

Structural Break Analysis of Budgetary Operations on Nigeria Economy

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Abstract

As important as air; so very vital to the survival of the rural poor and national development to improve life and quality of live and survive is the extent of budgetary operations and its implementation in Nigeria. This paper examined the structural break analysis of the budgetary operations and the degree of economic development in Nigeria between the years 1961 to 2009. The data were secondarily generated from the CBN statistical bulletin. Analysis shows that there is a significant relationship between budgetary operations and economic development in the structural break year in directional form with low record of the magnitude of ADM, TRF and TRF while very high magnitude of direct relationship was felt in the year between 1985 -2009.

Keywords: GDP, E-Views, Causality test, Budgetary, Break

1.0 Introduction

Nigeria has the third largest GDP apart from South Africa and Algeria in Africa. However, in spite of the huge potentials, including human and material resources, Nigeria has experience a prolong period of economic stagnation. The key challenges of macro economy management was to designed public policy formulation and implementation framework in line with the basic need of domestic economy necessitating embankment of economic policy short term plan i.e. the budget. In order to meet with the social and political commitment for economic development, government has at various times adopted expansionary policy resulting in large budgetary expenditure, increase domestic prices and consequent balance of payment deficit. Between 1994 and 2005, federal government expenditure rose from N487,113.4m to N1,822.1b while revenue was from N463,608.8m to N5,547..5b (CBN statistic bulletin, 2005). During this period also, inflationary rate staggered between 57.0% and 17.9% while unemployment registered was from 72,277 to 315,226 and the balance of payment from N42, 643.3m to N1, 364,845.5m. An identified approach through which government budget affect a nations macro economy is the monetarist which emphasized the liquidity impact of the budget with respect to government operations.

Larosiere (2000) argued that “borrowing from the domestic monetary system has brought about distortion in the domestic economy and put pressure on the balance of payment leading to external debt. He argued further that such policy far from alleviating the internal and eternal difficulties aggravate the inflationary, unemployment and the balance of payment through the expansion of domestic credit and money supply”. However, the questions this paper seeks to answer are: How has the budget reduce the volatility in the macro economy? Does the budget have an impact on macro-economic objectives of government? Does policy or other factors affect the growth of budgetary operation over the years? The objective of the paper is to empirically investigate the relationship between budgetary operation and economic growth in Nigeria. If there is any link between government budget and macro-economic index i.e. Services (Administration, Social and Economic), Total Fund Transfer and GDP.

2.0 Theoretical Framework

There are numbers of economic objectives which a government of any nation pursued. While some of the objectives may be conflicting, however, there is the general agreement as to the desirability of achieving specific objectives for macro-economic variables. The macro-economic objective which a government pursues includes; price stability, full services, equilibrium in fund transfer and economic growth (Nzotta, S.M. 2004). all of this could be achieved through an economic plan i.e. the budget. Nwanna, Alade, Odoko (2003) observed that financing high budget deficit by excessive borrowing from the banking system have resulted in high monetary expansion, high inflationary pressure, deterioration in the balance of payment, sluggish and negative growth, high interest rate and unemployment. Agosto (2005) argued that “lower deficit and low government borrowing will slow down monetary growth which will result in lower inflation, lower interest rate, stable exchange rate, strong current account balance and a high foreign reserve” and creating negative effect on the budgetary operation in social, economic and

administrative services that will in turn slow down the pace of growth in the country of study.

Soludo (2003) observe that “the size of consolidated public sector spending has grown from about 15% of GDP in 1970 to over 50% in 2001. He further said that given the size of the public sector, and the private sector depends largely on the public sector, the annual budget is therefore a decisive policy document that would lay a solid foundation and growth enhancing economy in which unemployment and poverty will be reduced and inflation maintained at single digit”.

Babalola (2007) states that; “improved implementation of budget, fiscal and monetary policies will enhance a stable macro-economic environment”.

3.0 Trends and Structure of Government Revenue

The non oil revenue sources dominated government revenue in 1960s. Between 1980 and 1989 government revenue as a proportion of GDP average 22%. This is a result of increase in oil revenue which average 62.2% of the total revenue. The depreciation of the exchange rate and the dual exchange rate also increased the naira earnings from oil revenue which are usually quoted in US dollars. Consequently, in 1990s, federally collected revenue increased substantially to an average of 26.8% of GDP and the contribution of oil revenue increased to an average of 73.2% of all revenue during the period.

Total revenue collected in 2000 and 2005 increased tremendously to 38.8% of GDP as oil contributed 79.7% to total revenue during the period. Although, revenue from non oil sources between 1980 and 2005, recorded a substantial increase in absolute term, its relative contribution to total revenue was not impressive as it 37.8% in the 1980s declined to 20.3% by 2005.

Table 1: Revenue Accruing to Government 1980-2009

Years	Oil % of total	Revenue % of GDP	Non oil % of total	Revenue % of GDP	Total Rev. % of GDP
1980-89	68.2	16.1	37.8	6.9	22.0
1990-94	78.0	24.7	22.0	7.3	32.0
1995-99	68.3	14.8	31.7	6.8	21.6
2000-2005	79.7	30.9	20.3	7.9	38.8
2006-2009	73.5	21.6	27.9	7.2	28.6

Source: *CBN statistical bulletin and CBN annual reports and statement of account (various issues)*

3.1 The Trend and Structure of Government Expenditure

Government expenditure had oscillated between 30.2 and 22.5% of GDP during the 1990-94 and 1995-1999 period respectively but rose to 27.8% of GDP in 2005. Recurrent expenditure during the period under review accounted for an average of 54.7% of total or 12.8% of GDP while the average share of capital expenditure was 45.6% of total expenditure or 10.6% of GDP during the period. See table 2. The high share of recurrent expenditure during the period was attributed to such factors as inflationary pressure, expansion of the public service, the implementation of the democratic process, increased domestic and foreign debt service (interest payment only) and the increase in salaries and allowances of civil servants.

A clear implication of this pattern of expenditure is that a large proportion of government spending is on recurrent expenditure, particularly, debt service payments. This partly explains the decline in the country social and economic infrastructure thus leading to poor economic growth Nzotta, S.M. (2004).

Table 2: Total Government as a Percentage of Total GDP 1990-2005

Year	Recurrent		Capital		Total GDP
	Total	GDP	Total	GDP	
1990-1994	56.1	16.9	43.3	13.3	30.2
1995-1999	45.9	11.5	54.1	12.0	22.5
2000-2005	60.6	10.1	39.4	6.5	27.8
2006-2009	54.7	12.8	45.6	10.6	26.8

Source: *CBN statistical bulletin and CBN annual reports and statement of account (various issues)*

3.2 Financing Budget Deficits: Macro-Economic Implication

Given the volatile revenue base and spiral in government expenditure (year under review) the occurrence of

deficit in 11 out of 12 years was probably inevitable. Nwanna et al (2000) opined that “certain level of fiscal deficits may be considered essentially in the development process, but observed that the level, magnitude and methods of financing have tended to produce and perpetuate macroeconomic imbalance”. Result show that financing high deficit through borrowing from the banking system have resulted in high monetary expansion, high inflationary rate, deterioration in the balance of payments and high unemployment.

Between 1990 and 2000, commercial bank funding accounted for an average of 60.7% of total deficit financing between 2001 and 2005, the pattern worsen and with the banking system funding an average of 94.1% and the CBN alone accounting for 87.1% of total deficit financing. During the period, the non bank public finance fluctuates from 2.8% in 1991 to 44.9% in 2005. Comparatively, foreign sources provided an average of 14.1% between 1991 and 2005 (CBN 2005).

3.3 Result of Fiscal Operation of the Government Sector

The fiscal operations of the government sector in Nigeria have resulted in deficit in 11 out of 12 years under review (1994-2005). The deficits have ranged from 0.8% of GDP to 24.9% of GDP and were mainly incurred by the federal government (CBN 2000). The deficits of the government sector have been attributed to the need for massive investment in development projects and to the decline in revenue due to fluctuation in crude oil prices. Despite this, the economy has been trapped in low savings- low investment equilibrium, with excess capacity and massive unemployment. Imports are dominated by consumer goods and raw materials underscoring the uncompetitive domestic production. More fundamentally, performance has been characterized by atypical volatility of major macroeconomic aggregates.

The oil sector contributes 95% of foreign exchange earning and over 60% of government revenue. The cycle of boom and burst has been fuelled by oil price shocks and the government has not quite learnt how to manage these shocks. Positive shock is treated as if it is permanent while negative shock is treated as if it is though they are temporary. With each positive shock government ratchet up spending in tandem with revenue inflows, while negative shock elicit austerity measures but more often a resort to public borrowing Malik, S., Hayat, M.K. and Hayat, M.U. (2010).

The government in 1997 to 2003 embarks on huge public sector investment designed to address years of infrastructure decay. In year 2001, the government budget envisages an even greater public capital expenditure outlay than in 2000 (about 50% increase over the 2000 and about 250% over the 1999 level). However, the introduction of the various procurement rules and value for money audits of capital projects helped to slow down capital spending and also avoid waste.

3.4 Macroeconomic Policy and Stability

Soludo (2000) observed that “a major part of Nigeria’s economic stagnation is the mismanagement of its macroeconomic policy”. Some of the major themes in the country’s macroeconomic policy stance such as volatility in monetary, fiscal policy design and implementation, frequent policy reversals and weak institutional capacity for economic policy coordination and governance are also similar to the issue pertaining to the structure of income and production. Inflationary rate has been so high in Nigeria. The rate has continued to fluctuate rising from 9.9% in 1980 to 39.6% in 1984 falling to 5.4% in 1986. It got to an all high rate of 72.8% in 1995, fell to 6.9% in 2000 but rose to 17.9% in 2005.

The rate of registered unemployment has been increasing from 11,273 in 1970 to an all high rate of 256,632 in 1980; it thereafter fell to 72,277 in 1994 but rose again to 318,308 in 2005 and risen grossly to 519,30 in 2008. This agree with Kumar, M.S. and Woo, J. (2010) that the balance of payment was in deficit in 1994 of N42, 623.3m and to N220, 675.1m in 1998. In 2000 the balance of payment recorded a surplus of N354, 139.2m and then fell to N24, 738.7m in 2001. It stood at N1, 364,845.5m in 2005 (Table 3) and the reason for this could be as a result of government effort in encouraging agricultural production for export and increase in the revenue from oil.

The pattern of government expenditure is that a large proportion of spending on recurrent expenditure particularly debt service payments (period of review) explain the rapid decline in the country social and economic infrastructure. Moreover, the growing recurrent expenditure has contributed significantly to the poor economic growth. Although several efforts have been made authors to evaluate this acclaimed fact over the years little did they do on the root causes of the imbalance in the budgetary operations as regards economic growth in Nigeria? As a result of this gap in literature, the researchers study the policy or other remote factors that may result to break in the structure of budgetary operations over the years under study with regards to military and democratic era of governances in

Nigeria.

4.0 Methodology

4.1 Model specification and analysis

It is important to explain the model specifications for the research empirical analysis with the specified functions and models to guide the reader of this study.

SECS= f(Social + Economic Services)

ASECS= Aggregate of SECS

ADM= Administration

TRF= Total Fund Transfer

Government Budgetary Operation = f(ASECS, ADM, TRF)

GDP= Economic Growth Measure

4.2 The Model

$$GDP = f(ADM, ASECS, TRF) \tag{1}$$

$$GDP = \alpha_0 + \alpha_1 ADM + \alpha_2 ASECS + \alpha_3 TRF + \varepsilon$$

where $\alpha_1 < 0, \alpha_2 > 0$ and $\alpha_3 < 0$, α_i is the regression coefficients, α_0 is constant and ε is the error term.

4.3 Scope

The research covers the period between 1961-2009 and data were obtained from the CBN bulletin. The explanatory variables would be estimated using various econometrics techniques. The analysis is done electronically with help of econometric. E-view is used to test and conduct the empirical analysis OLS and Granger Causality to evaluate the structural break relationship and effect from 1961 to 1984 and 1985 to 2009.

4.4 Hypothesis

Hypotheses for the research study are formulated as:

Ho1: there is no significant relationship between government budgetary operation and Economic growth.

Ho2: there is no structural break in the government budgetary operation and Economic growth.

5.0 Result of Data Analysis

Table3: OLS Result Output

Dependent Variable: GDP

Method: Least Squares

Date: 06/20/12 Time: 00:09

Sample: 1961 1984

Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ADM	0.077222	0.033563	2.300844	0.0323
ASECS	1.412061	0.718175	1.966180	0.0633
TRF	0.001729	0.000619	2.793471	0.0112
C	69.33483	42.31293	1.638621	0.1169
R-squared	0.902804	Mean dependent var		395.4483
Adjusted R-squared	0.888225	S.D. dependent var		352.8705
S.E. of regression	117.9745	Akaike info criterion		12.52983
Sum squared resid	278359.7	Schwarz criterion		12.72617
Log likelihood	-146.3579	F-statistic		61.92337

Durbin-Watson stat 0.835056 Prob(F-statistic) 0.000000

Source: E-Views 4.1 version

Estimation Command:

=====
 LS GDP ADM ASECS TRF C

Estimation Equation:

=====
 GDP = C(1)*ADM + C(2)*ASECS + C(3)*TRF + C(4)

Substituted Coefficients:

=====
 GDP = 0.07722244368*ADM + 1.412060946*ASECS + 0.001728840715*TRF + 69.33483019

Source: E-Views 4.1 version

The Anova result of the regression output showed that all budgetary variables of measure (ASECS, ADM and TRF) are statistically significant to GDP as the F-stat Prob. Value (0.0000) is less than the critical value at 5% level. The individual variables significance are tested using the associated probability of **ADM**, **ASECS** and **TRF** are all greater than 1%, 5% and 10% respectively. This result showed that ADM, ASECS and TRF are not statistically significant to GDP in the year 1961 to 1983. The direction of the relationship which is based on sign indicated that there is direct relationship among ADM, ASECS, TRF and the GDP. The magnitude of the relationship of GDP to the ADM, ASECS and TRF is measured using the partial change in the independent variables using the values of the regression coefficients multiplying by 100. Therefore, the estimate model show that a unit change or rise in ADM, ASECS and TRF will result in 7.72%, 14.1% and 0.1% increase in the GDP. To adjudge the accuracy of the model fit of the analysis, the R-square value (0.9023) 90.2% degree of accuracy. The coefficient of variability is the adjusted R-square is 0.88867 which indicate that the variation in GDP is capable of being explained by the independent variables- ADM, ASECS and TRF at 88.9% while 11.1% is unexplainable as result of certain factors such as political, social and economic factors or error due to other uncontrollable factors.

Table4: OLS Result Output

Dependent Variable: GDP

Method: Least Squares

Date: 06/20/12 Time: 00:15

Sample: 1985 2009

Included observations: 25

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ADM	0.155243	0.034113	4.550797	0.0002
ASECS	0.893713	0.189292	4.721352	0.0001
TRF	0.745771	0.109685	6.799215	0.0000
C	-187514.7	26450.49	-7.089273	0.0000
R-squared	0.999647	Mean dependent var		501137.2
Adjusted R-squared	0.999597	S.D. dependent var		1715066.
S.E. of regression	34429.83	Akaike info criterion		23.87688
Sum squared resid	2.49E+10	Schwarz criterion		24.07190
Log likelihood	-294.4610	F-statistic		19843.99
Durbin-Watson stat	1.373903	Prob(F-statistic)		0.000000

Source: E-Views 4.1 version

Estimation Command:

=====
 LS GDP ADM ASECS TRF C

Estimation Equation:

$$GDP = C(1)*ADM + C(2)*ASECS + C(3)*TRF + C(4)$$

Substituted Coefficients:

$$GDP = 0.1552430635*ADM + 0.8937128321*ASECS + 0.7457709539*TRF - 187514.7295$$

Source: E-Views 4.1 version

From the structural break occasion by change in power and subsequently military rule Nigeria witness changes hence between 1984-2009, the individual variables significance are tested using the probability associated with **ADM**, **ASECS** and **TRF** are less than 5%. This result showed that ADM, ASECS and TRF are statistically significant to GDP in the year 1985 to 2009. The Anova result of the regression output showed that all budgetary variables of measure (ASECS, ADM and TRF) are statistically significant to GDP as the F-stat Prob. Value (0.0000) is less than the critical value at 5% level. In addition, the individual variables significance are tested using the associated probability of **ADM**, **ASECS** and **TRF** which are all less 5%. This result showed that ADM, ASECS and TRF are statistically significant to GDP in the year 1985 to 2007. The direction of the relationship which is based on sign indicated that there is direct relationship among ADM, ASECS, TRF and the GDP. The magnitude of the relationship of GDP to the ADM, ASECS and TRF is measured using the partial change in the independent variables using the values of the regression coefficients multiplying by 100. Therefore, the estimate model show that a unit change or rise in ADM, ASECS and TRF will result in 15.5%, 89.3% and 74.5% increase in the GDP.

To adjudge the accuracy of the model fit of the analysis, the R-square value (0.9996) 100% degree of accuracy. The coefficient of variability is the adjusted R-square is 0.9996 which indicate that the variation in GDP is capable of being explained by the independent variables- ADM, ASECS and TRF at 99.9% while 0.1% is unexplainable as result of certain factors such as political, social and economic factors or error due to other uncontrollable factors.

Table 5: Impact Analysis
Pairwise Granger Causality Tests
Date: 06/20/12 Time: 00:18
Sample: 1961 1984
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
ADM does not Granger Cause GDP	22	0.39250	0.68133
GDP does not Granger Cause ADM		0.12046	0.88726
ASECS does not Granger Cause GDP	22	1.34479	0.28695
GDP does not Granger Cause ASECS		1.78175	0.19838
TRF does not Granger Cause GDP	22	0.35231	0.70807
GDP does not Granger Cause TRF		1.06131	0.36784

Source: E-Views 4.1 version

From the causality test result above, the probability of the F-stat for all the interacted variables are greater than the 5% level of significance which therefore indicated that independent variables and dependent variable in 1961 to 1984 do not granger causes each other. It suffice to say that there was remarkable impact of economic growth in Nigeria.

Table6: Impact Analysis
Granger Causality Tests
Date: 06/20/12 Time: 00:20
Sample: 1985 2009
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
ADM does not Granger Cause GDP	23	5.47365	0.01390

GDP does not Granger Cause ADM		4.46725	0.02659
ASECS does not Granger Cause GDP	23	7.65295	0.00393
GDP does not Granger Cause ASECS		0.41940	0.66370
TRF does not Granger Cause GDP	23	3.44112	0.05426
GDP does not Granger Cause TRF		5.95119	0.01038

Source: E-Views 4.1 version

However, the reversal of the impact was felt in the early 1985 to 2009 as there were granger causality effect among the variables and the dependent variables. ADM and GDP granger causes each other, ASECS granger causes GDP but GDP has no effect on the ASECS. TRF does not granger causes GDP but GDP does granger cause TRF. TRF granger causes ADM while ASECS does granger cause TRF. ADM and ASECS do not granger cause each other.

6.0 Conclusion

The budgetary operations in Nigeria have been dependent on oil revenue which produces cycle of boom and burst. Government increase in budget deficits experienced during the period of review result from government huge investment in infrastructures of development which had been left to decay by successive military regimes. Analysis shows that there is a significant relationship between budgetary operations and economic development in the structural break year in directional form with low record of the magnitude of ADM, TRF and TRF while very high magnitude of direct relationship was felt in the year between 1985 -2009. Although, there is overall significant of ADM, ASECS and TRF to the GDP in the years of study, there is significance of the variables to the GDP in 1961 to 1983 but statistical significance was experience in 1985 to 2009 based on ADM, ASECS and TRF. However, economic variable and budgetary operations have contributed to the slow pace of economic growth in Nigeria as a result of poor data bank and school of economics.

Recommendations

1. Government should maintain low deficits with little or no borrowing to finance it through the proper and direct management of the accrued revenue from the sectors they expend budget on their operations.
2. There should be lower result in lower inflation, unemployment and strong balance of payment to attain stronger and reliable economic stability.
3. Government should set out achievable target rate which shall prevent revenue volatility from budget overrun and establish policy survival in terms of governance in Nigeria irrespective of successions in the government.

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