THE CONTRIBUTION OF TAX REVENUE TO INTERNALLY GENERATED REVENUE IN THE FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA

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ABSTRACT

The study examined the contribution of tax revenue to internally generated revenue (IGR) in Federal Capital Territory (FCT), Abuja, Nigeria from 1995-2020. The study adopted ex-post facto research design. The variables in the model include internally generated revenue as the dependent variable while company income tax (CIT), personal income tax (PIT) and value added tax (VAT) were captured in the model as the explanatory variables. The method adopted for the study was Autoregressive Distributed Lag (ARDL) models. Findings from the unit root test show that IGR, CIT and VAT were stationary at first difference while PIT was stationary at level. The Cointegration test result from the ARDL bound test shows that the variables are co-integrated, which implies that the time series variables considered have long-run equilibrium relationship. Findings from the ARDL regression result shows that the coefficients of CIT and VAT have negative relationship with IGR in FCT, Abuja while the coefficient of PIT has positive relationship with IGR in FCT, Abuja. Findings also show that effects of CIT, PIT and VAT on IGR in FCT, Abuja were statistically insignificant. The study recommends among others that there should be accountability and transparency from government officials on the management of revenue derived from the various components of taxation particularly CIT, PIT and VAT that directly concerns individuals in the society.

Keywords: *Tax, Revenue, Economic, Growth*

JEL Classification: *C62, D64, D18*

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INTRODUCTION

In this twenty first century, taxation serves to increase the value of demand, stimulate investment and promote economic growth. Governments of developed and less developed economies are saddled with crucial role of ensuring a reasonable increase in the growth of the economy over time (Edame & Okoi, 2014). There are a number of theories that underline the concept of taxation, including the decentralization theorem that deals with the distribution of public sector functions and finances between different levels of government (Ozo-Eson, 2005). Policies and laws used to shape and guide fiscal policy are made by government. Generally, in designing fiscal policy government uses taxation as a tool to promote economic growth. Economic growth of any country is typically measured by increase in gross domestic product (GDP) and sustainable development, although economists have proposed broader measures of economic well-being and have identified a number of factors that affect economic growth, including geography, political institutions, and financial markets (Daron & James, 2012). For development and growth of any society, the provision of basic infrastructure is quite necessary. This perhaps explains why the government shows great concern for a medium through which funds can be made available to achieve their set goals for the society (Fagbemi, Uadiale, & Noah, 2010). The value added tax (VAT), which replaced the old sales tax in 1994 in Nigeria, has before its introduction been identified as the main source of revenue in several developing countries. Particularly in Africa, value added tax has maintained 30% of the aggregate revenue generated (Salizi & Squire, 1988). Records showed that decline in oil prices in recent times has led to decreased funds available for distribution among federal, state and local governments in Nigeria (Afuberon & Okoye, 2014). The fluctuation in oil prices in the international market has been a serious concern for Nigerian government, therefore, there is need to diversify the economy.

Tax revenue is the most vital and principal tool that boosts and sustains economic growth of a country (Munir & Sultan, 2016). It affords emerging countries an unwavering and foreseeable economic environment that promotes growth and conveniently funds social and physical infrastructural needs. Tax revenue serves as a means of funds which is used to meet social and physical infrastructural needs like good roads, portable water, accessible/affordable health care services, etc. Taxation

is the most important revenue source of the government which helps in provision of public goods and services (Omodero, Okafor, Azubike & Ekwe, 2016). The basic idea behind taxation is to create adequate revenue to increase the well-being of the people with a particular aim of increasing the position of the economic growth and development. Although reverse has been the case in Nigeria, the economy of Nigeria has stayed in an atrocious state with macroeconomic indicators showing an economy starved of revival, reformation and rejuvenation (Olashore, 1999).

Nigeria runs a federal system of government that consists of three tiers; that is, the federal, state and local governments. Each of these tiers has constitutionally assigned responsibilities to discharge. According to Orewa (1983), it has been generally agreed that no central government can satisfactorily conduct administration wholly from the capital through civil servants, based at the headquarters.

Appah (2010) stated that revenue from taxation forms the bedrock of the revenue base of most governments all over the world. The extent to which a government can provide social, economic and infrastructural development is a function of the amount of funds at its disposal. Studies have revealed that the impact of tax revenue in promoting economic growth has not been commensurate to the amount of revenue derived from taxes by government. The ratio of tax paid compared to social amenities provided by the government is alarming (Omodero, Okafor, Azubike & Ekwe, 2016).

It is important to stress that sustainable economic development of states in Nigeria depends on the ability of such states to generate revenue internally to supplement the revenue allocation from federation account. In other words, federal allocations are not sufficient to sustainably guarantee appreciable development in states and local governments. This explains the need for states including the Federal Capital Territory to step up efforts towards raising internally generated revenue (IGR) so as to sustain the economy of the nation at both the federal and subnational levels (Appah, 2010). A key government instrument for raising IGR is taxation. It is thus necessary to investigate the contribution of tax revenue in Nigeria at both the national and subnational levels. This paper has thus attempted to investigate the contribution of tax revenue to internally generated revenue in the Federal Capital territory (FCT), Abuja.

Research Questions

i. What is the impact of company income tax on internally generated revenue (IGR) in FCT- Abuja, Nigeria?
ii. To what extent has personal income tax impacted internally generated revenue (IGR) in FCT- Abuja, Nigeria?
iii. To what extent does value added tax influence internally generated revenue (IGR) in FCT- Abuja, Nigeria?

Objectives

The main objective of this paper is to establish the contribution of tax revenue to internally generated revenue (IGR) in Federal Capital Territory (FCT), Abuja. The specific objectives are to:

i. evaluate the impact of company income tax on internally generated revenue (IGR) in FCT- Abuja Nigeria.
ii. examine the impact of personal income tax on internally generated revenue (IGR) in FCT- Abuja, Nigeria.
iii. investigate the impact of value added tax on internally generated revenue (IGR) in FCT- Abuja, Nigeria.

Hypotheses

i. Company income tax has no significant impact on internally generated revenue (IGR) in FCT- Abuja, Nigeria.
ii. Personal income tax has no significant impact on internally generated revenue (IGR) in FCT- Abuja, Nigeria.
iii. Value added tax has no significant impact on internally generated revenue (IGR) in FCT- Abuja, Nigeria.

LITERATURE REVIEW

Conceptual Issues

Company Income Tax (CIT) is charged on any company gains or profit accruing in, derived from, brought into, earned in and received in Nigeria. A Company is defined by Section 93 (1) of the Companies Income Tax Act CAP 60 Laws of the Federation

of Nigeria (LFN), 1990 as “any company or corporation other than a corporation sole, established by or under any law in force in Nigeria or elsewhere”. John (2011), argued that both Acts of the National Assembly are made to serve economic and fiscal purposes. While CAMA regulates incorporation, control and management of companies, CITA charges to tax the profits of these companies.

Personal Income Tax (PIT) is imposed on individuals or entities (taxpayers) that varies with respective income or profits (taxable income). Personal Income Tax generally is computed as the product of a tax rate times taxable income. Direct tax is levied on income of a person. Personal income tax is a tax on the Pay As you Earn (PAYE) basis; the tax payable depends on how much is earned by the tax payer. Akintoye and Tashie (2013) remarked that the peoples' willingness to pay tax is greatly influenced by their perception of the government's delivery in FCT.

Value Added Tax (VAT) has become a major source of revenue in many developing countries like Nigeria. Evidence suggests that in these countries VAT has become an important contribution to total government tax revenue (Ajakaiye, 2000). Value

Added Tax decree was established in Nigeria in 1993 but was implemented in 1994. VAT is a consumption tax that is relatively easy to administer and difficult to evade and it has been embraced by many countries worldwide (Federal Inland Revenue Service, 1993).

Theoretical Review

Laffer model which is described in terms of two interacting effects of taxation: a "mathematical effect" and an "economic effect” is adopted in this study. The "mathematical effect" assumes that tax revenue raised is the tax rate multiplied by the revenue available for tax base. The model is stated as:

$$R = t \times B \quad \text{----------(1)}$$

Where R is revenue, t is the tax rate and B is the taxable base; at a 0% tax, no tax revenue is raised. The "economic effect" assumes that the tax rate will affect the tax base itself. At the extreme of a 100% tax rate, the government collects zero revenue because taxpayers change their behavior in response to the tax rate: either they lose their incentive to work, or they find a way to avoid paying taxes. Thus, the "economic effect" of a 100% tax rate is to decrease the tax base to zero. If this is the case, then somewhere between 0% and 100% lies a tax rate that will maximize revenue. If the tax base reacts to the tax rate linearly, the revenue maximizing rate could theoretically be any percentage greater than 0% and less than 100%. The problem is similar to that of the monopolist who must never increase prices beyond the point at which the elasticity of demand exceeds one in absolute value (Laffer, 1981).

Empirical Review

Ayeni and Afolabi (2020) examined the dynamic relationship between tax revenue, infrastructural development and economic growth in Nigeria, using an annual secondary time series data from 1981 – 2018. The unit root properties of the series were examined using both Augmented Dickey Fuller (ADF) test and Phillip Perron (PP) test, while the Johansen Cointegration test was employed to examine if the series are cointegrated. The results reveal that the series are all integrated of order 1 and non-cointegrated. To examine the direction of causality and the interrelationship among the variables, a vector autoregression (VAR) causality test was carried out, and a VAR at-first difference model from the impulse response results show that while tax revenue influences economic growth and infrastructure, infrastructure does not influence economic growth, but significantly influences tax revenue collected. The results reveal a unidirectional causality running from tax revenue to economic growth and from economic growth to infrastructure, while a bi-directional causality is found between tax revenue and infrastructural development.

Ukpabi (2019) studied the impact of indirect taxation and economic growth in Nigeria. Time series data were applied in conducting the research. Ordinary Least square (OLS) method of analysis was adopted after determining the stationarity of the variable using Augmented Dickey-Fuller technique. Findings reveal ample long run and short run relationship among variables using the Johansen cointegration and Vector Error Correction Mechanism. The result showed that of the two indirect tax

sources (Value Added Tax and Customs and excise duties),Value Added Tax had a positive significant relationship with economic growth.

Omodero, Michael and John (2018) investigated the impact of internally generated revenue (IGR) on economic development of Nigeria. The study used ex-post facto research design to specifically examine the impact of total IGR (TIGR), Federal Government Independent Revenue (FGIR), States IGR (SIGR) and Local IGR (LIGR) Governments IGR on the Real Gross Domestic Product. The time series data employed covered a period from 1981 to 2016 and were gathered from the Central Bank of Nigeria (CBN) Statistical Bulletin. The statistical tool used for the data analysis was the multi-regression and t-test for test of hypotheses. The findings of the study revealed that TIGR, SIGR and LIGR had robust and significant positive impact (p-value = 0.000 < 0.05) on RGDP, while FGIR also indicated positive and significant influence on RGDP. There was an existence of high correlation between the dependent and independent variables. The study concluded that the positive impact of IGR is not out of place but the physical evidence is apparently lacking and, therefore, government policies that could eradicate sharp practices in the government system are required.

Ochi, Eme and Oko (2019) examined the effect of tax revenue generation on economic growth in Nigeria from 1990-2017. The study adopted the ex-post facto research design. Time series data were obtained through on-line retrieval method from Central Bank of Nigeria (CBN) annual reports and Federal Inland Revenue Service (FIRS) annual report for the period covered by the study. The data were analyzed using multiple regression technique in estimating all the coefficients. The result revealed that there is a positive significant effect between tax revenues generation and economic growth in Nigeria.

METHODOLOGY

Research Design

This study adopts ex-post facto research design. Ex-post facto research design was adopted on the basis that it does not provide the study an opportunity to control the variables mainly because they have already occurred and cannot be manipulated. Researchers have little or no control over independent variables in this design (Kerlinger, 1964).

The Model for the Study

To achieve the objective of this study the study adopted autoregressive distributed lag (ARDL) model approach as developed by Pesaran, Shin and Smith (2001). An autoregressive distributed lag (ARDL) model is an ordinary least square (OLS) based model which is applicable for both non-stationary time series as well as for times series with mixed order of integration such as level, first difference and at both. This model takes sufficient numbers of lags to capture the data generating process in a general to specific modeling framework. A dynamic error correction mechanism (ECM) can be derived from ARDL through a simple linear transformation. To illustrate the ARDL modeling approach, the following simple model can be considered:

$$y_t = \alpha + \beta x_t + \delta z_t + \mu_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

The error correction mechanism version of the ARDL model is given by:

$$\Delta y_t = \propto_0 + \sum_{i=1}^{p} \beta_i \Delta y_{t-i} + \sum_{i=1}^{p} \delta_i \Delta x_{t-i} + \sum_{i=1}^{p} \varepsilon_i \Delta z_{t-i} + \lambda_1 y_{t-i} + \lambda_2 x_{t-i} + \lambda_3 z_{t-i} + \mu_t \quad (3)$$

The first part of the equation with β, δ and ε represents short run dynamics of the model. The second part with λ' represents long run relationship. The null hypothesis in the equation $\lambda_1 + \lambda_2 + \lambda_3 = 0$, means non-existence of long run relationship. The study captures the short and long-term impact of the above explanatory variables on the dependent variable of the ARDL model specified as follows:

$$\Delta IGR_t = \propto_0 + \sum_{i=1}^{q} \beta_i \Delta CIT_{t-i} + \sum_{i=1}^{q} \delta_i \Delta PIT_{t-i} + \sum_{i=1}^{q} \varepsilon_i \Delta VAT_{t-i} + \lambda_1 CIT_{t-i} + \lambda_2 PIT_{t-i} + \lambda_3 zVAT_{t-i} + \mu_t \quad (4)$$

Where:

Δ=First difference operator; $\alpha_{0=}$ Constant; β, δ and ε = Short-term effects; λ_1, λ_2 and λ_3 Long-term dynamics of model; μ_t=Error term. In order to determine the optimal offsets (p, q) of our model, the information criteria of Akaike-AIC, Schwarz-SIC and Hannan-Quin has been employed. The structure of equation (3) suggests the presence

of a co-integration relationship between the variables conditioning the estimation of short and long-term coefficients. A priori expectations of a model represent the economic explanation of regressed model and are expected to be positive. This is stated thus; $\beta_0, \beta_1, \beta_2, \& \beta_3 > 0$.

Method of Data Analysis

Augmented Dickey-Fuller test

In statistics and econometrics, an augmented Dickey-Fuller test (ADF) tests the null hypothesis that a unit root is present in a time series sample. The alternative hypothesis is different depending on which version of the test is used, but it is usually stationarity or trend stationarity. It is an augmented version of the Dickey–Fuller test for a larger and more complicated set of time series models stated as:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum_{i=1}^{n} \alpha \Delta y_i + e_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

$$\Delta y_t = \alpha_0 + \alpha_1 y_{\mu-1} + \sum_{n=1}^{n} \alpha_1 \Delta y_i + \delta_t + e_t \quad \ldots\ldots\ldots\ldots (6)$$

Y is a time series, t is a linear time trend, Δ is the first difference operator a_0 is a constant, n is the optimum number of lags in the dependent variable and e is the random error term. The difference between equation (4) and (5) is that the first equation includes just drift. However, the second equation includes both drift and linear time trend

Co-integration Test

Co-integration analysis helps to clarify the long-run relationships between integrated variables. Since the data used for the analysis is time series, cointegration tests were employed to avoid spurious regression. Granger's 1987 paper with Robert Engle formalized the cointegrating vector approach, and coined the term. The basic idea behind cointegration is that if, in the long-run, two or more series move closely together, even though the series themselves are trended, the difference between them is constant. It is possible to regard these series as defining a long-run equilibrium relationship, as the difference between them is stationary (Hall & Henry, 1989).
The Cointegration test equation is**:**

$$y_t = \beta_0 + \beta_1 x_t + \beta_2 x_{2t} + \ldots\ldots + \beta_n x_{nt} + \mu_t \text{----------} (7)$$

x_ts are the time series independent variables at current time. y_t is the time series dependent variable. The βs are the unknown regression coefficients. The μ_t is the disequilibrium error or cointegrating residual.

Error Correction Mechanism (ECM)

An error correction mechanism belongs to a category of multiple time series models most commonly used for data where the underlying variables have a long-run stochastic trend, also known as co-integration. Thus, ECMs directly estimate the speed at which a dependent variable returns to equilibrium after a change in other variables.

Starting from a simple, proportional, long-run equilibrium relationship between two variables becomes:

$Y_t = KX_t$ ..... (8)

Where: Y = inventory; X = sales, or Y as consumption and X as income, or whatever. Of course, a fully specified equilibrium model may well include more variables, and the equilibrium relationship need not be one of direct proportionality, but keeping it simple, the relationship can be written in log form as: $y_t = k + x_t$

Granger Causality Test

Granger causality test is a statistical hypothesis test for determining whether one-time series is useful in forecasting. This is used to test the cause of the independent variables on the dependent variable. If variable A is helpful in predicting B, namely, the regression of B is based on past values of B and past values of A are added, this can greatly enhance the explanatory ability of the regression. Then, A can be called Granger cause of B; otherwise, it can be called non-Granger cause. If two variables Y and X are cointegrated, then there may exist any of the 3 relationships: a) X affects Y, b) Y affects X and c) X and Y affect each other. The first two show unidirectional relationship while the third shows bidirectional relationship. If two variables are not cointegrated, then one does not affect the other and are independent. To determine the pattern of such relationship, Granger (1969) has developed causality test method. If current and lagged values of X improve the prediction of the future value of Y, then it is said that X 'Granger cause' Y. The simple model of Granger causality is as follows:

$$\Delta y_t = \sum_{i=1}^{n} \alpha_i \Delta y_{t-i} + \sum_{i=j}^{n} \beta_j \Delta x_{t-j} + \mu_t \quad (9)$$

$$\Delta x_t = \sum_{i=1}^{n} \lambda_i \Delta x_{t-i} + \sum_{i=j}^{n} \delta_j \Delta y_{t-j} + \mu_{2t} \quad (10)$$

DATA AND INTERPRETATION OF RESULTS

To analyze the impact of tax revenue on internally generated revenue in Federal Capital Territory, Abuja, Nigeria, model estimation was carried out using annual time series data covering the period 1995 to 2020. See Appendix 1 for the regression data.

Unit Root Test Result

Table 1: Augmented–Dickey Fuller (ADF) Test Result

Variables	Critical Value	Level	**ADF Statistics** First Difference	**Remark**
IGR	-2.991878	1.402867	-3.976634**	I(1)
CIT	-2.991878	-4.002899**	-5.303630**	I(0)
PIT	-3.012363	-2.156431	-5.898352**	I (1)
VAT	-2.960411	-2.005990	-5.195029	I(1)

Note: ** Indicates the rejection of the null hypothesis of existence of unit root at 5% significance level. Lags are selected based on Schwarz Information Criteria (SIC).

The ADF unit root test results as reported in table 1 show that IGR, PIT and VAT were stationary at first difference while CIT was stationary at level. This means that IGR, PIT and VAT have mean, variance and covariance that are not constant over time. However, at first difference, each of these time series variables became stationary. The implication of the unit root test results is that IGR, PIT and VAT are integrated of order one, i.e., I (1) while CIT is integrated of order zero i.e., I(0).

ARDL Bound Cointegration Test Result

Table 2: ARDL Bound Test Result for Cointegration

F-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.033318	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Computed by Author, 2021.

Note: The lag length was selected based on the Schwartz Information Criterion. K is the number of regressors. The result of the ARDL bound test for the presence of long-run relationship between the variables is reported in table 2. Since this study employed annual data, the study follows the tradition of Narayan and Smyth (2005) and set the maximum lags in the ARDL model to 2 ($i_{max} = 2$). The estimated model of the ARDL-bound test is based on minimizing the Schwartz Information Criterion (SIC). The bound *F*-test for Cointegration test yields evidence of a long-run relationship between the concerned variables. The computed *F* statistic (F_C = 4.033318) is greater than the upper bound at 5% critical value resulting in the rejection of the null hypothesis of no long-run relationship between the examined variables. This evidence implies that a long-run relationship exists between the variables and rules out the possibility of estimated relationship being spurious.

Error Correction Mechanism

Table 3: Error Correction Mechanism Results

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)*	-0.131277	0.052493	-2.500858	0.0217

R-squared	0.104915	Mean dependent var	4.44E+09
Adjusted R-squared	0.104915	S.D. dependent var	1.22E+10
S.E. of regression	1.15E+10	Akaike info criterion	49.21375
Sum squared resid	3.05E+21	Schwarz criterion	49.26284
Log likelihood	-589.5650	Hannan-Quinn criter.	49.22677
Durbin-Watson stat	2.245468		

Note: The ARDL model was selected based on SIC.

From the error correction mechanism result in table 3 the coefficient of the loading factor (error correction term i.e., ECT) is correctly signed and statistically significant at 5% level of significance. It implies that an error correction mechanism exists so that the deviation from short run to the long-run equilibrium will have a significant impact on internally generated revenue in the Federal Capital Territory (FCT). The value of -0.13 implies that 13% of the disequilibria in IGR of the previous year's shocks adjust back to the long-run equilibrium in the current period. It also implies that adjustment to long-run equilibrium of internally generated revenue is moderate.

Granger Causality Test Result

Table 4: Pair wise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.	Remark
CIT does not Granger Cause IGR	24	0.10382	0.9019	Accept
IGR does not Granger Cause CIT		0.39323	0.6802	Accept
PIT does not Granger Cause IGR	21	0.09517	0.9097	Accept
IGR does not Granger Cause PIT		0.21019	0.8126	Accept
VAT does not Granger Cause IGR	24	0.11279	0.8939	Accept
IGR does not Granger Cause VAT		0.52614	0.5992	Accept
PIT does not Granger Cause CIT	21	2.93282	0.0822	Accept
CIT does not Granger Cause PIT		0.64812	0.5362	Accept
VAT does not Granger Cause CIT	24	0.14074	0.8696	Accept
CIT does not Granger Cause VAT		808.654	4.E-19	Reject
VAT does not Granger Cause PIT	21	0.33502	0.7202	Accept
PIT does not Granger Cause VAT		27.9868	6.E-06	Reject

Table 4 shows the results of the Pairwise Granger causality test. According to Gujarati and Porter (2009), a variable Granger causes the other variable if it helps forecast its future values. Based on the p-value associated with the F-statistic (0.9019) do not reject the null hypothesis that company income tax (CIT) does not Granger cause internally generated revenue (IGR) at 5% level of significance. Also, the F-statistic and the associated p-value (0.6802) indicate that the study does not reject the null hypothesis that internally generated revenue does not Granger-cause company income tax (IGR) at 5% level of significance.

Based on the p-value corresponding to the F-statistic and the associated p-value (0.9097), do not reject the null hypothesis that personal income tax (PIT) Granger cause internally generated revenue (IGR) at 5% level of significance. Also, the F-statistic and the associated p-vale (0.8126) do not indicate the rejection of the null hypothesis that internally generated revenue (IGR) Granger cause personal income tax at 5% level of significance. The Granger causality test shows no causality flowing from personal income tax to internally generated revenue with a feedback mechanism in FCT.

Based on the p-value corresponding to the F-statistic (0.8939), do not reject the null hypothesis that value added tax (VAT) Granger cause internally generated revenue (proxy for economic growth) at 5% level of significance. However, the F-statistic and the associated p-value (0.5992) indicated that the study does not reject the null hypothesis that internally generated revenue (proxy for economic growth) Granger cause value added tax at 5% level of significance. The Granger causality test shows no causality moving from value added tax to internally generated revenue with a feedback mechanism in FCT.

Based on the p-value corresponding to the F-statistic (0.0822), do not reject the null hypothesis that personal income tax Granger cause company income tax (CIT) at 5% level of significance. However, the F-statistic and the associated p-value (0.5362) indicated that the study does not reject the null hypothesis that company income tax Granger cause personal income tax at 5% level of significance. The Granger causality test shows no causality flowing from personal income tax to company income tax with a feedback mechanism in FCT.

Based on the p-value corresponding to the F-statistic (0.8696), do not reject the null hypothesis that value added tax Granger cause company income tax at 5% level of significance. However, the F-statistic and the associated p-vale (4.E-19) indicated that the study rejects the null hypothesis that company income tax (CIT) does not

Granger cause value added tax income at 5% level of significance. The Granger causality test shows unidirectional causality running from value added tax to company income tax with a feedback mechanism in FCT.

Based on the p-value corresponding to the F-statistic (0.7202), do not reject the null hypothesis that value added tax does not Granger cause personal income tax at 5% level of significance. However, the F-statistic and the associated p-value (6.E-06) indicated that the study rejects the null hypothesis that personal income tax does not Granger cause value added tax at 5% level of significance. The Granger causality test shows unidirectional causality running from value added tax to personal income tax with a feedback mechanism in FCT. The implication is that internally generated revenue and the determinants of tax revenue have at least two unidirectional causations within them.

ARDL Regression Result

Table 5: The ARDL regression results

IGR= 3.60-4.480CIT+2.973PIT-4.411VAT (11)
t*stat.(0.863) (0.896) (0.976) (0.794)
Prob. (0.398) (0.896) (0.976) (0.794)

R-squared	0.836674	Mean dependent var	1.91E+10
Adjusted R-squared	0.802290	S.D. dependent var	2.85E+10
S.E. of regression	1.27E+10	Akaike info criterion	49.54709
Sum squared resid	3.05E+21	Schwarz criterion	49.79251
Log likelihood	-589.5650	Hannan-Quinn criter.	49.61220
F-statistic	24.33296	Durbin-Watson stat	2.245468
Prob(F-statistic)	0.000000		

The results in table 5 indicated that the coefficients of company income tax (CIT) and value added tax (VAT) do not agree with the a priori expectations except personal income tax (PIT). From the results company income tax (CIT) and value added tax (VAT) have negative relationship with internally generated revenue while personal income tax income has positive relationship with internally generated revenue (IGR).

F-Statistic

The F-statistic which was used to examine the overall significance of regression model revealed that the result is significant, as indicated by the value of F-statistic in equation (11) which is significant at the 5.0 percent level. That is, the F-statistic P-value of 0.000000 is less than 0.05.

Adjusted R^2 (R-square)

The adjusted R^2 (R-square) value of 0.802290 revealed that tax revenue has a very good impact on internally generated revenue (IGR) in Federal Capital Territory, Abuja, Nigeria. It indicates that about 80 percent of the variation in internally generated revenue (IGR) was caused by tax revenue, while the remaining unaccounted variation of 20 percent is captured by the white noise error term.

Durbin-Watson (DW) Statistic

It was used to test for the presence of autocorrelation among the error terms. The acceptable Durbin- Watson range is between 0 and 2.5. The model indicates that there is absence of autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 2.24. This demonstrates that the estimates are unbiased and can be relied upon for economic decisions

Test of Hypothesis One

H_{01}: Companies income tax has no significant impact on internally generated revenue (IGR) in Federal Capital Territory Abuja, Nigeria. From the estimated regression (equation 11), the probability value of the companies' income tax (CIT) which is 0.896 is greater than 5 percent level of significance. Since the probability value of the t-statistic for companies' income tax (CIT) was found to be greater than 5 percent level of significance value, the study thus does not reject the null hypothesis (H_{01}) and concludes that companies' income tax has no significant impact on internally generated revenue (IGR) in Federal Capital Territory Abuja, Nigeria.

Test of Hypothesis Two

H_{02}: Personal income tax has no significant impact on internally generated revenue (IGR) in Federal Capital Territory, Abuja, Nigeria. From the estimated regression in equation (11), it is observed that the probability value of the personal income tax (PIT) whose value is 0.976 is greater than 5 percent level of significance. Since the probability value of the t-statistic for personal income tax (PIT) is greater than 5 percent level of significance value the study thus does not reject the null hypothesis (H_{02}) and concludes that personal income tax has no significant impact on internally generated revenue (IGR) in Federal Capital Territory Abuja.

Test of Hypothesis Three

H_{03}: Value added tax have no significant impact on internally generated revenue (IGR) in Federal Capital Territory, Abuja, Nigeria. From the estimated regression in equation 11, it was observed that the probability value of the value added tax (VAT) whose value is 0.794 is greater than 5 percent level of significance. Since the probability value of the t-statistic for value added tax (VAT) is greater than 5 percent level of significance value the study thus does not reject the null hypothesis (H_{03}) and concludes that value added tax has no significant impact on internally generated revenue (IGR) in Federal Capital Territory, Abuja.

Discussion of Findings

From the ARDL regression result, the coefficient of value added tax (VAT) depicts that it has negative relationship with internally generated revenue (IGR). This is in agreement with Cornelius, Ogar and Oka (2016) whose findings show that company income tax has insignificant impact on the growth of the Nigerian economy. This is probably as a result sharp practices by some companies who employ the services of tax specialists in order to pay less tax to the government.

Findings from this study show that personal income tax (PIT) has a positive but statistically insignificant relationship with IGR in Federal Capital Territory. This is in agreement with the study of Chigbu and Njoku (2015) whose findings showed that there is a positive and insignificant relationship between personal income and the growth of the Nigerian economy. The insignificant impact of personal income tax on internally generated revenue (IGR) in Federal Capital Territory, Abuja can be largely attributed to tax avoidance and tax evasion.

More so, findings from the study show that value added tax has negative and insignificant impact on internally generated revenue (IGR) of Federal Capital Territory, Abuja. This is against the study of Akhor (2016) whose findings revealed negative and significant impact on real gross domestic product in Nigeria. The insignificant impact of value added tax on internally generated revenue (IGR) in Federal Capital Territory, Abuja as a result of poor method of tax collection, poor accountability and corruption among others.

CONCLUSION AND RECOMMENDATIONS

Empirical evidence in this paper has revealed that the determinants of tax revenue had not significantly impacted on internally generated revenue (IGR) in Federal

Capital Territory, Abuja within the period under review. However, the various components of taxation did not exert the same level of influence. Personal income tax exerted a relatively stronger influence on internally generated revenue (IGR) than company income tax and value added tax.

The paper, therefore, recommends the need for strict application of and compliance to tax laws in order to raise the level of internally generated revenue in FCT. In addition, tax administrators and tax payers that are found wanting in the implementation of tax laws should be made to face appropriate stipulated penalties.

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APPENDIX
Time Series Data

Year	IGR	CIT	PIT	VAT
1995	0	21,878.30	42,857.90	7260.8
1996	0	22,000.00	76,667.00	20761
1997	0	26,000.00	68,574.10	31000
1998	0	33,315.30	67,986.60	34000
1999	0	46,211.20	164,273.40	36667.7
2000	0	51,147.40	525,072.90	47135.8
2001	0	68,660.00	639,234.00	58469.6
2002	0	89,104.00	392,207.20	91757.9
2003	0	114,771.10	683,484.90	108601
2004	0	130.1	1,183.50	136411.2
2005	0	162.2	1,904.90	159.5
2006	0	244.9	2,038.30	178.1
2007	11,250,205,481.00	327	1500.6	230.4
2008	12,063,561,624.00	416.8	2,812.30	301.7
2009	16,115,244,047.08	568.1	1,256.50	404.5
2010	21,188,960,382.00	657.3	1,944.70	468.4
2011	25,541,217,951.00	700.5	3,976.30	562.9
2012	23,911,807,952.00	848.6	4,365.40	649.5
2013	26,850,828,116.00	985.5	3,719.00	710.20
2014	23,314,339,703.00	1,207.30	3.439.60	795.6
2015	20,423,817,246.65	1,029.10	1,782.40	794.2
2016	31,180,896,446.24	988.4	1,192.30	778.7
2017	14,620,024,868.64	1,206.30	1,801.40	811
2018	59,073,307,343.22	1,229.34	1,835.80	967.7
2019	94,190,597,442.15	1,257.24	1,877.47	985.87
2020	102,944,550,422.90	1,987.11	1,458.75	1008.24

Sources: Federal Inland Revenue Service (FIRS) Publication