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OIL REVENUES, DEFENCE EXPENDITURE AND MACROECONOMIC STABILITY RELATIONSHIPS IN NIGERIA (1980-2014).

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ABSTRACT

The stability of the macroeconomic variables in any country is very essential for sustainable growth and development. Hence, this study analyzed the trend of oil revenues and government spending on defence. This is with a view to determining the relationships between oil revenues, defence spending and macroeconomic stability in Nigeria. The study employed the Autoregressive Distributed Lag (ARDL) modelling approach to cointegration and error correction model (ECM) to determine the long and short run relationships between the variables used. Inflation and Unemployment were used as the proxy for macroeconomic stability as suggested by the Misery Index. The results showed that there is an inverse and significant relationship between military spending, GDP per capita and macroeconomic stability and a positive and significant relationship between oil revenues, exchange rate, gross capital formation and macroeconomic stability in the long and short run. The error correction model (ECM) was stable, highly significant and correctly signed. Therefore, government should improve and increase its spending on defence in order to maintain peace, political stability and order in the country.

Keywords: Oil Revenues, Defence Spending, Macroeconomic stability, Time Series, ARDL bounds test, and Error Correction Model.

I**NTRODUCTION**

Over the years and in the recent times, the issue of huge financial commitment into the oil sector and military expenditure in Nigeria have become pressing issues and problems in the nation's annals. It is interesting to know that much of the budgetary allocation has been to the defence and the development of oil sectors due to the monocultural dependency on crude oil and unconventional conflicts in the areas of terrorism, internal insecurity and the more deadly boko haram insurgency in Nigeria. The defence expenditure for instance as a percentage of the total federal budget had been on the increase from the time past. In 1974, the provision for defence was 10 per cent, later it increased to 11 per cent in 1975 and 15 per cent in 1977. (Akpa, 1997). In addition, the military expenditure constituted to about 0.8 per cent of the total GDP in 1988, and in the 90s it took an upward drift of about 45.5 billion naira and in 2012, it rose to about 32% with the value of 345 billion naira due to the growing insecurity challenges in the country. In 2013, there was an increase of 4% of the total GDP on defence, and in 2014 it declined to 2% of the total GDP and further increased to 6% of the total GDP in 2015.

The Nigerian economy in the recent times is still import driven and oil dependent even in the midst of recent drop in the global oil price. Oil revenues constitute about 14% of the Nigeria's GDP and roughly 90% of its income. (African Economic Outlook, 2012). Nigeria as a nation in Africa is naturally endowed with over 30 different minerals and being a resource-rich, the country has about 37.2 billion barrels of proven oil reserves, 187 trillion cubic feet of proven natural gas and produces about 2.3 million barrels of oil per day. It is interesting to know that Nigeria is the largest oil producer in Africa and the tenth largest in the world yet; the country still imports about 85 per cent of its refined petroleum products due to the low capacity utilization (around 30 per cent) and frequent breakdowns of its refineries. (Aregbeyen and Kolawole, 2015).

Hence, despite the decline in the estimate of the share of oil and gas in GDP and the reduction in oil price in the international market, the oil sector still accounts for majority of exports and streams of revenues in Nigeria. No wonder, Nigeria relied largely on revenue from oil to finance its budget. It is apt to note that despite the serious decline in the oil price which has led to the decline in funds of federal and state governments, the bulk of government allocations in the budget still go to the defence and oil sectors. Therefore, even with huge increase in budgetary allocation to oil and defence, it is interesting to know that physical development has been on the decline in the recent times, and the impacts of defence expenditures and revenues from oil on the masses are no longer being felt in terms of growth, development and security due to the fall in global oil price, the recent blowing of the pipe lines by Niger delta avengers and the boko haram activities. (Apanisile & Okunlola, 2014).

In the literature the relationship between military expenditure and economic growth has been widely discussed and documented with different views (see Egwaikhide & Ohwofasa, 2009, Olowononi & Aiyedogbon, 2008, Dunne, 2000, Masoud & Mustapha, 2014, Haseeb, Nira, & Azam, 2014), but studies on military expenditure and macroeconomic stability which constitutes the major thrust of this study were few. Thus, the conclusions on these studies were that military spending impacted on growth significantly and that both military spending and economic growth granger caused one another. But then, the income factor (revenues from oil) which necessitates expenditure on defence was not considered and accounted for in the aforementioned studies.

Also, Odularu (2008), Adedokun (2012) and Akinlo (2012) examined the effect of oil revenue on growth in Nigeria without considering the interactive impacts of military expenditure and macroeconomic stability variables. Thus, Aregbeyen and Kolawole (2015) examined the effect of public spending and oil revenue on growth in Nigeria without considering the

relationship between military expenditure and macroeconomic stability in Nigeria. They focused mainly on economic growth and not on the macroeconomic stability in Nigeria. Thus, none of the existing studies, to the authors' knowledge, has explicitly considered the impact of oil revenues and government expenditure on defence on macroeconomic stability in Nigeria.

It is pertinent to raise the following questions in order to put this study in the right perspective; what has been the trend of military spending and oil revenues over the years, what are the effects of oil revenues on defence spending and what are the overall effects of oil revenue and defence spending on macroeconomic stability in Nigeria even in the midst of decline in oil price and the advent of terrorism and boko haram insurgency which necessitates the increase in defence spending in the recent years? In order to provide answers to the questions raised, this study first assessed the trend of oil revenues and government expenditure on defence from 1980 to 2014, secondly, the study investigated the impact of oil revenue on defence spending, and finally, the study examined the dynamic interactions and the effects of both oil revenue and defence spending on macroeconomic stability in Nigeria. This study is presented as follows: Section 1 introduced the topic, Section 2 discussed the review of the relevant literature, Section 3 presented the methodology, and Section 4 discussed the empirical results of the model, while Section 5 presented the concluding part of the study.

LITERATURE REVIEW

Review of Oil Revenues and Macroeconomic Stability

In recent years in the economic theories, growing literature has emerged about revenues of natural resources like crude oil and their impacts on the economy of natural resources-rich countries which has been termed 'resource curse'. The basic idea is that natural resources-rich countries have generally lower economic growth than non-natural resources-rich countries in long term. Oil resources for instance are the obvious examples of the natural resources. It is interesting to know that oil revenues have caused economic problems in majority of oil rich countries like Nigeria. The optimal use of oil revenues in the development process of the developing countries is one of the main concerns and important challenges of oil – exporting countries especially after the first and second shocks of the oil in 1973 and 1979 and subsequent volatility in the recent times. (Mehrara, 2008).

It is therefore against the above background that Mehrara, Abbas & Haghiri (2012) examined the relationship between oil revenues and macroeconomic instability in oil rich countries. The study employed a 26year panel data set of 11 countries with oil funds and the results showed that macroeconomic stability variables have negative and significant relationship with oil revenues. They noted that most of oil exporting countries suffer from macroeconomic instability arising from the volatility of oil revenues. Clemente, Faris & Puente (2002) adopted a general equilibrium model to assess the effectiveness of the Venezuelan stabilization fund in reducing macroeconomic volatility in the pressure of price shocks in the international oil markets. They found that the reduction on macroeconomic stability resulting from the fund activity in Venezuela does not necessarily translate into less volatility in products prices for all sectors of the economy.

Shabsigh and Ilahi (2007) investigated the impact of oil revenues on macroeconomic stability and sustainability. This study employs a 30 year panel data set of 15 countries and their results found that oil revenues have positive relationship with macroeconomic stability.

Review of Defence Spending and Macroeconomic Stability

Ozsoy (2010) examined the relationship between defence spending and macroeconomic stability variables which include inflation and unemployment. The study used VAR models and Granger Causality for four Countries which include Egypt, Israel, Jordan, and Turkey. The results showed that only Egypt and Israel have unidirectional causality from defence spending to macroeconomic stability variables, but causality could not be established for Jordan and Turkey. The impulse response function as a shock of defence spending showed that in Israel, inflation and unemployment rates are affected positively but in Turkey it is negative, while no effect was found for Egypt and Jordan.

Olaniyi (1993) evaluated the impact of government expenditure on defence on some selected macroeconomic variables like GDP growth rate, unemployment, inflation and balance of payment equilibrium in Nigeria. The study employed Ordinary Least Square technique and the results revealed that the Nigerian defence sector through increased defence spending contributes positively to real growth in GDP, but it has a progressive distributional effect and a dampening effect on inflation and unemployment. To buttress this, Aiyedogbon (2010) investigated the relationship between one of the macroeconomic stability variables (inflation) and military spending in Nigeria using the VECM framework for the period of 1980 – 2010. The findings showed that military expenditure contributed more than any other variables employed in the study in fuelling inflation and unemployment in Nigeria.

In contrary to the earlier studies, Aiyedogbon and Ohwofasa (2011) examined the relationship between inflation and some selected macroeconomic variables like military spending, exchange rate, gross capital formation and economic growth proxied by GDP. This study tested for stationarity, cointegration, causality, impulse response and VECM framework. Their results contradicted the earlier findings in that military spending does not induce inflation and unemployment in Nigeria in the long run. Aiyedogbon & Ohwofasa (2012) further justified the above findings when he investigated the relationship between macroeconomic stability proxied by inflation and military spending using the VECM framework for the periods of 1980 – 2012 and their findings mirror the earlier studies and they recommended the sustenance of the current funding of the military spending by the government.

In addition, Aiyedogbon and Ohwofasa (2012) improved on their early studies and examined the impact of military spending on inflation in Nigeria in the period 1980-2012. The study employed cointegration and ARCH techniques. The empirical findings showed that long run relationship exists between macroeconomic stability variables and military expenditure. The capital military expenditure on inflation rate was found to be negative, while recurrent military expenditure exhibit positive impact on inflation in Nigeria. Apanisile et al (2015) examined the effect of military expenditure on output in Nigeria both in the short run and long run. Their results showed that military spending has negative effect on output in the short run and a positive and significant effect in the long run.

METHODOLOGY

Secondary data were used in this study and annual data covering the period from 1980 to 2014 were employed. Total government expenditure on Defence, oil revenue, economic growth proxied by gross domestic product, gross capital formation, exchange rate, inflation and unemployment were the variables of interest. Essentially, for the reason of uniformity in measurement, and clarity in the interpretation of findings, the variables were transformed to their natural logarithms to eliminate any serial correlation that might be present and were denoted by lnGEXD, lnOREV, lnGCF, lnGDP,

lnEXR, and lnMI (INF & UNEM). Data on total expenditure on defence, real gross domestic product, exchange rate and oil revenue were obtained from the statistical bulletin of the Central Bank of Nigeria (CBN) (2013), while data for the unemployment, gross capital formation and inflation were collated from the international financial statistics of the International Monetary Fund (IMF) (2013).

In order to assess the trend of oil revenues and defence expenditure, graphs were used and the Ordinary Least Square (OLS) Technique and Autoregressive Distributed Lag (ARDL) model were adopted in order to examine the relationship among oil revenues, defence expenditure and macroeconomic stability proxied by inflation and unemployment. Hence, in the attempt to examine the relationship and interaction among Oil revenues proceeds, Defence Spending and macroeconomic stability in Nigeria, two different ARDL equations were estimated and analysed. The first examined the impact of oil revenue proceeds on macroeconomic stability variables, the second examined the impact of defence spending on macroeconomic stability variables while the last investigated the impact of oil revenues and defence spending on macroeconomic stability in order to establish if there are short and long run relationships among the variables used in this study. In order to undertake the empirical analysis using the ARDL technique, variables used in the model must be stationary and not necessary integrated of the same order, that is , the variables in the analysis may be I(0), I(1) or combination of both but the integrated order must be at most 1. (Pesaran, Shin & Smith 2001; Acaravci & Ozturk 2012).

Hence, firstly, we adopted Auto Regressive Distributed Lag (ARDL) Bounds test, because of its flexibility and usage when not all the variables have the same order. Secondly, because it bounds test allows the variables to have different optimal lags. Therefore, both the Augmented Dickey-Fuller (ADF) (Dickey & Fuller, 1979, 1981) and Phillips-Perron (PP) (1988) unit root tests were performed to determine the order of integration of the series. Then, the ARDL bounds cointegration test was utilized using a reduced form equation. (Narayan, 2005; Acaravci & Ozturk, 2012).

This study further employed and modified the model of Ram (1986, 1988) and Rapasingha & Goetz (2007) to estimate the effect and the relationship among Oil revenues, Defence Spending and Macroeconomic Stability in Nigeria. We further stated the Ram (1986, 1988) and Rapasingha & Goetz (2007) models as follows in (1) and (2):

$lnGSP_t = \alpha_0 + \alpha_1 lnOREV_t + \varepsilon_t$ ..... (1).

$lnPOV = B_0 + B_1 lnGCE + B_2 lnGCF + B_3 lnGDP + B_4 lnGRE + B_5 lnOLR + \mu$ ..(2).

In linear form, we adopted and re-modified equations 1 and 2 as follows:

$lnMI_t = \propto_0 + \propto_1 lnGEXD_t + \propto_2 lnOREV_t + \propto_3 lnGCF_t + \propto_4 lnGDP_t + \propto_5 lnEXR_t + \mu_t$ ..... (3).

Where $\propto_0$ = Constant, $\propto_{1-5}$ = Coefficients and μ_t = Error term.

Since we have hypothesized log-linear functional form between the research variables given in the equation (3), in order to perform ARDL bounds F (or Wald) test for examining evidence for long run relationship, the ARDL bound testing approach for co-integration can be written as below (Pesaran et al., 2001):

$\Delta lnMI_t = \propto_1 + \sum_{i=0}^{p} \beta_i \Delta lnMI_{t-i} + \sum_{i=0}^{p} \theta_i \Delta lnGEXD_{t-i} + \sum_{i=0}^{p} \delta_i \Delta lnOREV_{t-i} + \sum_{i=0}^{p} \gamma_i \Delta lnGCF_{t-i} + \sum_{i=0}^{p} \rho_i \Delta lnGDP_{t-i} + \sum_{i=0}^{p} \sigma_i \Delta lnEXR_{t-i} + \mu_t$ ..... (4).

Where μ_t stands for the error correction term and Δ is is the first difference operator.

$\Delta lnMI_t$= The natural logarithm of Misery Index suggested by Martinez-Vasquez & McNab (2006) to be used as the proxy for macroeconomic stability in the recent literature of macroeconomics. Thus, MI = (INFR + UNPR) that is, the sum of the inflation rate and unemployment rate. Hence, this makes it the most suitable proxy for measuring macroeconomic stability in an economy.

$\Delta lnGEXD_t$ = The natural logarithm of government expenditure on defence over time.

δ_i = Coefficient of Oil revenue proceeds. β_i = Coefficient of Misery Index.

$\Delta lnOREV_t$ = The natural logarithm of oil revenue proceeds over time. γ_i= Coefficient of gross capital formation.

$\Delta lnGCF_t$= The natural logarithm of gross capital formation over time.

$\Delta lnGDP_t$ = The natural logarithm of real gross domestic product over time

ρ_i= Coefficient of real GDP. θ_i= Coefficient of Government expenditure on defence.

$\Delta lnEXR_t$ = The natural logarithm of exchange rate over time σ_i= Coefficient of exchange rate.

This model therefore, is estimated by using ordinary least squares (OLS) method. The ARDL method estimates $(p+1)^k$ number of regressions are estimated to obtain the optimal lag length for each variable in the equation and the choice between different lag lengths is made by using information criteria such as Akaike (AIC) or Schwarz (SC). Schwarz information criterion (SC) preferred to AIC because it tends to define more parsimonious specifications (Pesaran & Shin, 1995; Acaravci & Ozturk, 2012). Thus, if there is evidence of co-integration among the variables, the long-run model in equation (4) is estimated.

In similar way, the ARDL specification of the short-run dynamics can be derived by constructing an error correction model of the form:

$$\Delta lnMI_t = \propto_1 + \sum_{i=0}^{p} \beta_i \Delta lnMI_{t-1} + \sum_{i=0}^{p} \theta_i \Delta lnGEXD_{t-1} + \sum_{i=0}^{p} \delta_i \Delta lnOREV_{t-1} + \sum_{i=0}^{p} \gamma_i \Delta lnGCF_{t-1} + \sum_{i=0}^{p} \rho_i \Delta lnGDP_{t-1} + \sum_{i=0}^{p} \sigma_i \Delta lnEXR_{t-1} + \omega ECM_{t-1} + \mu_t \quad \text{..... (5).}$$

Where ECM_t is the error correction term and is defined as:

$$ECM_t = \Delta lnMI_t - \propto_1 + \sum_{i=0}^{p} \beta_i \Delta lnMI_{t-1} + \sum_{i=0}^{p} \theta_i \Delta lnGEXD_{t-1} + \sum_{i=0}^{p} \delta_i \Delta lnOREV_{t-1} + \sum_{i=0}^{p} \gamma_i \Delta lnGCF_{t-1} + \sum_{i=0}^{p} \rho_i \Delta lnGDP_{t-1} + \sum_{i=0}^{p} \sigma_i \Delta lnEXR_{t-1} \text{..... (6).}$$

All coefficients of the short-run equation are coefficients relating to the short-run dynamics of the model's convergence to equilibrium and ω in equation (5) above represent the speed of adjustment.

EMPIRICAL RESULTS INTERPRETATION AND DISCUSSION

Trends of Oil Revenues in Nigeria from 1980-2014.

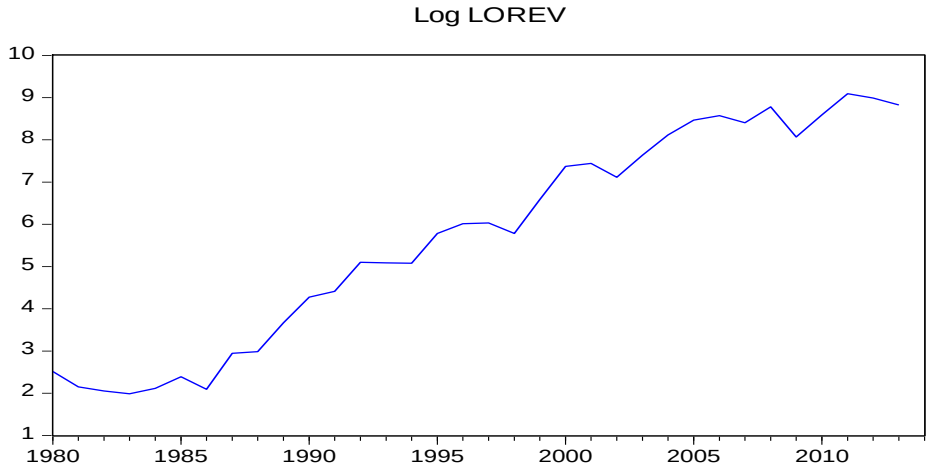

Fig 1.1 Trends of Oil Revenues in Nigeria from 1980-2014.

Source: Authors' Computation.

The revenues from oil and non oil have been the major sources of government finances in Nigeria. The oil revenues includes proceeds from crude oil sales, petroleum profit tax, rents and royalties while the components of non oil revenues are companies' income tax, customs & excise duties, value added tax and personal income tax. It is apt to note that since the 1970s revenues from oil has been the dominant source of government revenues, contributing over 70% to the federally collected revenue (CBN, 2014). The stylized fact in Nigeria has shown that federally collected revenues from oil recorded substantial increase from 1970 – 80s and this resulted to favourable development in the international oil market as a result of oil discovery in the 70s. The federation account revenue from oil increased sharply in 1970 representing 11.3% of the total GDP to 30% of the total GDP in 1980. The contribution of oil to federally collected revenue rose significantly from 41.4% from 1971-73 to 73.9% from 1974-79. The oil revenues later dropped in the 80s from 30% to 17.2% following the drop in the world oil supply in the international market. It is apt to note that from the second half of the 1980s the trend of oil revenues received a great boost which occurred as a result of the deregulatory measures (the Structural Adjustment Programme) adopted in President Babangida regime. As a result of this, the total federally collected revenues increased sharply in trends from 12.6millions naira in 1995 to over 582million naira in 1997 before declining to 463million naira in 1998. As a percentage of the GDP, it moved from 17.2% in 1986 to 18.6% in 1997 before declining to 16.3% in 1998. In the democratic period the oil revenues continued to increase from 949million naira in 1999 to 7.3billion in 2010 and 11.2billion naira in 2014.

Trends of Defence Spending in Nigeria from 1980-2014.

The trend of defence expenditure had been on the increase from time past. In 1974, the provision for defence was 10 per cent, later it increased to 11 per cent in 1975, 11.2 per cent in 1976 and 15 per cent in 1977. (Akpa, 1997). In addition, the military expenditure constituted to about 0.8 per cent of the total GDP in 1988, and in the 90s it took an upward drift of

about 45.5 billion naira, 7.23 and 7.74 per cent of the total GDP in 2005 and 2006. And in 2012, it rose to about 32% with the value of 345 billion naira due to the growing insecurity challenges in the country. In 2013, there was an increase of 4% of the total GDP on defence, and in 2014 it declined to 2% of the total GDP and further increased to 6% of the total GDP in 2015. These expenditures include military and civil personnel, retirement pensions of military personnel, operations, maintenance, procurement, military research, military aid etc.

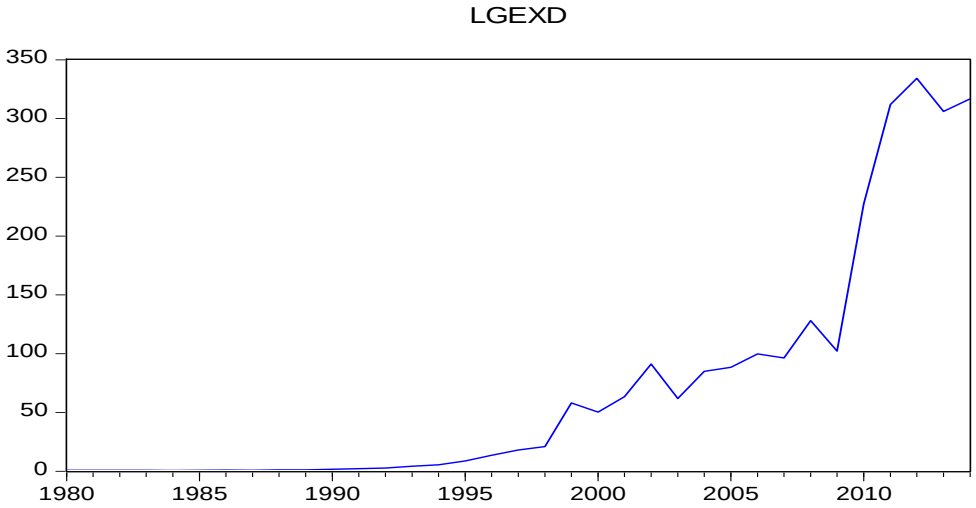

Fig 1.2 Trends of Defence Spending in Nigeria from 1980-2014.

Source: Authors' Computation.

Hence, it is this upward trend in increase of defence spending that had provoked public outcry in the country in the past years, until recently with the advent of insurgency and terrorism. It is believed that the unprecedented upward trend of military expenditure is not justifiable given the level of insecurity in the country in the recent time. This explains why the discord as per the effects of rising defence spending on security has been a major concern and debates recently among researchers in Nigeria.

Unit Root Test for the Variables

Table 1: Unit Root Test Results (Augumented Dickey Fuller Test).

Augumented Dickey Fuller Test					
Without Intercept			With Intercept		
Variables	**Levels**	**1st Difference**	**Levels**	**1st Difference**	**Remarks**
LMI	-0.1502	-5.7293****	-3.1722	-5.6764****	I(1)
LGEXD	1.8528	-4.5938****	0.9490	-4.9617****	I(1)
LOREV	2.3572	-6.5424****	1.5017	-6.0583****	I(1)
LGCF	2.6754	-4.0140****	1.8833	-4.4360****	I(1)
LEXR	1.1409	-5.4968****	-0.2524	-6.0393****	I(1)
LPCI	1.7018	4.2827****	1.4730	3.7951****	I(1)

Source: Author's Computation****Null hypothesis rejected at all levels (1%, 5% & 10%).

Table 2: Unit Root Test Results (Phillip Perron Test)

Phillip Perron Test					
Without Intercept			**With Intercept**		
Variables	**Levels**	**1st Difference**	**Levels**	**1st Difference**	**Remarks**
LMI	0.5821	-10.6600****	3.1841	-11.6574****	I(1)
LGEXD	2.7993	-4.5938****	1.6736	-4.9436****	I(1)
LOREV	0.8746	-6.7186****	-0.0850	-7.2549****	I(1)
LGCF	2.7199	-4.0950****	1.9534	-4.4265****	I(1)
LEXR	1.1420	-5.5464****	-0.2215	-6.0352****	I(1)
LPCI	2.8532	-4.3821****	3.6734	-4.8539****	I(1)

Source: Author's Computation****Null hypothesis rejected at all levels (1%, 5% & 10%).

Tables 1 and 2 shows the result of stationary test for ADF-test and PP test respectively for the case of Nigeria. Both tests revealed that all the variables of interest have a unit root at level, but became stationary at first difference, which implies that LMI, LGEXD, LOREV, LGCF, LEXR and LPCI are I (1). As the results point out, all the variables are I(1), therefore implying that we can confidently apply ARDL approach which capable of handling both stationary at level I(0) and first difference I(1) (Narayan, 2005).

Table 3 reports the results of the ADRL bounds cointegration tests. It shows the calculated F-statistic when the regression is normalized on MI the proxy for the macroeconomic stability. From the estimated Bounds test, results depicted that the F-statistics of 7.9950 is greater at all level for both the upper and lower bound critical values at 1%, 2.5%, 5% and 10%. This provided evidence to reject the null hypothesis of no co-integration at 1%, 5% and10% significance level and accepts the alternative hypothesis that says cointegration exists. It can therefore be concluded from the ARDL bounds test that there is a long-run relationship among the variables in this study. Following the establishment of long-run co-integration relationship among the variables, the long-run and short-run dynamic parameters for the variables were obtained.

Table 3: ARDL Bounds Test for Co-integration Relationship

Model	**Computed F-Statistic**	
CO_2	7.9950	
Bounds Level	**I(0)**	**I(1)**
1% critical Value	3.41	4.68
5% critical Value	2.62	3.79
10% critical Value	2.26	3.35

Source: Author's Computation.

The empirical results of the long-run model were presented in Table 4. The estimated coefficients of the long-run relationship among oil revenues; defence spending, and macroeconomic stability produced mixed results in line with the diversity of evidence of existing literature. Hence, the long-run ARDL estimates presented in table 4 indicated a positive and significant relationship at 5% between the real exchange rate and macroeconomic stability (proxied by inflation and unemployment) with a coefficient value of (0.0202). This implies that an improvement in real exchange rate is associated with improvement in macroeconomic stability and any increase in the exchange rate values will lead to increase macroeconomic stability. This result conforms to the results of studies like Clarida and Gali (1994), Rodrik (2008) that there exists a positive and significant long run relationship between real exchange rate improvement and macroeconomic

stability. Gross capital formation and GDP per capita were two other variables that contribute immensely to macroeconomic stability. Their estimates (0.2010 and -0.010033) both showed positive and negative significant results at 5% level. The results showed that GDP per capita is the highest contributor to macroeconomic stability in Nigeria. This implies that a percentage increase in GDP per capita and gross capital formation will lead to an increase of about 20% and decrease of about 1% in macroeconomic stability in the long run in Nigeria.

In addition, it can be deduced that improvement in government spending on defence does not enhance macroeconomic stability in the long run. The Government expenditure on defence has a negative and significant relationship with macroeconomic stability (inflation and unemployment) at 5% significance level with a coefficient of -0.024425 which implies that an increase of 1% in Defence spending leads to a decrease of 2.4% in macroeconomic stability (inflation and unemployment) and this conforms to the findings of the studies like Olaniyi (1993), Aiyedogbon and Ohwofasa (2011). This supports the argument of Aiyedogbon and Ohwofasa (2011) that increase in government spending on defence would not induce inflation and unemployment in Nigeria in the long run and this explains the reason why they recommended the sustenance of the current funding of the military spending by the government in Nigeria.

Furthermore, oil revenues proceeds were found to have positive and significant relationship with macroeconomic stability (inflation and unemployment) at 5% significance level with a coefficient estimate of 0.0206. The implication is that revenues from oil proceeds enhances the macroeconomic stability variables (inflation and unemployment) in Nigeria, that is, an increase of 1% in oil revenues proceeds leads to an increase of 2% in macroeconomic stability in the long run in Nigeria. This result conforms to the findings like Mehrara et al (2012) and Clemente et al (2002) that found that most of oil exporting countries suffer from macroeconomic instability arising from the volatility of oil revenues.

Table 4: Estimated ARDL Long Run Coefficients and Estimates: Dependent Variable: LMI ARDL (2, 1, 2, 1, 2, 1).

Variables	Coefficients	Std. Error	t-Statistic	Probability
LEXR	0.020218	0.003307	6.114021	0.0000*
LGCF	0.201000	0.010200	5.601329	0.0000*
LGEXD	-0.024425	0.005441	-4.489292	0.0003*
LOREV	0.020556	0.000140	3.959576	0.0010*
LPCI	-0.010033	0.000006	-5.145847	0.0001*
C	1.873321	0.041258	45.405113	0.0000*

Source: Author's Computation. *Significant at 1%.

Table 5 gives the results of the short-run dynamic coefficients associated with the long-run relationships obtained from the ECM equation. The error correction term in the model is highly significant and correctly signed. This indicates adjustment to long-term equilibrium in the dynamic model. Bannerjee, Dolado & Mestre (1998) posit this as an evidence of a stable long-term relationship. The coefficient of error correction term is (-0.5450). This implies that deviations from the long-term macroeconomic stability adjust quickly.

Furthermore, as expected, military spending, gross capital formation, oil revenues and GDP per capita in the short- run all have negative and significant effects at 5% level of significance on macroeconomic stability and these variables do not induce inflation and unemployment in the short-run. The results showed that 1% increase in military spending, oil revenues, gross capital formation and GDP per capita will reduce inflation and unemployment (macroeconomic stability proxy) by

1.8%, 0.6%, 1.6%, and 0.1% in the economy in the short run. Hence, only exchange rate is positive and significant at 5% level of significance on inflation and unemployment in the short run.

Table 5: The Short Run (Error Correction Representation) of the ARDL Model (2, 1, 2, 1, 2, 1) Dependent Variable: LMI

Variables	Coefficients	Std. Error	t- Statistics	Probability
D(LEXR$_t$)	0.017486	0.004714	3.709580	0.0217*
D(LGCF$_t$)	-0.016000	0.000400	-4.621535	0.0002*
D(LGEXD$_t$)	-0.018635	0.005659	-3.293189	0.0043*
D(LOREV$_t$)	-0.000663	0.000165	-4.007553	0.0009*
D(LPCI$_t$)	-0.001009	0.000003	-2.874354	0.0105*
Ecm(-1)	-0.545007	0.241350	-6.401512	0.0020*

Source: Author's Computation *Significant at 1%, 5% and 10%.

Table 6: ARDL- Error Correction Model (Bounds Test Model) Diagnostics Tests.

Null Hypothesis	Test Statistics	Df	P-value
No Serial Correlation	χ^2= 1.274	2	0.098
No mis-specification	χ^2= 0.076	2	0.780
Jacque Bera Normality	χ^2= 3.621	2	0.706
Heteroskedasticity	χ^2= 0.660	3	0.665
No ARCH Effect	χ^2= 0.322	2	0.750

Source: Author's Computation

The specification problems associated with serial correlation, functional form, normality or Heteroskedasticity were checked with diagnostics tests, including the test for serial correlation (LM test), Heteroskedasticity (ARCH test), normality (Jacque Bera) test and functional form. The results were presented in table 6. This indicates that the underlying ARDL equation passes the diagnostic tests. Hence, the ECM is stable.

CONCLUSION

The study examined whether military expenditure and oil revenues have contributed immensely to the macroeconomic stability in Nigeria. We examined the effects of oil revenues and military spending on macroeconomic stability over the 35 years of the study period in Nigeria. The study employed Autoregressive Distributed Lag approach to Co-integration on secondary data from 1980 to 2014. The seven selected variables were: per capita income, oil revenues, military expenditure, exchange rate, gross capital formation and (inflation and unemployment rate) the proxy for macroeconomic stability. It also investigated the effect of military spending and oil revenues on macroeconomic stability, both in short and long-run in Nigeria.

Thus, the results showed that military spending has negative and significant effect on macroeconomic stability in both short and long run periods. Military spending and GDP per capita both have negative and significant impacts in long and short-run, while exchange rate was positive and significant in short and long run. The outcomes of the result imply that government should improve and increase its spending on defence in order to maintain peace, political stability and order in the country. The gross capital formation and oil revenues were both positively significant in the long run and became negatively significant in the short run. The study concludes that military expenditure and revenues from oil are both economically contributive to the macroeconomic stability in Nigeria.

REFERENCES

Acaravci, A. & Ozturk, I. (2012). Foreign Direct Investment, Export & Economic Growth: Empirical Evidence from New EU Countries. *Romanian Journal of Economic Forecasting*, 52-67.

Adedokun, A. (2012). Oil Export and Economic Growth: Descriptive Analysis and Empirical Evidence from Nigeria. *Pakistan Journal of Social Sciences* 9(1), 46-58.

Adelowokan, O.A & Osoba, A.M. (2015). Oil Revenue, Government Expenditure & Poverty Rate in Nigeria. *Global Journal of Management & Business Research, 15*(10), 1-8.

Afircan Economic Outlook (2012). Nigeria. Retrieved from www.africaneconomicoutlook.org

Aiyedogbon, J. (2011). Military Expenditure and Gross Capital Formation in Nigeria. *European Journal of Humanities & Social Sciences*.

Aiyedogbon, J.O & Ohwofasa, B.O. (2011). Impact of Military Expenditure on Inflation in Nigeria. *Being a Paper Presented at the International Social & Management Sciences Research Conference.* Kaduna: Kaduna state University, Kaduna.

Aiyedogbon, J.O & Ohwofasa, B.O. (2012). Inflation & Military Expenditure in Nigeria: A further Empirical Investigation. *European Journal of Educational Planning & Policy Studies, 2*(1).

Aiyedogbon, J.O. & Ohwofasa, B.O. . (2012). Impact of Military Expenditure on Inflation in Nigeria. *Journal of American Research Institute for Policy Development on Review of Arts & Humanities*, 1-17.

Aiyedogbon, J.O., Ohwofasa, B.O & Ibeh, S.E. (2012). Does Military Expenditure Spur Inflation? Autoregressive Distributed Lag (ARDL) & Causality Analysis for Nigeria. *European Journal of Business & Management, 4*(20), 147 - 150.

Akinlo, A. (2012). How Important is Oil in Nigeria's Economic Growth? *Journal of Sustainable Development, 5*, 165-179.

Akpa. (1997). Force Structure & Budgeting System for Defence in Anyanwu S, Egwaikhide, C & Aiyedogbon, J (eds) "Comparative Regime Analysis of the Trend & Structure of Military Expenditure in Nigeria". *Journal of African Macroeconomic Review, 2*(1), 25 & 42.

Akpan, N. (2005). Government Expenditure & Economic Growth in Nigeria: A Disagregated Approach. *Central Bank of Nigeria Economic & Financial Review, 43*(1), 51-69.

Apanisile, T.A & Okunlola, O.C. (2014). An Empirical Analysis of Effects of Military Spending on Economic Growth in Nigeria: A Bound Testing Approach to Cointegration 1989-2013. *Journal of Public Administration, Finance & Law*, 117-128.

Aregbeyen, O & Kolawole, B.O. (2015). Oil Revenue, Public Spending and Economic Growth Relationships in Nigeria. *Journal of Sustainable Deveolpment, 8*(3), 113-120.

Bannerjee, A. Dolado, J. & Mestre, R. (1998). Error Correction Mechanism Tests for Cointegration in single equation framework. *J time series Analysis, 19*, 267-283.

Central Bank of Nigeria Statistical Bulletin (Various Years). Abuja: Central Bank of Nigeria.

Clarida, R. & Gali, J. (1994). Sources of Real Exchange Rate Fluctuations: How Important are Nominal Shocks? Research Paper Presented at the 1994 Texas Conference on Monetary Economics, Published as Carnegie-Rochester Conference Series on Public Policy, Vol.41, December 1994. pp. 1-56.

Clemente, L., Faris, R. & Puente, A. (2002). Natural Resource Dependence, Volatility & Economic Performance in Venezuela. *The Role of a Stabilization Fund and Competitiveness*.

Dickey, D. & Fuller, W. (1979). Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association*, 74, 427-431.

Dickey, D. & Fuller, W. (1981). Likelihood Ratios for Auto-regressive Time Series. *Econometrica, 49*, 1057-1172.

Dunne, J. (2000). *The Economic Effects of Military Expenditure in Developing Countries.* London: The Burroughs.

Egwaikhide, C.I & Ohwofasa, B.O. (2009). An Analysis of Military Expenditure & Economic Growth in Nigeria. *Academic Journal of Defence Studies, 17*.

Haseeb, M, Nira, H. & Azam, M. (2014). Exports, Foreign Direct Investment and Economic Growth: Empirical Evidence from Malaysia. *American Journal of Applied Sciences*, 11(6) 1010 - 1015.

Martinez-Vazquez, J. & McNab, R. (2006). Fiscal Decentralization, Macroeconomic Stability and Growth, *Hacienda Publica Espanola/Revista de Economia Publica* 179, 25 - 49

Masoud, A & Mustapha, B. (2014). Military Expenditure & Economic Growth in the Case of China: Using ARDL Approach. *International Journal of Development and Energy Economics, 2*(1), 27-36.

Mehrara, M. (2008). The Asymmetric Relationship between Oil Revenues & Economic Activities: The Case of Oil Exporting Countries. *Journal of Energy Policy, 36*(3), 1164-1168.

Mehrara, M., Abbas, R.K., & Haghiri, F. (2012). Oil Fund and the Instability of Macro-Economy in Oil - Rich Countries. *Journal of World Applied Sciences, 16*(3), 331-336.

Narayan, P. (2005). Reformulating Critical Values for the Bounds f-statistics Approach to Cointegration: An Application of the Tourism Demand Model. *Fiji Department of Economics Discussion Paper* (2).

Odularu, G. (2008). Crude Oil and the Nigerian Economic Performance, *Oil and Gas Business.*

Olaniyi. (1993). Nigeria's National Defence & Economic Development: An Impact Analysis. *Scandinavian Journal of Development Alternative*, 241-254.

Olowononi, E.D & Aiyedogbon, J.C. (2008). Trends in Nigeria's Defence Spending 1986-2006. *Journal of Economic Theory, 2*(2), 43-49.

Ozsoy, O. (2010). The Relationship between Defence Spending & Macroeconomic Variables. *International Journal of Economics & Finance Studies, 2*(1).

Pesaran, M. S. (1995). Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. *The Ragnar Frisch Centennial Symposium, The Norwegian Academy of Science & Letters*, 1-33.

Pesaran, M.H., Shin, Y.C., & Smith, R. (2001). Bounds Testing Approaches to the Analysis of Level of Relationships. *Journal of Applied Econometrics, 16*, 289-326.

Phillips, P & Perron P. (1988). Testing for Unit Roots in Time Series Regression. *Biometrika, 75*, 335-346.

Ram, R. (1986). Government Size and Economic Growth: A New Framework and Some Evidence fromnCross section and Time Series Data. *American Economic Review, 76*, 191-203.

Ram, R. (1988). Additional Evidence on Causality between Government Revenue & Government Expenditure. *Southern Economic Journal*, 763-769.

Rodrik, D. (2008). The Real Exchange Rate and Economic Growth, Brookings Papers on Economic Activity, 39, 2, 365b. 439.

Rupasingha, A & Goetz, S. (2007). Social and Political Forces as Determinants of Poverty: A Spatial Analysis. *The Journal of Socio-Economics*, 650-671.

Shabsigh, G. &. (2007). Looking Beyond the Fiscal: Do Oil Funds Bring Macroeconomic Stability? *IMF Working Paper, WP/07/96, Middle East and Central Asia Department.*

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