Period	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	-0.045176	0.063459	-0.192661	0.154316	0.751099	0.000000	0.000000
2	-0.013464	0.057147	-0.174053	-0.044014	0.380632	-0.009881	-0.318636
3	-0.151163	0.140510	-0.070392	-0.053173	0.247581	0.196247	-0.228333
4	-0.074011	0.232530	0.003951	-0.122192	-0.021738	0.161599	-0.215346
5	0.029897	0.186480	0.014645	-0.132110	-0.063159	0.193406	-0.140353
6	0.130999	0.116849	0.019134	-0.108032	-0.121304	0.179284	-0.146326
7	0.199771	0.065525	0.040467	-0.096523	-0.104726	0.160976	-0.135382
8	0.267563	0.024076	0.058923	-0.078489	-0.076049	0.139186	-0.125935
9	0.305960	0.004643	0.084020	-0.065717	-0.047670	0.131053	-0.119569
10	0.322252	0.001896	0.110546	-0.058151	-0.022487	0.130262	-0.103788

Response of LOG(INTR):

Period	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.043168	-0.005858	-0.017607	0.028029	-0.012630	0.183328	0.000000
2	0.027994	0.039441	0.013606	-0.039853	-0.034304	0.042830	-0.030223
3	0.092404	-0.036117	-0.002917	-0.022373	0.058573	0.056085	-0.011959
4	0.089367	-0.025967	0.007814	-0.016397	0.007141	0.029150	-0.067815
5	0.077161	0.007044	0.023857	-0.029319	0.027355	0.031164	-0.036444
6	0.092422	0.012453	0.026060	-0.024726	0.018174	0.037435	-0.023341
7	0.085064	0.013551	0.036595	-0.023798	0.011151	0.049375	-0.016579
8	0.080385	0.009570	0.043933	-0.021969	0.009035	0.050361	-0.007120
9	0.077499	0.002755	0.045774	-0.019160	0.008004	0.047096	-0.005713
10	0.071136	0.000315	0.043846	-0.017446	0.009191	0.040706	-0.005477

Response of POLX:

Period	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.144480	0.003490	-0.009804	0.135691	-0.009399	0.053867	0.222243
2	0.110283	-0.073428	0.095567	0.059788	-0.027457	0.057570	0.050647

3	0.041309	-0.115834	0.104902	0.060037	0.053259	0.005059	0.067032
4	0.021320	-0.088181	0.076422	0.057105	0.023322	-0.034085	-0.012137
5	-0.033962	-0.009615	0.040039	0.025782	0.029286	-0.052772	-0.011752
6	-0.043804	0.025223	-0.000161	0.018049	0.027346	-0.030615	-0.000459
7	-0.057441	0.037561	-0.014018	0.009586	0.003746	-0.006494	-0.005258
8	-0.059090	0.031428	-0.015357	0.003847	-0.008716	0.006055	-0.002934
9	-0.046889	0.017171	-0.015842	0.002371	-0.020513	0.005060	-0.010343
10	-0.033927	0.008350	-0.016712	0.001054	-0.024231	-0.001346	-0.017452

Table 11: Variance Decomposition

Variance decomposition of TERR

Period	S.E.	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.166162	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.214892	94.18479	0.779127	1.812577	0.056141	0.912307	2.175370	0.079691
3	0.251013	85.73325	1.494544	6.295081	0.061774	1.630443	4.714151	0.070759
4	0.276809	80.02196	1.533165	11.25963	0.062559	1.602894	5.446794	0.072999
5	0.293996	76.39933	1.410018	14.37262	0.090536	1.785024	5.876945	0.065521
6	0.304689	74.33559	1.316672	15.98435	0.131956	1.877628	6.290090	0.063708
7	0.311518	72.83324	1.327111	16.79772	0.208958	1.980334	6.790886	0.061757
8	0.316240	71.75356	1.367506	17.15283	0.296232	2.049872	7.318827	0.061170
9	0.319632	70.96672	1.396846	17.30694	0.390356	2.079681	7.792259	0.067198
10	0.322162	70.42042	1.411319	17.35789	0.485619	2.093529	8.151942	0.079284

Variance decomposition of LOG(INFL)

Period	S.E.	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.621834	5.722961	94.27704	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.789379	3.560278	75.97479	0.322038	3.962627	5.277727	2.467524	8.435018
3	0.846589	3.095823	66.18004	0.300176	3.576138	4.714878	14.37971	7.753232
4	0.873885	4.154039	62.11884	1.624332	3.612429	5.533818	15.33406	7.622473
5	0.876738	4.127444	61.90292	1.820828	3.810407	5.502936	15.26251	7.572957
6	0.881519	4.312372	61.30731	1.881912	3.828987	5.472874	15.17747	8.019074
7	0.884383	4.358998	60.98823	2.042638	3.921103	5.476726	15.10137	8.110934
8	0.887122	4.591796	60.68838	2.149961	3.960685	5.511208	15.03074	8.067227
9	0.889281	4.838664	60.40813	2.141692	3.981713	5.502385	15.09874	8.028667
10	0.891396	5.064248	60.12223	2.175111	3.990530	5.484483	15.16851	7.994896

Variance decomposition of LOG(GDPC)

Period	S.E.	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.315870	6.840920	1.399605	91.75948	0.000000	0.000000	0.000000	0.000000
2	0.440483	5.871758	0.928791	80.92419	0.053948	7.530124	2.721128	1.970058
3	0.490720	4.733273	0.846883	76.54360	1.092589	10.43661	2.266233	4.080813
4	0.517851	5.135812	1.463116	71.50919	1.434458	11.74417	2.623623	6.089638
5	0.529461	6.333029	1.400040	68.57180	2.115744	11.41062	2.650773	7.517994
6	0.540491	8.660353	1.413054	65.82533	2.683633	11.14192	2.914281	7.361431
7	0.552806	11.42912	1.389084	63.14491	2.925764	10.67810	3.390419	7.042605
8	0.564722	13.53191	1.333832	61.05350	3.029684	10.27457	3.990326	6.786180
9	0.575468	15.17470	1.302213	59.48754	3.037048	9.968160	4.405312	6.625028
10	0.583883	16.27313	1.312798	58.43819	3.018388	9.806719	4.629877	6.520895

Variance decomposition of LOG(GOVX)

Period	S.E.	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.137321	3.195072	0.117152	0.214806	96.47297	0.000000	0.000000	0.000000
2	0.183407	4.375080	1.258778	6.193622	57.34155	8.105212	0.244404	22.48135
3	0.203057	5.449831	1.158091	6.774436	50.57811	8.917062	0.332533	26.78994
4	0.247486	3.788144	2.117130	5.116740	35.05096	16.84362	0.274718	36.80869
5	0.278465	3.015631	4.667092	4.189053	27.71579	19.70186	0.429541	40.28103
6	0.311141	4.369663	5.496826	3.374253	22.20985	21.38106	1.221953	41.94639
7	0.347776	7.266713	5.521740	2.874582	17.78753	21.88492	2.475187	42.18933
8	0.386450	12.07173	5.053697	2.840462	14.44401	21.02556	3.793129	40.77141
9	0.429981	17.96993	4.363945	3.209460	11.72391	19.36555	4.933598	38.43361
10	0.476267	23.76656	3.744788	3.917577	9.635297	17.35498	5.903021	35.67778

Variance decomposition of LOG(OPEN)

Period	S.E.	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX

1	0.794450	0.323352	0.638043	5.881080	3.773039	89.38449	0.000000	0.000000
2	0.955686	0.243298	0.798479	7.380956	2.819421	77.63088	0.010690	11.11627
3	1.056247	2.247314	2.423302	6.486579	2.561550	69.04697	3.460804	13.77348
4	1.123882	2.418625	6.421106	5.730576	3.444587	61.02389	5.124242	15.83698
5	1.173687	2.282600	8.412129	5.270116	4.425428	56.24431	7.413980	15.95144
6	1.220107	3.264980	8.701391	4.901325	4.879087	53.03444	9.019735	16.19904
7	1.264526	5.535424	8.369327	4.665444	5.124979	50.05988	10.01775	16.22719
8	1.312191	9.298321	7.806016	4.534302	5.117202	46.82504	10.42832	15.99080
9	1.364038	13.63616	7.225037	4.575563	4.967696	43.45517	10.57370	15.56667
10	1.417144	17.80416	6.693861	4.847553	4.770732	40.28450	10.64098	14.95821

Variance decomposition of LOG(INTR)

Period	S.E.	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.191734	5.069115	0.093336	0.843320	2.137088	0.433950	91.42319	0.000000
2	0.211659	5.908988	3.548942	1.105242	5.299003	2.982903	79.11594	2.038981
3	0.248738	18.07903	4.678071	0.814036	4.645956	7.704977	62.37037	1.707559
4	0.276335	25.10721	4.673352	0.739515	4.116426	6.309653	51.64771	7.406133
5	0.294688	28.93336	4.166515	1.305645	4.609526	6.409893	46.53327	8.041792
6	0.314809	33.97194	3.807408	1.829335	4.656027	5.949970	42.18895	7.596376
7	0.333567	36.76179	3.556263	2.832935	4.656101	5.411355	39.76848	7.013077
8	0.350573	38.53934	3.294128	4.135177	4.608018	4.965505	38.06740	6.390431
9	0.365640	39.92120	3.033924	5.368615	4.510674	4.612640	36.65390	5.899048
10	0.377824	40.93274	2.841466	6.374638	4.437656	4.379111	35.48867	5.545720

Variance decomposition of LOG(POLX)

Period	S.E.	TERR	LOG(INFL)	LOG(GDPC)	LOG(GOVX)	LOG(OPEN)	LOG(INTR)	POLX
1	0.302947	22.74493	0.013270	0.104728	20.06183	0.096249	3.161594	53.81739
2	0.358708	25.67533	4.199664	7.172667	17.08747	0.654554	4.830798	40.37951
3	0.407136	20.96002	11.35452	12.20652	15.43874	2.219352	3.765362	34.05548
4	0.430052	19.03155	14.38117	14.09819	15.60044	2.283232	4.002937	30.60248
5	0.438451	18.90940	13.88357	14.39717	15.35427	2.642755	5.299702	29.51313
6	0.443627	19.44565	13.88473	14.06316	15.16357	2.961408	5.652990	28.82850
7	0.449319	20.59040	14.23399	13.80645	14.82734	2.893806	5.531567	28.11645
8	0.454685	21.79614	14.37775	13.59655	14.48657	2.862646	5.419500	27.46085
9	0.458304	22.50008	14.29200	13.50219	14.26141	3.017961	5.346458	27.07989
10	0.460909	22.78828	14.16371	13.48145	14.10118	3.260337	5.287042	26.91800

Source: Own Computations using E-view 4.1

Note: Variables are as defined in equation 2

Table 12: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Probability
LOG(GDPC) does not Granger Cause LOG(INFL)	41	0.59631	0.55619
LOG(INFL) does not Granger Cause LOG(GDPC)		0.08914	0.91492
LOG(GOVX) does not Granger Cause LOG(INFL)	41	0.23011	0.79561
LOG(INFL) does not Granger Cause LOG(GOVX)		0.63140	0.53763
LOG(OPEN) does not Granger Cause LOG(INFL)	41	0.64984	0.52814
LOG(INFL) does not Granger Cause LOG(OPEN)		0.20646	0.81442
LOG(INTR) does not Granger Cause LOG(INFL)	41	1.13996	0.33110
LOG(INFL) does not Granger Cause LOG(INTR)		1.49031	0.23887
POLX does not Granger Cause LOG(INFL)	41	0.43285	0.65199
LOG(INFL) does not Granger Cause POLX		0.77673	0.46746
TERR does not Granger Cause LOG(INFL)	41	0.29372	0.74726
LOG(INFL) does not Granger Cause TERR		0.13166	0.87706
LOG(GOVX) does not Granger Cause LOG(GDPC)	41	1.21548	0.30845
LOG(GDPC) does not Granger Cause LOG(GOVX)		2.03077	0.14600
LOG(OPEN) does not Granger Cause LOG(GDPC)	41	2.13279	0.13324
LOG(GDPC) does not Granger Cause LOG(OPEN)		0.11118	0.89509
LOG(INTR) does not Granger Cause LOG(GDPC)	41	1.81976	0.17666
LOG(GDPC) does not Granger Cause LOG(INTR)		0.33510	0.71747
POLX does not Granger Cause LOG(GDPC)	41	0.50060	0.61032
LOG(GDPC) does not Granger Cause POLX		1.81650	0.17718
TERR does not Granger Cause LOG(GDPC)	41	0.75834	0.47578
LOG(GDPC) does not Granger Cause TERR		0.44572	0.64385
LOG(OPEN) does not Granger Cause LOG(GOVX)	41	2.21918	0.12336
LOG(GOVX) does not Granger Cause LOG(OPEN)		0.57034	0.57036
LOG(INTR) does not Granger Cause LOG(GOVX)	41	7.17436	0.00239
LOG(GOVX) does not Granger Cause LOG(INTR)		0.45856	0.63583
POLX does not Granger Cause LOG(GOVX)	41	9.80739	0.00040
LOG(GOVX) does not Granger Cause POLX		3.83616	0.03088
TERR does not Granger Cause LOG(GOVX)	41	3.20184	0.05250

LOG(GOVX) does not Granger Cause TERR		0.03978	0.96104
LOG(INTR) does not Granger Cause LOG(OPEN)	41	3.13488	0.05558
LOG(OPEN) does not Granger Cause LOG(INTR)		0.71094	0.49795
POLX does not Granger Cause LOG(OPEN)	41	1.94552	0.15765
LOG(OPEN) does not Granger Cause POLX		2.90440	0.06771
TERR does not Granger Cause LOG(OPEN)	41	0.55851	0.57694
LOG(OPEN) does not Granger Cause TERR		0.08092	0.92244
POLX does not Granger Cause LOG(INTR)	41	0.43424	0.65110
LOG(INTR) does not Granger Cause POLX		0.02879	0.97164
TERR does not Granger Cause LOG(INTR)	41	3.70864	0.03432
LOG(INTR) does not Granger Cause TERR		0.15309	0.85860
TERR does not Granger Cause POLX	41	0.19446	0.82413
POLX does not Granger Cause TERR		0.00000	1.00000

Source: Own Computations using E-view 4.1

Note: Variables are as defined in equation 2

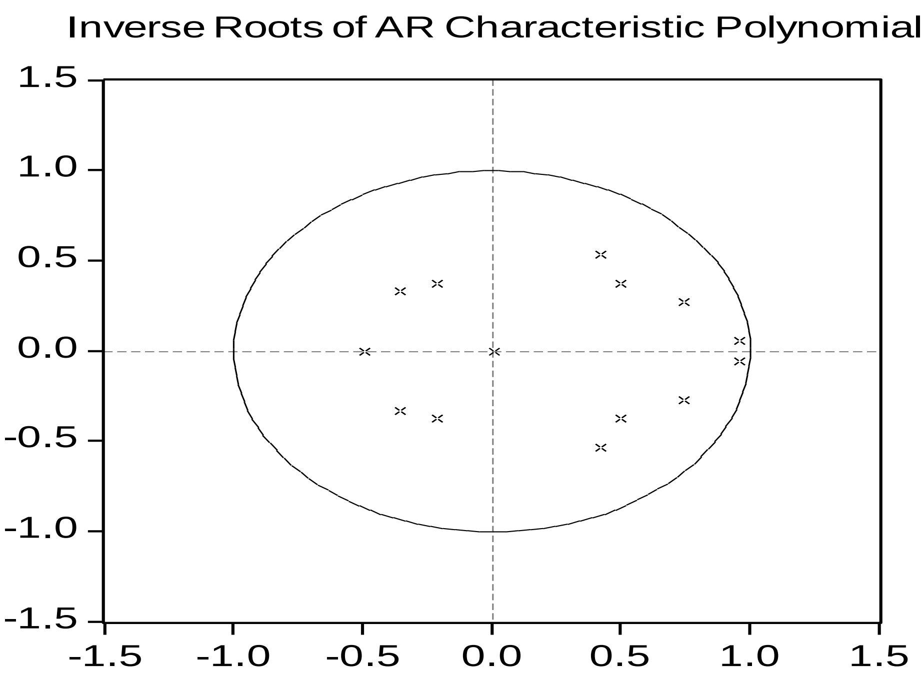

Figure 1: Inverse Roots of AR characteristic Polynomial

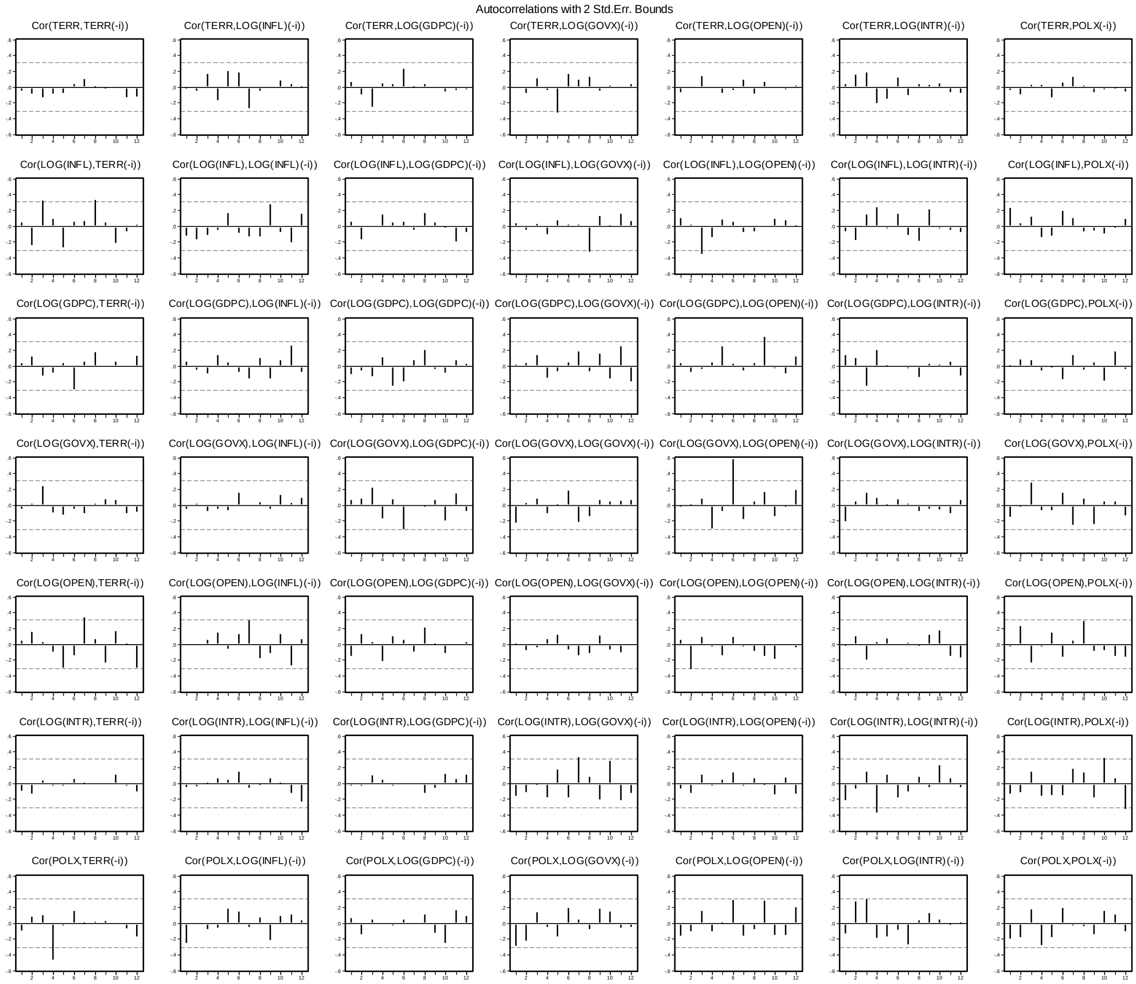

Figure 2: Pairwise Cross-Correlograms for the Estimated Residuals

Table 13: Over parameterized Regression Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.051816	0.470048	-0.110236	0.9130
LOG(GDPC)	0.232026	0.056988	4.071458	0.0003
LOG(OPEN)	0.121070	0.026233	4.615207	0.0001
LOG(INFL)	-0.079971	0.034086	-2.346150	0.0263
LOG(GOVX)	-0.184890	0.031325	-5.902341	0.0000
LOG(INTR)	0.628458	0.082824	7.587871	0.0000
POLX	0.328669	0.077225	4.255988	0.0002
ECM(-1)	0.464029	0.120551	3.849235	0.0006
DLOG(GDPC)	-0.144426	0.061097	-2.363885	0.0253
DLOG(OPEN)	-0.079500	0.029229	-2.719929	0.0111

DLOG(GOVX)	0.399108	0.172224	2.317379	0.0280
DLOG(INTR)	-0.412218	0.104604	-3.940756	0.0005
D(POLX)	-0.417677	0.096888	-4.310939	0.0002
DLOG(INFL)	0.024306	0.029174	0.833152	0.4118
R-squared	0.939322	Mean dependent var		0.785714
Adjusted R-squared	0.911150	S.D. dependent var		0.415300
S.E. of regression	0.123791	Akaike info criterion		-1.079242
Sum squared resid	0.429078	Schwarz criterion		-0.500019
Log likelihood	36.66408	F-statistic		33.34263
Durbin-Watson stat	1.778757	Prob(F-statistic)		0.000000

Table 14: Error Correction Model Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.051268	0.467562	-0.109649	0.9134
LOG(GDPC)	0.217044	0.053791	4.034945	0.0004
LOG(OPEN)	0.115505	0.025234	4.577340	0.0001
LOG(INFL)	-0.064628	0.028532	-2.265142	0.0312
LOG(GOVX)	-0.178076	0.030079	-5.920365	0.0000
LOG(INTR)	0.616936	0.081230	7.594969	0.0000
POLX	0.340240	0.075564	4.502661	0.0001
ECM(-1)	0.470324	0.119678	3.929922	0.0005
DLOG(GDPC)	-0.142587	0.060734	-2.347727	0.0259
DLOG(OPEN)	-0.075312	0.028641	-2.629527	0.0135
DLOG(GOVX)	0.393111	0.171164	2.296700	0.0290
DLOG(INTR)	-0.411254	0.104044	-3.952685	0.0005
D(POLX)	-0.417237	0.096374	-4.329353	0.0002
R-squared	0.937818	Mean dependent var		0.785714
Adjusted R-squared	0.912088	S.D. dependent var		0.415300
S.E. of regression	0.123137	Akaike info criterion		-1.102372
Sum squared resid	0.439715	Schwarz criterion		-0.564522
Log likelihood	36.14982	F-statistic		36.44775
Durbin-Watson stat	1.802824	Prob(F-statistic)		0.000000

Images of Terrorism in Nigeria

A terror attack in Nigeria's northern A car burns after a bombing that Rescuers helping one of the victims of

city of Kano killed 35 worshippers outside

the Christmas Day terrorist attacks on

St. Theresa Catholic

Church inChristian churches in Jos, Damaturu,

Madalla, Nigeria.

Potiskum and other areas in the Middle

Belt and Northern Nigeria.

Source: IndianVision (2012),**Gambrell (2011),** Nigerians Report (2011).