

# A Comparative Analysis of the VAT System of Developed and Developing Economies (UK and Nigeria)

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## Abstract

This research work focused on a comparative analysis of the VAT of developed and developing economies, with UK and Nigeria as subjects of comparison. Two hypotheses were tested using OLS regression technique from a span of data from 2000 to 2013. Findings revealed that the UK value added tax is not more significant than the Nigeria's value added tax in influencing economic growth and that the UK value added tax is more significant than the Nigeria's value added tax in influencing economic development. Implication of findings shows that revenue generated from VAT in developed economies are efficiently utilized with the reverse being the case in developing economies. It was recommended that revenue generated from tax in developing nations should be put into productive activity that will enhance economic growth and development and that a better tax model should be proposed in developed economies to balance the weight of tax burden between the rich and the poor so as to have equilibrium in tax collation.

**Keywords:** VAT; EPC; Tax Collation;

## Introduction

VAT is a tax on estimated market value added to a product or service at each stage of its manufacture or distribution and the addition are ultimately added to final consumers (Encyclopedia, 2009). End users of product and services bear the tax burden or the incidence because they cannot recover the tax paid on consumption of goods and services. On the other hand, businesses can recover VAT they pay on goods and services because those goods and services are like intermediate goods and services (Umeora, 2013). They use them to produce further goods and services that will be sold to other business in the supply chain or directly to the final consumers. In UK, standard VAT rate is 20% (GOV.UK, 2012) while in Nigeria, VAT rate is 5%, an attempt to raise it to 10% met stiff resistance from Nigerian Labour Congress (NLC).

Country seeking to improve its revenue generation would opt for a concept enabling it to best realize its objectives with due regards to its peculiar socio-economic make-up - one of these ways is by taxation. Tax can therefore be said to be a means by which government appropriate part of the private sectors' income. Tax revenue is used in meeting non-current and recurrent expenditure. Tax occupies a unique position because it is an important part of government policies. The ability of government to generate revenue from this sector affects services offered by such a government. A means of improving internally generated revenue is through VAT.

However, the essential common feature of tax is that it has been the dynamic nature in every system to reflect the economic and policy needs of that nation. Another common feature of tax is that it has always been a compulsory levy. For government to achieve their laudable objectives, it has been successively trying all techniques in the past which include grouping and segregating tax and those who pay it and varying methods and time of payment. It has been the view that the sole objectives of these groupings, segregations and variations to enable government generate enough revenue without really inconveniencing the tax payers has led to the need for VAT.

It is this idea of trying to collect tax efficiently on the part of the government and pay tax conveniently on the part of the tax payers and together with the fact that the existing monetary policy in Nigeria is not generating the much needed revenue to meet up with government expenditure and the need to review the entire Nigerian tax system which is the major non-oil source of revenue that has prompted the introduction of Value Added Tax (VAT) in Nigeria.

On this background, we are compelled to empirically compare VAT in UK and Nigeria and its effects on economic growth and development.

## Objectives of the Study

1. To establish if the VAT of a developed economy contributes more significantly to economic growth than that of a developing economy.

2. To determine empirically if the VAT of a developed economy contributes more to economic development than that of a developing economy.

## **Theoretical Review**

### **Ibn Khaldun's Theory of Taxation**

This theory was explained in the term of two different effects, the arithmetic effect and the economic effect which the VAT rate have on revenue. The two effects have opposite results on revenue in case the VAT rate are increased or decreased. According to the arithmetic effect, if VAT rates are lowered, the VAT revenue will be lowered by the amount of decrease in the rate. The reverse is the case for an increase in VAT rates (Ishlahi, 2006).

The economic effect however, recognized the positive impact that lower VAT rate have on work, output and employment and thereby the tax base by providing incentives to increase these activities whereas raising VAT rate has the opposite economic effect by penalizing participation in the taxed activities. At a very high VAT rate, negative economic effect dominates positive arithmetic effect, thereby, the VAT revenue declines (Ishlahi, 2006).

### ***A Brief History of Value Added Tax (VAT) in UK according to (Harry, 2010)***

It came into force in 1973, introduced by Lord Barber, the chancellor under Sir Edward Heath, and started off as a simple 10 per cent tax on nearly all goods bought from a business. Since then it has swollen in size, complexity and popularity.

Paddy Behan, a partner at Vantis accountancy firm and considered to be of the country's leading VAT specialists, said: "It is hugely efficient tax, it's a great tax from a revenue raising exercise. It has swept the world. More than 130 countries have now adopted it from Belgium to Burkina Faso. One of the few holding out is America, but academics are talking about Obama introducing it over there."

VAT was originally a French idea, started in the 1950s. Britain introduced it as part of its condition of joining the European Economic Community. All countries joining the EEC had to replace their indirect taxes with the VAT. It replaced the Purchase Tax, which was a fairly complex system that had many different rates.

In the early days it was a relatively low level of no more than 10 per cent, with the exception of petrol and – briefly – electrical appliances, which were deemed in the days before Britain struck North Sea oil to be luxuries. They were subject to a 25 per cent rate. However, Heath's Government, when in opposition, had always promised that key essential items would not be subject to VAT, such as books.

### **History of Value Added Tax in Nigeria**

The idea of introducing VAT in Nigeria came from the study group set up by the Federal Government in 1991 to review the entire tax system. VAT was proposed and a committee was set up to carry out feasibility studies on its implementation.

In January, 1993, the then government agreed to introduce VAT by the middle of the year. It was later shifted to 1st September, 1993 by which time the relevant legislation would have been made and proper ground work done. The actual implementation however, did not commence until January 1994 after the promulgation of the Value Added Tax Decree No. 102 of 1993. According to the decree, a 'VATable' organization is an existing manufacturer, distributor, importer or supplier of goods and services.

### ***Basically there are three types of VAT and they include:***

1. The Consumption VAT: Under the consumption VAT, capital purchases are treated the same way as input. It has three advantages, one of which is that it is easier to compute as the firm does not have to separate expenditures on other items of purchases in determining the VAT base. The main disadvantages of this type of VAT is that it creates refund problems where very heavy and expensive machinery are involved.
2. The Income VAT: With this type of VAT, the tax paid on purchases of capital input is amortized (i.e. credited against the firm's VAT liability) over the expected lives of such capital inputs.
3. The Gross Product VAT: This is the Nigerian type of VAT. Under this type of VAT, no deduction of tax on input of capital purchases is allowed against the firm's output tax. The taxable firm is treated as a final consumer of all of its capital input. The tax paid on the capital input is treated as part of cost of that capital input. Under this arrangement, the revenue is saved and the problem of having to make cash refunds.

## **Empirical Review**

Adereti, Adesina and Sanni (2011) investigated the impact of Value Added Tax on the economic growth of Nigeria. They employed multiple regression model and their findings showed that the ratio of VAT Revenue to GDP averaged 1.3% compared to 4.5% in Indonesia which indicates a positive and significant correlation between VAT Revenue and GDP. Their result also showed that no causality existed between the GDP and VAT Revenue.

Onwuchekwa and Aruwa (2014) explored the impact of value added tax (VAT) on the economic growth of Nigeria. Ordinary Least Square technique was adopted to test the formulated hypotheses. The result showed that

VAT contributed significantly to the total tax revenue of government and by extension, the economic growth of Nigeria. It was found that VAT within the period under scrutiny progressed arithmetically.

Izedonmi and Okunbor (2014) empirically examined the contribution of VAT to the development of the Nigerian economy. It used time series data on the Gross Domestic Product (GDP), VAT Revenue, Total Tax Revenue and Total (Federal Government) Revenue from 1994 to 2010. The data were analyzed using multiple regression modelling. Their findings showed that VAT Revenue accounted significantly for 92% of the variations in Nigeria's GDP. A positive but insignificant correlation between VAT Revenue and GDP was observed. Onaolapo, Aworemi and Ajala (2013) look at VAT and its effect on revenue generation in Nigeria. The stepwise regression analysis technique was adopted to analyze obtained data. Their finding showed that Value Added Tax has statistical significant effect on revenue generation in Nigeria. Bakare (2013) investigated VAT on output growth in Nigeria. Using the Ordinary Least Square regression technique, he found a positive and significant relationship between VAT and output growth in Nigeria. The results of his findings also showed that the past values of VAT could be used to predict the future behaviour of output growth in Nigeria. The main conclusion of the study was that Value Added Tax has the potential to assist in the diversification of revenue sources, thereby providing enough funds for economic growth and development and reducing overdependence on oil for revenue.

Olatunji (2009) studied the effectiveness of the administration of VAT to improve government revenue and boost economic growth in Nigeria. He adopted simple percentage and chi-square for data analysis. The study found that there exists a positive correlation between VAT and GDP. Okoli and Matthew (2015), examined the extent to which VAT had contributed to Nigeria's total federally collected revenue and its position among the other tax components from 1994 to 2012, using the Error Correction Model (ECM) for the analysis, results revealed that VAT was the second-long term source of the total federally collected revenue.

### Knowledge Gap

Though there are many research works done to out-search the relationship between VAT, economic growth and development, this one deviates from the norms, although still looking at the same subject matters, but this time at an International level, comparing the VAT of an advanced economy (United Kingdom) with a developing economy (Nigeria). More so, adopted variable for development is not common among existing research works.

### Research Methodology

The research design employed by the researcher is ex post-facto research which aids measure the relationship between one variable and another using historical data.

The nature of data for the analysis of this study is secondary accessed from the Central Bank of Nigeria Statistical Bulletin, 2013; World Bank Database ([data.worldbank.com](http://data.worldbank.com)); Federal Inland Revenue Service and UK Government Database ([data.gov.uk](http://data.gov.uk)). A regression model has been employed, the essence of regression is to use a mathematical equation to express the nature of the relationship existing between variables and ultimately to use this equation to predict the value one variable given a specific value of the other variable (Ugbam, 2001).

The following is a simple regression model adopted

$Y = b_0 + b_1X + \mu$ . Where: Y = the variable we are trying to predict;  $b_0$  = the intercept;  $b_1$  = the slope; X = the variable we are using to predict Y;  $\mu$  = the error term.

The intercept ( $b_0$ ) is the value of the dependent variable when the independent variable is equal to zero while the slope of the regression line ( $b_1$ ) represents the rate of change in Y as X changes. Because Y is dependent on X, the slope describes the predicted values of Y given X.

The above model can thus be applied in this study as:

$$\text{NIG.GDP} = b_0 + b_1\text{NIG.VAT} + \mu \dots\dots\dots \text{Eqn. (1)}$$

$$\text{UK.GDP} = b_0 + b_1\text{UK.VAT} + \mu \dots\dots\dots \text{Eqn. (2)}$$

$$\text{NIG.EPC} = b_0 + b_1\text{NIG.VAT} + \mu \dots\dots\dots \text{Eqn. (3)}$$

$$\text{UK.EPC} = b_0 + b_1\text{UK.VAT} + \mu \dots\dots\dots \text{Eqn. (4)}$$

Where

GDP – Gross Domestic Product (*Proxy for Economic Growth*)

VAT – Value Added Tax

EPC – Electric Power Consumption (*Proxy for Economic Development*)

### Techniques of Data Analysis

The Techniques of data analysis employed by the researcher is the Ordinary Least Squares method using Statistical Package for Social Sciences (SPSS) version 22.0. The aim of using this method is to minimize the error in our prediction of the dependent variable, and by minimizing the residuals, error will be minimized. By using the "squares" the researcher is precluding the problem of signs thereby giving positive and negative prediction errors the same importance. The outcome of model A and B will be compared to conclude statement in the first Hypothesis while the result of model C and D will be compared also to ascertain the verdict for the second

Hypothesis.

**Population of the Study**

The population for this study comprises all the economic variables and all tax revenue generated by the Federal Government of Nigeria and the United Kingdom from 2000 to 2016.

**Sample of the Study**

The variables adopted for the study are Gross Domestic Product (GDP), Value Added Tax (VAT) and Electric Power Consumption (EPC) from 2000 to 2013 while the sample drawn from all tax revenue generated by the federal government are Value Added Tax (VAT) and total tax revenue from 2002 to 2013. This data was used because it was available and accessible.

**Data Analysis**

**Hypothesis 1: The UK VAT does not significantly influence economic growth than Nigeria's VAT**

**Hypothesis 2: The UK VAT does not contribute more to economic development than Nigeria's VAT**

**DECISION RULE: Reject H<sub>0</sub> if the Model A is generally more significant, otherwise do not reject H<sub>0</sub>.**

**Table I VAT, economic growth and Economic Development Data for UK and Nigeria from 2000 to 2013**

Year	UK.EPC	UK.VAT	UK.GDP	NIG.EPC	NIG.VAT	NIG.GDP
2000	6114.529	58,509	968346	74	30.64	6713.57
2001	6141.983	60,284	1006371	75	44.91	6895.2
2002	6142.75	63,000	1054355	104	52.63	7795.76
2003	6174.551	67,525	1118059	101	65.89	9913.52
2004	6138.754	71,907	1172773	123	96.2	11411.07
2005	6270.984	73,005	1241819	129	87.45	14610.88
2006	6200.554	76,104	1310789	111	110.57	18564.59
2007	6102.413	80,299	1377734	138	144.37	20657.32
2008	6015.727	80,708	1414107	126	198.07	24296.33
2009	5643.129	68,637	1382229	120	229.32	24794.24
2010	5700.872	80,867	1414635	135	275.57	54204.8
2011	5472.604	95,207	1452075	149	318	63258.58
2012	5451.984	98,623	1495576	155	347.7	71186.53
2013	5407.291	103,757	1551553	0	389.53	80222.13

Source: CBN Statistical Bulletin, 2013; UK Government Database and World Bank Database

**First Model (general model):  $GDP = b_0 + b_1VAT + \mu$**

**Model A:  $NIG.GDP = b_0 + b_1NIG.VAT + \mu$**

**Table A1 Model Summary**

Equation 1	R	.967
	R Square	.935
	Adjusted R Square	.930
	Std. Error of the Estimate	6858.506

**Table A2 ANOVA**

	Sum of Squares	Df	Mean Square	F	Sig.
Equation 1 Regression	8176631292.760	1	8176631292.760	173.826	.000
Residual	564469248.527	12	47039104.044		
Total	8741100541.287	13			

**Table A3 Coefficients**

		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
Equation 1	(Constant)	-5518.995	3234.007		-1.707	.114
	NIG.VAT	205.697	15.602	.967	13.184	.000

The R of .967 above shows that there is a strong positive relationship between the explanatory variable (Value Added Tax of Nigeria) and the dependent variable (gross domestic product). The R<sup>2</sup> of .935 shows that 93.5% of the variation in GDP can be explained by NIG.VAT. The Anova table shows that the model fit is very significant (p-value<.001), thus valid for prediction. The intercept of -5518.995 shows the value of GDP when NIG.VAT is constant. The slope of 205.697 shows that at every unit increase in NIG.VAT, GDP will increase by 205.697 units. The independent variable (NIG.VAT) is statistically significant (p-value<.001) in explaining the variation in GDP

price index. After replacing the intercept, the slope and the standard error from the above regression output, we will have  $NIG.GDP = -5518.995 + 205.697NIG.VAT + 6858.506$ .

**Model B: UK.GDP =  $b_0 + b_1UK.VAT + \mu$**

**Table B1 Model Summary**

Equation 1	R	.899
	R Square	.809
	Adjusted R Square	.793
	Std. Error of the Estimate	86420.650

**Table B2 ANOVA**

		Sum of Squares	Df	Mean Square	F	Sig.
Equation 1	Regression	379243754073.613	1	379243754073.613	50.779	.000
	Residual	89622344592.745	12	7468528716.062		
	Total	468866098666.357	13			

**Table B3 Coefficients**

		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
Equation 1	(Constant)	347927.540	133222.678		2.612	.023
	UK.VAT	12.137	1.703	.899	7.126	.000

The R of .899 above shows that there is a strong positive relationship between the explanatory variable (Value Added Tax of UK) and the dependent variable (gross domestic product). The  $R^2$  of .809 shows that 80.9% of the variation in GDP can be explained by UK.VAT. The Anova table shows that the model fit is very significant (p-value<.001), thus valid for prediction. The intercept of 347927.540 shows the value of GDP when UK.VAT is constant. The slope of 12.137 shows that at every unit increase in UK.VAT, GDP will increase by 12.137 units. The independent variable (UK.VAT) is statistically significant (p-value<.001) in explaining the variation in GDP. After replacing the intercept, the slope and the standard error from the above regression output, we will have  $UK.GDP = 347927.540 + 12.137UK.VAT + 86420.650$ .

**Table AB Generalization Basis**

Basis for Generalization	Model A	Model B	REMARK
Sig.	.000	.000	AB
$R^2$	.935	.809	A
t (difference)	-1.707	-2.082	A

**Decision**

Having weighed the basis for generalization above, it was found that the value added tax of Nigeria is more significant in explaining the variations in GDP than that of UK, hence we cannot reject the statement that the UK VAT does not significantly influence economic growth than Nigeria's VAT and firmly assert that the UK VAT does not significantly influence economic growth than Nigeria's VAT.

**MODEL C: NIG.EPC =  $b_0 + b_1NIG.VAT + \mu$**

**Table C1 Model Summary**

Equation 1	R	.016
	R Square	.000
	Adjusted R Square	-.083
	Std. Error of the Estimate	41.407

**Table C2 ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
Equation 1	Regression	5.526	1	5.526	.003	.956
	Residual	20574.474	12	1714.539		
	Total	20580.000	13			

**Table C3 Coefficients**

		Unstandardized Coefficients		Beta	T	Sig.
		B	Std. Error			
Equation 1	(Constant)	109.087	19.525		5.587	.000
	NIG.VAT	.005	.094	.016	.057	.956

The R of .016 above shows that there is a weak positive relationship between the explanatory variable (Value Added Tax of Nigeria) and the dependent variable (Electric power consumption - per capita). The R<sup>2</sup> of .000 shows that minute or microscopic fraction of the variation in Electric power consumption - per capita can be explained by NIG.VAT. The Anova table shows that the model fit is very non-significant (p-value .956 > .05), thus not valid for prediction. The intercept 109.087 shows the value of NIG.EPC when NIG.VAT is constant. The slope of .005 shows that at every percentage increase in NIG.VAT, NIG.EPC will increase by 0.5%. The independent variable (NIG.VAT) is statistically non-significant (p-value .956 > .05) in explaining the variation in electric power consumption. After replacing the intercept, the slope and the standard error from the above regression output, we will have  $NIG.EPC = 109.087 + .005NIG.VAT + 41.407$ .

**MODEL D: UK.EPC = b<sub>0</sub> + b<sub>1</sub>UK.VAT + μ**

**Table D1 Model Summary**

Equation 1	R	.781
	R Square	.610
	Adjusted R Square	.577
	Std. Error of the Estimate	205.604

**Table D2 ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
Equation 1	Regression	792505.092	1	792505.092	18.747	.001
	Residual	507278.299	12	42273.192		
	Total	1299783.391	13			

**Table D3 Coefficients**

		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
Equation 1	(Constant)	7278.567	316.952		22.964	.000
	UK.VAT	-.018	.004	-.781	-4.330	.001

The R of .781 above shows that there is a fairly positive relationship between the explanatory variable (Value Added Tax of UK) and the dependent variable (Electric power consumption - per capita). The R<sup>2</sup> of .610 shows that 61.0% of the variation in Electric power consumption - per capita can be explained by UK.VAT. The Anova table shows that the model fit is very significant (p-value .001 < .05), thus valid for prediction. The intercept of 7278.567 shows the value of UK.EPC when UK.VAT is constant. The slope of -.018 shows that at every percentage increase in UK.VAT, UK.EPC will decrease by 1.8%. The independent variable (UK.VAT) is statistically significant (p-value .001 < .05) in explaining the variation in electric power consumption in UK. After replacing the intercept, the slope and the standard error from the above regression output, we will have  $UK.EPC = 7278.567 - 0.018UK.VAT + 205.604$ .

**Hypothesis II**

**The UK value added tax is not more significant than the Nigeria's in influencing economic growth**

**Table CD Generalization Basis**

Basis for Generalization	Model C	Model D	REMARK
Sig.	.956	.001	D
R <sup>2</sup>	.016	.610	D
t (difference)	5.587	22.964	D

**Decision**

Having weighed the basis for generalization above, it was found that the value added tax of UK is more significant (Sig. = .001) in explaining the variation in UK's EPC than that of Nigeria's value added tax, hence the rejection of the statement that the UK VAT does not contribute more to economic development than Nigeria's VAT and conclude therefore that the UK VAT contributes more to economic development than Nigeria's VAT.

**Findings and Discussion**

*Having tested all postulations, we found that*

1. The UK value added tax is not more significant than the Nigeria's value added tax in influencing economic growth.  
 This result doesn't infer that the UK VAT was not significant in explaining economic growth, the results of Model A and Model B were very significant in explaining the variation in economic growth, just that Model A was generally seen to have performed better in explaining the variation in GDP.
2. The UK value added tax is more significant than the Nigeria's value added tax in influencing economic

development.

The implication of the above findings shows that VAT has contributed to economic growth in both UK and Nigeria. However, in Nigeria, VAT has not improved economic development. Thus, this may have been the reason for increasing unemployment rate, increasing infant mortality rate and inadequate power supply while in UK, economic development is very high and adequately enhanced.

### **Conclusion and Recommendations**

Given the findings, we conclude that the UK value added tax was found to be more significant in influencing economic growth and development. This could be because of the rate of VAT the charge citizens and the citizens' willingness to pay because what the Government does with it is evident. However, in Nigeria the reverse is the case.

*We would want policy makers to see to it that:*

- i. Revenue generated from tax in developing nations should be put into productive activity that will enhance economic growth and development.
- ii. Citizens in developing countries are well educated on the importance of tax compliance, stating why, and how they help their country by complying.
- iii. Government give the citizens in developing countries reasons to pay tax.
- iv. A better tax model should be proposed to balance the weight of tax burden between the rich and the poor so as to have equilibrium in tax collation.

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