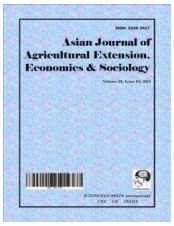

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Fiscal Policy: Nigerian Experiences from 1960-2012

I. M. Shuaib[1*], Ekeria O. Augustine[1] and Ogedengbe A. Frank[1]

[1]Department of Business Administration and Management, Federal Polytechnic, Auchi, Nigeria.

Authors' contributions

This work was carried out in collaboration between these authors. Author EOA designed the study, wrote the introductory part of the paper, and the literature review. Author OAF designed the theoretical framework of this paper upon we designed the model for the paper, and author IMS designed the variables that formed the model for the study, tested the formulated model by using the RGDP as the dependent variable and INV, INTR, INFL, EXCH, CA as the independent variables. To run the econometric analysis, Eview 7.2 statistical windows was employed, which enabled us to draw summary, and recommendations from the result findings. The authors read and approved the final manuscript.

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ABSTRACT

The paper examined the impact of fiscal policy on the growth of the Nigerian economy using time series data from 1960-2012. The study explored secondary data from the Central Bank Statistical Bulletin for the period of 1960 to 2012 and used various econometric analyses and/or statistical analytical (E-view 7.2) method to examine the relationship between fiscal policy and growth. The paper tested the stationarity—through Group unit root test, and stationarity found at first differenced at 5% level of significance. Factor method, Goodness-of- fit summary, VAR and its properties were tested. Also, the Co-integration Technique and Pairwise-Granger Causality were employed in this study to test and determine the long-run relationship among the variables examined. From the result of the empirical findings, it was discovered that fiscal policy has a direct relationship with growth. The paper however recommended that among others the government should ensure fiscal policy's effectiveness in such a way as achieving economic growth. Government should increase its aggregate expenditure such a way that the citizens will benefit from it. Government should

**Corresponding author: E-mail: almuhalim@yahoo.com, franklaba@yahoo.com;*

ensure that monetary policy is supplementary tool to fiscal policy in order to stabilize the economy. Government should ensure that inflation rate is maintained at single-digit level to enable the private investors to have conducive atmosphere for production of goods for export. Government should reduce the cost of domestic borrowing (i.e., interest rate) to enable both the domestic and foreign potential investors have an access to investible funds. Government should stabilize the foreign exchange market-where the foreign currencies are traded. Hence economic growth.

Keywords: Fiscal policy; exchange rate; inflation rate; growth.

1. INTRODUCTION

All the economies of the world have one fundamental objective on how to achieve economic growth and development. In this vein, Nigerian government had been striving on how to achieve economic growth and development. The structure of Nigerian economy has absolutely changed, which has landed the country into shocks and disturbances. In the early 50s and late 60s, Nigerian economy was relatively stable because the economy was based on agricultural sector, while in the early 1970s, the structure of the economy changed absolutely from agricultural sector to petroleum or crude oil sector, which has resulted to the fluctuations in Nigeria's Gross Domestic Product (GDP). From early 70s till now, Nigerian economy has witnessed various degrees of shocks and disturbances both internally and externally [1,2,3]. Internally, the unstable investment and consumption patterns as well as the improper implementation of public policies, changes in future expectations and the accelerator are some of the factors responsible for it. Similarly, the external factors identified are wars, revolutions, population growth rates and migration, technological transfer and changes as well as the openness of the country's Nigerian economy are some of the factors responsible [2].

This cyclical fluctuation in the country's economic activities has an inverse relationship with growth and/or led to the periodical increase in the country's unemployment and inflation rates as well as the external sector disequilibria [4].

For this economic disequilibria to be restored, fiscal policy has to interplay [1,2]. Fiscal policy is one of major economic stabilization weapons that involves measure taken to regulate and control the volume, cost and availability as well as direction of money in an economy to achieve some specified macroeconomic policy objective and/or to counteract undesirable trends in the Nigerian economy. Therefore, these policies cannot be left to the market forces of demand and supply as well as other instruments of stabilization such as monetary and exchange rate policies among others, are used to counteract are problems identified [4,5]. Fiscal policy weapon comprises of: (i) increase (or decrease) in aggregate desired expenditure; (ii) Tax policy; and (iii) Budgetary Policy [6,7]. This may include either an increase or a decrease in taxes as well as government expenditures which constitute the bedrock of fiscal policy but in reality, government policy requires a mixture of both fiscal and monetary policy instruments to stabilize an economy because none of these single instruments can cure all the problems in an economy [5].

The Nigerian economy started experiencing recession from early 1980s that leads to a depression in the mid 1980s. This depression continued until early 1990s without recovering from it, which led to the introduction of Structural Adjustment Programme SAP) in 1986. As such, the government continually initiated policy measures that would tackle and overcome the dwindling economy. Drawing the experience of the great depression of 1930s, government policy measure to curb the depression was in the form of increase government spending [8]. According to [9], the management of the Nigerian economy, the effort(s) to achieve macroeconomic stability has been unproductive and negative hence one cannot say that the Nigeria economy is performing. This is evidenced in the adverse inflationary trend, government fiscal policies, undulating foreign exchange rates, the fall and rise of gross domestic product, unfavourable balance of payments as well as increasing unemployment rates are all symptoms of growing macroeconomic instability. As such, the Nigerian economy is unable to function well in an environment where there is low capacity utilization attributed to shortage in foreign exchange as well as the volatile and unpredictable government policies in Nigeria [10].

In this paper, we shall discover the impact of fiscal policy on the Nigerian economy and how effective has been her attendants' weapon.

2. LITERATURE REVIEW

Over the years, there has been a strong increase in theoretical and empirical work on the dynamics of fiscal policy. Fiscal policy is undoubtedly one of the most important tools used by government to achieve macroeconomic stability of the economy of most developing countries [11]. Therefore, the attempt to empirically test the efficacy of monetary and fiscal policy in an economy dated back to the pioneering studies of [12] who empirically investigated the responsiveness of general price level on economic activity represented by aggregate consumption to change in money supply and autonomous government expenditure using ordinary simple linear regression model to estimate the US data from 1897-1957. In their conclusion, they found out that a stable and predictable casual relationship existed between demand and money supply while no such significant relationship was observed for government expenditure [13]. Hence, there was a stable aggregate and money supply for the period.

According to [14], in his article unit root of variables Dickey-Fuller (DF) test and Augment Dickey-Fuller (ADF) tests confirmed that the model assumed the irrelevance of anticipated monetary policy for short-run deviations of domestic output from its natural level. Therefore, only the unanticipated components of external price changes in the level of external economic activity leads to the deviation of domestic output from natural and observed that monetary tightening once anticipated in an economy would have no effect on real domestic output in the short-run. Also, [15] in his study of Nigeria's urban unemployment analyzed the monetary and fiscal policy on implication Nigeria's full employment level. However, on the other hand, all the fiscal variables significantly reduced unemployment in Nigeria. This except one was highly significant in reducing the level of unemployment generation in Nigeria than monetary policy measure [2,16,17].

For selected EU countries, [18] find that a government spending on innovation of GDP worsens the trade balance and appreciates real effective exchange rate concluding that the main short-term transmission channel upon impact is output, with the real exchange rate playing a greater role over longer horizons [19,20].

To analyze this issue on a set of countries using panel regressions some studies are done and find a statistically significant impact of fiscal variables on external imbalances. Most recent among these studies is by [21] examined the determinants of the current account for 135 countries during 1975-2004 using random effects GLS regressions, and report a positive association on the fiscal balance percent of GDP. Few studies are done to analyze this issue on a set of countries using panel regressions and find a statistically significant impact of fiscal variables on external imbalances [22,23].

[24] empirically investigated the effects of fiscal policy or government budget deficit shocks on the current account and the other macroeconomic variable: real output, real interest rate and exchange rate for Pakistan over the period 1960-2009. The structural Vector Autoregressive model is employed; the exogenous fiscal policy shocks are identified after controlling the business cycle effects on fiscal balances. The results suggested that an expansionary fiscal policy shock improves the current account and depreciates the exchange rate. The rise in private saving and the fall in investment contribute to the current account improvement while the exchange rate depreciates. The twin divergence of fiscal deficit and current account deficit is also explained by the output shock which seems to drive the current account movements and its co-movements with the fiscal balance which supports the Ricardian view.

According to [6,7], fiscal policy interplays in stabilization of the economic fisticuffs. Such as the correction of the aggregate desired expenditure through tax and budget policies to influence the direction of the aggregate consumption and / or investment. This expansionary / loose in turn causes a rightward shift in the AD curve. By a synonymous argument, a decrease in government spending (contractionary / tights) shifts the AD curve to the left (Pp.565-566; Pp.117-119).

3. MODEL SPECIFICATION

The econometric model of multiple regression analysis of [2] with inclusion of few variables were adapted for this study to test the relationship between the dependent and

independent variables. This functional relationship is represented as thus:

$$RGDP = f(INV, INTR, INFL, EXCH, CA) \quad (1)$$

Mathematically, this functional relationship can be specified in linear form as thus:

$$RGDP = \beta_0 a_0 + \beta_1 INV \pm \beta_2 INTR \pm \beta_3 INFL \pm \beta_4 EXCH \pm \beta_5 CA + \mu \quad (2)$$

Where: RGDP = Real gross domestic product proxied for economy; INV = Investment; INTR = Interest Rate; INFL = Inflation Rate; EXCH = Exchange Rate; CA = Current Account proxied for fiscal policy deficit; μ = white noise error term.

The model is transformed into log-linear form. Which is expressed as:

$$LogRGDP = \beta_0 + \beta_1 logINV \pm \beta_2 logINTR \pm \beta_3 logINFL \pm \beta_4 logEXCH \pm \beta_5 logCA + \mu \quad (3)$$

Where: Log (RGDP) = Log of Real gross domestic product; Log of (INV) = Log of Investment; Log (INTR) = Log of Interest Rate; Log (INFL) = Log of Inflation Rate; Log (EXCH) = Log of Exchange Rate; Log (CA) = Log of Current Account; μ = white noise error term.

The a priori expectations are as follows:

$$\beta_0 > 0, \beta_1 > 0, \beta_2 > 1, \beta_3 < 0, \beta_4 < 0, \beta_5 > 0.$$

Where:

β_0= Intercept, β_1 = Coefficient of Investment, β_2 = Coefficient of interest rate, β_3 = Coefficient of inflation rate, β_4 = Coefficient of exchange rate, β_5 = Coefficient of Current account, and μ = white noise error term.

The contribution of this study to knowledge is in terms of the estimation techniques employed and the data used which is extended to 2012. An attempt will be made to empirically investigate the relationship between the impact of fiscal policy on the growth of the Nigerian Economy for the period 1960 – 2012 regression analysis. The equation was estimated using a variety of analytical tools, including group unit root tests, co-integration tests, and Granger Causality Analysis. The results are discussed below. The data used for the study covers the period 1960 and 2012. The study employed secondary data which are derived from various issues of [25,26].

4. MODEL SUMMARY

Table 1 shows the summary of the Group unit root test using summary test (.i.e. Levin, Lin & Chu t*; Im, Breitung t-stat, Pesaran and Shin W-stat; ADF-Fisher Chi-square; PP-Fisher Chi-square) with the lag length selection based on AIC: 0 to 1 of the variables used for the empirical study. The group unit root test shows that; Real Gross Domestic Product (RGDP); Current Account (CA); Exchange Rate (EXCH); Inflation rate (INFL); Interest Rate (INTR); and Investment (INV) were stationary at first differenced at 5 percent level of significance respectively.

The top of the output indicates the type of test, exogenous variables and test equation options. If we were instead estimating a Group unit test, a list of the series used in the test would also be depicted. The lower part of the summary output gives the main test results, organized both by null hypothesis as well as the maintained hypothesis concerning the type of the unit root process.

All of the results indicate the presence of a unit root, as the LLC, BTS, IPS, ADF-Fisher tests and PP-Fisher tests could not reject the null of a unit root at first differenced.

4.1 Factor Method: Maximum Likelihood

Factor method has a wide range of tools for its analysis, from computing the covariance matrix from raw data all the way through the construction of factor score estimate.

Below the heading as shown in Table 2, is a section displaying the estimates of the unrotated orthogonal loadings, communalities and uniqueness estimates obtained from estimation. We first see that Kaiser-Guttman MAP method has retained two factors, label “F1 & F2”.

To the right of the loadings are communality and uniqueness estimates which apportion the diagonal of the correlation matrix into common (explained) and individual (unexplained) components. The communalities are obtained by computing the row norms of the loadings matrix, while the uniqueness are obtained directly from ML estimation algorithm. We may see for example that 99% ($0.991 = 0.991^2 + 0.096^2$) of the correlation for the RGDP variable, 90% ($0.904 = 0.771^2 + 0.556^2$) of the correlation for the CA variable, 0.94%($0.936 = 0.782^2 + 0.570^2$) of the correlation for the EXCH variable, 14% ($0.145 = 0.092^2 + (-0.369)^2$) of the correlation for the INFL, 56%($0.560 = 0.669^2 + (-0.335)^2$) of the correlation for the INTR, 100%($1.000 = 1.000^2 + 0.000^2$) of the INV correlation are accounted for by two common factors.

Table 1. Group unit root test

Group unit root test: Summary
Series: LOG_RGDP_, LOG_CA_, LOG_EXCH_, LOG_INFL_, LOG_INTR_, LOG_INV_
Date: 01/28/14 Time: 15:00
Sample: 1960 2012
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Andrews automatic bandwidth selection and quadratic spectral kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-9.46281	0.0000	6	257
Breitung t-stat	-10.2098	0.0000	6	251
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-15.1935	0.0000	6	257
ADF - Fisher Chi-square	157.540	0.0000	6	257
PP - Fisher Chi-square	154.269	0.0000	6	259

*** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality*

The next section provides summary information on the total variance and proportion of common variance accounted for by each of the factors derived by taking column norms of the loadings matrix. First, we note that cumulative variance accounted for by the two factors is 4.54, which is close to 50% (4.536/9.1) of the total variance. Furthermore, we discover that first factor F_1 accounts 80% (3.644/4.536) of the common variance and second factor accounts for the remaining 20% (0.892/4.536).

The bottom portion of the output shows basis goodness-of– fit information for the estimated specification. The first column displays the discrepancy function, number of parameters, and degree of freedom (against the saturated model) for the estimated specification. For this extraction method (ML), Eview also displays Chi-Square goodness-of-fit test and Bartlett adjusted version of the test. Both versions of the test have p-value of over 0.02, indicating that two factors adequately explain the variation in the data.

For purpose of comparison Eview also presents result for the independence (no factor) model which shows that a model with no factors does not adequately model the variances.

4.2 Goodness-of-fit Summary

This is used to examine a variety of diagnostic. As we may see in Table 3, the result of the goodness-of-fit computes a large number of absolute and relative fit measures. In addition to the discrepancy, Chi-Square and Barlett Chi-Square statistics seen previously, the result has scaled information criteria, expected cross-validation indices, generalized fit indices, as well as various measures based on estimate of noncentrality. Also presented are incremental fit indices which compare the fit of the estimated model against independence model.

4.3 Vector Regression Estimates (VAR) Summary

The vector Autoregression (VAR) is commonly used for forecasting systems of interrelated time series and/or analyzing the dynamic impact disturbances on the system of variables. The VAR approach sidesteps the need for structural modeling by treating every endogenous variable in the system as a function of the lagged values of all of the endogenous variables in the system.

Since only lagged values of the endogenous variables appear on the right-hand side of the equations, simultaneity is not an issue and OLS yields consistent estimates. Moreover, even though the innovations ε_t may be contemporaneously correlated, OLS is efficient and equivalent to GLS. Since all equations have identical regressors.

Each column in the Table 4 corresponds to an equation in the VAR. for each right-hand side

variable, presents the estimated coefficient, its standard error, and t-statistic.

There is additional information below the coefficient summary. The first part of the additional output presents standard OLS regression statistics for each equation. The results are computed separately for each equation using the appropriate residuals and are displaced in the corresponding column. The numbers at the very bottom of the table are the summary statistics for the VAR system.

The test of variables in 4.3 or Table 4 enables us to have Tables 5, 6, 7, 8, diagram 1 and 2 that we used to ascertain the statistical significance of the variables under review.

4.4 AR Roots Table/Graph

The estimated VAR is stable (stationary) if all roots have modulus less than one and lie inside the unit circle. If the VAR is not stable, certain results (such as impulse response, standard errors) are not valid. There will be kp roots, where k is the number of endogenous variables and p is the largest lag.

From the output as shown in Table 5 and diagram 1 all the roots have modulus less than one and lie inside the unit circle.

Table 2. Factor method: maximum likelihood

Factor method: maximum likelihood
Date: 01/30/14 time: 21:31
Covariance analysis: ordinary correlation
Sample (adjusted): 1973 2012
Included observations: 26 after adjustments
Balanced sample (listwise missing value deletion)
Number of factors: kaiser-guttman
Prior communalities: squared multiple correlation
Convergence achieved after 8 iterations

	Unrotated loadings				
	F1	**F2**	**Communality**	**Uniqueness**	
LOG_RGDP_	0.990936	0.096332	0.991235	0.008765	
LOG_CA_	0.770941	0.556333	0.903857	0.096144	
LOG_EXCH_	0.781992	0.569762	0.936140	0.063859	
LOG_INFL_	0.092456	-0.368751	0.144525	0.855474	
LOG_INTR_	0.669047	-0.335593	0.560247	0.439754	
LOG_INV_	1.000000	0.000000	1.000000	0.000000	
Factor	**Variance**	**Cumulative**	**Difference**	**Proportion**	**Cumulative**
F1	3.643989	3.643989	2.751975	0.803348	0.803348
F2	0.892014	4.536004	---	0.196652	1.000000
Total	4.536004	4.536004		1.000000	
	Model	**Independence**	**Saturated**		
Discrepancy	0.489317	8.919563	0.000000		
Chi-square statistic	12.23293	222.9891	---		
Chi-square prob.	0.0157	0.0000	---		
Bartlett chi-square	10.19411	197.7170	---		
Bartlett probability	0.0373	0.0000	---		
Parameters	17	6	21		
Degrees-of-freedom	4	15	---		

Warning: heywood solution (uniqueness estimates are non-positive).
Results should be interpreted with caution

Table 3. Goodness-of-fit summary

Goodness-of-fit summary Factor: untitled Date: 01/30/14 time: 21:40			
	Model	**Independence**	**Saturated**
Parameters	17	6	21
Degrees-of-freedom	4	15	---
Parsimony ratio	0.266667	1.000000	---
Absolute fit indices			
	Model	**Independence**	**Saturated**
Discrepancy	0.489317	8.919563	0.000000
Chi-square statistic	12.23293	222.9891	---
Chi-square probability	0.0157	0.0000	---
Bartlett chi-square statistic	10.19411	197.7170	---
Bartlett probability	0.0373	0.0000	---
Root mean sq. resid. (RMSR)	0.032288	0.610249	0.000000
Akaike criterion	0.162805	7.422657	0.000000
Schwarz criterion	-0.030748	6.696832	0.000000
Hannan-Quinn criterion	0.107069	7.213645	0.000000
Expected cross-validation (ECVI)	1.849317	9.399563	1.680000
Generalized fit index (GFI)	0.883892	0.349404	1.000000
Adjusted GFI	0.390434	-2.415629	---
Non-centrality parameter	8.232935	207.9891	---
Gamma Hat	0.752266	0.107301	---
McDonald Noncentralilty	0.848183	0.015611	---
Root MSE approximation	0.286931	0.744740	---
Incremental fit indices			
	Model		
Bollen Relative (RFI)	0.794279		
Bentler-Bonnet Normed (NFI)	0.945141		
Tucker-Lewis Non-Normed (NNFI)	0.851562		
Bollen Incremental (IFI)	0.962405		
Bentler Comparative (CFI)	0.960417		

4.5 Cointegration Analysis

Co-integration test is carried out in order to determine the long-run relationship between the dependent and independent variables when one or all of the variables is/are non-stationary at level which means they have number stochastic trends in asymptotic distribution. Co-integration tests are conducted by using the reduced procedure developed by [27,28]. They noted that a linear combination of two or more 1(1) series may be stationary, or 1(0), on which case we say the series are cointegrated. Such linear combination defines a cointegrating equation with cointegrating vector of weights characterizing the long-run relationship between the variables.

The result is presented in Table 6. It revealed that there is cointegration among the variables. This is because the Trace Statistic value of 27.10258 is greater than the critical value of 15.49471 at 5 percent level of significance. We cannot reject the null hypothesis of none*of the hypothesized number of cointegrating equations. In the same vein, the Trace Statistic Value of 2.454166 is less than the critical value of 3.841466 at 5 level of significance. We do reject hypothesis of at most 1 of the hypothesized number of cointegrating equations.

4.6 Pairwise Granger Causality Tests

This carries out pairwise Granger causality tests and tests whether an endogenous variable can be treated as exogenous as shown in Table 7. For each equation in the VAR, the output displays X^2 (Wald) statistics for the joint significance of each of the lagged endogenous variables in that equation. The statistics in the last row (All) is the X^2 statistics for joint significance of all other lagged endogenous variables in the equation.

Table 4. Vector regression estimates (VAR) summary

Vector autoregression estimates
Date: 01/28/14 time: 15:42
Sample (adjusted): 1974 2012
Included observations: 19 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Lyzing

	LOG_RGDP_	LOG_CA_
LOG_RGDP_(-1)	0.204920	-4.678354
	(0.19522)	(1.41702)
	[1.04966]	[-3.30155]
LOG_CA_(-1)	-0.018525	0.101451
	(0.02374)	(0.17231)
	[-0.78037]	[0.58877]
C	0.890650	4.517778
	(0.30200)	(2.19207)
	[2.94913]	[2.06097]
@TREND	0.012705	0.171341
	(0.00609)	(0.04420)
	[2.08626]	[3.87615]
LOG_EXCH_	-0.021220	0.033072
	(0.06970)	(0.50589)
	[-0.30446]	[0.06537]
LOG_INFL_	0.044035	-0.861703
	(0.05532)	(0.40156)
	[0.79595]	[-2.14588]
LOG_INTR_	-0.057423	1.364941
	(0.09429)	(0.68443)
	[-0.60897]	[1.99427]
LOG_INV_	0.638694	3.805263
	(0.22128)	(1.60616)
	[2.88632]	[2.36917]
R-squared	0.995530	0.970616
Adj. R-squared	0.992685	0.951917
Sum sq. resids	0.021974	1.157679
S.E. equation	0.044695	0.324413
F-statistic	349.9464	51.90718
Log likelihood	37.28241	-0.378622
Akaike AIC	-3.082359	0.881960
Schwarz SC	-2.684701	1.279619
Mean dependent	5.495842	5.264975
S.D. dependent	0.522568	1.479451
Determinant resid covariance (dof adj.)		0.000126
Determinant resid covariance		4.22E-05
Log likelihood		41.77564
Akaike information criterion		-2.713226
Schwarz criterion		-1.917909

Table 5. AR roots table/graph

Roots of characteristic polynomial
Endogenous variables: LOG_RGDP_ LOG_CA_
Exogenous variables: C @TREND LOG_EXCH_ LOG_INFL_ LOG_INTR_ LOG_INV_
Lag specification: 1 1
Date: 02/03/14 time: 12:26

Root	Modulus
0.452092	0.452092
-0.145721	0.145721

No root lies outside the unit circle.
VAR satisfies the stability condition

Table 6. Cointegration analysis

Date: 02/03/14 time: 12:30
Sample (adjusted): 1975 2012
Included observations: 12 after adjustments
Trend assumption: linear deterministic trend
Series: LOG_RGDP_ LOG_CA_
Exogenous series: @TREND LOG_EXCH_ LOG_INFL_ LOG_INTR_ LOG_INV_
Warning: critical values assume no exogenous series
Lags interval (in first differences): 1 to 1
Unrestricted cointegration rank test (trace)

Hypothesized		Trace	0.05	
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical value**	**Prob.****
None *	0.871783	27.10258	15.49471	0.0006
At most 1	0.184957	2.454166	3.841466	0.1172

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
** denotes rejection of the hypothesis at the 0.05 level*
***MacKinnon-Haug-Michelis (1999) p-values*

Table 7. Pairwise granger causality tests

VAR granger causality/block exogeneity wald tests
Date: 02/03/14 time: 12:22
Sample: 1960 2012
Included observations: 19

Dependent variable: LOG_RGDP_			
Excluded	**Chi-sq**	**Df**	**Prob.**
LOG_CA_	0.608980	1	0.4352
All	0.608980	1	0.4352
Dependent variable: LOG_CA_			
Excluded	**Chi-sq**	**Df**	**Prob.**
LOG_RGDP_	10.90026	1	0.0010
All	10.90026	1	0.0010

The result revealed that we cannot reject hypothesis that RGDP does not granger cause CA and we do reject hypothesis that CA does not granger cause RGDP.

4.7 VAR Residual Normality Tests

The normality test reports the multivariate extensions of the Jarque-Bera Residual normality test, which compares the third and fourth moments of the residuals to those from the normal distribution. This is an *asymptotic,* or large sample, *test* and is based on OLS residuals.

For the multivariate test, you must choose a factorization of the residuals that are orthogonal to each other. The components of Jarque-Bera test are the coefficient of Skewness, S (a measure of asymmetry of a probability density

function) and Kurtosis K (a measure of how tall or flat a PDF is in relation to the normal distribution), of a random variable (e.g., OLS residuals).

From the output in Table 8, the computed chi-square value exceeds the critical chi-square value for 2 d.f at the chosen level of significance (0.05); we reject the null hypothesis of normal distribution, and this result is confirmed by the exact probability of obtaining that value.

4.8 Orthonormal Loadings Biplot

The component scores are displayed as circles and the variables loadings and displayed from the origin with variable labels. The Biplot clearly shows us in diagram 2 that the first component has positive loadings for all the six variables (.i.e., general inflation interpretations). Second, component has positive loadings for interest rate and negative loadings for RGDP, INV, INFL and INTR. If CA does well relative to RGDP and INV, the second specific component will be positive, and vice versa.

5. SUMMARY

The paper empirically examines the impact of the fiscal policy on the growth of the Nigerian economy, using annual time series data from 1960 to 2012. The model developed by [2] was used for the study. The paper employs stochastic characteristics of each time series data by testing their stationarity using Group unit root tests, factor method, Goodness-of-fit Summary, including VAR, AR Root/Graph, Cointegration tests, Pairwise Granger Causality Test, VAR residual normality tests, and orthonormal loadings Biplot.

The null hypothesis being that there is presence of a Group unit root was rejected at first differenced implying that the variables were found stationary at 5% level of significance. The factor method and Goodness-of-fit Summary also rejected the null hypothesis at 5%. The vector regression estimates and its properties were employed to ascertain the level of shock or disturbances in time series data. Co-integration technique was adopted in assessing the co-integrating properties of variables, especially in a multivariate context. The result of the test showed that for the periods, 1960-2012, there was no co-integrating relationship between fiscal policy and economic growth for Nigeria data. Thus, all the variables have both short and long run relationship with each other as revealed by Cointegration tests. Further effort was made to check the causality relationship that exist between the six variables by employing the Pairwise-Granger causality at two lag periods as could be seen in Table 7.

Table 8. VAR residual normality tests

VAR residual normality tests
Orthogonalization: cholesky (lutkepohl)
Null hypothesis: residuals are multivariate normal
Date: 02/03/14 time: 12:28
Sample: 1960 2012
Included observations: 19

Component	Skewness	Chi-sq	Df	Prob.
1	-0.742420	1.745427	1	0.1865
2	-0.510138	0.824094	1	0.3640
Joint		2.569521	2	0.2767
Component	**Kurtosis**	**Chi-sq**	**Df**	**Prob.**
1	3.154320	0.018853	1	0.8908
2	2.546566	0.162769	1	0.6866
Joint		0.181622	2	0.9132
Component	**Jarque-bera**	**Df**	**Prob.**	
1	1.764280	2	0.4139	
2	0.986863	2	0.6105	
Joint	2.751143	4	0.6003	

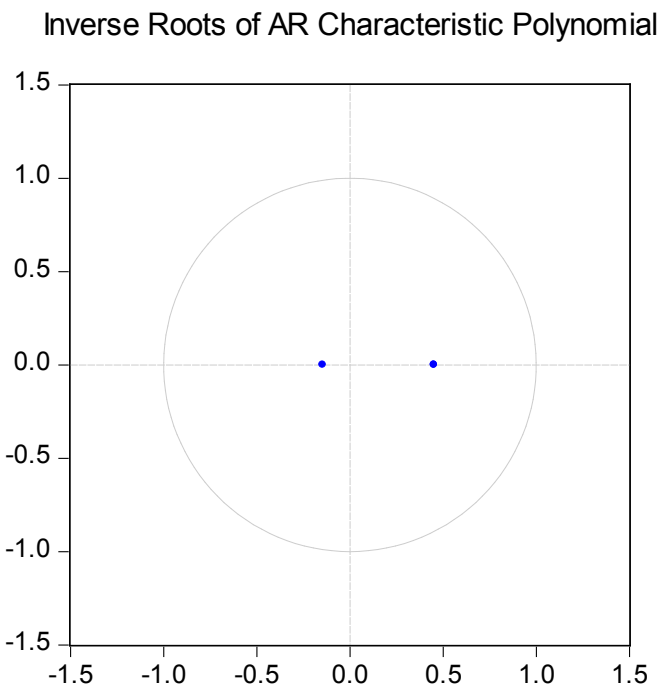

Diagram 1. Inverse roots of AR characteristic polynomial

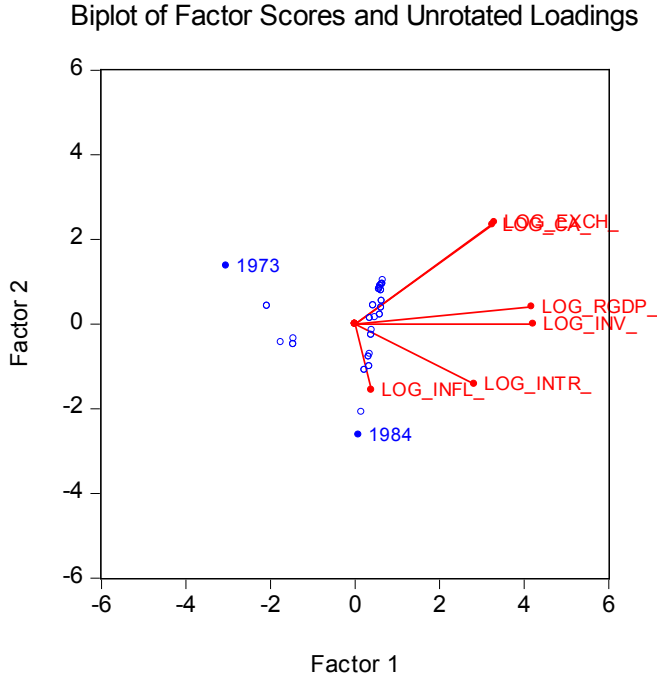

Diagram 2. Orthonormal loadings biplot

The VAR was conducted using lag two (2) and in the result both unidirectional and bi-directional causality were seen running as shown in Table 7. However, it should be borne in mind that the study did not consider whether the relationship between fiscal policy and growth was negative or positive; but, various studies as reviewed in the literature have come up with the result that fiscal

policy deficit is and has never been favourable to economic growth. Hence an inverse impact on economic growth.

6. RECOMMENDATIONS

From the econometric study of the impact of fiscal policy on the growth of the Nigerian Economy from 1960-2012, the following recommendations are stated below:

- Government should ensure fiscal policy's effectiveness in such a way as achieving economic growth.
- Government should increase its aggregate expenditure such a way that the citizens will benefit from it.
- Government should ensure that monetary policy is a supplementary tool to fiscal policy in order to stabilize the economy.
- Government should ensure that inflation rate is maintained at single-digit level to enable the private investors to have conducive atmosphere for production of goods for export.
- Government should reduce the cost of domestic borrowing, (.i.e., interest rate) to enable both the domestic and foreign potential investors have an access to investible funds.
- Government should stabilize the foreign exchange market-where the foreign currencies are trade in. Thus, however, determines the quantity and quality goods and services to be bought and sold.

7. CONCLUSION

The result of the econometrics on the fiscal policy: Nigerian Experiences, the paper revealed having carried out different econometric and/or statistical test that fiscal policy deficit is and has never been favourable to economic growth. Hence an inverse impact on economic growth of Nigeria. This means that the government fiscal policies (.i.e. reduction in aggregate demand expenditure; budgetary; and/or tax) have not impacted positively on Nigerian economic growth.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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