

IMPACT OF MILITARY EXPENDITURE ON ECONOMIC GROWTH IN NIGERIA

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Abstract

This paper examines the impact of military expenditure on economic growth in Nigeria. Time series data spanning from 1985 to 2020 is used. Both the dependent and independent variables were obtained from World development indicator data 2020. The study uses Auto Regressive Distributed Lag (ARDL) approach. The data for the study is analyzed using E-view 9.0. The bound test approach results show that military expenditure was significant in influencing GDP by 92% in the short-run, while in the long-run it has a negative impact (-1.3%). Arms import and money supply had both negative impacts in influencing economic growth of Nigeria. However, exchange rate figures had negative impact in the short-run, but in the long-run it was found to be positive but insignificant on economic growth of Nigeria. The finding generally suggests the synchronization of military sector and their finances through checks and balances.

Keywords: Military expenditure, Economic Growth, ARDL, Error correction

JEL Codes: H56, E60, C50, C32

1. Introduction

Security and safety are found to be among the basic human needs of a society and is essential for human survival and welfare. Virtually, every human activity has affected its economy directly or otherwise. The alarming level of insecurity in the world has fuelled crime rate and terrorist attacks in some parts. This has also resulted in leaving unpalatable consequences for the economic growth. These threats have led to national insecurity, increasing military budgets globally towards combating the increasing waves of crime and death toll by weakening all economic activities Fact Sheet (2019). At the same time, most countries need some level of security to deal with internal and external threats to fight for, but these can certainly have opportunity costs as they can prevent money from being used for other purposes to improve the pace of development (Dunne & Uye 2010).

According to Stockholm International Peace Research Institute (SIPRI, 26 April 2021) estimated that total world military expenditure rose to 1981 billion dollar last year that indicates an increase of 2.6% in real term from 2019. SIPRI 2021 has it that, the five biggest spenders in 2020 which together accounted for 62 per cent of global military expenditure, were the United State, China, India, Russia and the United Kingdom. Data on China's military expenditure grew for the 26th consecutive year. Where, the combined military expenditure of the 11 Middle Eastern countries for which SIPRI has spending figures falls by 6.5 per cent in 2020, to 143 billion dollar. The results of the global pandemic of last year have affected global gross domestic product (GDP) to shrank by 4.4 per cent (October's 2020 projection by the International Monetary Fund), this occurred largely due to the economic impacts of the Covid-19.

Total military expenditure of Africa fell by 8.4% but regionally, military expenditure was higher, for the first time, in North Africa than in Sub-Saharan Africa, totaling 3.4 billion dollar and 18.5% billion in 2020 respectively. The biggest increase in spending were made by Chad (+31 per cent), Mali (+22 per cent), Mauritania (+23 per cent), and Nigeria (+29 per cent) all in the Sahel region, as well as Uganda (+46 per cent). Nigeria, Sub-Saharan Africa's second largest spender after South Africa. Akpansung (2021) observed that military spending accounted for a very high percentage of total government expenditure, this is so because its increase was attributed to security challenges arising from internal threats, the spread of arms and uprising of different kinds, such as kidnapping, Indigenous People of Biafra (IPOB), Boko Haram, and herders conflicts. The effects of constant attacks by the insurgents and high spending by government on military have adverse effects on the national economy at large,

Similarly, where military spending is the amount of financial resources dedicated by a nation or a state to raise and maintain the armed forces; this often reflects how much an entity perceives in the likelihood of threats against it, or the amount of aggression it wishes to employ against threats. The size of a budget also reflects the nation's ability to fund military activities. Trends of military expenditure in Nigeria indicates a rise from 100 billion Naira in 2010, 2015 with 326.69 billion Naira, 2017 465.87 billion Naira, 2018 576 billion and above in 2020 respectively. The implication of the persistent increase in insecurity and budget over the period of time, as against military expenditure could have significant short-run and long-run effects on economic growth in Nigeria.

From the preceding, the main objective of this work was to examine the short-run and long-run impact of military expenditure on economic growth in Nigeria in the context of Solow and Barro model which are more

suitable in analyzing military growth issues (Umar and Abubakar 2016), by taking into account the effect of military expenditure, armed import, institutional quality, exchange rate and money supply.

2. Conceptual literature.

The definition of military expenditure by SIPRI (2019) cannot be realistic for all countries, however, since it would require much more detailed information than is available about what is included in military budgets and off-budget military expenditure items. (For example, military budgets might or might not cover civil defense, reserves and auxiliary forces, police and paramilitary forces, dual-purpose forces such as military and civilian police, military grants in kind, pensions for military personnel, and social security contributions paid by one part of the government to another.)

According to Balami (2006), Economic growth is usually proxied by GDP and often conceptualized to be that increase in output of an economy's capacity in producing goods and services needed for the improvement of the welfare of the country's citizens. Growth is also seen to be a steady process that involves raising the level of output of goods and services in the economy. Growth is yet meaningful when the rate of growth is much higher than population growth because it has to lead to improvement in human welfare. Therefore, growth is seen as a steady process of increasing the productive capacity of the economy and hence, of increasing national income, is characterized by higher rates of increase of per capita output and total factor productivity, especially labor productivity.

2.1 Theoretical and empirical review

Classical school alleged that military expenditure is likely to impede economic growth through increase in government spending. Nonetheless the theory is grounded on the theory that increased government expenditure signifies a lower level of private investment, domestic saving and lower consumption as a result of a very

low aggregate demand in an economy. Similarly, a higher level of military expenditure will lead to an increase in interest rate, which will in return crowd out private investment. Conversely, an increase in government expenditure nay military expenditure will equally stimulate demand and lead to increase purchasing power, national output and create positive externalities (Oger, Eyo & Arkpo 2019).

The new-classical theory employ military expenditure as significant shock to the economy, which has dynamic real effects on output. The theory differed from the neoclassical theorists in the sense that it gave backing to the argument that fiscal policies do enhance economic growth. Effect of government spending in the new growth models is endogenized as it has tax implications and income-generating effect. Size of rate of growth of gross domestic product that is left unexplained and exogenously are resolute in the Solow neoclassical growth equation. The theory assumes that public and private spending on human capital generates external economies and productivity developments that offset the natural tendency for diminishing returns, endogenous growth theory seeks to explain the existence of increasing returns-to-scale and the divergent long-term growth patterns among countries (Umar & Abubakar 2016).

Therefore, new growth theory, opined that military expenditure amidst all other public expenditure can spawns positive externalities that affect efficiency parameters on the factor input (Labor and Capital) which have invigorating impact on output. Security from both external and internal threats stimulates and environment that stimulates investment by both foreign and domestic investors.

Empirical conclusion on the effect of military expenditure on economic growth have been a contentious. This is based on the outcome of a seminal work by Benoit (1973). The study found a positive

relationship, in different opinion there have been a lot of researchers that have discredited his finding using various models and theories, although inconclusively. Naureen (2018) and Akpansung (2021) found a mixed results on the impact of military expenditure on economic growth in Nigeria. Sanjeev and Saida (2019); Akume, Jelilov and Akenegbu (2019) results indicate positive impact. Lastly, findings of Aminu and Abubakar (2016); Ayunka (2018); Aure'lien and Jean-Claude (2018); Ajmair, Hussain, Abbasssi and Gohar (2018); Cetin and Guzel (2019); Tao, Glont, Li, lobont and Guzun (2020) and Ologbenla (2020) signifies a negative and insignificant impact on economic growth respectively.

Akpansung (2021) investigates the short-run and long-run impacts of military expenditure on economic growth in Nigeria from 1981to 2018. His study uses the modified augmented Solow growth model. The ARDL technique was used in the analysis. The bounds test results and error correction mechanism indicate that military expenditure exerted a positive and significant impact on Nigerian economy both in short and long run. While population results impacted negatively on growth, but lagged value and oil rent s impacted positively, external debt burden, domestic investment and human capital impacted negatively on growth.

Ologbenla (2020) investigated the nexus between military expenditure and macroeconomic performance in Nigeria from 1980 - 2017. The Vector Auto-regression technique VAR was applied to assess the interactions among the variables in the short run. Results show military expenditure in Nigeria having a significant influence on output, exchange rate shocks and military expenditure contributions wasn't making any significant impacts on output in Nigeria. The study also revealed military expenditure appearing to be insulated against inflation shock as large chunks of military expenditure are traded in

foreign currency hence less affected by domestic prices.

Sanjeev and Saida (2019) assessed whether military expenditure or spending impact is converging across countries with an examination on-trend and key determinants during 1970 – 2018. The study in contrast reveals the presence of inconsistencies on trend as result of traits due to external aggression with a convergence of military expenditure in 3 distinct groups. But, the largest country group accounted for over 90% globally while on outlay had fallen during the Cold war levels. But at the part of the determinant impact had a significant effect from the International monetary fund program on military expenditure. Their studies show that military expenditure was so positively significant in fostering growth on the international monetary fund.

Ajmair, Hussain, Abbassi and Gohar (2018) examined the long-run relationship between military expenditure; number of persons in military and economic growth for Pakistan, the study adopted ARDL approach for annual time series data from 1990 to 2015. The results indicated that military expenditures are insignificant and number of persons in military is positively and significantly related to GDP growth in the long run. The error correction term is negative and significant. There exist short

run relationship among economic growth, military expenditures and number of army persons. Despites several study little has not been done to covered this scope, the inclusion of such variable called a research of this kind in assessing the impact of military expenditure amidst such crises pandemic and insurgencies.

3. Methodology

The study employed *ex-post facto* research design, relatively more reliable data on both the dependent and independent variables, which run from 1985-to 2020. The model specified is adapted from Umar (2016). The model established the interactional relationships between defense expenditure, threat, arms import, and political instability. This model is employed.

$$RGDP = f(DE, THR, AI, PI,)$$

The symbol is the intercept, is the error term. Where *lrgdpk* is the real gross domestic product per capita, it is a proxy for growth. *Thr* stands for internal threats. The *lde* is the log of defence expenditure as a ratio of GDP. To achieve this objective modified model is used which is as = $gdpk = f(MIE, AIM, ISQ, EXR, and M2)$.

$$GDPK_t = a_0 + a_1MIE_t + a_2AIM_t + a_3EXR_t + a_4M2_t + u_t$$

The ARDL model is as follows.

$$\begin{aligned} \Delta GDPK = & \omega_0 + \sum_{i=1}^{n-1} w_{1i} \Delta GDPK_{t-1} + \sum_{i=0}^{n-1} w_{2i} \Delta MIE_{t-1} + \sum_{i=0}^{n-1} w_{3i} \Delta AIM_{t-1} + \sum_{i=0}^{n-1} w_{4i} \Delta ISQ_{t-1} + \\ & \sum_{i=0}^{n-1} w_{5i} \Delta M2_{t-1} + \sum_{i=0}^{n-1} w_{4i} \Delta EXR_{t-1} + \delta_1 GDP_{t-1} + \delta_2 MIE_{t-1} + \delta_3 AIM_{t-1} + \delta_4 M2_{t-1} + \delta_5 ISQ_{t-1} + \\ & \delta_6 EXR_{t-1} + \mu_t \end{aligned}$$

A priori expectation = $a_1, a_2, a_3, a_4, a_5, > 0$. The symbol a_0 is the intercept, u_t is the error term it is expected to be normally distributed where *GDPK* is the real gross domestic product per capita, it is a proxy for growth. The *MIE* is expressed as the

(military expenditure) as a ratio of *gdpk*, scholars largely believed that military expenditure has negative impact on economic growth. Exchange rate (*EXR*) is the exchange rate in Nigeria in which may have a negative impact on economic growth. *AIM* and *ISQ* denote arms import

and institutional quality which is argued to be negatively related to economic growth. Data was sourced from Stockholm International Peace Research Institute (SIPRI) database (2020) and World Governance Indicator database (2020).

Empirical Results and Discussion

The run results of the autoregressive distributed lag (ARDL) procedure yielded consistent estimates of the long-run

coefficient that are asymptotically normal irrespective of whether the underlying regressors are I(0) or I(1) (Pesaran & Shin, 1998, Pesaran et al 2001). The inert status of the time series data was first examined to ensure that the variables satisfied the ARDL underlying condition of I(0) and I(1) or of not otherwise. The estimates were conducted via Augmented Dickey-fuller (ADF) unit roots estimates as shown in Table 4.1.

Table 4.1: Results of ADF unit roots of the variables in levels and at the first differences

Variables	With trend and constant		Remark
	At level	First diff	
<i>GDP</i>	-3.9422 (0.0206)**		I(0)
<i>MIE</i>		-5.0021 (0.0017)***	I(1)
<i>AIM</i>	-8.2900 (0.0000)***		I(0)
<i>ISQ</i>		-5.9160 (0.0001) ***	I(1)
<i>M2</i>		-6.9777 (0.0000) ***	I(1)
<i>EXR</i>		-0.3653 (0.0139) **	I(1)

Note * ** and *** represent statistical significance at 1%, 5% and 10% level respectively

5. ARDL Bounds Testing for Co-integration

The run result of the long-run co-integrating relationship among the indicated variables is based on the Nayaran (2004) bound testis reported in Table 4.2. Pesaran et al (2001) bounds test could not be in this test because of our sample size is too small (n=34). The table

shows, the computed F-statistics values of (4.02) exceeds the upper bound critical values at both 5 per cent. This, therefore, implies a strong rejection of the null hypothesis of no level relationship at the 5 per cent confidence level. The test results suggest that there exists a long-run co-integrating relationship among the study variables.

Table 4.2: Results of the Bound test based on ARDL

Test Statistic	Value	K
F-statistic	4.020534	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Note: K represents number of independent variables in the model

Source: Author’s compilation based on E-views 9 output

6. The long-run and short-run co-efficient of the ARDL model

Ensuing the rejection of the null proposition of no long-run co-integration relationship between the study variables, we estimated the long-run and short-run coefficients based on the optimal ARDL model. The results are reported in table 4.3. As shown, military expenditure (MIE) has a positive and insignificant impact on economic growth in the short-run (0.6407), but has a negative but insignificant impact on economic growth of Nigeria in the long-run at 5% level of significance (0.2771). Thus

one (1) percent increase in military expenditure in Nigeria’s per capita GDP by approximately .92 percent in the short-run and -1.3 percent in the long-run. This result agrees with the neoclassical economic theory as well as corroborates those of Umar (2016) slightly, who also found a negative impact and insignificant results within the span of 1984 to 2014. This study was contrary to the finding of Akpansung, (2020) who found a positive and significant impact on economic growth in the long-run in Nigeria and contrarily to international study of Benoit (1973).

Table 4.3: Results of the long-run and short-run of the selected model
Cointegrating Form

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>D(LMIE)</i>	0.927256	1.959345	0.473248	0.6407
<i>D(LMIE(-1))</i>	-4.400611	1.732794	-2.539604	0.0187
<i>D(LAIM)</i>	-0.103305	0.433163	-0.238490	0.8137
<i>D(M2)</i>	-0.000000	0.000000	-0.886707	0.3848
<i>D(EXR)</i>	-0.014749	0.025724	-0.573337	0.5722
<i>D(ISQ)</i>	0.016542	0.154329	0.107183	0.9156
<i>D(ISQ(-1))</i>	-0.436292	0.163234	-2.672804	0.0139
<i>CointEq(-1)</i>	-0.887260	0.148853	-5.960656	0.0000

Long Run Coefficients

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>LMIE</i>	-1.261530	1.131880	-1.114544	0.2771
<i>LAIM</i>	-2.150366	1.087982	-1.976473	0.0608
<i>M2</i>	-0.000000	0.000000	-2.240180	0.0355
<i>EXR</i>	0.002984	0.021903	0.136256	0.8929
<i>ISQ</i>	0.640224	0.267073	2.397186	0.0254
<i>C</i>	67.280505	36.787444	1.828899	0.0810

Note: Δ= first difference operator. *, ** and *** denote 1%, 5% and 10% significant level, respectively.

Source: Author’s computation using E-views, 9.0.

Though, the control variables of the model results reveal that in the short-run only ISQ had a positive but insignificant impact, while in the long-run the values of EXR and ISQ also, has a positive and insignificant impact for exchange rate to influence economic growth in Nigeria, but significant impact for ISQ at 5%. On the contrary, the run results of the other variable are negative

both in the long and short. Findings are in line to Umar (2016) and Benoit (1973). However, in disagreement with Akpansung (2021) contradicts the prior expectation. The estimated value of error correction term is (− 0.887260), which shows that the economy would adjust annually by 89% to equilibrium position in Nigeria after shock. Lastly, the adjusted coefficient of the

determination indicates that the estimated ARDL model has satisfactory goodness of fit, exerting about 64% explanatory power with respect to variation in economic growth of Nigeria during the study period.

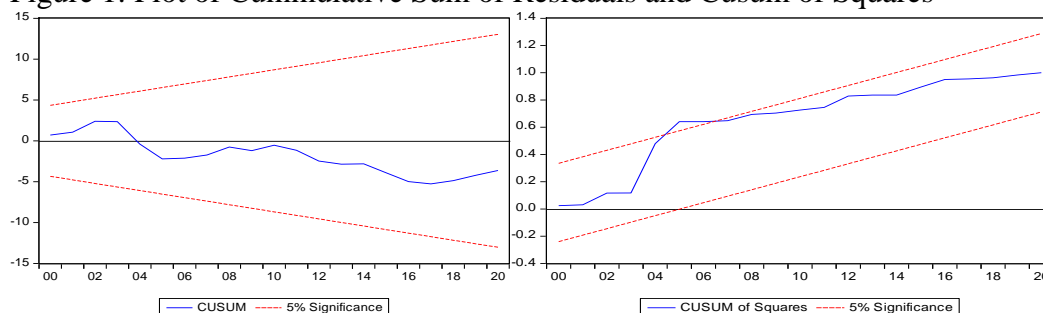
7. Diagnostics and Stability Test for ARDL Model

The validity of the ARDL bound test relies on the normally distributed error terms that are homoscedastic and serially uncorrelated and also on the stability of the coefficient over time (Kripfganz & Schneider, 2018). Therefore, post estimation diagnostic test of heteroskedasticity test, serial correlation LM test, as well as the stability tests using CUSUM and CUSUM Square test are conducted. Breusch-Godfrey Serial Correlation LM test and Breusch-Pagan-Godfrey test of Heteroskedasticity result

accept the null of no serial autocorrelation and heteroskedasticity respectively.

Similarly, the results for the stability test, the Cumulative Sum of Recursive (CUSUM) and CUSUM Square is shown in Figure 1 revealed lie within the 5% critical bound or region. Although the data of the study stretches over a long period of time (1985-2020). The lag length selection usually trims some observation appearing on the graph plots of CUSUM and CUSUM Squares. We ensured minimal lag selection in the estimation of the above two tests. This enables us to capture the residual stability test over a reasonable period of time with CUSUM and CUSUM Square also starting at 2000. However, the CUSUM Square depicts a relative instability around 2004 to 2008 which was attributed to ethno-religious conflict in Jos and that of Niger Delta conflict.

Figure 1: Plot of Cummulative Sum of Residuals and Cusum of Squares



8. Conclusion and policy implication

The empirical analysis on whether military expenditure mends or discourage economic growth has remained inconclusive and debatable over the years. This paper contributes to the empirical literature using Akpansung (2021); Ologbenla (2020); Akume, Jelilov and Akenegbu (2019) and Umar (2016) with model and focused on Nigeria. The estimation technique used was the ARDL bound co-integration regression. We found an insignificant positive relationship between military expenditure and economic growth in the short but a negative relationship in the long-run in Nigeria and is not statistically significant at 5%. This indicates that a lot needs to be done on military expenditure, through

training and re-training of personal of military that design their finances, with constant checks and balances toward their spending to impact positively to growth of Nigeria.

While both arms import values and money supply had negative impact in the short-run and long-run. Therefore, fund allocated on purchased of arms need to be adequately monitored with policy and punishments on offenders. Lastly, the values of institutional quality both in the short-run and long-run had positive and insignificant impact in influencing economic growth in Nigeria at 5% in the short-run but statistically significant at 5% in the long-run (0.0253). This shows that institutions of institutional

quality need to be re-strengthening in fighting back offenders and block linkages with reward on well-done jobs, and re-training of staffs in new modern technology, to realize the importance of such expenditure in nation building.

On country-specific, this study is limited in scope and in some number of control variables used. It is apparent the result might differ if other variables and techniques are employed. Therefore, we suggest that further studies be conducted through a comparative and dis-aggregating military expenditure, to determine how much military expenditure impacted the growth of each segment rather collectively.

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