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# SPATIO-TEMPORAL INFORMATION SYSTEM ANALYSIS OF REVENUE ALLOCATION IN NIGERIA (1999-2008)

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## Abstract:

The bulk of the federally allocated revenue derived from revenue accruing to the Federal Government of Nigeria is shared with the other two tiers of government under a revenue allocation system (RAS) using different formulas at different times. The sharing principle has remained a contentious issue to date. This paper presents a spatio-temporal analysis of three items of revenue allocation namely, statutory, excess crude oil, value added tax and 13% share of derivation shared among the three tiers between May 1999 – December 2008. A comparative analysis was conducted among 6 geo-political zones, 36 states and 774 local government areas of the country. The result shows that when allocations from the four items of revenue are combined, the South-South zone leads with incredible margin, thus raising questions about the legitimacy of agitations from this zone.

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## Introduction:

Federalism was adopted in 1954 in Nigeria as a political device to try to keep together diverse large ethnic groups that could have otherwise remained contiguous as neighbouring nation-states. Thus, the distribution of federally collected revenue came into being under conditions of ethnic plurality and rivalry. In recent years, the issues of

resource control, revenue allocation and fiscal federalism have dominated discussions at various levels of Nigeria's political debate. Like most federal systems, Nigeria has a revenue distribution system in which the federal government shares revenue with the states and local governments. As far back as the early 1970s, the bulk of federally allocated revenue derive from revenue accruing to the federal government which is then shared with the other two tiers of government under a revenue allocation system (RAS) using different formulas at different times.

At different times, ad hoc commissions have been set up to determine the allocation formulae and criteria. Between 1946 and 1979, there were eight of such commissions on revenue allocation. These were: Phillipson- 1946, Hicks-Phillipson- 1951, Chick- 1953, Raisman- 1958, Binns- 1964, Dina- 1968, Aboyade- 1977, and Okigbo- 1980. It was not until 1988 that a permanent body was created to monitor, review, and advise the federal government on RAS on a continuing basis. The new body, called the National Revenue Mobilization, Allocation, and Fiscal Commission, represents a structured attempt to replace the ad hoc approaches to effecting changes in the RAS. This body is enshrined in the 1989 Constitution.

Despite these efforts, revenue allocation has remained a contentious issue among the three tiers of government in Nigeria. In the last eight years, the 36 state governments have been at daggers-drawn with the Federal Government over the formulation of a revenue sharing formula that would be acceptable to all the stakeholders. One major impact of this seemingly never ending controversy is the fact that fiscal federalism in Nigeria has not been able to contribute optimally to social and economic development. Despite the considerable increase in the number of administrative units, the rate of real economic growth has been low and the country's per capita income has declined considerably over the years compared with the level that was attained in the 1980s. As the nation operates a new era of democracy under a federal constitution, there is the need to critically review the division of functions among the various tiers of governments, as well as the revenue sharing arrangements in order to substantially improve the delivery of public goods and services as well as promote real economic growth.

The available literature on revenue allocation in Nigeria focuses mostly on justifying a particular sharing formula or proposing a new one. Notable among this

category are: Adedotun (1991) and Mobolaji (2002, 2004). Other studies including Anyanwu (1999), Aigbokhan (1999), Ebajemito and Abudu (1999), Okon and Egbon (1999), seem to discuss generally about fiscal federalism by diagnosing the Nigeria situation and proffering solutions. Some of the immediate puzzling issues that need to be examined critically include the following:

- Is it really the sharing formula that is the problem or the proper management and effective utilization of the allocated revenue that matter?
- Is the existing revenue allocation formula adequate or is there room for further refinements in view of the various formulae that have been tried out thus far?

The paper therefore aims at providing answers to these immediate questions as well as serving as a platform for raising a number of other secondary issues as basis for further research into areas that are likely to be of great interest for policy analysis and development planning.

Before May 1999, revenue allocation figures among the three tiers of government had always been shrouded in secrecy. Now, in order to entrench transparency and accountability at all levels of government, the monthly allocation figures are made public. It is also believed that revenue allocation, if made available in a user-friendly format and carefully analyzed, are capable of enhancing greater accountability and good governance.

This study, therefore, seeks to focus on utilizing available data on monthly allocation figures from 1999 to 2008 to investigate deeply into some problems of fiscal federalism and revenue allocation by allowing the data on revenue allocation to tell their own story. No concerted efforts had been made in the past to study the size, distribution and trend in the revenue allocation across geopolitical zones, states and local government areas. In fact, there is a dearth of literature on the issue of comparative analysis of economic indicators among the federating units in Nigeria. Our study aims at rectifying these shortcomings in the literature.

In addition, this study stimulates the consciousness of the ordinary citizen; to raise questions about the way and manner such allocations are spent. This will make political debates lively and create a challenge to political office holders to account for allocations received during their tenure in office. The choice of May 1999 is highly significant as it

marked the inauguration of the third republic and it is widely believed that never before then had government at all levels had so much funds at their disposal.

Following the background, the rest of this paper is structured as follows: section two below provides a conceptual survey of past empirical studies on fiscal federalism and revenue allocation; section three presents an overview of revenue allocation system in Nigeria between 1999 and 2008, with section four's focus on the comprehensive comparative analysis of the revenue allocation the three main tier of Federal Republic of Nigeria; section five gives the geographical context to the debate using the instrumentality of geographic information system(GIS) to show how the revenue were allocated to the geo-political zones in Nigeria, while section six concludes the paper.

### **A survey of the Empirical Evidence:**

A large number of studies have been conducted on fiscal federalism and revenue allocation both in the developed and developing countries. However, the focus of majority of these studies usually revolves around examining the structure, pattern, trends and impact analysis of revenue allocation on economic growth. Examples that can be cited of these studies are many. Tables 1 and 2 below summarise some of the concepts of these studies in other countries and in Nigeria respectively.

**Table.1: Summary of empirical studies on other countries**

Authors	Countries	Period	Main results
Davoodi and Zou (1998)	46 Developing and Developed Countries	1970-1989 five and ten year averages	10% higher decentralization of spending reduces growth of real GDP per capita in developing countries by 0.7-0.8%-points (10%significance level)
Woller and Philipps (1998)	23 Developing Countries	1974-1991 three and five year averages and annual data	No robust significant effect of the decentralization of spending or revenue on growth of real GDP per capita
Yilmaz (2000)	17 Unitary States 13 Federal	1971-1990 annual data	Decentralization of expenditures at the local level increases growth of

	Countries Newly Industrialized Countries and Developed Countries		real GDP per capita in unitary states more than in federal countries. Decentralization at the regional level is not significant
Enikolopov and Zhuravskaya (2003)	21 Developed and 70 Developing and Transition Countries	Cross-section of the averages 1975-2000	10% higher decentralization of revenue reduces growth of real GDP per capita in developing countries by 0.14%points (5% significance level)
Thießen (2003)	21 Developed Countries	Cross-section of the averages 1973-1998	Decentralization of spending by 10% increases growth of real GDP per capita by 0.15%-points (5% significance level), quadratic term is significantly negative
Thießen (2003a)	26 Countries	Panel data 1981-1995	Decentralization of spending by 10% increases growth of real GDP per capita by 0.12%-points (5% significance level).
Zhang and Zou (1998)	28 Chinese Provinces	1987-1993 Annual Data	Decentralization of expenditure to the provinces reduces growth of real GDP per capita
Jin, Qian and Weingast (1999)	29 Chinese Provinces	1982-1992 Annual Data	Expenditure decentralization by 10% increases growth of real GDP per capita by 1.6%points (10% significance level)
Lin and Liu (2000)	28 Chinese Provinces	1970-1993 Annual Data	Revenue decentralization by 10% increases growth of real GDP per capita by 2.7%points (5%

			significance level)
Qiao, Martinez Vazquez and Yu (2002)	28 Chinese Provinces	1985-1998	Expenditure decentralization increases growth of nominal GDP per capita significantly (5% significance level)
Naumets (2003)	24 Ukrainian Oblasts and Autonomous Republic of Crimea	1998-2000	Not robust negative impact of own revenue decentralization on growth of real gross value added
Xie, Zou and Davoodi (1999)	Central Level in the USA	1951-1992	No significant impact of expenditure decentralization on growth of real GDP per capita
Akai and Sakata (2002)	50 US States	1992-1996, Cross-Section of Average Growth Rates, Panel with Annual Data	Expenditure decentralization by 10% increases growth of GDP per capita by 1.6-3.2%points (robust 10% significance levels)
Berthold, Dreus and Thode (2001)	16 Lander	1991-1998	Higher horizontal and vertical grants significantly reduce growth of nominal GDP per capita
Behnisch, Büttner and Stegarescu (2002)	Central Level in Germany	1950-1990	Increase of federal share of expenditure in total expenditure has positive effect on German productivity growth

Source: Compiled by the authors

**Table.2: Summary of studies on the Nigerian fiscal federalism**

Authors	Objectives	Findings
Akinlo (1999)	To examine the fiscal responsiveness of State governments to formal intergovernmental flows in aggregate and according to the type of central government assistance schemes.	The most important finding is that state governments' Fiscal expenditure was stimulated by federal grants during the period of analysis. More importantly various grants examined were found to have positive effects on the expenditure profiles of the state governments. Above all, statutory grants appear to account for the most stimulative effect of federal funds on total state governments' capital and recurrent expenditure.
Aigbokhan (1999)	To investigate the fiscal decentralization on economic growth in Nigeria	The study found evidence of high concentration ratio of both expenditure and revenue. It also found evidence of mismatch in spending and taxing responsibilities with states being harder hit.
Akujuobi and Kalu,(2009)	Examining the role of the financing sources of Nigerian State governments in the financing of their real asset investments.	It can be seen that Federal allocation and stabilization fund are significant in the financing of real asset investments at both 5% and 1% levels of significance. Internally-generated revenue (IGR), loans (LNS), Grants (GT) and value added tax (VAT) are found insignificant in the financing of the real asset investments of Nigerian state governments for the period 1984-2008. Instead of through the external sources stated earlier.

Jimoh, (2003)	(i) To provide concrete statistical evidence on the impact of the extent of decentralization of government expenditures and/or revenue collection on the levels of economic activities in Nigeria.  (ii) To examine the extent to which varying degree of decentralization of expenditures and/or revenue-raising powers have affected the Nigerian performance on key measures of development.	The regression analysis suggests that more decentralized governance, especially in terms of increased local governments and increased transfer of revenues to lower tiers of government would stimulate economic activities and/ or economic growth. It also suggests that the major determinants of the prevalence of poverty in Nigeria are economic and population growths.
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Source: Compiled by the authors

### **Analysis of Revenue Allocation in Nigeria (1999 – 2008)**

Revenue and resource allocation issue in Nigeria present a strong idiosyncrasy from other economies of the world basically in terms of sharing formula most especially between the central and its constituent units. At such, it continues to remain a serious political issue till date. This situation can largely be attributed to diverse and complex multidimensional factors, of which heterogeneity of the people greatly contributed to. For example there are as many ethnic groups (apart from the major tribes) as there are different religious sects with various ideological leanings.

In the light of the above, it is understandable why the issue of resource allocation continue to generate political debates and intense discussions in various local and international fora. However, most of these discussions lacked intellectual and statistical evidence. Rather, they are mere political sentiments. Therefore, this section x-rays the dimension and direction of the federal government allocation to the different tiers of



governance and various geo-political zones in Nigeria in the period spanning 116 months, that is, May 1999 through December 2008.

The choice of the starting period of May 1999 is symbolic and significant. It marked the inauguration of the third republic and it is widely believed that never before then had government at all levels had so many funds at their disposal. Again, before this period, allocation figures were shrouded in topmost secrecy. It was during this period that agitation for accountability and transparency in public finance became vociferous. As a way of demonstrating sensitivity, government started making the allocations available online. Consequently, the entire data for the study period were downloaded freely from the website of the Federal Ministry of Finance .

However, the free accessibility goes with a number of challenges some of which include:

- data not available in an easily convertible format;
- duplication or outright missing of allocation data either for some months or for some levels of government;
- inconsistencies in data arising from computational errors and tabulation; and,
- Lack of definitions and formulae for the various items of revenue and deductions.

Notwithstanding the identified lapses, the data set still provided reasonable degree of accuracy needed for meaningful inference.

#### The Federal Allocation Data

The monthly allocation data are generally presented in four different tables. The first gives the summary of the allocations to the three tiers (FGN, States and LGCs) including the 13% derivation fund for three different items of revenue which include statutory, excess crude oil and VAT. A further breakdown of the distribution of the allocation to FGN, state governments and LGCs are presented in second, third and fourth tables respectively. The tables also reflect items of deduction such as external debt, contractual obligation, and 'other deductions'. The other deductions cover National Water Rehabilitation Projects, National Agricultural Technology Support Programme, Recovery of Debt owed to FIRS (WHT & VAT), Payment for Fertilizer, State Water Supply

Project, State Agricultural Project, National Fadama Project and Repayment to NEPA. Therefore, there are basically, four items of revenue allocation and three items of deduction. These are itemized in table 4.

**Table 3: Items of Revenue Allocation and Deductions**

Items of Revenue Allocation	Items of Deductions
1. Statutory	External Debt
2. Excess Crude Oil	Contractual Obligation
3. Value Added Tax (VAT)	Other Deductions
4. 13% Share of Derivation	

**Comparative Analysis of Allocation to the Three Tiers**

A comparative analysis of the observed allocation reflects the sharing formula as shown in figures 1, 2 and 3. In the case of statutory allocation, it can be seen that federal government had the highest allocation of about N9.48 trillion with all the states had N4.77 trillion while LGCs had 3.76 trillion under the period of review. A total of 1.960 trillion was allocated as 13% derivation fund from statutory allocation. Similarly, the excess crude oil sharing shows FG raking N1.536 trillion, states N1.049 trillion and LGCs N901 billion. A total of N377 billion was allocated as 13% derivation fund from excess crude oil allocation. The States had a good share of VAT allocation which amounted to N880 billion. They are followed by the LGCs with a figure of N560.8 billion while FGN had N240 billion.

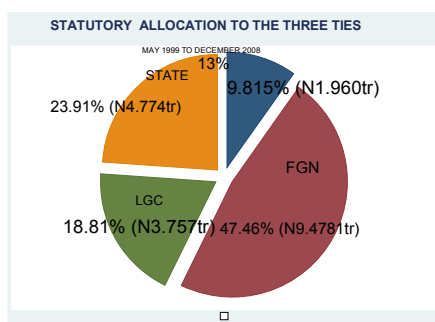


Fig 1

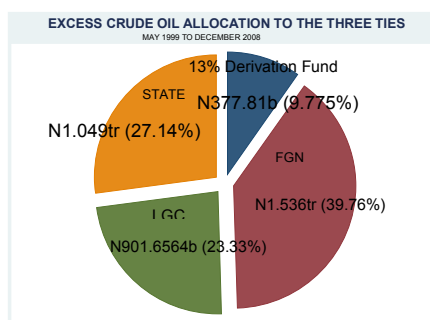


Fig.2

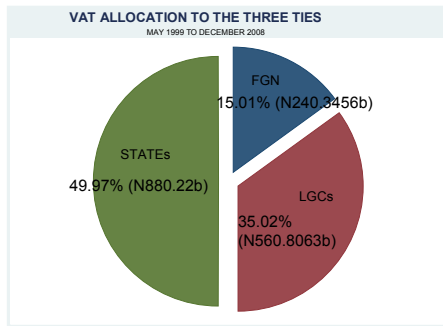


Fig.3

The most remarkable feature of these three items of revenue allocation is the observed skewness in their distribution. In other words, the distribution is inequitable. While statutory and excess crude oil apparently favoured FG, States benefited more from VAT. What this suggests is that the federal government is well positioned financially with huge fund at its disposal. The lopsidedness in the revenue allocation is the genesis of the socio-economic and political problems being experienced in the country. The extent of this unevenness is displayed in fig. 4 and fig. 5 below. Looking at the average monthly statutory allocation to each of the three tiers of government, it can be observed that the gap between the federal and state governments in Nigeria is very wide whereas the gap between states and local governments are also wide but not as wide as that of federal government. A number of commentators have attributed this phenomenon as the basis for the massive corruption at the federal level.

Fig. 4

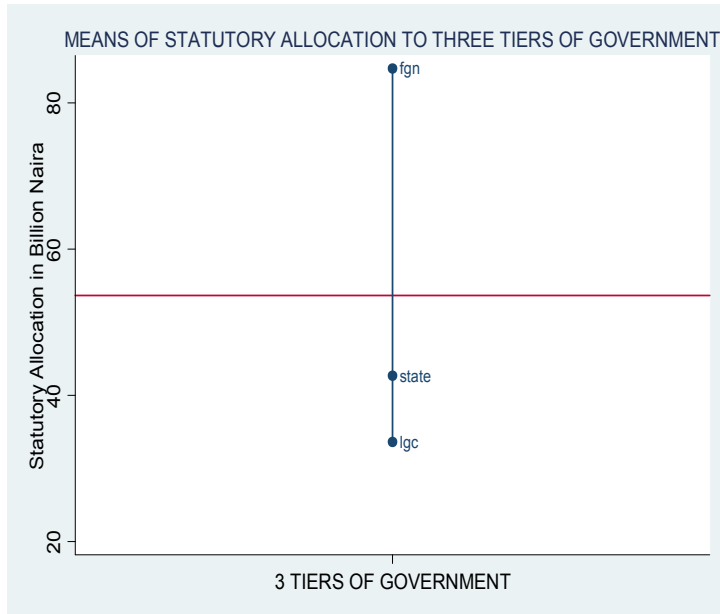
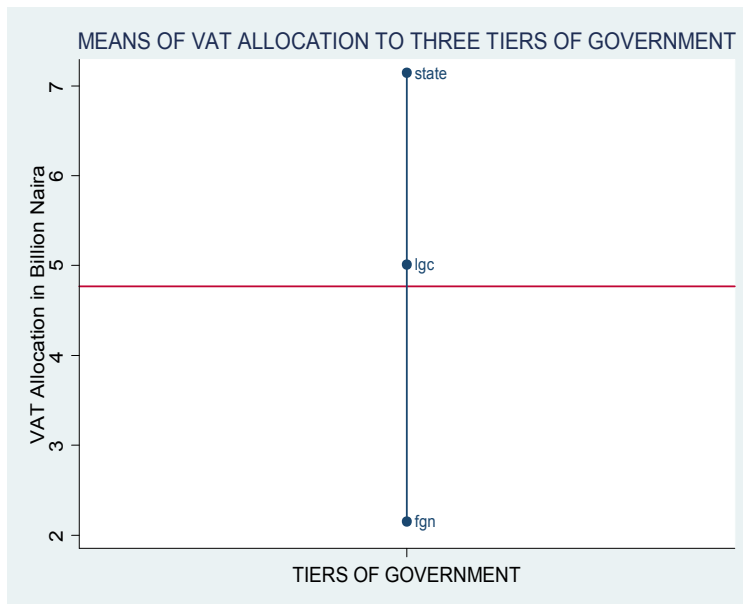


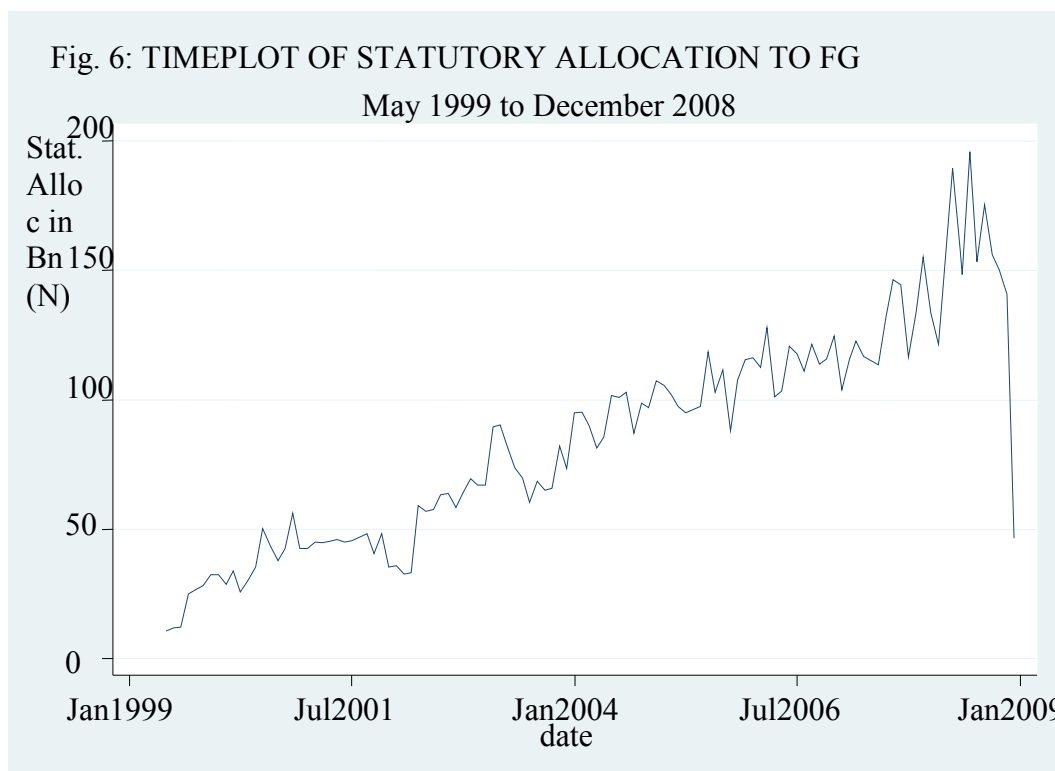
Fig. 5



A different picture emerges from the average monthly allocation of VAT proceeds to all the sharing units. The proceeds are normally shared to FG, States and LGAs at 15%, 50% and 35% respectively. The available data for the period under study truly reflect this. The mean of VAT allocation between the states and the federal government are far apart

but the distance between the local and the state governments was not as wide as that of federal government.

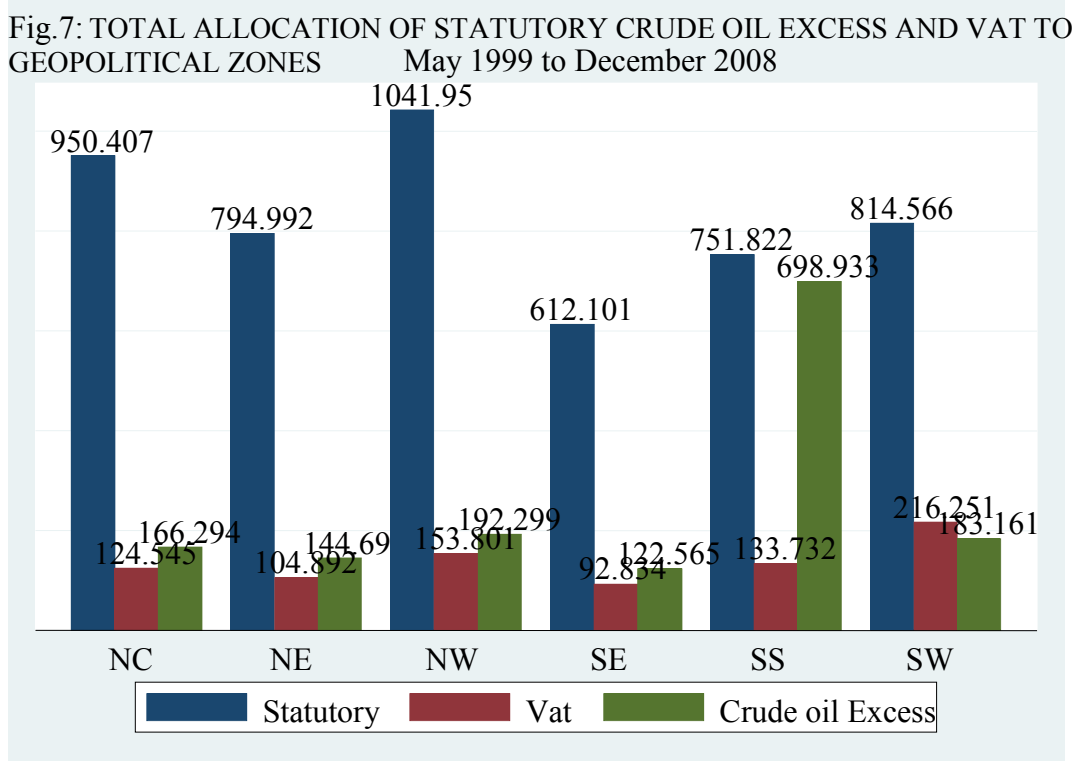
The distinguishing feature between the three allocations is that the amount involved in the case of statutory and excess crude oil is substantially higher, in fact in multiple folds than that of VAT allocation. It is also interesting to note that within the period of review-beginning from May 1999 to December 2008, the rate and level of growth in the trends of movement of the amount involved in the statutory allocation has been consistently higher and rising over time except for the sharp decline in the late 2008. (See fig. 6 below). The drop was as a result of militancy in the Niger Delta area and the global economic downturn.



### Comparative Analysis of Revenue Allocation to the Geo-Political Zones

From geo-political zones perspective, North-West zone had the highest statutory allocation of N1.041 trillion, immediately followed by North-Central with N950.47 billion over the period of review. In this analysis Federal Capital Territory (FCT) was treated as part of North-Central zone thus having seven states. The least allocation goes to the South-East with N612.101 billion during the same period. The difference between

North-East and South-South zones was not significant when compared to other geopolitical zones. The allocation of VAT across the geo-political zones depicts that there was no strikingly differences among them. Though, South-Western states had the highest share of the allocation, followed by North-West zone. In terms of crude oil excess allocation among the zones, we however noticed markedly difference in the distribution. For instance, what goes to South-South is highest and substantial compared to other geopolitical zones. The reason for this is obvious being predominantly oil producing region. The smallest allocation goes to South-East zone with N122.565 billion as depicted on the diagram. The South-West zone also had about N183.64 billion out of the entire crude oil excess allocation. The distribution of VAT allocation consistently favoured South-Western states as depicted on the diagram. The North-West zone also next that of South-West zone with N153.801 billion. The least collector is South-East zone with N92.834 billion.

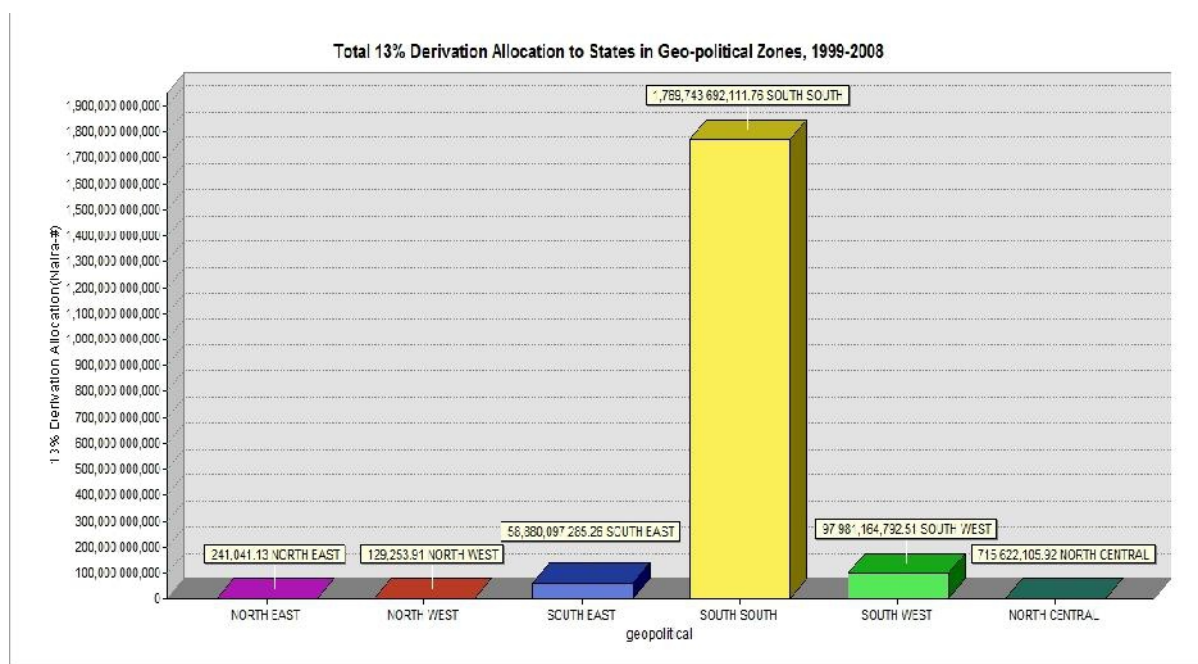


The striking feature of the allocations to the geopolitical zones is the performance of the South-East zone. In all the three items of revenue captured in fig. 7, the zone recorded the least figures. One plausible reason is that while other zones have six (6)

states each except North-West and North-Central with seven (7) each, the zone has just 5. It is not unlikely that if all the zones have equal number of states, say 6, amount shared might as well be nearly even except in the case of crude oil excess. The point being made is that the manner or the basis of sharing statutory and VAT among states appear fair and reasonable.

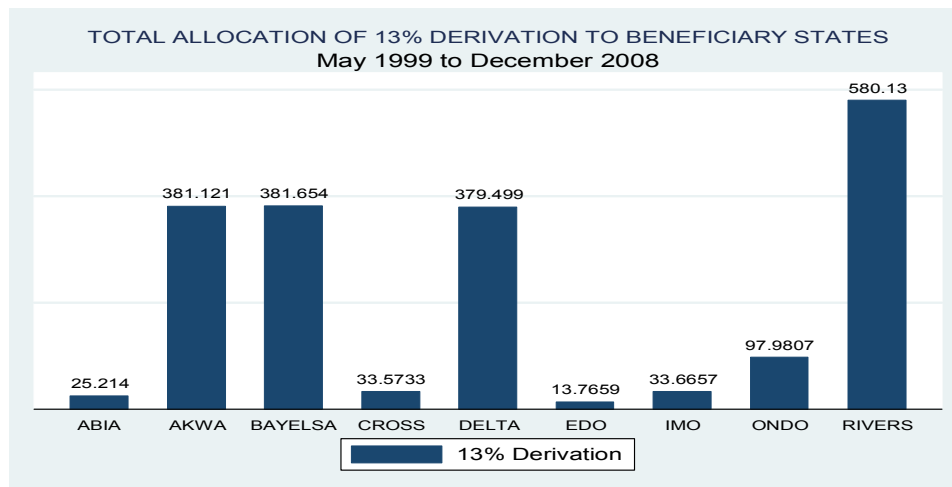
The 13% derivation fund is mostly benefited by South-South geopolitical zone as shown in fig. 8 below. The zone received N1.77 trillion out of N1.96 trillion shared during the period. South-West and South East got N97 billion and N58 billion respectively thereby showing better performance compared to the remaining three zones because of the presence of one or two oil producing states in each. A careful analysis of the 13% .

Fig. 8



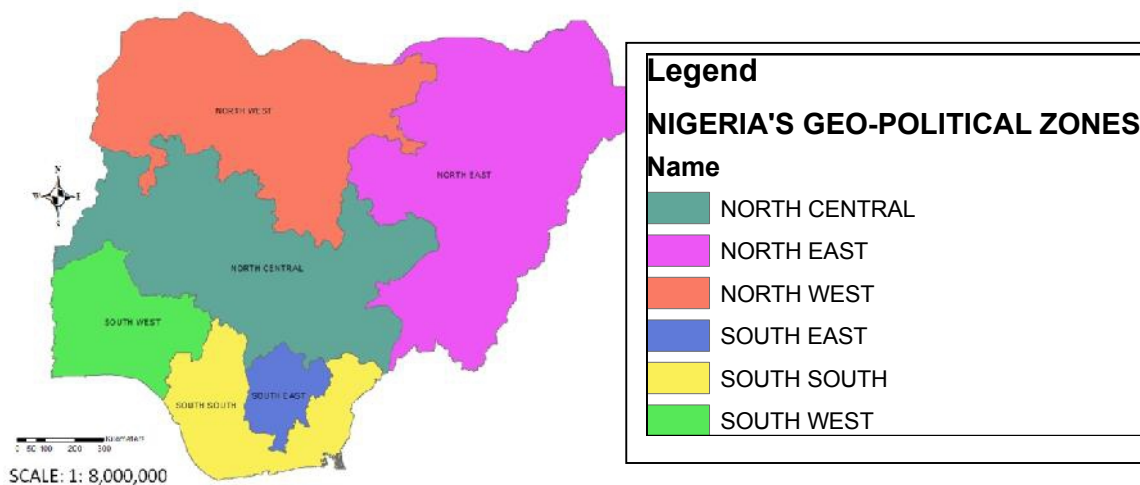
Allocation among the nine oil producing states (see fig. 4.3) shows unequal distribution. The dominating state is Rivers (N580 billion). Bayelsa (381.7 billion), Akwa Ibom (381.1) and Delta (379.5) are level players. Edo State came behind with N13.8 billion.

Fig. 9



However, when allocations from the four items of revenue are combined which now represents the gross allocation, the emerging picture is interesting as shown in figures. 11 to 14. The stinkinly rich zone is South-South which raked in N3.354 trillion within the period of study. The gap between it and the zone following is incredibly wide (about N2 trillion). A critical comparism of the allocation to all the political zones in the country shows a wide variation in the allocation of the federal generated revenue to all the political zones in the country, especially covering the period under study (See Figures 11 to 14). This phenomenon generates a number of questions such as: where are all the monies? Why are all the agitations?

Fig. 10: Map of Nigeria showing the Six (6) Political Zones differentiated with colours





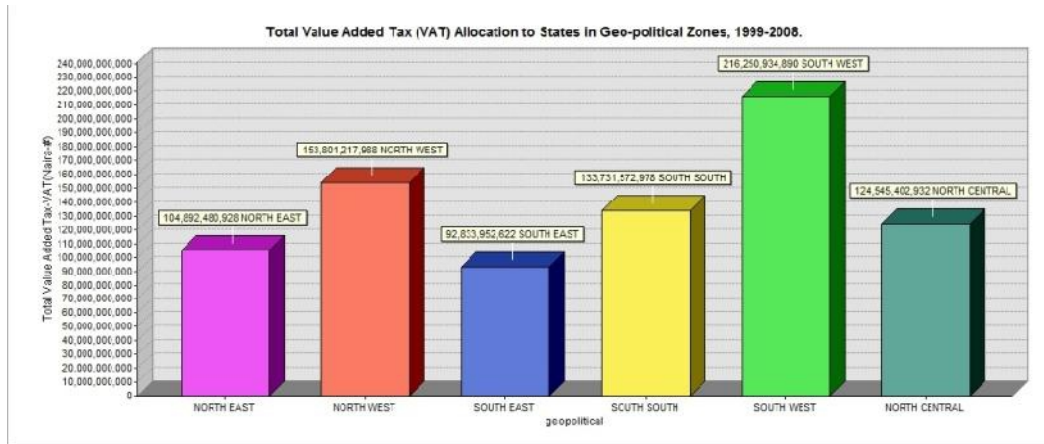


Fig 11 Total Value Added Tax (VAT) Allocation to States in Geo-political Zones

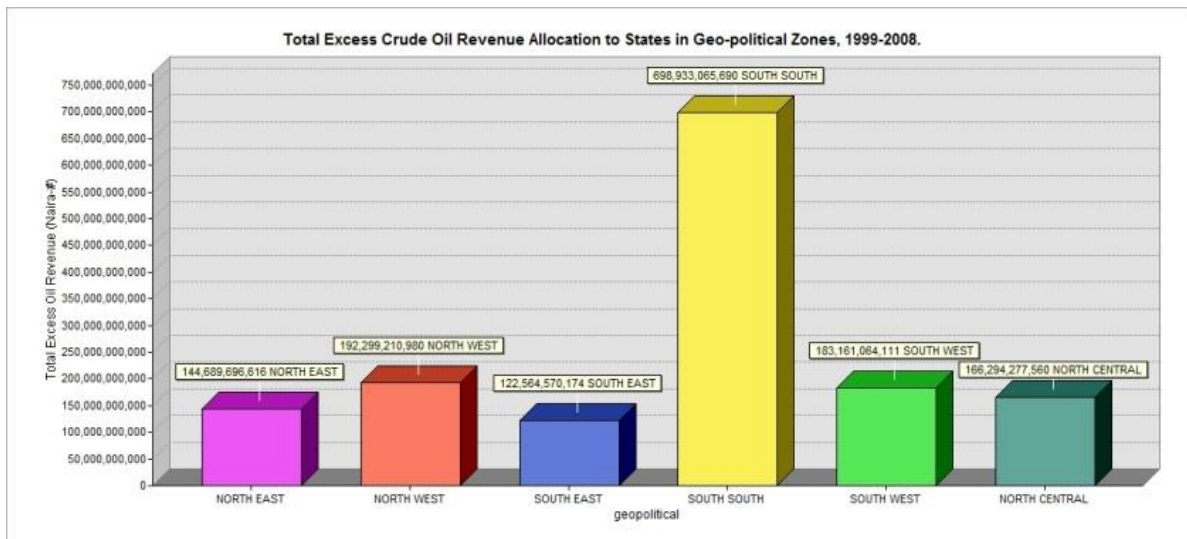


Fig 12 Total Excess Crude Allocation to States in Geo-political Zones

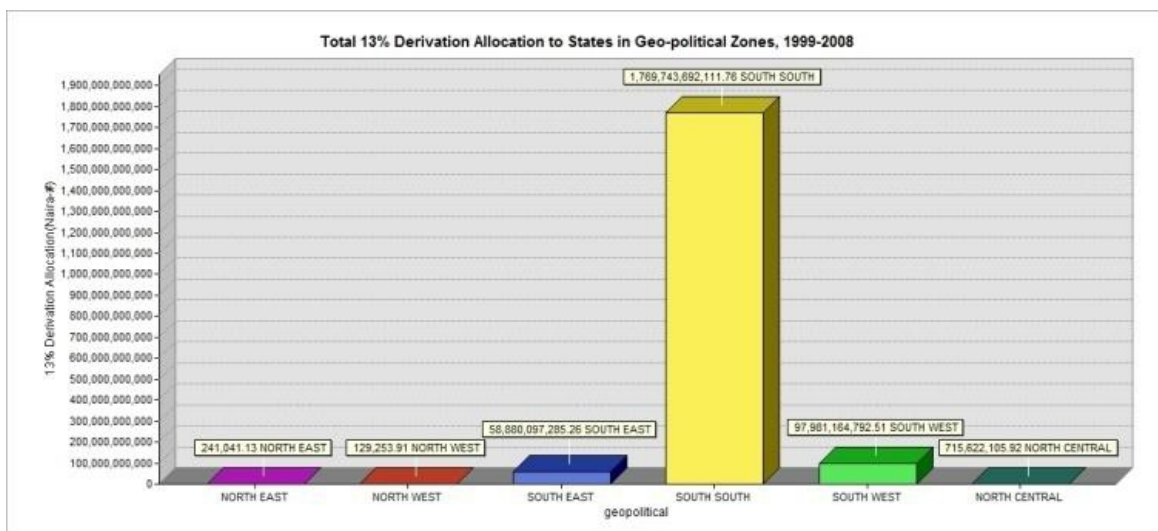


Fig 13: Total 13% Derivation Allocation to States in Geo-political Zones

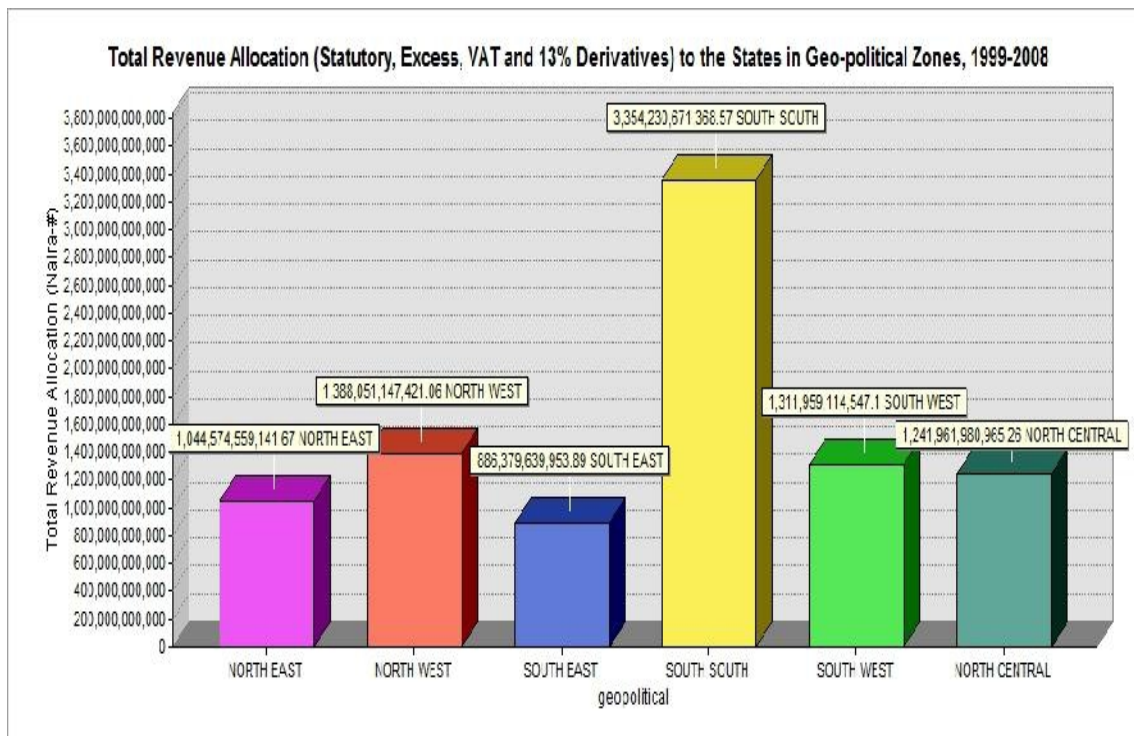


Fig 14: Total Revenue Allocation (Statutory, Excess, VAT and 13% Derivatives) to States in Geo-political Zones

## Conclusion:

The main objective of this paper is to provide a spatial as well as conducting a detail comparative analysis of revenue allocation in Nigeria from 1999-2008. Though, a large body of study exists on fiscal federalism and revenue allocation both in the developed and developing countries, the bulk of these studies focused majorly on issues bothering on allocation formula rather than analysing allocated figures. To this end, this project has been able to fill the void by looking at the two objectives using both Econometric and GIS based approaches. Emanating from the Econometric approach is a number of interesting outcomes. The results further confirm the findings of earlier studies on the lopsidedness in the profile of revenue allocation of the Nigerian federation in favour of the central government to the detriment of its constituent parts. These were found to be true for statutory allocations and crude oil excesses over the period of review but with VAT allocation charting a different path. The States from south-south region got

the largest percentage in the share of crude oil excesses. In effect, the distributional consequences have implications for the growth and development of the constituent units in particular and the federation in general. A companion paper (Olubusoye and Oyedotun) describes and details the state by state analysis of the revenue allocation in Nigeria between 1999 and 2008 when the republic returns to democracy.

### **Acknowledgement:**

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