Economics and Finance Review Vol. 2(6) pp. 85 – 96, August, 2012 ISSN: 2047 - 0401
Available online at http://www.businessjournalz.org/efr

ECONOMIC GROWTH AND FISCAL DEFICITS:

Empirical Evidence from Nigeria

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ABSTRACT

There has been considerable debate about the relationship between fiscal deficits and economic growth. Although macroeconomic theory postulates that fiscal deficits stimulate economic growth, empirical research has been less conclusive about this relationship. This paper examines this controversial relationship within the Nigerian context, using data over the period, 1970 – 2006. We adopted a modeling technique that incorporates cointegration and structural analysis. The results indicate that (i) fiscal deficit affects economic growth negatively, with an adjustment lag in the system; (ii) a one percent increase in fiscal deficit is capable of diminishing economic growth by about 0.023 percent; and (iii) there is a strong negative association between government consumption expenditure and economic growth.

Keywords – *Fiscal Deficits, Economic Growth, Cointegration, Government Expenditure, Nigeria.*

JEL Classification: *H62, C22*

INTRODUCTION

Fiscal policy plays a key role in the sustenance of economic growth and macroeconomic stability. The magnitude of government fiscal surplus or deficit is probably one of the most important statistics used to measure the impact of government fiscal policy on the economy (Siegal, 1979; Tanzi and Blejer, 1984). Fiscal deficits in Nigeria were generally financed by the excessive borrowing from the banking sector and external sources (NCEMA, 2004). The Central Bank of Nigeria (CBN) accounted for a large proportion of the financing from the banking sector (CBN, 2004). For a period of over three and half decades (1970 – 2006), the fiscal operations of the Nigerian government resulted in surplus in only six (6) years. Specifically, these surpluses occurred in 1971, 1973, 1974, 1979, 1995 and 1996. As at 1986, the federal nominal fiscal deficit stood at N8.3billion or 11.3 per cent of GDP. The deficit/GDP ratio was 5.4 per cent in 1987, 8.4 per cent in 1988, and 6.7 per cent in 1989. The ratio jumped to 11.0 per cent in 1991 and 15.5 per cent in 1993. The fiscal deficit grew by 58 per cent between 1985 and 1986. Between 1991 and 1992, the deficit grew by 60.9 per cent, increasing to 86.2 per cent in 1998. Between 1999 and 2006, the deficit/GDP ratios were 8.4, 2.9, 4.7, 5.6, 2.9, 1.7, 1.1 and 0.6 per cent, respectively. In absolute terms, these percentages were N285.1billion, N103.6billion, N221.0billion, N201.4billion, N202.7billion, N172.6billion, N161.4billion and N101.3billion, respectively (See Table I).

Table 1: Overall Budget Balance as percentage of GDP in Nigeria (1970 – 2006)

YEAR	OVERALL BALANCE (1)	FISCAL DEFICIT/GDP (2)
1970	-455.1	-8.7
1971	+171.6	2.6
1972	-58.8	-0.8
1973	166.1	1.5
1974	1,796.4	9.8
1975	427.9	-2.0
1976	-1,090.8	-4.0
1977	-781.4	-2.4
1978	-2,821.9	-7.8
1979	1,461.7	3.4
1980	-1,975.2	-3.9
1981	-3,902.1	-7.7
1982	-6,104.1	-11.8
1983	-3,364.5	-5.9
1984	-2,660.4	-4.2
1985	-3039.7	-4.2
1986	-8,254.3	-11.3
1987	-5,889.7	-5.4
1988	-12,160.9	-8.4
1989	-15,134.7	-6.7
1990	-22,116.6	-8.5
1991	-35,755.2	-11.0
1992	-39,532.5	-10.4
1993	-107,735.3	-15.3
1994	-70,270.6	-7.7
1995	+1,000	0.1
1996	+32,049.4	1.6
1997	-5,000	-0.2
1998	-133,389.3	-4.7
1999	-285,104.7	-8.4
2000	-103,800	-2.9
2001	-221,000	-4.7
2002	-301,000	-5.6
2003	-202,700	-2.9
2004	-172,600	-1.5
2005	-161,400	-1.1
2006	-101,300	-0.6

Source: CBN (2004, 2005) Statistical Bulletins; and CBN (2006) Annual Report and Statement of Accounts

Our choice of Nigeria for empirical investigation is informed by a number of reasons. Besides the obvious reason that Nigeria is an oil-rich country with a large inflow of oil revenue in its balance of payments, the country has nonetheless experienced very large fluctuations in the government budget deficits and accumulation of foreign debt. The years between 1970−2006 were characterized by a serious deterioration of the public finances in Nigeria. In particular, the period 1975-1978 witnessed very large and growing fiscal deficits, as stated above. An important feature of the economy was the transition to high rates of inflation. In the 1970s the overall inflation averaged 15.3 percent, while in the 1980s it increased to an average of 22.9 percent and in the

1990s the average inflation rate soared to 30.6 percent. But, by 2006, the economy experienced a sharp average fall of 18.4 percent in the inflationary trend. It has been claimed that the main causes of these high rates of inflation were the widening fiscal imbalances, sources of deficit financing, economic growth and the depreciation of the Naira exchange rate. Nonetheless, the transition to high inflation rates over the period resulted in substantial real cost and large losses in income, at the same time as the performance of the economy as a whole declined as a result of widening fiscal deficits and decreasing oil revenues, following the collapse of oil prices in the early 1980s, exacerbated by poor macroeconomic management and political uncertainty.[1] The late 1980s were, however, especially marked by the heightened increase in the fiscal deficit which led to the imposition of IMF and World Bank induced structural adjustment program (SAP) aimed at creating more favourable conditions for the restoration of the economy along a sustainable growth path. The sharp reduction in the average inflation rate has been mainly attributed to the adoption of tight monetary and fiscal policies which, on the one hand, were designed to facilitate the success of the (SAP) and, on the other hand, to help salvage the government's failing fiscal programs.[2] It is noteworthy that the attention to macroeconomic management enabled the country to return to acceptable levels of fiscal consolidation, which allowed the economy to run on a more stable growth path since the early1980s.

A number of studies have consequently looked at the relationship between economic growth and fiscal deficits. Studies in this area include the works of Adam and Bevan (2004), Fiani (1991), Brauninger (2002), De Castro (2004), Perotti (2004), Easterly and Schmidt-Hebbel (1993), Mountford and Unilg (2005), and Hsieh and Lai (1994). These studies argue that there is a positive relationship between economic growth and fiscal deficits. On the other hand, the findings of Gemmel (2001), and M'Amanja and Morrissey (2006) contradict most of the earlier evidence on the impact of fiscal deficits on economic growth. Their results reveal significantly negative effect of fiscal deficit on economic growth. However, not only did these studies yield conflicting results and conclusions, perhaps due to the methodologies adopted in analyzing their research data, but more importantly, the time frame considered in many of them was rather short. Above all, the contexts of these studies were different from Nigeria. These observed limitations have left a trail on knowledge gap in the literature, thus warranting the need for a more systematic examination of the relationship between economic growth and fiscal deficits from the standpoint of Nigeria. This underscores the need for this study.

Our treatment of the subject matter differs from the past studies in several important aspects. First, we are able to draw on an extensive literature of the latest contributions and methodological shortcomings of many extant studies. This is a considerable advantage in retrospection. Second, the study sample comprises broad longitudinal data set spanning 1970-2006. This data set is more robust than those used in the previous studies, especially those on developing countries. The study period also corresponds to and witnessed regimes of economic reforms in Nigeria. Another important shortcoming of most previous studies which the current study seeks to overcome is that explicit attention was not paid to the time-series characteristics of the data used. Using recent developments in time series econometrics as provided by Engle and Granger (1987), Andrew (1991), Phillips and Peron (1988), Dickey and Fuller (1979), Newey and West (1994), MacKinnon (1996), Johanssen (1991, 1995), Engsted and Bentzen (2001), this study is able to derive the relationship between the variables in the model adopted.

The remainder of this paper is organized as follows. Section II discusses the literature on fiscal deficits and economic growth. Section III lays out the analytical framework and econometric methodology, while empirical results are reported in Section IV. Section V concludes the paper.

[1]As a consequence, the government was only able to sustain the level of expenditure by increasing its foreign debt burden and by the build up of private sector debt through trade arrears.
[2]The measures included policies to widen the government revenue base, reductions in government subsidies, imports, government involvement in economic activities and a rebalancing of the economy away from the public sector in favour of the private sector.

II LITERATURE REVIEW

The empirical work of Adam and Bevan (2004) examined the relationship between fiscal deficits and growth (GDP) for a panel of 45 developing countries. Based on the consistent treatment of budget constraints, it found evidence of a threshold effect at a level of the deficit around 1.5 per cent of GDP. The threshold involves not only a change of slope but also a change of sign in the relation regardless of the budget category excluded from the model, indicating that for an economy not on its steady state growth path, there is a range over which deficit–financing may be growth-enhancing. Again, Fiani (1991) provides evidence in Morocco that growth remained high despite large budget deficits.

Brauninger (2002) conducted a study on the interaction of budget deficit, public debt and endogenous growth. The result is that if the deficit ratio fixed by the government stays below a critical level, then there are two steady states where capital and public debt grow at the same constant rate, and an increase in the deficit ratio reduces the growth rates. Therefore, if the deficit ratio exceeds the critical level, then there is no steady state. Capital growth declines continuously and capital is driven down to zero in finite time. De Castro (2004) investigated the effect of fiscal policy in Spain, and found that shocks to government expenditure boosts GDP, private consumption and investment, with multipliers close to one in the short term and negative in the medium and long term. Easterly and Schmidt-Hebbel (1993) studied ten developing countries and provided the evidence that fiscal deficits and growth are self-reinforcing and that good fiscal management preserves access to foreign lending and avoids the crowding out of private investment. However, the evidence by Gemmel (2001) from low income, medium and high income countries contradicts most of the earlier evidences on the impact of budget deficits on growth. The result revealed significantly negative effect of budget deficit on economic growth. Perotti's (2004) study of five OECD countries revealed that the effect of fiscal policy on GDP tends to be small, and the effects of government spending shocks and tax cuts on GDP and its components have become substantially weaker over time.

Mountford and Unilg (2005) stressed that the best fiscal policy to stimulate the economy is a deficit-financed tax cut and that the long-term costs of fiscal expansion through government spending is probably greater than the short-run gain. M'Amanja and Morrissey (2006) concludes that unproductive expenditure and non-distortionary tax revenue were found to be neutral to growth predicted by economic theory. However, contrary to expectations, productive expenditure has strong adverse effect on growth, while there was no evidence of distortionary effects on growth of distortionary taxes. On the other hand, government investment was found to be beneficial to growth. Again, the empirical work of Hsieh and Lai (1994) on seven industrialized countries suggests that the relationship between government spending and growth can vary significantly across time as well as across the major industrialized countries that presumably belong to the same growth club. For most of the countries under study, public spending is found to contribute, at best, a small proportion to the growth of an economy.

Benos (2004) studied OECD countries and found that government spending on education, health and fuel-energy display a hump-shaped relationship with per capita growth and public expenditures on housing, community amenities, social security, social assistance, transport and communication are characterized by U-shaped relationship with growth. Also when the effect of public sending on education and social expenditures on growth is stronger, the poorer a country is, while the opposite is true for expenditure on health. Finally, the study found that budget surplus has a positive effect on growth.

III Analytical Framework and Methodology

The specification of our model mirrors the works of Gummell (2001), Brauninger (2002), Adam and Bevan (2004), and De Castro (2004). The economic growth–fiscal deficits model is specified as: $GDP_t = f$ (INV, GEXP, GCONS, TB, FD, GDP_{t-1})

The Gross Domestic Product Equation now becomes

$$GDP_t = h_o + h_1 INV + h_2 GEXP + h_3 GCONS + h_4 TB + h_5 FD + h_6 GDP_{t-1} + U_t \quad (1)$$

The dependent variable is Gross Domestic Product (GDP), while the independent variables are Investment (INV), Government Expenditure (GEXP), Government Consumption (GCONS), Trade Balance (TB), Fiscal Deficit (FD) and GDP_{t-1} is one year lag value of GDP and U_t is the error term.

h_0 is the intercept and,

h_1, h_2, h_3, h_4, h_5 ,h_6 are the coefficient of the regression equation.

A priori, it is expected that h_1, h_2, h_3, h_4, h_5 ,$h_6 > 0$;

The study data period covers 37 years, 1970-2006. – a period spanning over three decades. We concentrate on this period because it encompasses bouts of political uncertainty, the high oil price boom, and the reconstruction of the economy. A more important reason for the selection of this period is that it includes a set of structural adjustment policies aimed at reducing the budget deficit and stimulate economic growth. The source of data is the Statistical Bulletin of the Central Bank of Nigeria, December 2006.

We investigated the time series characteristics of the data to test whether the variables are integrated. The Augmented Dickey-Fuller (ADF), as specified in Dickey and Fuller (1979), and Phillips-Perron (Phillips and Peron, 1988) was employed. For the ADF, the null hypothesis is that the variable being considered has a unit root against an alternative that it does not.

To test for the long run relationships between the variables, we apply the Engle-Granger (1987) two step cointegration test which uses the residuals from the long run equation estimated with the non-stationary variables, and then test for the existence of unit root in the residual using the ADF regression and compare the value to an appropriate asymptotic null distribution. The economic interpretation of cointegration is that if two or more series are linked to form an equilibrium relationship spanning the long run, then even though the series themselves may be non-stationary, they will move closely together over time and their difference will be stationary.

The parsimonious error correction mechanism (ECM) can be specified as:

$$\Delta GDP_t = \boldsymbol{\alpha_1} + \Delta INV_{t-s} + \Delta GEXP_{t-s} + \Delta GCONS_{t-s} + \Delta TB_{t-s} + \Delta FD_{t-s} + \Delta GDP_{t-1} + ECM_{t-1} + \mu_t \quad (2)$$

In addition, we examine the impact of shocks in the system adopting the impulse response function and the variance decomposition error.

IV. EMPIRICAL RESULTS

Table 2: Summary of Statistics of the Variables used in the Regression Analysis

	Mean	Median	Maximum	Minimum	Std.Dev.	Obs
LGDP	11.12829	11.09621	11.3797	10.89509	0.12569	37
LFD	0.111193	0.066115	0.50274	-0.37609	0.182012	37
LGCONS	10.29901	9.966142	12.00134	8.763428	0.971469	37
LINV	10.59633	10.62313	11.11388	10.14962	0.245165	37
LGEXP	10.67595	10.44326	12.26543	8.95612	1.019011	37
LTB	-0.02962	0.058515	0.194715	-0.49138	0.192021	37

Source: Author's computation with data from CBN Statistical Bulletin using Econometric views

The characteristics of the data series used in the regression analysis are presented in Table 2. The table reports the summary of statistics used in the analysis. It provides information about the means and standard deviations of the main variables. The mean value of log of Gross Domestic Product is 0.12829 while the mean of the log of fiscal deficit and investment stood at 0.111 and 10.59633 respectively.

Table 3: Table of Observed Result of the Augmented Dickey Fuller test (ADF)*

VARIABLES	LEVEL		FIRST DIFFERENCE	
	Model 1	Model 2	Model 1	Model 2
LFD	-3.20642	-4.67947	-5.84943	-5.86981
LGCONS	0.149152	-1.39162	-5.12945	-5.04648
LGDP	-0.71521	-1.82668	-5.97603	-5.92072
LGEXP	-0.77383	-4.30895	-7.14852	-7.07677
LINV	-1.43743	-1.22452	-4.01566	-3.98471
LTB	-1.83802	-2.08306	-5.20265	-5.1498

*The Null Hypothesis is the presence of unit root. Model 1 includes a constant while model 2 includes a constant and a linear time trend. Lags were selected based on Schwarz Information Criterion. *, **, *** indicate significance at 1%, 5%, and 10% respectively.

The variables for our analysis were subjected to two types of unit roots test to determine whether they are unit roots or stationary series. The tests employed were the Augmented Dickey Fuller test (ADF) and the Phillips-Perron test (PP) test. For the ADF and PP tests, two models are considered viz, with constant, with time trend. The null in both the ADF and PP test is the presence of unit root.

The ADF results in Table 3 reports that all of the variables are integrated of order one in the two models of unit root test considered. One interesting feature noted in the results was that all the variables were stationary in model with constant as well as constant and linear time trend at the first difference level. However, the log of the gross domestic product (LGDP) is not significant in the ADF models that include a constant and time trend, and with neither constant nor time trend but it is significant in the models that include only constant in first difference.

Table 4: Table of Observed Result of the Phillips-Perron Test (PP)*

VARIABLES	LEVEL		FIRST DIFFERENCE	
	Model 1	Model 2	Model 1	Model 2
LFD	-3.17008	-4.54522	-13.1983	-14.133
LGCONS	0.073099	-1.6722	-5.15092	-5.07216
LGDP	-0.78224	-2.17373	-5.98407	-5.92585
LGEXP	-0.66233	-2.14895	-7.12546	-7.05476
LINV	-1.31499	-1.68372	-3.98715	-3.94437
LTB	-1.95716	-2.15896	-5.21298	-5.1498

The Null Hypothesis is the presence of unit root. Model 1 includes a constant, Model 2 includes a constant and a linear time trend while Model 3 includes neither in the test regression as exogenous. The Bandwith was chosen using Newey-West method with Barttlet Kernel spectral estimation, **, *** indicate significance at 1%, 5%, and 10% respectively.

The PP test statistics reported in Table 4 reinforces the result in the model that include only constant in the ADF test and also supported those models that include a constant and a linear time trend. The PP test supports the presence of unit roots in the series. It is evident from Table 3 and 4 that the variables become stationary series

when appropriately differenced. From the two types of integration tests carried out (above), it could be concluded that that all the variables in our model contains unit roots. Therefore, we can safely proceed to use the co-integration method in analyzing our models as conventional regression model will generate spurious results due to the integration level of the series. Following the findings that the data series are by nature, mostly non-stationary stochastic processes, econometric developments regarding the concepts of cointegration are particularly opposite in testing for equilibrium. Accordingly, the long run properties of the variables in the behavioural equation were examined using the Engle-Granger two-step procedure.

Table 5: Table of Observed Result of the Unit Root Test of Residual of ECM of variables

Equation	Augmented Dickey Fuller Test	Phillips-Perron test
Gross Domestic Product Equation	-5.8679	-6.1601

Note: (1) Lags were selected based on Schwarz Information Criterion in the ADF test (2) The Bandwith was chosen using Newey-West method with Barttlet Kernel spectral estimation in the Phillip-Perron test (3) *, **, *** indicate significance at 1%, 5%, and 10% respectively.

Presented in Table 5 is the result of the unit root test of the residual of the static long run model. The regression residual have zero mean, and as they are not expected to have deterministic trend, the unit root exercise were conducted by excluding both the models that includes constant and constant with time trend. The ADF test statistics and the Phillip-Perron statistics suggest that the disequilibrium error is mostly I(0), and as such, the variables in the static equation are cointegrated.

Table 6: Table of Observed Result of the Johansen Multivariate Cointegration Test Results for the Gross Domestic Product Equation

Sample(adjusted): 1972 2006				
Included observations: 35 after adjusting endpoints				
Trend assumption: Linear deterministic trend (restricted)				
Series: LGDP LINV LGCONS LGEXP LTB LFD				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test				
Hypothesized		Trace	5 Percent	1 Percent
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None **	0.769566	133.4967	114.9	124.75
At most 1	0.565967	82.12407	87.31	96.58
At most 2	0.519812	52.91185	62.99	70.05
At most 3	0.305952	27.23663	42.44	48.45
At most 4	0.251586	14.45413	25.32	30.45
***(**) denotes rejection of the hypothesis at the 5%(1%) level**				
Trace test indicates 1 cointegrating equation(s) at both 5% and 1% levels				
Hypothesized		Max-Eigen	5 Percent	1 Percent
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None **	0.769566	51.37268	43.97	49.51
At most 1	0.565967	29.21222	37.52	42.36
At most 2	0.519812	25.67522	31.46	36.65
At most 3	0.305952	12.7825	25.54	30.34
At most 4	0.115892	4.311159	12.25	16.26
***(**) denotes rejection of the hypothesis at the 5%(1%) level**				
Max-eigenvalue test indicates 1 cointegrating equation(s) at both 5% and 1% levels				

Source: Author's Computation from cointegration test using Econometric views.

In view of the problems with the Engle-Granger framework for testing cointegration, the results were validated using the Johansen (1991, 1995) approach. This framework provides the number of cointegrating equations and estimates of all cointegrating vectors in the multivariate case. The Johansen cointegration test results are contained in Table 6. The trace test and the max-eigen test were conducted to establish the number of cointegrating relations in each of the equations. The trace result results are presented in the first part of the table while the max-eigen results were presented in the second part of the table. Test results indicate the existence of one cointegrating relationship in the equations at the 1% and 5% significance levels. In addition, the normalized cointegrating coefficients show that the variables in the equation are relatively important. The consistency in the test results confirms the existence of long run relationship among the exogenous and dependent variables in the model.

As the data series are non-stationary and the vector of variables in the equation appear to be cointegrated, execution of the second phase of the Engle-Granger technique led to the estimation of error-correction forms of the stochastic equation. The equation represents the short-run behaviour and the adjustment to the long run model. The residual from the cointegrating regression lagged one period was used as error correction mechanism in the dynamic equation. The Ordinary Least Squares (OLS) estimation method was used as it is an essential component of most other estimation techniques. In addition, the OLS remains one of the most commonly used methods in econometric investigations involving large models. Estimates of the specification obtained using general-to-specific method are presented in Table 7 and discussed below. The results were evaluated using conventional diagnostic tests.

The general discussion of the error correction model is useful here. All the diagnostic test statistics are quite satisfactory. The magnitude of the coefficients confirms the absence of redundant regressors. Judged by the significance of the t-statistics, the coefficients are well determined. The disequilibrium error term, ECM_{t-1}, is statistically significant and negative (as expected) in all the equations. The significance of the error term confirms the existence of long run relationship between the variables in the error correction models. Of particular interest is the coefficient on the lagged ECM in the gross domestic product equation. The ECM induces about 92.7% adjustment per period in this equation. In addition, the equation is statistically significant and the overall statistical fit is good. The marginal significance level of the F-statistics is zero. Hence, the null hypothesis of the F-statistics is rejected for all choices of significance level. Therefore, the conclusion is that, as groups, the regression coefficients are significantly different from zero. The high value of the Durbin-Watson (DW) indicates absence of autocorrelation. Finally, the relatively low value of the standard error of the regressions is a clear evidence of the goodness of fit of the equation.

Table 7: Parsimonious Model of Gross Domestic Product Equation

Dependent Variable: D(LGDP)				
Method: Least Squares				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009697	0.004059	2.389233	0.0274
D(LINV(-3))	0.119838	0.029257	4.096055	0.0006
D(LGCONS)	-0.099619	0.024541	-4.059283	0.0007
D(LGCONS(-1))	-0.092221	0.020730	-4.448592	0.0003
D(LGCONS(-2))	-0.047764	0.026090	-1.830713	0.0829
D(LGEXP)	0.062650	0.020346	3.079219	0.0062
D(LGEXP(-2))	0.056874	0.020066	2.834343	0.0106
D(LTB)	0.084949	0.022742	3.735393	0.0014

D(LTB(-2))	0.079466	0.023383	3.398396	0.0030
D(LFD(-1))	-0.023333	0.013923	-1.675858	0.1001
D(LFD(-3))	-0.028066	0.014514	-1.933768	0.0682
D(LGDP(-1))	0.498883	0.144816	3.444932	0.0027
D(LGDP(-3))	0.373892	0.096767	3.863826	0.0010
ECM8(-1)	-0.927991	0.225775	-5.668983	0.0000
R-squared	0.876077	Mean dependent var		0.010980
Adjusted R-squared	0.791288	S.D. dependent var		0.024388
S.E. of regression	0.011142	Akaike info criterion		-5.859810
Sum squared resid	0.002359	Schwarz criterion		-5.224928
Log likelihood	110.6869	Durbin-Watson stat		2.561233
F-statistic	10.33243			
Prob(F-statistic)	0.000005			

Source: Regression results from analysis using Econometric views.

The economic growth equation in Table 7 has statistically significant coefficients for investment, consumption, government expenditure, trade balance, fiscal deficit and the past levels of economic growth. Evidently, estimates from the error correction model reveal that investment in the third period lag has a positive and significant effect on economic growth in Nigeria. For example, a 1% increase in investment has about 0.11% increase in economic growth in Nigeria. Against a priori expectation, government consumption was found to affect income negatively although statistically significant. The trade balance variable was also found to be positive and statistically significant. Fiscal deficit was however found to affect national income negatively. This is however with an adjustment lag in the system. By way of illustration, a 1% increase in fiscal deficit is capable of dampening national income by about 0.023%. This result is consistent with Gemmel (2001), which revealed significantly negative effect between fiscal deficit and economic growth. The error correction estimate of 0.927 indicates that 92.7% of the preceding period's disequilibrium is eliminated in the current period, with immediate adjustments captured by the difference terms. The value of the adjusted R^2 shows that the model accounts for at least 79.12% changes in economic growth.

Variance Decomposition Analysis and Impulse Response

Additional insights on the causal relationship between fiscal deficits and economic growth are obtained by analyzing the variance decomposition and impulse response function of the VECM. In this manner, a shock to any one of the variables considered in the VECM not only affects the variables directly, but is also transmitted to other endogenous variables via the dynamic lag structure of the VECM. Thus, the variance decomposition provides information about the relative importance of each random shock to the endogenous variables in the VECM. Within a VAR system it provides the proportion of the movement in the dependent variables that is due to their own shocks versus shocks to the other variables in the system. Shocks to an individual variable can, of course, generate variations in both itself and other variables. Forecast error variance decomposition identifies the relative importance of these affects, and the impulse response figures can trace out the dynamic responses of the variables to these shocks.

Table 8 presents the results of the variance decomposition estimations over a 10 year period. The results of the variance decomposition of GDP, INV, GCONS, GEXP, TB and FD for h – step ahead forecast errors are

produced by their innovation. Trade balance explains about 36.2% of the variations in the economic growth in the 10th period. This is followed by the repeat GDP which explained about 34.3% of future changes in GDP. However, about 15.7% of future changes in GDP is explained by investment. Government consumption explained about 4.7% of future changes while fiscal deficit only explained 1.42% of changes in the 10th period.

Table 8: Variance Decomposition of Gross Domestic Product Equation

Period	S.E.	LGDP	LINV	LGCONS	LGEXP	LTB	LFD
1	0.021274	100	0	0	0	0	0
2	0.029384	81.17064	3.195735	3.256419	1.597389	6.592067	4.187746
3	0.03267	77.42961	3.426601	2.720296	1.299508	11.57981	3.544168
4	0.036254	71.03933	2.788783	2.21345	1.200092	19.8754	2.882942
5	0.039326	63.94967	2.559389	2.066129	1.228571	27.57193	2.624313
6	0.042151	56.59018	3.411724	2.187814	1.713422	33.70649	2.390369
7	0.045104	49.56962	5.514827	2.63683	2.789247	37.3857	2.103769
8	0.048241	43.34576	8.510073	3.226222	4.221357	38.85342	1.843171
9	0.05157	38.24508	12.03548	3.930959	5.904012	38.27163	1.612835
10	0.055101	34.3086	15.68602	4.671462	7.68562	36.22926	1.419031

Although variance decomposition shows the importance of a variable to movements in another variable, the direction of these movements can only be discerned from the impulse functions. These are represented by the solid lines in the graph. Thus, it is possible to see whether an impulse in a variable leads to a fall or rise in the other variables. Government consumption, government expenditure, trade balance and fiscal deficit generate positive responses initially but the responses started declining on the gross domestic product as evidenced in the variance decomposition error result. Investment however generates negative impulses starting from the third period.

IV. CONCLUSION

The purpose of this study was to determine the effect of fiscal deficits on economic growth in Nigeria during the period, 1970-2006. After establishing the unit root status of the variables in the structural equation and the existence of cointegration, the OLS two-stage approach, as suggested by Engle Granger (1987), was utilized in deriving the long-run and short-run estimates. The structural analysis was done using the Impulse Response Analysis and Forecast Error Variance Decomposition to trace the one-time shock to one of the innovations in the current and future values of the endogenous variables.

Empirical evidence shows that fiscal deficit affects economic growth negatively. This is however with an adjustment lag in the system. It is shown that a 1 percent increase in fiscal deficit is capable of dampening economic growth by about 0.023%. This result is consistent with prior studies (see, for example, Gummel, 2001). Also government consumption expenditure was also found to affect economic growth negatively.

The findings of this study present policy implications for Nigerian policy makers as they grapple with the problems of macroeconomic instability and deficit financing. The study has shown that monetary stimulation does not and cannot support long term sustainable development. It favours a few in the short run and damages the enterprise of many over the long period. Monetary stimulation provides a conduit pipe for corruption and, to a large extent, weakens the separation of powers that is constitutionally necessary for good governance in Nigeria. It is really difficult to stop because even the public is not much bothered as long as the deficits are not financed directly through increased taxes. Consequently, increased taxes could be an alternative way of financing deficits in Nigeria. The need to sustain and deepen current efforts of engendering fiscal discipline in Nigeria and de-emphasizing monetary financing of government fiscal deficits cannot be over-emphasized.

Accordingly, a credible programme of expenditure reductions that would keep government spending at sustainable limits is imperative. Finally, government spending should be done with due regard to resource availability, as the price of oil, Nigeria's major revenue earner, is volatile and prone to the vagaries of the international market.

IMPULSE RESPONSE GRAPH

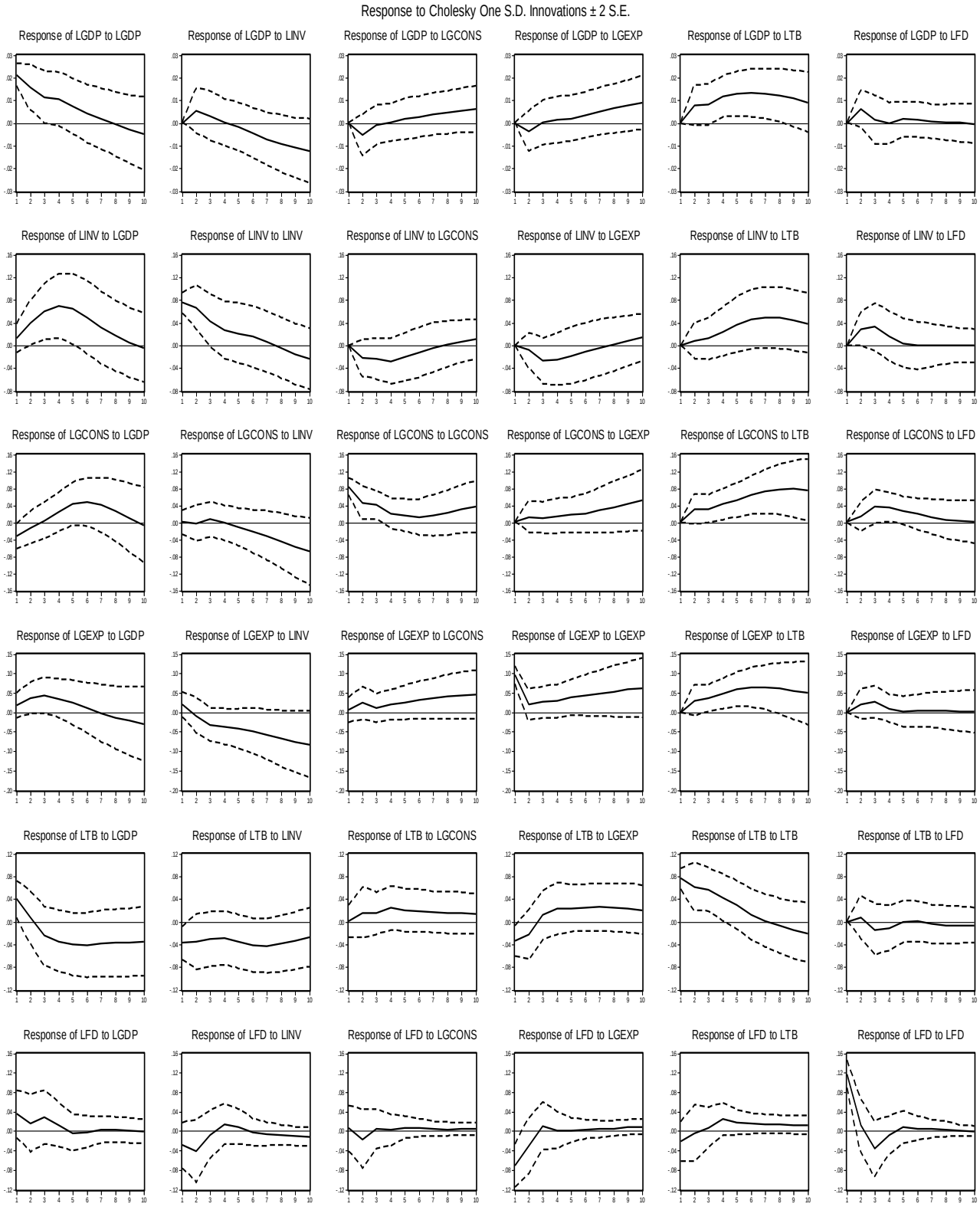

Figure 4.8: Accumulated impulse response functions for the gross domestic product equation. The dashed lines are 95% bootstrap confidence bounds.

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