FISCAL FEDERALISM AND UNEMPLOYMENT REDUCTION IN DEMOCRATIC ECONOMIES: EVIDENCE FROM NIGERIA (1999-2015)

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Abstract: The Nigerian federal system over the years is beset by a lingering lopsidedness in revenue allocation among the three tiers of government-Federal, State and Local Governments amidst the debate whether the public or private sectors should be the major driver of the economy given rising unemployment. Therefore, this study aims at investigating the causal relationship between the statutory allocations to the levels of government, and unemployment in the country and estimating their contribution to unemployment reduction since the return to democracy in 1999. By using the Granger Causality Technique, the result shows that independence is suggested between Federal, State and local governments' allocations and unemployment in Nigeria at 5% level of significance. The Ordinary Least Squares was used to determine the impact of federation allocations to various tiers on unemployment. The result indicates that while the Federal and State Governments' impact positively on unemployment, the local Governments' impact is negative. A 1% increase in federal allocation to the federal and states government would respectively lead to 118.17% and 11.06% increase in unemployment while Local Governments would have a greater reduction of 54.76% in unemployment; The study concludes that the relationship between fiscal federalism and unemployment reduction in Nigeria is significant. It is thus recommended that more revenue should be allocated to Local Governments; Federal and State Governments levels should be more efficient in the allocation of funds; and a greater synergy should be promoted between the levels of government as well as between government and the private sector so as to help reduce unemployment in Nigeria.

Keywords: Fiscal Federalism, Democracy, Unemployment and Nigeria.

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INTRODUCTION

In a federal system, the powers and functions of government are often devolutionized among the federal, state and local levels of government. Fiscal federalism has a long history in Nigeria (Anyanwu, 1999). It dates back to 1946 when the Richards Constitution was introduced. Over the years, fiscal commissions were appointed to work out fiscal and financial arrangements that were consistent with the assignment of powers and responsibilities to each level of government (Akeem, 2000). The rationale for this was to enable each level of government to have adequate funds to effectively and efficiently discharge its responsibilities. This arrangement was entirely consistent with the welfare optimization policy and development objectives of successive Nigerian opinion leaders and administrators. However, with the intervention of the military in politics in 1966, Nigeria was governed more or less like a unitary state. Indeed state budgets were subjected to the approval of the central authorities, but the Nigerian federal system was so problematic due to structural defects in its component federating units and her failure to acquire the essential tenets of true fiscal federalism. Recently, with the return to democracy, there has been significant movement towards decentralization. This is predicated on the fact that the closer government is to the people the better will be its response to the demands of the governed. Since 1999 substantial amounts of resources have accrued to the various levels of government and that has presented tremendous opportunities for service delivery. For instance, government revenue as a percentage of Gross Domestic Product (GDP) rose from 16.3% 1n 1998 to 19.8% in 2003 and 20.4 in 2005 (Eboh and Igbokwe, 2006). Notably, revenue sharing has been a contentious issue among the federating units in Nigeria. The struggles centres on who gets what, why and how. It is thus apparent that the issue has serious political and economic overtones and the adopted revenue sharing formula often reflects the struggle for power and resources among the component units.

More concisely, the historical trajectory of Nigeria's federation suggests that the centre-Federal Government has had the edge in revenue sharing to the extent that greater power and resources are now vested in the central government (Akeem, 2000). This has led to the creation of subordinate rather than co-ordinate federating units and a defederalizing tendency. Ogba (2011) observed that the core principle that dominates fiscal federalism in Nigeria is centralization. The centralization of Nigeria's fiscal federalism began with the report of the Dina Commission (1965) which argued that an appropriate revenue allocation system should result in a more equitable distribution of revenue among the tiers of government to achieve a balanced economic growth and development of the federation. The revenue sharing formula has similarly provoked litigations between the centre and the federating units, underscoring the power struggle involved. The end results in terms of the reduced unemployment therefore, has not been impressive .While the unemployment rate stood at 3.0% in 1999, it increased to 24.2% in 2015 and since then, the country rarely achieves its growth target aimed at reducing unemployment (NBS, 2015). Thus, the Revenue Mobilization, Allocation and Fiscal Commission (RMAFC) disclosed that the commission would soon produce a new, equitable and just sharing formula. Meanwhile, the Governors' Forum has been agitating for a review of the present formula that is lopsided in favor of the Federal Government-where it gets approximately 52% of the Federation Account, the 36 States share 26.72% and the 774 Local Governments get 20.60%. The Governors' Forum proposes 35% for the Federal Government, 42% for States and 23% for the Local Governments.

Certain questions are now pertinent here: What will constitute an equitable and just sharing formula? How should responsibilities be shared to approximate resources allocated? Above all, what is the causal link between the statutory allocations to the levels of government and reduction in unemployment and to what extent have these various levels of government contributed to reduced unemployment using the resources allocated to them since the inception of democracy in 1999? These are germane issues in formulating a new sharing formula that would promote the creation jobs which this study seeks to bring to limelight. From the above, the study basically aims at investigating the causal relationship between the statutory allocations of revenue to the levels of government and reduction in

unemployment in Nigeria and estimating their contribution to the reduction in unemployment since the return to democracy in 1999. This is to help in seeking ways of strengthening Nigeria's fiscal federalism for a more improved development.

HYPOTHESES

(i) The statutory allocations of revenue to the levels of government accelerate reduction in unemployment in Nigeria.

(ii) Reduction in unemployment accelerates the statutory allocations of revenue to the levels of government in Nigeria.

(iii) There is a significant relationship between the statutory allocations of revenue to the levels of government and reduction in unemployment in Nigeria.

Thus, this paper is divided into five sections. Section one is introduction. This section considers the background to the study, statement of the research problem, research questions and objectives; research hypothesis as well as the organization of the study. Section two is conceptual analysis and review of relevant literature. It theoretically discusses the concepts of federalism, fiscal federalism, unemployment, and other related conceptual and theoretical issues. Methodology forms section three which clearly states the sources and methods of data collection, the definition of variables and the models as well as the analytical techniques. While section four includes results and discussion of findings, conclusion and recommendations are covered in section five.

REVIEW OF RELEVANT LITERATURE
The Concept of Fiscal Federalism

The concepts of a federal system of government and fiscal federalism have been conceptualized in the literature by many authors. Agbu (2004) viewed a federal system of government as that which often arises from the desire of the people to form a union without necessarily losing their identities. Federalism would, therefore, seem to provide an attractive system of government especially in the context of ethnic pluralism as found in Nigeria. In principle, federalism implies the construction of a system where consensus is reached between current demands of the union and the territorial diversity within an emerging society by the creation of a single political system within which central and provisional governments are assigned co-ordinated

authority in a manner defining both the legal or political limits of equality or subordinate functions (ibid). Nwokedi (2010) pointed out that Nigeria's federal system of government evolved by sheer accident of history. It was not based on concepts or principles; nor was it based on empirical evidence of success of federal arrangement in most of the former British colonies. Rather it was based on administrative convenience and necessity of the British colonial administrators to cut cost of administering the two Nigerians which emerged when the Royal Charter to the Royal Niger Company was revoked and the two areas, North and South of the geographical location along the River Niger were constituted as the Northern Protectorate and Southern Protectorate respectively. Fiscal federalism is a common feature of a federal system of government. Ikeji (2011) asserted that fiscal federalism refers to the scope and structure of the tiers of government-in the case of Nigeria, federal, state and local governments' responsibilities and functions and more importantly, the allocation of resources amongst the tiers of government as well as the distribution of revenue within the tiers of government. Perhaps, the most important issue of fiscal federalism is the revenue allocation formula, the sharing of national revenue among the various tiers of government. This because it determines the allocation of powers and functions to the various levels of government and ultimately directs the economic growth of the country.

Concept of Democracy

The term democracy comes from two Greek words: demos-which means people and kratein- which means to govern, to rule. Democracy is therefore interpreted to be government of the people, or government of the majority. Thus, in a democratic economy these democratic principles are expected to thrive: fundamental freedom and fundamental rights, well-structured institutions, universally recognized ideal and goal, popular participation, public accountability, free and fair elections and independence of the press and judiciary (Bassiouni, 1998).

Concept of Unemployment

According to Gbosi (2006) unemployment is the difference between the amounts of labour employed at current wage levels and working conditions, and the amount of labour not hired at these levels, however, he defined employment as a situation in which people who are willing to work at the

prevailing wage rate are able to find jobs. The implication of the definition is that anyone who is hired should not be counted as part of the unemployed labour force, in order to avoid overestimation of the official rate of unemployment. In recent times, the definition of unemployment by the International Labour Organization (ILO) is said to be more encompassing, "the unemployed is a member of the economically active population, who are without work but available for and seeking for work, including people who have lost their jobs and those who have voluntarily left work (World Bank, 1998). The application of this definition across countries has been faulted, especially for the purpose of comparison and policy formulation, as countries characteristics are not the same in their commitment to resolving unemployment problems, furthermore, the preponderance of housewives who possess the ability and willingness to work, the definition of the age bracket all stand as limitations to the definition by ILO (Douglason and Gbosi 2006). Unemployment is a social phenomenon that is affecting human societies, particularly the developing nations of Africa. Casson (1979), view an unemployed person as someone who is actively seeking a job of certain specification and would be willing to accept such a job if it were offered at the prevailing market wage. According to Binks (1990), we live in a working world and the man who does not work is not human, because he produces nothing. Binks (ibid) maintains that the most appreciated value in working apart from money earned is the social recognition it carries with it and that when a man works, he has certain goals that act as his diligence and commitment, these goals include winning a degree of economic security, to gain an amount of control over affairs and to experience satisfying and predictable relationship with the members of the groups with which he is most intimately associated.

The Structure of Nigerian Federalism

Nigerian federalism is structured into three levels of governments: the federal government, thirty-six states and seven hundred and seventy-four local government areas. Each tier of government has its own taxing powers, expenditure responsibilities and some level of fiscal autonomy as spelt out in the constitution. Based on these, there is bound to be problems among the tiers of governments in the attempt to perform their constitutional duties. The problems and complications arise due to the political structure of the tiers of government (Ogba, 2011).

Challenges of Fiscal Federalism and Economic Growth in Nigeria

In the Nigerian fiscal federalism, the federating units are expected to generate enough revenue internally to supplement the statutory allocations shared to them and to justify their creation. Thus, amongst other challenges, the greatest challenge created apart from the modality of sharing federally generated revenue, is fiscal imbalances created in the process of intergovernmental fiscal relations. Some of these intergovernmental fiscal problems among the three tiers of government in Nigeria are horizontal fiscal imbalance, vertical fiscal imbalance, vertical and horizontal multiple taxation as well as vertical and horizontal fiscal competition (Ogba, 2011).

Horizontal fiscal imbalance underscores the problem of equalization. This refers to the fiscal imbalance that occurs between different units of a given tier of government in a federation. This is evident in Nigeria where there is inter-state or inter-local government differences in the distribution of wealth and resource endowment and ultimately income which determine how governments are able to meet the economic aspirations of citizens. Equalization is necessary to meet common interest in the federation, to encourage the private sector and promote spill over benefits or costs among states and local governments to generally promote economic growth and development of the country. Vertical fiscal imbalance underlines the problem of non-correspondence. In Nigeria, there exists large divergence between sources of revenue and expenditures of the various levels of government. The federal government has higher revenue sources than states, while states have high revenue sources than local governments. Thus, this fiscal imbalance has taken a pattern where the federal government is in a superior position and sub-national governments in the inferior position (Akeem, 2000). Vertical and horizontal multiple taxation is evident in tax overlapping where a given tax base is taxed more than once in a country. It is vertical when it is imposed by the tiers of government and horizontal when it is imposed by units within a given tier of government. The cumulative effect of multiple taxation will negate the principle of equity, and affect both the public and private sectors, thereby slowing economic growth.

Vertical and horizontal competition takes place when states and local governments compete in expenditure increase and tax concessions in order to attract investors to their jurisdiction. The diversity of the levels of government in the Nigerian federation gives room for greater fiscal

competition. This give rise to tax exporting and inter goal non-neutrality which could change public and private sector behavior and consequently, the state of economic growth. Notably, with respect to revenue allocation, another key challenge is the politicization of the principles of sharing the federally generated revenue among the levels of government. Politicians manipulate the principle of derivation, population, freedom of financial operation given to component units and administrative economy to gain undue advantage. On the whole, the unstable nature of the business environment due to recent insecurity, weak institutions and poor infrastructure also pose a serious challenge to fiscal federalism and economic growth in Nigeria. Until these challenges are tamed, attaining the country's economic growth target could be a mirage. Thus the answer to the question of how Nigeria could initiate policies in this direction is covered in the next sections of this study.

METHODOLOGY
Annual time series data on the relevant variables from 1999-2015 were obtained from CBN Annual Statistical Bulletin. The choice of the period covered in the study is built on the premise that prior to it; the Nigerian federation was governed most often by the military who usually suspend the constitution that defined inter-governmental fiscal relations among the tiers of government. Thus, fiscal federalism could not prevail in an autocratic political arrangement as found during the military regimes in Nigeria.
The relevant variables used include the unemployment rate (UNER) which forms a proxy to unemployment reduction, and the revenue accrued to the levels of government from the federation account as proxy for fiscal federalism; where FED, STA and LGA stand for the revenue that accrued to the federal, state and local governments respectively.

Analytical Techniques
The Granger technique (Granger, 1969; Gujarati, 1995) has been adopted to determine the direction of causation between economic growth and fiscal federalism-as viewed in this study. Granger proposed that for a pair of linear covariance stationary time series X and Y; X causes Y if the past values of X can be used to predict Y more accurately than simply using the past values of Y. Formally, X is said to cause Y if: $\partial^2_1 (Y_t: Y_{t-j}, X_{t-i}) < \partial^2_2(Y_t: Y_{t-j})$, where ∂ represents the variance of forecast error and i, j =1,2,3,…,k.

The Granger causality test requires the use of F-statistic to test whether lagged information on a variable say "Y" provides any statistical information about another variable "X"; if not, then, "Y" does not Granger cause "X". Notably, the Ordinary Least Squares Technique of regression is used to determine the relationship between fiscal federalism and economic growth. Although regression analysis deals with the dependence of one variable on other variables, it does not necessary imply causation. Therefore, in view of the nature of economic behavior, any realistic formulation of economic models should involve some lagged variables among the set of explanatory variables. Lagged variables are one way of taking into account the length of time in the adjustment process of economic behavior, and perhaps the most efficient way of rendering them dynamic. Thus, the models to be estimated here are specified under the assumption that fiscal federalism and unemployment affect each other with (distributed) lags.

Modeling Fiscal Federalism and Unemployment
The causal relationship between fiscal federalism and unemployment is determined using the models below:

$$UNER_t = \sum_{i=1}^{n} \alpha_i FED_{t-i} + \sum_{i=1}^{n} \beta_j UNER_{t-j} + U_{1t} \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$FED_t = \sum_{i=1}^{n} \lambda_i FED_{t-i} + \sum_{j=1}^{n} \partial_j UNER_{t-j} + U_{2t} \ldots\ldots\ldots\ldots\ldots (2)$$

$$UNER_t = \sum_{i=1}^{n} \alpha_i^* STA_{t-1} + \sum_{i=1}^{n} \beta_j^* UNER_{t-1} + U_{3t} \ldots\ldots\ldots\ldots\ldots (3)$$

$$STA_t = \sum_{i=1}^{n} \lambda_i^* STA_{t-1} + \sum_{j=1}^{n} \partial_j^* UNERt_{-j} + U_{4t} \ldots\ldots\ldots\ldots\ldots (4)$$

$$UNER_t = \sum_{i=1}^{n} \alpha_i' LGA_{t-1} + \sum_{j=1}^{n} \beta_j' UNER_{t-j} + U_{5t} \ldots\ldots\ldots\ldots\ldots (5)$$

$$LGA_t = \sum_{i=1}^{n} \lambda_i' LGA_{t-1} + \sum_{j=1}^{n} \partial_j' UNER_{t-j} + U_{6t} \ldots\ldots\ldots\ldots\ldots (6)$$

where it is assumed that the disturbances U_{1t} and U_{2t}, U_{3t} and U_{4t}, U_{5t} and U_{6t}, are uncorrelated.

Equations (1) and (2) postulate that current UNER is related to past values of UNER as well as those FED and that current FED is also related to past values of FED and UNER. Equations (3) and (4),(5) and (6) indicate a similar behavior between UNER and STA, UNER and LGA. Note that α_i, β_j, λ_i, ∂_j, α_i^*, β_j^*, $\lambda_i^*, \partial_j^*$, α_i', β_j' λ_i', ∂_j', α_i'', $\beta j''$ are parameters to be estimated. The apriori expectation here is that the sets of FED_t, STA_t, LGA_t, and $UNER_t$ would be statistically significantly different from zero in the regression of the above models. Thus, if $\sum \alpha_i \neq 0$ and $\sum \partial_j \neq 0$, it implies a feedback or a bilateral causality between unemployment and fiscal federalism in terms of the

revenue accrued to the federal government (FED). The Granger technique involves estimating the equations in (1) and (2); (3) and (4); (5) and (6); Therefore, as a pair wise test, the null hypotheses for these models become:

- H_O: $\sum \alpha_i = 0$, that is, lagged FED terms do not belong in the regression.
- H_O: $\sum \partial_j = 0$, that is, lagged UNER terms do not belong in the regression.
- H_O: $\sum \alpha_i^* = 0$, that is, lagged STA terms do not belong in the regression.
- H_O: $\sum \partial_j^* = 0$, that is, lagged UNER terms do not belong in the regression.
- H_O: $\sum \alpha_i' = 0$, that is, lagged LGA terms do not belong in the regression.
- H_O: $\sum \partial_j' = 0$, that is, lagged UNER terms do not belong in the regression.

This implies that the alternative hypothesis in each case is that the lagged terms belong in the regressions. To test these hypotheses, we apply the F-test given by:

$$F = \frac{(RSS_R - RSS_{UR})/t-1}{RSS_{UR}/n-k} \quad\text{..(7)}$$

Where RSS_R = the restricted residual sum of squares and RSS_{UR} = the unrestricted residual sum of squares which follows the F-distribution with (t-1) and (n-k) degree of freedom; t= the number of lagged terms and k= the number of parameters estimated in the unrestricted regression. This follows that when we regress current UNER on all lagged UNER terms and other variables if any but do not include say, the lagged FED variables, we obtain the RSS_R. While when we regress including the lagged FED terms, we obtain the RSS_{UR}.

Decision Rule

If the computed F value exceeds the critical F value at a chosen level of significance, we reject the null hypothesis, in which case, the lagged terms belong in the regression. To statistically ascertain the extent to which fiscal federalism impacts on unemployment reduction, we derive a multiple linear regression model from the models above with FED, STA, LGA as explanatory variables and UNER as dependent variable. The econometric model is specified thus:

$$UNER_t = a_0 + a_1 FED_t + a_2 STA_t + a_3 LGA_t + U_t \quad\text{....................................(8)}$$

Where a_0 is the intercept; a_1, a_2, and a_3 are the coefficients to be estimated; FED_t, STA_t, and LGA_t represent annual revenue accrued to the federal, state and local governments respectively while U_t is the disturbance term which is N (0, ∂^2). The signs of FED_t, STA_t, LGA_t are expected to be

negative to show that they contribute to unemployment reduction in Nigeria

RESULTS AND INTERPRETATION

Having used the econometric software, Eviews to run the data analysis, the results are summarized and discussed using the tables below:

Table 1: Pair Wise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
FED does not Granger Cause UNER	15	1.04656	0.3866	Reject H_0
UNER does not Granger Cause FED		1.10692	0.3679	Reject H_0
STA does not Granger Cause UNER	15	1.79995	0.2149	Reject H_0
UNER does not Granger Cause STA		0.56641	0.5848	Reject H_0
LGA does not Granger Cause UNER	15	0.93933	0.4228	Reject H_0
UNER does not Granger Cause LGA		0.77889	0.4849	Reject H_0

Source: *Athours' Computation Using Eviews 10; Note: α=5%-level of significance*

As shown in table 1, the Granger Causality result reveals that independence was suggested between FED and UNER, STA and UNER and between LGA and UNER. This Is because the probability value of each null hypothesis is greater than 0.05. Hence, no causal relationship was said to exist between fiscal federalism and unemployment in Nigeria during the recent democratic dispensation

Table 2: Linear Regression Result

Dependent Variable: LOG(UNER)
Method: Least Squares
Sample: 1999 2015
Included observations: 17

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.252690	2.157938	-1.970719	0.0704
LOG(FED)	1.181687	0.702012	1.683286	0.1162
LOG(STA)	0.110696	0.630461	0.175579	0.8633
LOG(LGA)	-0.547642	0.522013	-1.049097	0.3132

R-squared	0.760234	Mean dependent var	2.720583
Adjusted R-squared	0.704903	S.D. dependent var	0.504417
S.E. of regression	0.274014	Akaike info criterion	0.451047
Sum squared resid	0.976086	Schwarz criterion	0.647097
Log likelihood	0.166099	Hannan-Quinn criter.	0.470535
F-statistic	13.73982	Durbin-Watson stat	1.619381
Prob(F-statistic)	0.000252		

Source: *Athours' Computation Using Eviews 10*

It is evident from the result in Table 2 that the a priori theoretical expectation regarding the size and sign of the LGA_t estimate is satisfied. This is because the parameters a_3 is negative The parameter a_1 and a_2 are however, positive, meaning that the a priori expectation of FED_t and STA_t are not satisfied. This shows that revenue allocations to local governments have negative effect on unemployment in Nigeria as the result revealed that LGA has the effect of reducing unemployment by 54.76%. However, allocations to federal and state governments impact positively on unemployment. While FED contributes to 118.17% increase in unemployment STA contributes to 11.07% increase in unemployment within the study period. The negative impact of LGA on unemployment could be as a result of the efficient allocation of funds and / or their management as well as financial discipline in the local government level; while endemic corruption at the federal and state levels could be responsible for the positive impact of FED and STA on unemployment. The a_0 is the autonomous component that does not change with changes in revenue allocations. Its negative sign underscores the relevance of revenue allocation in the reduction of unemployment. More so, the standard errors, t-statistics and probability values of the coefficients confirmed the insignificance of the individual estimates a_0, a_1, a_2 and a_3 at 5% level of significance. The regression model also met the statistical coefficient criteria regarding the overall significance of the estimates. The adjusted coefficient of determination (R^2) which is 0.7049 implies that 70.49% of the total variation in unemployment is explained by the changes in the explanatory variables–FED, STA, and LGA. Also, the F–statistic (13.74) is also significant at 5% level of significance as its probability value of 0.000251 is less than 0.05. The post diagnostic tests of normality of the residuals and serial correlation presented in Appendix II showed that the estimates are robust and reliable. This is because both the probability values of Jarque-Bera and Breusch-Godfrey statistics of 0.6759 and 0.8756 respectively were greater than 0.05. Hence the model did not suffer any problem of lack of normality or the presence of serial correlation among the disturbances.

POLICY CONCLUSION AND RECOMMENDATIONS

In conclusion, it is evident from the study that in Nigeria's fiscal federalism, independence is exists between federal, state and local governments allocations and unemployment reduction,. While the local governments contribute to reducing unemployment, the federal and states governments

rather contribute to increases in unemployment within the study period. Hence, it suggested that the relationship between fiscal federalism and unemployment reduction in Nigeria is significant. This study therefore recommends that more revenue should be allocated to Local Governments; Federal and State Governments level should be more efficient in the allocation of funds; and a greater synergy should be promoted between the levels of government as well as between government and the private sector. The federal government of Nigeria could consider the creation of more local governments instead of states government and setting up a robust means of checking leakages and favouritism in the allocation of revenue to the various levels of government. Anti-graft agencies should also be given the right constitutional backing to probe the financial affairs of public officials so as to instill financial discipline into the public sector.

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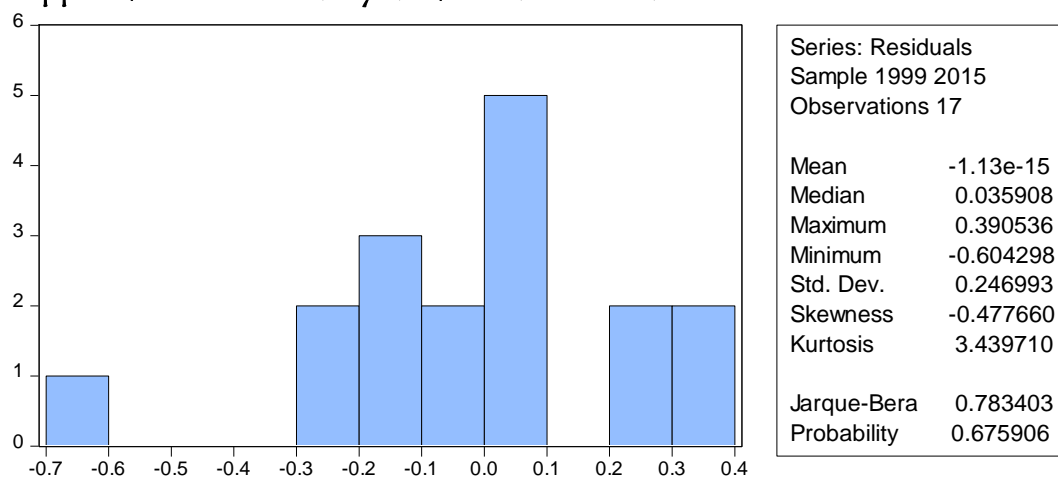
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Appendix I: Data on Statutory allocations to Federal, States and Local Governments, and unemployment in Nigeria (1999–2015)

Year	UNER (%)	FED (₦B)	STA (₦B)	LGA (₦B)
1999	3.0	576.80	103.7	43.87
2000	13.1	1262.47	251.6	118.59
2001	13.6	1427.43	404.1	128.50
2002	12.6	1606.12	388.3	128.90
2003	14.8	2,011.59	535.2	291.41
2004	13.4	2657.20	777.2	375.66
2005	11.9	3033.90	921.0	493.0
2006	12.3	3219.10	1016.1	550.8
2007	12.7	3878.50	1109.3	568.3
2008	14.9	4552.84	1709.2	722.3
2009	19.7	3600.07	937.8	529.31
2010	21.1	4784.47	1353.7	715.97
2011	23.9	6158.40	1786.3	940.03
2012	23.9	6565.24	1857.0	977.4
2013	23.9	7488.30	2104.3	1106.97
2014	24	7540.32	2122.92	1125.08
2015	24.2	5845.83	1482.60	822.87

Sources: CBN, various issues

Appendix II: Normality and Serial Correlation Tests

Series: Residuals Sample 1999 2015 Observations 17	
Mean	-1.13e-15
Median	0.035908
Maximum	0.390536
Minimum	-0.604298
Std. Dev.	0.246993
Skewness	-0.477660
Kurtosis	3.439710
Jarque-Bera	0.783403
Probability	0.675906

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Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.087331	Prob. F(2,11)	0.9170
Obs*R-squared	0.265713	Prob. Chi-Square(2)	0.8756

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Sample: 1999 2015
Included observations: 17
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.106806	2.341529	0.045614	0.9644
LOG(FED)	-0.004103	0.767154	-0.005349	0.9958
LOG(STA)	-0.070832	0.771340	-0.091829	0.9285
LOG(LGA)	0.067217	0.618288	0.108714	0.9154
RESID(-1)	0.018991	0.337741	0.056228	0.9562
RESID(-2)	-0.130932	0.313321	-0.417885	0.6841

R-squared	0.015630	Mean dependent var	-1.13E-15
Adjusted R-squared	-0.431811	S.D. dependent var	0.246993
S.E. of regression	0.295547	Akaike info criterion	0.670588
Sum squared resid	0.960829	Schwarz criterion	0.964663
Log likelihood	0.300004	Hannan-Quinn criter.	0.699819
F-statistic	0.034932	Durbin-Watson stat	1.589359
Prob(F-statistic)	0.999159		

Source: Authors'' computation using E views 10