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# Macroeconomic Determinants of Education Expenditure in Nigeria, 1980-2012

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**Abstract**
The paper focuses on the determinants of education expenditure in Nigeria. The variables for the study which spans the period 1980-2012 include government expenditure on education (GEE) as dependent variable while oil revenue (ORV), non oil revenue (NOR) and openness (OPEN) as independent variables. The study employs co-integration and VAR methods. The findings revealed that oil revenue was the most important determinant in funding education expenditure both in the short and the long run in Nigeria. The funding from non oil revenue was more or less not substantial while impact external sector on education expenditure was deleterious. The paper therefore recommended that corruption so prevalent in the oil and gas sector, the Nigerian National Petroleum Corporation (NNPC), must be dealt with.
**Keywords:** Education Expenditure, Oil Revenue, Non Oil Revenue, Co-integration, VAR

## 1. Introduction

As a result of increasing rate of illiteracy and the scourge of HIV/AIDS which have affected large number of the population and in turn limited the extent of labour supply in Less Developing Countries in general and Nigeria in particular, money should be invested on the educational sector. Unfortunately, spending on the sector has been on the decrease. This is even more worrisome when one considers the fact that a good way of generating economic growth is through educational development. The basic importance of education is to enable individuals with knowledge and the ability to apply that knowledge. Education is therefore commonly regarded as the most direct avenue to rescue a substantial number of people out of poverty since there is likely to be more employment opportunities and higher wages for skilled workers (Ohwofasa, Obeh & Atumah). However, public spending on education has been low, being only 0.9 percent of the GNP in 2002 (World Bank, 2004) and about 1.0 percent of GDP and 3.0 percent of government revenue in 2012 (see table 1). Nigeria is a populous Black African nation, blessed with abundance population of over 160 million people, with wide geographical spread across thirty-six (36) states and a federal capital territory. At independence and several years after, the country was perceived as a relatively secured nation in the West African sub-region because of its steady economic growth and leadership role in the ECOWAS sub-region. However, the sudden discovery of crude oil truncated the nation's steady drive towards sustainable economic development, as the focus of the federal government shifted from commercial agriculture to crude oil exploration and exploitation (Dode, 2011).

In the view of Watts (2009) cited in Adebakin & Raimi (2012), a total of $700 billion oil revenues had been accumulated by the Nigerian government since independence. Unfortunately, the massive oil revenues have added little to the living standard of Nigerians. He argued that 85 per cent of oil revenues earned overtime is shared among the influential political elites, who constitute only one per cent of the population, with the possibility that 40 percent or more of the national wealth accumulated overtime might have been stolen by the ruling elites, technocrats and policy bureaucrats. The picture of mismanagement of the nation's oil wealth as painted above, justifies the assertion that Nigeria is experiencing economic growth, but no sustainable economic development. While the ruling elites, technocrats and their cronies were busy stealing, embezzling and sharing the nation's oil wealth, the country's educational sector is in near state of collapse. Crude oil was first discovered in commercial quantities in Nigeria in 1956, while actual production started in 1958. It became the dominant resource in the mid-1970s. Nigeria has proven reserves of about 32 billion barrels of predominantly low sulphur light crude (the borny light), which at current rate of exploitation could last another 38 years. The intention is to expand the reserves to 40 billion barrels and production capacity to 4 million barrels per day (mbd).The massive increase in oil revenue as an aftermath of the Middle-East war of 1973 created unprecedented, unexpected and unplanned wealth for Nigeria which began the dramatic shift of policies from a holistic approach to benchmarking them against the state of the oil sector. The Naira which is the national currency strengthened as foreign exchange inflows outweighed outflows, and foreign reserves were built up. Up until 1985, the Naira was stronger than the US Dollar. This encouraged import-oriented consumption habit that soon turned Nigeria into a

perennial net importer, which became a major problem when oil earnings decreased with lower international oil prices. External reserves collapsed, fiscal deficits mounted and external borrowing ensued with the "jumbo loans" taken in 1979. Most of Nigeria's macro-economic indices became unstable and worrisome. Nigeria is Africa's highest oil exporter, and the world's tenth largest oil producing country. It has realized over US$ 600 billion in oil revenues since 1960, a figure greater than the resources used by the Marshall Plan in rebuilding Europe after World War II, and is currently the 8th highest net oil exporter in the world (Vanessa, et al. 2012). Nigeria's economy is heavily dependent on natural resources as oil and gas constitutes 98 percent of total exports, 80 percent of government revenues and around 20 percent of GDP (CBN, 2010). In spite of the enormous economic potentials in Nigeria, it has largely failed to live up to the ambitious growth projections that followed the first oil boom in the 1970s. Also, social indicators have displayed no specific tendency towards improvement such that in 2010, Nigeria was ranked 142$^{nd}$ out of 169 countries by the United Nations Human Development Index. And up to 70 percent of Nigerians are considered to be 'poor' – subsisting below the national poverty line (NBS, 2012).

Furthermore, Nigerian's economic performance has been rather weak and does not reflect the abundance human and natural resource endowments. Compared with the emerging Asian countries, notably, Thailand, Malaysia , China, India and Indonesia that were far behind Nigeria in terms of GDP per capita in 1970, these countries have transformed their economies notably through their educational sector and are not only miles ahead of Nigeria, but are also major players on the global economic arena. Indeed, Nigeria's poor economic performance, particularly in the last four decades or so, is better illustrated when compared with China which now occupies an enviable position as the second largest economy in the world. In 1970, while Nigeria had a GDP per capita of US$233.35 and was ranked 88th in the world, China was ranked 114$^{th}$ with a GDP per capita of US$111.82. Furthermore, the country lags behind her peers in most human development indicators. For example, while China and Thailand are on the 5$^{th}$ and 22$^{nd}$ positions, respectively, on the 2009 Global Hunger Index, Nigeria was ranked 46$^{th}$ (CBN, 2010). This can be traced largely to the huge infrastructure deficit in the educational sector, rising insecurity, mass corruption and widespread poverty. The major factors accounting for the relative decline of the country's economic fortunes are easily identifiable to include lack of focused and visionary leadership, economic mismanagement and corruption as well as poor funding of the educational sector. Prolonged period of military rule stifled economic and social progress, particularly in the three decades of 1970s to 1990s. During these years, resources were plundered, social values were debased, and unemployment rose astronomically with concomitant increase in crime rate. Living standards fell so low, to the extent that some of the best brains with the requisite skills to drive the developmental process left in droves to other nations, and are now making substantial contributions to the economic success of their host countries. Available data has put the national poverty level at 54.4 per cent even as there has been rising unemployment with the current level put at 19.7 percent by the National Bureau of Statistics (NBS, 2010).

Most studies in the education literature have mainly focused on the relationship between education expenditure and economic growth (see for example Babatunde & Adefabi, 2005; Oluwatobi and Ogunrinola, 2011; Ohwofasa, et al, 2012). The series of studies on the determinants of education expenditure failed to include relevant revenue collection as a major determinant of education spending in Nigeria. Thus, the objective of this study is to investigate the long run relationship between education expenditure and its determinants as well as the innovations in education expenditure as a result of innovations in its determinants. Consequently, the sequence of the paper is clear. Following the introduction, section two contains relevant literature. And section three focuses on the methodology and the specification of the relevant equations. These were followed by the discussion of the estimation technique in section four. Finally, section five ends the study with concluding remarks.

## 2. Theoretical and Empirical Literature

Government expenditure on the educational sector deals with how the amount allocated to education is spent. One of the methods of determining the flow of educational finance is to study the time trend of educational expenditure. It has been argued that expenditure on education is determined by budgetary allocations. Public education is usually designed to cultivate and develop skills, intellect, character, values and psychomotor potentials of individuals (Omojimite, 2012). Thus, it is argued that human resource development ensures that the workforce needed by a country is continuously adapted for, and upgraded to meet the new challenges of social, cultural and technological environment (Adebiyi and Oladele, 2005).

Empirically, Omojimite (2010) examines the notion that formal education accelerates economic growth for the sample data of 1980-2005. The methods of study were co-integration and Granger Causality tests and results show co-integration relationship between public education expenditures and economic growth. The paper further

indicates that public education expenditure granger cause economic growth and there is a bi-directional causality between public recurrent expenditures on education and economic growth. No causal relationship was established between capital expenditure on education and growth. In a more recent study, Omojimite (2012) investigates the proposition that military expenditures "crowd-out" expenditures on education in Nigeria for the period 1973-2006. Using a VAR model estimate, the result indicates that defence spending 'crowds-in' expenditures on education in Nigeria as the study reveals positive and significant relationship between defence spending and education expenditures. Babatunde and Adefabi (2005) investigate the long run relationship between education and economic growth in Nigeria from 1970-2003 through the application of Johansen Cointegration technique and vector error correction methodology (VECM). The paper examines two different channels through which human capital can affect long run economic growth in Nigeria. The first channel is when human capital is a direct input in the production function and the second channel is when the human capital affects the technology parameter. The Johansen sCointegration result establishes a long run relationship between education and economic growth while the VECM results reveal that human capital has a positive effect on productivity growth in Nigeria.

Irughe (2013) examines the impact of education expenditure on economic growth in Nigeria for the period 1977-2009. The paper employs error correction method and a geometric method of analysis and found that impact of education expenditure on economic growth is negative. Omotor, D.G. (2004) examines the profile of educational expenditure in Nigeria (1977 – 1998). Using the ordinary least squares (OLS) technique he finds that federal government revenue is the singular significant determinant of educational expenditure model. Lawal & Wahab (2011) investigate the relationship between education and economic growth in Nigeria for the period 1980-2008. Employing an OLS the paper finds that education investments have direct and significant impact on economic growth in Nigeria. Oluwatobi and Ogunrinola (2011) examine the impact of government recurrent and capital expenditures on education and health in Nigeria and their effect on economic growth. The study adopted the augmented Solow model and real output as dependent variable while the explanatory variables were government capital and recurrent expenditures on education and health, gross fixed capital formation and the labour force. The result of the study shows that there exists a positive relationship between government recurrent expenditure on human capital development and the level of real output, while capital expenditure is negatively related to the level of real output. Ohwofasa, et al. (2012), scrutinize the relationship between government expenditure in the education sector and economic growth in Nigeria through the technique of co-integration and error correction mechanism using time series data spanning 1986 to 2011. The co-integration result shows that long run relationship exists between the variables. While the econometric results among other things indicated that recurrent expenditure exhibits positive impact on economic growth, the same cannot be said of capital expenditure on education.

**Structure and Trend of Government Revenue and Education Expenditure in Nigeria**

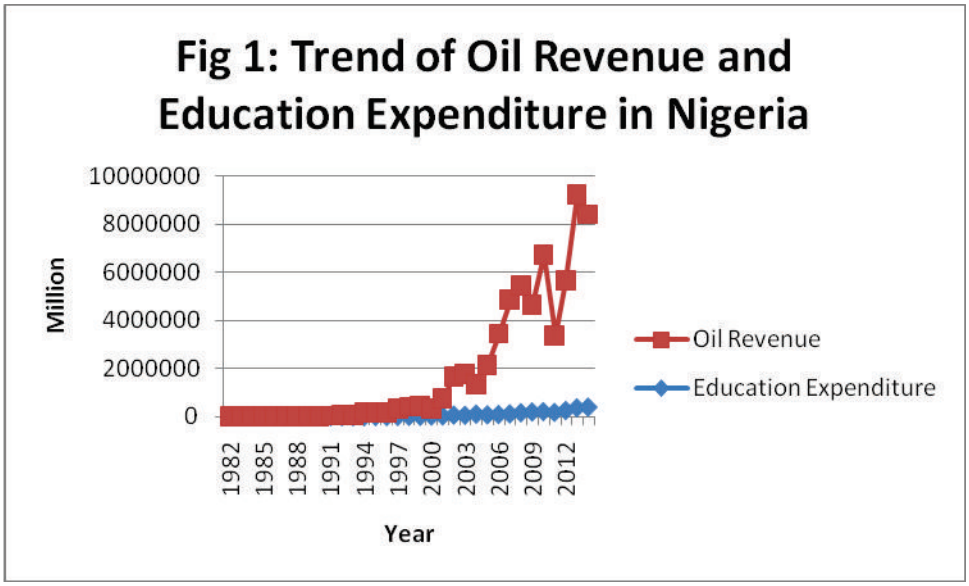
Table 1 show that between 1980-84, education expenditure has an average share of 8.9 percent of government revenue and declined to 2.9 percent for the period 2005-09. It recorded the lowest share in government revenue of 2.7 percent and marginally increases to 3.0 percent in 2012. As a share of GDP, education expenditure averaged 2.1percent between 1980-84, 0.9 percent between 1985 and 1994 and 0.8 percent between 1995-99. It oscillated to 1.1 percent between 2000-04 and decline thereafter to less than one percent. In 2011/12, education expenditure stood at 1.0 percent of GDP. Similarly, fig 1 depicts the trend of oil revenue and education expenditure for the 1980-2012 and it can be seen that while oil revenue witnessed upward expenditure made to the educational sector was at the trough. Thus, both table 1 and fig 1 shows that budgetary allocation to the educational sector is not the type that will turn the sector around. This explains why there are decaying infrastructures in most of the public schools in Nigeria.

Table 1: Education Expenditure as % of Government Revenue and GDP, 1980-2012

| Year | Govt Revenue (₦m) - 1 | Nominal GDP (₦m) - 2 | Education Expt (₦m) - 3 | 3 % of 1 | 3 % of 2 |
|---|---|---|---|---|---|
| 1980-84 | 61719.7 | 259051.2 | 5498.1 | 8.9 | 2.1 |
| 1985-89 | 134493.9 | 598161.2 | 5624.4 | 4.2 | 0.9 |
| 1990-94 | 784227.4 | 2696036.5 | 24191.8 | 3.1 | 0.9 |
| 1995-99 | 2979192.1 | 13340349.2 | 102309.6 | 3.4 | 0.8 |
| 2000-04 | 12365193.1 | 36117693.1 | 409971.9 | 3.3 | 1.1 |
| 2005-09 | 29939384.3 | 102884719.5 | 876234.5 | 2.9 | 0.9 |
| 2010 | 7303671.6 | 33984752.1 | 258700.0 | 3.5 | 0.8 |
| 2011 | 13779121.1 | 37409862.3 | 371221.5 | 2.7 | 1.0 |
| 2012 | 13256840.3 | 40544102.1 | 396026.3 | 3.0 | 1.0 |

Source: CBN Statistical Bulletin/Annual Report and Statement of Account (various issues)




## 3.0 The Model

This study employs vector auto regression (VAR) model: a statistical model used to capture and explain the linear interdependencies among multiple time series data. VAR model allows each variable to be a function of its own past values as well as the past values of the other variables in the system. This model was adopted because it was most successful, flexible and easy to use for the analysis of multivariate time series. It is also useful especially in the description of dynamic behavior of macroeconomic time series variables for forecasting and policy analysis. This paper assumed that a change in macroeconomic variables such as oil revenue, non oil revenue and openness of the economy will account for the nature and size of public education expenditures in Nigeria. The size of this shock can best be determined by a VAR model (Omojimite, 2012). The data employed for the study spanned 1980-2012 and were culled from the various issues of Central Bank of Nigeria Statistical Bulletin and Annual Report and Statement of Account. The variables are measured in millions of naira while the econometric package used is the Eview 4.0 P.C for window. Except openness which is already computed in percentage form, all the variables are in logarithmic form. The general specification of the model using a linear approach is thus presented below:

GEE = f(ORV, NOR, OPEN)……..(1)

In log stochastic term, equation (1) can be written as:

$GEE_t = \beta_0 + \beta_1 InORV_t + \beta\delta_2 InNOR_t + \beta_3 OPEN_t + \mu_t$……..(2)

Where:

GEE = Government Expenditure on Education in Nigeria
ORV = Oil Revenue
NOR = Non oil Revenue
OPEN = Openness of the Economy (Export + Import/GDP)
t = time trend
$\mu$ = white noise error
$\beta_0$ = constant

$\beta_1$-$\beta_3$ = parameters to be estimated

The VAR form of equation 2 is presented below:

$$\Delta GEEt = \sum_{i=1}^{n} b1t\Delta GEEt-1 + \sum_{i=1}^{n} c1t\Delta ORVt-1 + \sum_{i=1}^{n} d1t\Delta NORt-1 + \sum_{i=1}^{n} e1t\Delta OPENt-1 + e1t$$

$$\Delta ORVt = \sum_{i=1}^{n} b2t\Delta GEEt-1 + \sum_{i=1}^{n} c2t\Delta ORVt-1 + \sum_{i=1}^{n} d2t\Delta NORt-1 + \sum_{i=1}^{n} e2t\Delta OPENt-1 + e2t$$

$$\Delta NORt = \sum_{i=1}^{n} b3t\Delta GEEt-1 + \sum_{i=1}^{n} c3t\Delta ORVt-1 + \sum_{i=1}^{n} d3t\Delta NORt-1 + \sum_{i=1}^{n} e3tOPENt-1 + e3t$$

$$\Delta OPENt = \sum_{i=1}^{n} b4t\Delta GEEt-1 + \sum_{i=1}^{n} c4t\Delta ORVt-1 + \sum_{i=1}^{n} d4t\Delta NORt-1 + \sum_{i=1}^{n} e4t\Delta OPENt-1 + e4t$$

Where Δ is the first difference operator, e1t, e2t, e3t and e4t are random disturbances and n is the number of optimum lag length, which is determined empirically by Schwarz criterion (SC). For each equation in the above VAR, Wald $\chi 2$ statistics is used to test the joint significance of each of the other lagged endogenous variables in the equations. 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 macro variables respond to shocks in the policy variables, while the variance decompositions show the magnitude of the variations in the macro variables due to the policy variables

**Unit Root Test**

The Augmented Dickey Fuller (ADF) and the Phillips-Perron tests were used to test for unit roots as in the equation below.

$$\Delta Yt = Ci + \omega Yt-1 + C2t + \sum_{t=1}^{p} di\Delta Yt-1 + \varepsilon t \dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

yt = relevant time series
Δ = an operator for first difference
t = a linear trend
εt= error term

The null hypothesis of the existence of a unit root is Ho: ω=0. Failure to reject the null hypothesis leads to conducting the test on further differences of the series. Further differencing is conducted until stationarity is reached and the null hypothesis is rejected. Akaike Information Criteria (AIC) and the Schwarz criterion (SC) were employed to determine the lag length.

**Co-integration**

Co-integration regressions measure the long-term relationship between the variables whose existence guarantees that the variables demonstrate no inherent tendency to drift apart. The Johansen co-integration tests (Johansen 1988; Johansen and Juselius, 1990), which set up the non-stationary time series as a vector auto regression (VAR) of order p were employed for the test. Consider a VAR of order:

$$Yi = A1Yi-1 + \dots\dots\dots\dots + ApYi-p + BXi + \varepsilon t \dots\dots\dots\dots\dots\dots (5)$$

Where yi is a k-vector of non-stationary I(1) variables, Xi is a d-vector of deterministic variables, and εt is a vector of innovations. The trace statistic for the null hypothesis of co-integrating relations is computed as:

$$LRtr\ (K) = -\Gamma \sum_{i=r+1}^{h} \log(1-\mu i) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$

Where: $LR_{tr}$ = trace statistics
K =cointegratin relations
μi =itheigen value

In Johasen (1990), two test statistics are employed and they include the trace test and the maximum eigenvalue test which are used to test the hypothesized existence of r co-integrating vectors. The trace test statistic tests the null hypothesis that the number of distinct co-integrating vectors is less than or equal to r against a general alternative while the maximum eigenvalue test statistic tests the null hypothesis that the number of co-integrating

vectors is r against the alternative of r+1 co-integrating vectors.

## 4.0 Presentation of Results

Table 2 presents the results of stationarity test for both Augmented-Dickey Fuller (ADF) and Phillips-Perrons (PP) tests.

**Table 2: Results of Stationarity Test**

| Variable | ADF Test | Mackinnon Critical Value | Level | PP Test | Mackinnon Critical Value | Level |
|---|---|---|---|---|---|---|
| LGEE | -4.261857 | -3.5670 | I(1) | -6.285039 | -3.5614 | I(1) |
| LORV | -4.777155 | -3.5670 | I(1) | -6.478985 | -3.5614 | I(1) |
| LNOR | -4.060649 | -3.5670 | I(1) | -7.237991 | -3.5614 | I(1) |
| OPEN | -3.756660 | -3.5614 | I(0) | -6.847410 | -3.5614 | I(1) |

Stationarity at 5% level

The tests show that the four macroeconomic variables of government expenditure on education (GEE), oil revenue (ORV), non oil revenue (NOR) and level of openness (OPEN) were stationary at first differencing for the PP while for the ADF test, only OPEN became stationary at level.

**Table 3: Results of Co-integration Test**

| Null Hypothesis | Alternative Hypothesis | Statistical Value | 5 percent critical value | 1 percent critical value | Eigen value |
|---|---|---|---|---|---|
| Trace Statistics | | | | | |
| r = 0 | r > 0 | 64.81608 | 47.21 | 54.46 | 0.596486 |
| r > 1 | r > 1 | 36.68221 | 29.68 | 35.65 | 0.547070 |
| Max-Eigen Statistics | | | | | |
| r = 0 | r = 1 | 28.13387 | 27.07 | 32.24 | 0.596486 |
| r <1 | r = 2 | 24.55252 | 20.97 | 25.52 | 0.547070 |

It can be seen from table 3 that the trace test indicates 2 co-integrating equations at both 5 and 1 percent levels respectively while the max-eigenvalue test indicates 2 co-integrating equations only at the 5 percent level. Thus, there is an evidence of co-integration among the variables and this implies that the results of the unrestricted co-integration rank test confirmed a long run significant relationship between education expenditure and its determinants.

**Table 4: Long Run Dynamics Regression Results**

Dependent Variable: LGEE
Method: Least Square

| Variable | Coefficient | Std Error | t-Statistics | Prob. |
|---|---|---|---|---|
| Constant | -2.011368 | 0.366338 | -5.490470 | 0.0000 |
| LORV | 0.567659 | 0.176468 | 3.216770 | 0.0032 |
| LNOR | 0.436620 | 0.178724 | 2.442980 | 0.0209 |
| OPEN | -4.190099 | 0.930073 | -4.505128 | 0.0001 |
| $R^2$ = 0.98; F-Stat = 440.1; DW = 1.66 | | | | |

The coefficients of the three explanatory variables measures the long run as they show that a 100 percent increase in ORV and NOR increases education expenditure by 57 and 44 percent respectively as the two variables are positively signed. Similarly, a 100 percent decrease in ORV and NOR has an opposite effect on expenditure in the educational sector in Nigeria. On the other hand, a one percent increase or decrease in openness variable, decreases or increases education expenditure by 4.19 percent. The variable is negatively signed indicating no demonstration of effect of international exposure to increase in education expenditure within the period. Omotor (2004) has earlier reached a similar finding. The goodness of fit statistic shows that the explanatory variables explained about 98 percent of education expenditure in Nigeria. Finally, table 4 further reveal that while the F-stat shows that the model is statistically significant, the DW test depicts absence of serial correlation.

**Table 5: Results of VAR Estimate**
t-statistic in ()

| Variable<br>(1) | LGEE<br>(2) | LORV<br>(3) | LNOR<br>(4) | OPEN<br>(5) |
|---|---|---|---|---|
| LGEE(-1) | 0.154894<br>(0.8) | -0.033398<br>(-0.1) | 0.520823*<br>(1.9) | 0.042607<br>(0.8) |
| LGEE(-2) | -0.056734<br>(-0.4) | -0.314501<br>(-1.2) | -0.200684<br>(-0.9) | -0.024437<br>(-0.6) |
| LORV(-1) | 0.578908*<br>(3.0) | 0.743244*<br>(2.3) | 0.390451<br>(1.4) | 0.057858<br>(1.1) |
| LORV(-2) | 0.324195<br>(1.5) | 0.115419<br>(0.3) | -0.220753<br>(-0.7) | -0.046337<br>(-0.8) |
| LNOR(-1) | 0.288356<br>(1.6) | 0.167083<br>(0.6) | 0.372614<br>(1.5) | -0.024762<br>(-0.5) |
| LNOR(-2) | -0.267817<br>(-1.6) | 0.338220<br>(1.2) | 0.105823<br>(0.4) | 0.006349<br>(0.1) |
| OPEN(-1) | -3.315878*<br>(-3.2) | -0.394281<br>(-0.2) | -0.063027<br>(-0.0) | 0.402640<br>(1.4) |
| OPEN(-2) | -1.327172<br>(-1.1) | -1.231665<br>(0.6) | 0.891702<br>(0.5) | -0.121216<br>(-0.4) |
| C | -2.184143*<br>(-4.0) | -0.193836<br>(-0.2) | 0.795279<br>(1.0) | -0.022956<br>(-0.2) |
| $R^2$ | 0.990768 | 0.977976 | 0.982395 | 0.496627 |
| F-stat | 295.1113 | 122.1140 | 153.4533 | 2.713150 |
| Akaike AIC | 0.279860 | 1.332034 | 0.984609 | -2.291283 |
| Schwarz SC | 0.696179 | 1.748353 | 1.400928 | -1.874964 |

In table 3, the $R^2$s are robust as they range from 0.50 to 0.99. In interpreting the results, the variable with asterisk (*) is statistically significant while our interest is column two. As with VAR estimate, the current value of the variable in the column rank is said to depend on the lag variable on the rows. Thus, the current value of education expenditure in column two is significantly responsive to oil revenue (lag 1) and openness (lag 1). However, while impact of oil revenue on education expenditure is positive that from openness is negative and thus reaffirming the long rum results above. Also, education expenditure is positively responsive to lag 1 of non oil revenue and negatively responsive to its lag 2. And hence on the average the impact of non oil revenue is not felt on the educational sector in the short run. Column 3 to 5 can be interpreted likewise.

### 4.1 Variance Decomposition (VD)

Forecast error variance decomposition provides complementary information on the dynamic behavior of the variables in the system. It shows the proportion of forecast error variance for each variable that is attributable to its own innovation and to innovation in the other variables. Table 6 presents the VD of four endogenous variables with concentration based on the $10^{th}$ period horizon.

**Table 6: Variance Decomposition**

| Variance Decomposition of LGEE | | | | | |
|---|---|---|---|---|---|
| Period | S.E | LGEE | LORV | LNOR | OPEN |
| 1 | 0.247126 | 100.0000 | 0.000000 | 0.000000 | 0.000000 |
| 5 | 0.578455 | 22.68747 | 51.46889 | 12.03763 | 13.80600 |
| 10 | 0.924698 | 10.34615 | 67.78491 | 16.28823 | 5.580718 |
| Variance Decomposition of LORV | | | | | |
| Period | S.E | LGEE | LORV | LNOR | OPEN |
| 1 | 0.418210 | 0.109317 | 99.89068 | 0.000000 | 0.000000 |
| 5 | 0.805324 | 0.589385 | 86.20645 | 12.33971 | 0.864458 |
| 10 | 1.098065 | 1.543386 | 82.36963 | 15.48187 | 0.605116 |
| Variance Decomposition of LNOR | | | | | |
| Period | S.E | LGEE | LORV | LNOR | OPEN |
| 1 | 0.351522 | 5.629142 | 32.44292 | 61.92793 | 0.000000 |
| 5 | 0.692422 | 8.831593 | 61.59848 | 27.75897 | 1.810959 |
| 10 | 0.995190 | 5.398995 | 70.26123 | 23.35466 | 0.985113 |
| Variance Decomposition of OPEN | | | | | |
| Period | S.E | LGEE | LORV | LNOR | OPEN |
| 1 | 0.068328 | 3.016347 | 58.44109 | 0.590052 | 37.95251 |
| 5 | 0.083572 | 2.522578 | 63.83434 | 2.659205 | 30.98388 |
| 10 | 0.084954 | 2.704353 | 63.77561 | 3.076110 | 30.44393 |

A cursory look at table 6 reveals that oil revenue is responsible for most of the variations in education expenditure especially in the medium and the long term. Thus, the contribution of oil revenue to shock in education expenditure in the medium term is 51.5 percent and in the long term is 67.8 percent. The shock occasioned by non oil revenue to education expenditure is 16.3 percent, that occasioned by external sector is only about 5.6 percent while own shock constitutes about 10 percent in the $10^{th}$ period. Panel 2 to 4 can be interpreted in the same vain.

### 4.2 Impulse Response Function

**Fig 1**: **The sensitivity of Education expenditure to shocks in Oil Revenue, Non Oil Revenue and Openness of the Economy (2011 -2020)**

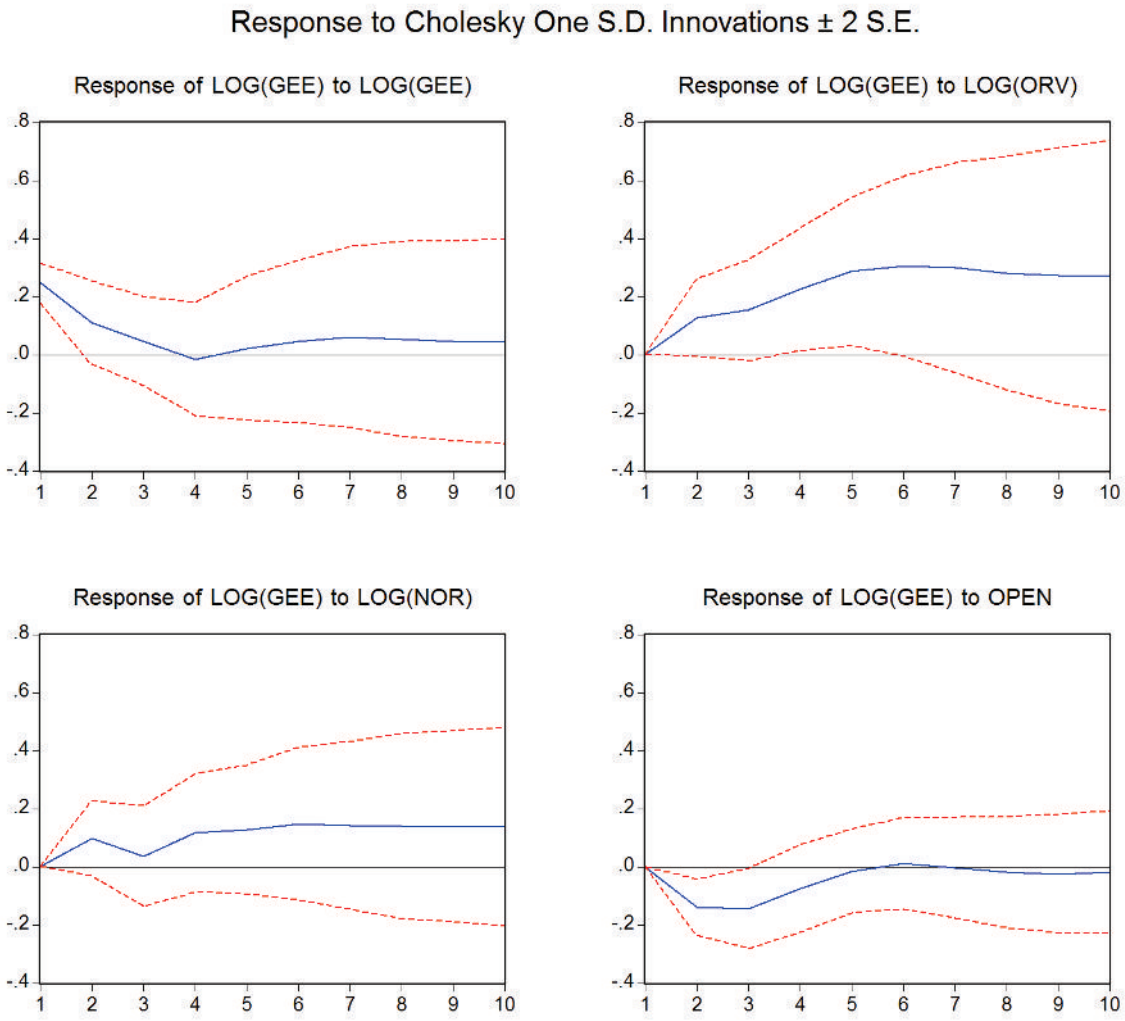



Fig 1 above x-rays the sensitivity of education expenditure to shocks occasioned by oil revenue, non oil revenue and degree of openness for the period 2011 -2020, the target years for Vision 20:2020. Thus, the response of education expenditure to own shock has been positive since 2011 and is expected to die off in 2014. And thereafter, up till 2020 and beyond a marginal increase is expected. On the innovations occasioned by oil revenue and non oil revenue, the response of education expenditure will be positive all through the forecast period while the response to shock in openness is expected to be slightly negative.

### 5.0 Concluding Remarks

The paper examines macroeconomic determinants of education expenditure in Nigeria where only few studies are available in the literature. Most studies on Nigeria have focused on the relationship between education expenditure and economic growth. The current study differs by appreciating the importance of oil revenue in education spending profile. Thus, the macroeconomic variables for the study include government expenditure on education (GEE) as dependent variable while oil revenue (ORV), non oil revenue (NOR) and openness (OPEN) as independent variables. The econometric methods were basically co-integration and VAR. The empirical findings revealed that oil revenue was the most important determinant in funding education expenditure both in the short and the long run in Nigeria. The funding from non oil revenue or the real sector was more or less not substantial while any possible contribution from the external sector was deleterious to the education sector.

In both the variance decomposition and impulse response function, oil revenue was found to be responsible for enormous shock in education expenditure. The major conclusion that can be reached in this study is that the oil and gas sector in Nigeria is too important to be left in the hands of few government officials who embezzle the

funds while critical sectors like education and health are in gory state. It is therefore recommended that corruption prevalent in the umbrella house of the oil and gas sector, the Nigerian National Petroleum Corporation (NNPC), must be dealt with forthwith. Also, attention must be given to the real sector of the economy in order to broaden the revenue base of the government and enhance education expenditure.

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