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EMPIRICAL ANALYSIS OF THE EFFECT OF TAXATION ON INVESTMENT IN NIGERIA

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ABSTRACT

This study examined the effect of taxation on investment in Nigeria**.** It also looked at the direction of causality among Petroleum profit tax (PPT), Value added tax (VAT), Company income tax (CIT), Custom and excise duties (EXCISE), and Investment (INV) employing the method of Johansen co-integration and the Granger causality tests using data spanning the period 1981-2013. Results showed that petroleum profit tax has positive significant impact on investment both in the short run and in the long run with (β = .1472065 ; t=2.89; P>|t|= 0.000) and (β =.1269068; z=-5.99, P>|z|= 0.000) respectively. Also, PPT granger- cause INV. Value added tax and Company income tax have positive impact on INV in the short run (β=.2060944; .0675709 t= 3.71; 2.59, P>|t|= 0.000 respectively) but negative impact in the longrun (β=--.1130489; -.0915747 t= -4.62; -11.93, P>|t|= 0.000 respectively). Custom and Excise duties impacted INV negatively both in the short run and in the long run. (β=- -.1930202; t= -1.20, P>|t|= 0.000) and (β = -.5798377; z = - 8.70; P>|z|= 0.000) respectively. It is recommended that, once company income tax impacted investment negatively in the long run, Government should reduce the rate of company income tax in order to enhance the level of investment both local and foreign direct investment which will invariably reduce poverty and unemployment rate in Nigeria.

Key words*; Investment; Causality; VAT; CIT; Petroleum profit tax (PPT);*

INTRODUCTION

Background to the study

Nigeria is richly blessed with oil and gas among other mineral resources, but the over dependence on oil revenue for the economic development of the country has left much to be deserved. Nigeria's over dependence on oil revenue to the total neglect of other revenue source was encouraged by the oil boom of 1973/74 (Abiola and Asiweh 2012). There are many avenues if well developed can generate exorbitant revenue for government. One of the avenues is Taxation. Tax is a compulsory levy by government through its agencies on the income, consumption and capital of its subjects. These levies are made on personal income such as salaries, business profit, interest, dividend, discount or royalties to obtain revenue. It is levied against company profit, petroleum profit, capital gains and capital transfer (Bello, 2001). Taxes are the major tools required to overcome such and also to control other market imperfections, and achieve social justice by wealth redistribution (Aderibigbe and Zachariah 2014). Tax is a major player in every society of the world and a major issue due to its consistency and constancy. Taxation is also a compulsory payment or transfer of resources from private to public sector levied on

the basis of the determined criterion and without reference to specific benefits received in order to accomplish some of the nation's economic and social objectives. Taxation is primarily aimed at generating revenue for government in order to cater for its expenditure (Al Zakari, 1995).

Taxes have different effects on various economic activities. Taxes affect individuals' decisions to save, the decision of firms to produce, invest, create jobs, innovate investment in human capital and supply of labour. Poulson and Kaplan 2008 declared taxation has both positive and negative effects on GDP that is income taxes have strong negative effects on economic growth. According to Saima et al (2014**)** high tax rates depress the rate of investment, or slow down the growth in the capital stock through high corporate income and individual income tax rates, high capital income tax rates, high payroll tax rates and high tax rates on production. Edame and Okoi (2014) asserted that taxation is negatively related to the level of investment and the output of goods and services (GDP). But with those researchers' assertion, not all the components of taxes have negative impact on investment in Nigeria. More so, no existing literature has ever examined the effect different components of taxation on investment in Nigeria from 1981 to 2013. This study examined the effect of Petroleum profit tax, Value added tax, Company income tax, Custom and excise duties on investment in Nigeria from 1981 to 2013**.** It also looked at the direction of causality among Petroleum profit tax (PPT), Value added tax (VAT), Company income tax (CIT), Custom and excise duties (EXCISE), and Investment (INV) in Nigeria from 1981 to 2013.

LITERATURE REVIEW

Theoretical underpinning of taxation

According to Bhartia (2009) a taxation theory may be derived on the assumption that there need not be any relationship between tax paid and benefits received from state activities. In this group, there are four theories, namely, Socio-political theory, expediency theory, benefit received theory, cost of service theory and investment theory. The theoretical underpinning of taxation is being derived from the expediency theory, the benefits-received theory and investment theory. Expediency theory emphasizes that every tax proposal must pass the test of practicality. It must be the only consideration weighing with the authorities in choosing a tax proposal. According to this theory, economic and social objectives of the state as also the effects of a tax system should be treated irrelevant (Bhartia, 2009). Benefit received theory proceeds on the assumption that there is basically an exchange relationship between tax-payers and the state. The state provides certain goods and services to the members of the society and they contribute to the cost of these supplies in proportion to the benefits received (Bhartia, 2009). Investment theory states that the higher taxation reduces the marginal propensity to save, and invariably the investment reduce absolutely. Higher individual income or payroll tax rates reduce both the quantity and quality of work that households provide and reduces individual saving. Higher taxes on corporate income, capital gains, and dividends reduce business investment, as does lengthening tax depreciation schedules. Once government grows beyond its optimum size, it no longer provides sufficient benefits to offset the negative growth effects of the disincentives to work, save, and invest from increased taxation (Kevin 2011). With this, government employs taxation as a weapon to encourage and to discourage investment rate in the country. Government reduces the tax rate to increase the rate of investment in the country and vice visa.

Purpose of taxation in Nigeria

The purpose of the efficiently designed taxation is to achieve desired fiscal policy objectives (allocation, redistribution, and stabilization) in the most efficient way, namely by limiting undesired distortions, minimizing the cost of tax collection and promoting economic growth. The efficiency of taxation and particularly the tax structure plays important role in achieving economic growth and fiscal

consolidation (Desislava and Nikolay 2012). These days apart from the objective of raising the public revenue, taxes level affect consumption, production and distribution with a view to ensuring the social welfare through the economic development of a country, tax can be used as an important tool in the following manner: optimum allocation of available resources, raising government revenue, encouraging savings and investment, acceleration of economic growth, price stability, and control mechanism (Edame and Okoi 2014).

METHODOLOGY

Method of Data Collection

Secondary data was used in this study. The relevant data for the study were obtained from Central Bank of Nigeria (CBN) Statistical Bulletins (various issues), National Bureau of Statistics. The data covered the period from 1981-2013.

Method of data Analysis

Regression analysis technique was used to measure the relationship between a dependent variable and independent variables while Units root test, Johansen co-integration, Vector Error-Correction Model, and Granger causality tests were employed to determine the long run relationship among the variables. Regression models in the following variables:

$$\boldsymbol{p = f\ (j1,\ \ j2,\ \ j3, j4,\ \mu)}$$

The independent variable $j1 - j4$
The dependent variable p
A regression model relates p to a function of j and $\boldsymbol{\mu}$
Error term is denoted as $\boldsymbol{\mu}$.

Model specification

This model evaluated the effects of taxation on investment in Nigeria. Petroleum profit tax (PPT), value added tax (VAT), company income tax (CIT) and custom and excise duties (EXCISE) are independent variables while investment is dependent variable.

$$\boldsymbol{Inv = a_0 + a_1\, ppt + a_2\, vat + a_3 cit + a_3 excise + \mu} \qquad \mathbf{1}$$

Transformed to

$$\boldsymbol{logInv = a_0 + a_1\, logppt + a_{2log}\, vat + a_3 logcit + a_3 logexcise + \mu} \qquad \mathbf{2}$$

$\boldsymbol{log\ inv}$ – $\boldsymbol{log\ of\ investment}$
$\boldsymbol{logppt}$ – $\boldsymbol{log\ of\ petroleum\ profit\ tax}$
$\boldsymbol{logvat}$ – $\boldsymbol{log\ of\ value\ added\ tax}$
$\boldsymbol{logcit}$ – $\boldsymbol{log\ of\ company\ income\ tax}$
$\boldsymbol{logexcise}$ – $\boldsymbol{log\ of\ custom\ and\ excise\ duties}$

Basic VECM is

$$\Delta y_t = \alpha\beta' y_{t-1} + \sum_{t=1}^{p-1} \Gamma_i \Delta y_{t-i} + \epsilon_t \qquad \mathbf{3}$$

where y is a (K x 1) vector of I(1) variables, $\alpha$and β are (Kx r) parameter matrices with rank

r < K, Γ_1,.,.., Γ_{p-1} are (K x K) matrices of parameters, and εt is a (K x1) vector of normally distributed errors that is serially uncorrelated but has contemporaneous covariance matrix .

PRESENTATION AND ANALYSIS OF DATA

This session was used in analyzing and presentation of data collected from a reliable source (CBN Statistics Bulletin 2013).

Table 1- Effects of Taxation on Investment in Nigeria

Dependent Variable	Independent Variables	Coefficient	Standard Error	T	P>|t	[95%Conf. interval]
loginv	***logppt***	.1472065	.0508962	2.89	0.012	.0380449 .256368
	logcit	.0675709	.0395445	3.71	**0.000**	.0172436 .1523854
	logvat	.2060944	.1296432	2.59	0.014	.0719626 .4841514
	logexcise	-.1930202	.1607825	-1.20	0.250	-.5378643 .151824
	constant	9.182422	.6082951	15.10	**0.000**	7.877759 10.48709

R-squared = 0.9097	Adj R-squared = 0.8839	Root MSE = .1489	**Prob> F = 0.0000**	F(4, 14) = 35.25

Source: **Authors' Computation (2015) through STATA 11**

The above table is represented by regression plots below:

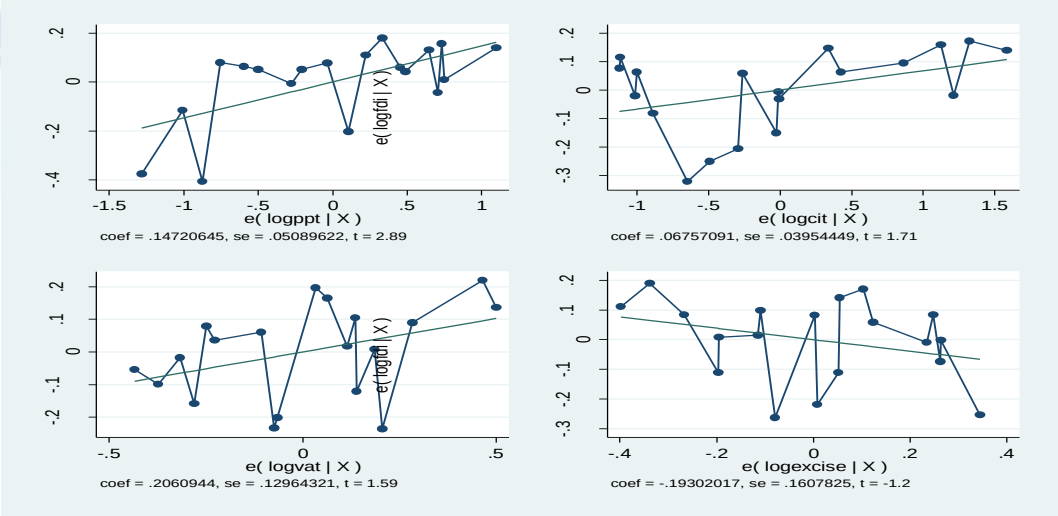

Table 1 above shows the effect of taxation on investment in Nigeria. 1% increases in petroleum profit tax (PPT) increases INV by 1.5%. This suggests a positive effect of PPT on INV in Nigeria. The result is also significant at 0.01 significant level. 1% increase in company income tax (CIT) also increases INV by 0.7 %.This means that CIT has positive effect on INV suggesting that if CIT increases INV also increases. Also,

1% increases in value added tax (VAT) increases INV by 2%. The effect of VAT on INV is positive suggesting that if VAT increases, INV also increases. Contrarily, 1% increases in custom and excise duties (EXCISE) reduces INV by 1.9%. This presumed that if EXCISE increases INV reduces.

Given the coefficient of determination(R^2) as 0.9097 (91%) with high value of adjusted R^2 as 88%, it presages that the independence variables incorporated into this model have been able to determine the effect of taxation on investment in Nigeria to 88%.The F and probability statistics also confirmed the significance of this model.

Table 2 – Unit root test

Variables	ADF stat	1% critical value	5% critical value	10% critical value	Order of integration	Remark
INV	0.731	-3.702	-2.980	-2.622	I(4)	Non Stationary
PPT	2.961*	-3.730	-2.992	-2.626	I(4)	Stationary
CIT	1.269	-3.702	-2.980	-2.622	I(4)	Non Stationary
VAT	3.856*	-3.730	-2.992	-2.626	I(0)	Stationary
EXCISE	3.390**	-3.730	-2.992	-2.626	I(0)	Stationary

(*)and (**) means stationary at 5% and 10% respectively.

Source: **Authors' Computation (2015) through STATA 11**

The study applies ADF unit root test, at level, at the first difference, and to four difference of the time series with assumption of no drift and tend, to have the information about the order of a time series. Not all variables are stationary at level. Since three variables are stationary, three variables are cointegrated. There exists an equilibrium or long run relationship among these cointegrated variables.

Table 3 - Selection of number of lags

Lag	LL	LR	DF	P	FPE	**AIC**	**HQIC**	**SBIC**
0	**-1983.89**	**30**			**2.6e+53**	**137.165**	**137.238**	**137.4**
1	**-1872.39**	**222.99**	**25**	**0.000**	**6.8e+50**	**131.199**	**131.642**	**132.614**
2	**-1801.79**	**141.19**	**25**	**0.000**	**3.4e+49**	**128.055**	**128.867**	**130.648**
3	**-1654.15**	**295.29**	**25**	**0.000**	**1.2e+46**	**119.597**	**120.778**	**123.368**
4	**-1455.13**	**398.03***	**25**	**0.000**	**2.5e+41***	**107.595***	**109.146***	**112.546***

Source: **Authors' Computation (2015) through STATA 11**

Four lags were used for this bivariate model because the Hannan–Quinn information criterion (HQIC) method, Schwarz Bayesian information criterion (SBIC) method, and sequential likelihood-ratio (LR) test all chose four lags, as indicated by the "*" in the output in table 3.

Table 4 - Johansen tests for Cointegration using Trace statistic

Rank	Parm	LL	Maximum Eigen Value	Trace statistic	**Critical value**
0	30	-2015.0023	-	187.5326	68.52
1	39	-1961.9341	0.96741	81.3961	47.21
2	46	-1944.677	0.67155	46.8820	29.68
3	48	-1931.6597	0.56821	20.8474	15.41
4	51	-1922.6177	0.44198	2.7634*	3.76
5	54	-1921.236	0.08529		

Source: **Authors' Computation (2015) through STATA 11**

Table 4 also generated information about the sample, the trend specification, and the number of lags included in the model. The main table contains a separate row for each possible value of r, the number of cointegrating equations. When r = 4, all four variables in this model are stationary. In this study, because the trace statistic at r = 0 of 187.5326 exceeds its critical value of 68.52, the null hypothesis of no cointegrating equations are rejected. Similarly, because the trace statistic at r = 1 of 81.3961 exceeds its critical value of 47.21, the null hypothesis that there is one or fewer cointegrating equation is also rejected. In the same vein, because the trace statistic at r = 2 of 46.8820 exceeds its critical value of 29.68, the null hypothesis that there is two or fewer cointegrating equation is also rejected. Also, because the trace statistic at r = 3 of 20.8474 exceeds its critical value of 15.41, the null hypothesis that there is three or fewer cointegrating equation is also rejected. In contrast, because the trace statistic at r = 4 of 2.7634* is less than its critical value of 3.76, the null hypothesis that there are four or fewer cointegrating equations cannot be rejected. Because Johansen's method for estimating r is to accept as r = 4 as the estimate of the number of cointegrating equations between these five variables. The "*" by the trace statistic at r = 4 pointed out that there are four or fewer cointegrating equations as selected by Johansen's multiple-trace test procedure.

Table 5 - Johansen tests for cointegration

Rank	Maximum Eigen Value	Parm	LL	Maximum Eigen Value	**SBIC**	**HQIC**	**AIC**
0	-	30	-2015.0023	-	133.3234	132.388	131.9356
1	0.96741	39	-1961.9341	0.96741	130.8966	129.6806	129.0925
2	0.67155	46	-1944.677	0.67155	130.5586	129.1244	128.4308
3	0.56821	48	-1931.6597	0.56821	130.2727	128.6826	127.9135
4	0.44198	51	-1922.6177	0.44198	130.0216*	128.338*	127.5237
5	0.08529	54	-1921.236	0.08529	130.0433	128.3284	127.4991

Source: **Authors' Computation (2015) through stata 11**

Since both the Trace statistic in table 4 and the SBIC and the HQIC in Table 5 estimators suggest that there are four cointegrating equations in the balanced-growth data. Having determined that there is a cointegrating equation among the INV, PPT, VAT, CIT and EXCISE series, the parameters of a bivariate cointegrating VECM for these four series by using Vector error-correction model were estimated below.

Table 6: Vector error-correction model

Equation	Parms	RMSE	R sq	chi2	P>chi2
D_logINV	7	.050378	0.9342	141.9147	0.0000
D_logppt	7	.618094	0.2985	4.254557	0.7500
D_logvat	7	.552514	0.5396	11.7189	0.1102
D_logcit	7	.881847	0.5622	12.84374	0.0760
D_logexcise	7	.609508	0.4424	7.93534	0.3383

Det(Sigma_ml) = 1.15e-08	Log likelihood = 34.79056	AIC = .4952278	HQIC = .6852336	SBIC = 2.406717	

Source: **Authors' Computation (2015) through STATA 11**

Table 7- Johansen normalization restriction imposed

Beta	Coefficient	Std Error	Z	P>|z|	[95% Conf. Interval]
_ce1					
logINV	1	.	.	.	.
Logppt	.1269068	.0211983	5.99	0.000	.085359 .1684547
Logvat	-.1130489	.0244858	-4.62	0.000	-.1610402 -.0650577
Logcit	-.0915747	.007673	-11.93	0.000	-.1066134 -.0765359
Logexcise	-.5798377	.0666516	-8.70	0.000	-.7104723 -.449203
-CONS	-4.30089				

Source: **Authors' Computation (2015) through STATA 11**

Table 7 contains information about the sample, the fit of each equation, and overall model fit statistics. The first estimation table contains the estimates of the short-run parameters, along with their standard errors, z statistics, and confidence intervals. The three coefficients on L. ce1 are the parameters in the adjustment matrix _ for this model. The second estimation table contains the estimated parameters of the cointegrating vector for this model, along with their standard errors, z statistics, and confidence intervals. According to Johansen normalization restriction imposed table, one percent increase in PPT, increases INV by 0.12% in the long run, this shows that there is positive and significant effect of PPT on INV. Contrarily, one percent increase in VAT, reduces INV by 0.11% in the long run, this shows that there is a negative significant effect of VAT on INV in the long run. Also, one percent increase in CIT, reduces INV by 0.09% in the long run, this shows that there is a negative significant effect of CIT on INV in the long run. In addition, one percent increase in EXCISE, reduces INV by 0.05% in the long run, this also shows that there is a negative significant effect of EXCISE on INV in the long run. Coefficient is statistically significant confirmed by P>|z| which is 0.000. Overall, the output indicates that the model fits well.

Table 8: Granger causality Wald tests

Equation	Excluded	chi2	Df	Prob> chi2	Decision
INV	PPT	20.233	2	0.000	PPT granger- cause INV
INV	VAT	111.62	2	0.000	VAT granger - cause INV
INV	CIT	20.4971	2	0.000	CIT granger- cause INV
INV	EXCISE	36.551	2	0.000	EXCISE granger – cause INV
INV	ALL	287.03	8	0.000	ALL jointly granger – cause INV
PPT	INV	4.2628	2	0.119	INV does not granger- cause PPT
PPT	VAT	4.2714	2	0.118	VAT does not granger – cause PPT
PPT	CIT	4.2847	2	0.117	CIT does not granger- cause PPT
PPT	EXCISE	0.76791	2	0.681	EXCISE does not granger – cause PPT
PPT	ALL	11.774	8	0.162	ALL jointly does not granger cause PPT
VAT	INV	27.53	2	0.000	INV granger- cause VAT
VAT	PPT	2.9657	2	0.227	PPT does not granger - cause VAT
VAT	CIT	15.206	2	0.000	CIT - cause Money supply
VAT	EXCISE	22.279	2	0.000	EXCISE granger- cause VAT
VAT	ALL	43.664	8	0.000	ALL jointly granger cause VAT
CIT	INV	11.851	2	0.003	INV granger- cause CIT
CIT	PPT	6.6038	2	0.037	PPT granger – cause CIT
CIT	VAT	10.699	2	0.005	VAT granger- cause CIT
CIT	EXCISE	24.597	2	0.000	EXCISE granger- cause CIT
CIT	ALL	48.807	8	0.000	ALL jointly granger cause CIT
EXCISE	INV	18.746	2	0.000	INV granger- cause EXCISE
EXCISE	PPT	2.3383	2	0.311	PPT does not granger – cause EXCISE
EXCISE	VAT	22.485	2	0.000	VAT granger- cause EXCISE
EXCISE	CIT	13.999	2	0.001	CIT granger- cause EXCISE
EXCISE	ALL	31.373	8	0.000	ALL jointly granger cause EXCISE

Source: **Authors' Computation (2015) through STATA 11**

Table 8 tests for the granger causality among the variables. The first is a Wald test that the coefficients on the four lags of PPT that appear in the equation for GDP are jointly zero. The null hypothesis that PPT does not Granger-cause INV cannot be accepted because Prob> chi2 is 0.000 which is less than 0.1 level of significance; therefore PPT granger-cause INV. Also, the null hypothesis that the coefficients on the four lags of VAT in the equation for INV are jointly zero cannot be accepted because Prob> chi2 is 0.000 which is less than 0.1 level of significant. So the hypothesis that VAT does not Granger cause INV cannot be accepted, therefore VAT Granger cause INV. More so, the null hypothesis that CIT does not Granger-cause INV cannot be accepted because Prob> chi2 is 0.000 which is also less than 0.1 level of significance; therefore CIT granger-cause INV. The null hypothesis that EXCISE does not Granger-cause INV cannot be Rejected because Prob> chi2 is 0.000 which is less than 0.1 level of significance; therefore EXCISE granger-cause INV. The last test is with respect to the null hypothesis that the coefficients on the four lags of all the other endogenous variables are jointly zero cannot be accepted in the sense that Prob> chi2 is 0.000 is less than 0.1 level significant level, therefore, PPT, VAT, CIT, and EXCISE jointly granger-cause INV.

SUMMARY AND CONCLUSIONS

This study analysed the effect of taxation on investment in Nigeria. This study also examined at the direction of causality among Petroleum profit tax (PPT), value added tax (VAT), company income tax (CIT), custom and excise duties (EXCISE) and investment employing the method of Johansen co-integration and the Granger causality tests using data spanning the period 1981-2013. Results showed that PPT has positive significant impact on INV both in the short run and in the long run. Also, PPT granger causes INV. The study also reviewed that Value added tax and Company income tax have positive significant impact on INV in the short run but negative impact in the longrun. Custom and Excise duties impacted INV negatively both in the short run and in the long run. VAT grangers cause INV, CIT granger cause INV and EXCISE also granger cause INV.

It is now concluded that that petroleum profit tax has positive significant impact on investment both in the short run and in the long run in Nigeria. But other components of tax impacted investment negatively in the longrun in Nigeria.

POLICY RECOMMENDATIONS

Based on the findings made in the course of this study, once company income tax impacted investment negatively in the long run, Government should reduce the rate of company income tax in order to enhance the level of investment both domestic and foreign direct investment which will invariably reduce poverty and unemployment rate in Nigeria. The higher the tax rate, the lower will be the level of investment which will absolutely have adverse effect on economic growth in Nigeria.

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