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ERROR CORRECTION MODELING OF PETROLEUM PROFIT TAX AND INCOME PER CAPITA IN NIGERIA

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Abstract

The paper undertakes an empirical research on the impact of petroleum profit tax on per capita income of Nigeria. The log linear error correction model was adopted to examine whether petroleum profit tax (PPT), Custom and excise duties (CED) and oil revenue exports (ORE) had an impact on Nigeria's per capita income (PCI). Unit root test was carried out on each of the variables to determine their level of stationarity. They were however found stationary after first difference (that is, they are all integrated of order one (I(1)). Therefore it was safe to proceed with Johansen Cointegration Test. The integrated variables were then used for the regression analysis. The cointegration result showed that the variables used in the model have a long term, or equilibrium relationship between them. It was observed that from the analysis that PPT and CED were found statistically insignificant and both had negative relationships with economic development in Nigeria, while oil export revenue had a positive impact and is statistically significant. These negative relationships and insignificancy of PPT and CED could be attributed to corruption, inadequate record keeping and mis-management of generated funds. The study thus recommends that Government should transparently and judiciously account for the revenue it generates through PPT and CED by investing in the provision of infrastructure and public goods and services.

Keywords: Petroleum, Tax, Per capita income, Economic Development, Co-integration, Error correction model

INTRODUCTION

For decades, Oil has remained the dominant source of Nigerian government revenue, accounting for about 90% of total exports, and this approximates 80% of total government revenues in Nigeria. Since the oil discoveries in the early 1970s, oil has become the dominant factor in Nigeria's economy. The problem of low economic performance of Nigeria cannot be attributed solely to instability of earnings from the oil sector, but as a result of failure by government to utilize productively the financial windfall from the export of crude oil from the mid – 1970s to develop other sectors of the economy.

The Nigerian petroleum industry has been described as the largest among all industries in the country. This is probably due to the belief that petroleum is one of the major sources of energy worldwide. The size, international characteristic, and role assumed by the petroleum industry were noted to have originated from the notion that petroleum is versatile as it currently satisfies a wide variety of energy and related needs. Petroleum is the most vital source of energy, providing over 50 percent of all commercial energy consumption in the world. The revenues obtained from crude oil in Nigeria are of absolute advantage to expenditure commitments on various projects at the local, state, and federal levels (Onaolapo, Taiwo & Adegbite, 2013).

Overtime, the tax system has been identified to be an opportunity for government to collect additional revenue needed in discharging its pressing obligations. A tax system among other things, offers itself as one of the most effective means of mobilizing a nation's internal resources and it lends itself to creating an environment conducive for promoting economic growth. The major sources of petroleum income are sales of crude oil and gas (oil revenue), Petroleum profits tax and royalties, licensing fees and other incidentals (Ogbonna & Appa, 2012).

The Petroleum Profit Tax Act 1959(PPTA) provides for the imposition of tax on the chargeable profits of companies that are engaged in petroleum operations in Nigeria. Petroleum operations is defined under the PPTA as "the winning or obtaining oil in Nigeria by or on behalf of a company for its account by any drilling, mining, extracting or other like operations or process, not including refining at a refinery, in the course of a business carried on by the company engaged in such operations, and all operations incidental thereto and any sale of or any disposal of chargeable oil by or on behalf of the company. Nigeria economy is dependent on oil, as it cannot finance social and economic growth in the absence of a large oil revenue base (Adegbie & Fakile, 2011). Nwete (2004) noted that the objectives of petroleum profit tax are numerous among which are: to achieve government's objective of exercising right and control over the public asset, Government imposes very high tax as a way of regulating the

number of participants in the industry and discouraging its rapid depletion in other to conserve some of the oil for future generation. This in effect will achieve government aim of controlling the petroleum sector development. The second objective is that the high profit profile of a successful investment in the oil industry makes it a veritable source for satisfying government objective of raising money to meet its sociopolitical and economic obligations to the citizenry. The third objective is to make petroleum taxation an instrument for wealth re-distribution between the wealthy and industrialized economies represented by the multinational organizations. These organizations who own the technology, expertise and capital needed to develop the industry and the poor and emerging economies from where the petroleum resources are extracted stand to be short changed. Environmental factor is another objective of petroleum taxing. The high potential for environmental pollution and degradation stemming from industry activities makes it a target for environmental taxation. This is a way of regulating its activity and promoting government quest for a cleaner and healthier environment. Cleaner production may be achieved by imposing tax for pollution and environmental offences.

The problems with the Nigerian economy have been traced to failure of successive governments to use oil revenue and excess crude oil income effectively in the development of other sectors of the economy (Yakub, 2008). Over all, there has been poor performance of national institutions such as power, energy, road, transportation, politics, financial systems, and investment environment have been deteriorating and inefficient (Nafziger, 2008).

This paper therefore seeks to examine the impact of petroleum profit tax on economic development in Nigeria

REVIEW OF LITERATURES

Conceptual analysis of Oil Sector Development

From a policy perspective, various literatures have identified economic development as efforts that seek to improve the economic well-being and quality of life for a community by creating jobs and supporting or growing incomes and the tax base. Dominant theories of economic growth have suggested that significant relationship exists between national income and economic growth. That is, when income is invested in an economy, it results in the growth of that economy. For example, Todaro (1997) noted that Harrod and Domar models states that growth is directly related to savings (unspent income). Similarly, Ogbonna & Appa (2012) observed that income from a nation's natural resources (e.g. petroleum) has a positive influence on economic growth and development. Contrary to this opinion expressed above, other studies on this subject matter, found that natural resources income influences growth negatively. That is, an increase in Income from natural resources does not necessarily result in an increase in

economic growth. For example, Sachs and Warner (1997) using a sample of 95 developing countries that included Indonesia, Venezuela, Malaysia, Ivory Coast and Nigeria, found that countries that have a high ratio of natural resource exports to GDP appear to have shown slower economic growth than countries with low ratio of natural resource export to GDP.

In theory, proponents of oil-led development (as an example Eromosele, 2004) observed that countries lucky enough to have petroleum, can base their development on this resource. They point to the potential benefits of enhanced economic growth and the creation of jobs, increased government revenues to finance poverty alleviation, the transfer of technology, the improvement of infrastructure and the encouragement of related industries. But the experience of almost all oil-exporting countries to date, especially Nigeria illustrates few of these benefits (Omeje, 2006). To say the least, Nafziger (1984) says that Nigeria's case is increasingly degenerating to a state of chaos as petroleum income is brazenly mismanaged while the basic national institutions such as electricity, energy, road, transportation, political, financial systems, and investment environment have been decreasing and inefficient in Nigeria, the infrastructure is still poor; talent is scarce. Poverty, famine, and disease afflict many nations, including Nigeria (Chironga, et al, 2011). Soludo (2009) attributes this paradox of natural resources existing without development to institutional inefficiencies. This situation tend to support Stiglits (2006) assertion that natural resources can be a curse if not well managed.

The Concept of Tax Evasion and Avoidance

Over time, tax evasion and tax avoidance have been identified as key fundamental issues of tax administration in a developing economy such as that of Nigeria. Most forms of taxes in Nigeria are to some extent avoided or evaded because the administrative machinery to ensure its effectiveness is weak (Adegbie & Fakile, 2011). Due to diversities and complexity in human nature and activities, no tax, law can capture everything hence loopholes will exist and can only be reduced or eliminated through policy reforms. Tax evasion and avoidance lead to loss of revenue for the government. A high degree of tax evasion has unpleasant repercussions on resources; it affects wealth redistribution and economic growth; it creates artificial bias in macroeconomic indicators. No matter how fair a tax system appears to be on paper, it will lack the standards of equity if there is high incidence of tax evasion or artificial tax avoidance. The border line of tax evasion and avoidance is very thin. Excess tax avoidance leads to tax evasion. Nzotta (2007) observed that tax avoidance and evasion in Nigeria is a serious limitation to the revenue mobilization efforts of the public sector in the country. The different tiers of government in Nigeria rely on taxes as a major source of revenue for the implementation of their programmes. Thus a high level of tax avoidance and evasion sustains a number of

distortions in the resource profile of the government. Tax evasion and avoidance have generated considerable interest and concern to the government and finance experts in most recent time. This is because of their socioeconomic implications and the effects on government's revenues and fiscal viability in the long run.

The Canadian Department of National Revenue gave a comprehensive definition of tax evasion: "Tax evasion is the commission or, the omission of an act knowing with intent to deceive so that the tax reported by the taxpayer is less than the tax payable under the law, or a conspiracy to commit such an offence. This may be accomplished by the deliberate omission of revenue, the fraudulent claiming of expenses or allowances, and the deliberate misrepresentation, concealment, or withholding of materials facts" (Adeleke, 1998)

Empirical Literature

Gelb (1981) analyzed the removal of controls on the prices of domestically produced crude oil in the United States, and noted that oil companies would be expected to derive substantially higher revenue and profits from the new price levels. Much of the additional profit would be an unearned windfall that should be recovered through a tax, which would be used to assist the financing of other energy objectives and related energy programs, and for equity and income distribution reasons. Windfall Profit Tax (WPT) proposals are in theory, mechanism for the redistribution of income and reallocation of resources-the shifting of anticipated industry revenue to the general public or low-income groups or for use in energy conservation and alternate energy development. He analyzed the federal controls on oil which covered virtually all phases of production, refining, and distribution of crude oil and petroleum products. Oil and gas production had been receiving favorable tax treatment for many years. A lower tax rate leads to a greater allocation of capital to the production of oil and gas than would occur under a normal tax rate.

The oil industry is the main hub of the Nigerian economy, and needs to be sustained if the country is to achieve real economy growth. Nwete (2004) centered his study on how tax allowances can promote investment in Nigerian petroleum industry. He observed that Nigeria aims to optimize its oil revenue, and achieve increase in the local content so as to attract foreign investment as a way of promoting and sustaining investment in the oil industry. However the bane of the industry has been the failure of the allowances and incentives to attract more investment and more wealth capable of sustaining the future growth of the economy even when the oil wells have dried up. He averred that there is the need to have in place a fiscal regime that will, through tax allowances and other incentives become investor friendly by balancing government needs with those of investors through its stability, efficiency and flexibility.

Ogbonna & Appa (2012) while further examining Petroleum Income and Nigerian Economy observed in their result that Per capita income(PCI) has a positive relationship with petroleum Licensing Fees(PLF). That is, an increase in licensing fees causes an increase in per capita income. Precisely, for every 1% increase in PLF, has a corresponding 0.496% increase in PCI. This result suggests that income per person in the country increases as petroleum income increases as indicated by the positive sign of the beta coefficient. However, the positive relationship between license fees(LF) and PCI is not statistically significant at 5% as is indicated by p – value of 0.401 which is greater than 0.05. This implies that we are not 95% certain of the effect of oil revenue on income as seen in the results is true. This implies that an increase in Licensing fee marginally increased per capita income within the period under review.

Adegbie & Fakile (2011) through the result of analysis observed that the operating landscape, business and competitive environments, both locally in Nigeria and internationally have continued to change rapidly in the last few years in such a manner that the Nigeria's oil and gas industry as it is currently set up can no longer operate in a sustainable manner. Despite the evolution, reforms and internal restructuring, the public sector of the industry has yet to fully meet the aspiration of the Federal Government and key stakeholders. They further stated that the existing structure of the industry and enabling legislation were no longer consistent with global standards. The private sector of the upstream sector of the industry dominated and operated by the international oil and gas companies in joint venture with Nigeria National Petroleum Corporation equally continues to face new challenges mainly with funding and cash call problems, as well as challenges in the Niger Delta region.

RESEARCH METHODOLOGY

Estimation Procedure

For the purpose of this research, the ordinary least square (OLS) multiple regression model is used to estimate the variables. This involves estimation of the model in order to examine the impact of petroleum profit tax on per capita income in Nigeria.

The econometric (log-linear) regression model will be used to test the impact of Petroleum profit tax (PPT), Custom and Excise duties (CED), and Oil revenue exports(ORE) on the per capita income(PCI) in Nigeria. This estimation technique aims at achieving unique parameter estimates that would enable us to interpret the regression coefficients in terms of elasticity and consequently give a slightly better fit.

In recent econometric research, it has become fashionable in contemporary econometric analysis to; among other things rigorously consider issues of stationarity, co-integration and error correction mechanism when dealing with models involving time series variables.

Stationarity assures non-spurious results; cointegration captures long-run or equilibrium relationship between (cointegrating) variables; and error correction mechanism is a means of reconciling the short-run behaviour of economic variables with their long-run behaviour (Gujarati & Porter, 2009). Popular test of stationarity of Augmented Dickey-Fuller (ADF) unit root test derived from Dickey & Fuller (1979 and 1981) has been developed over the years. It is known that while the Augmented Dickey-Fuller approach accounts for the autocorrelation of the first-differences of a series in a parametric fashion by estimating additional nuisance parameters, the Phillips-Perron approach deals with the phenomenon in a non-parametric way. Indeed, the Phillips-Perron unit root test makes use of nonparametric statistical methods to take care of the serial correlation in the error terms without adding lagged difference terms (Gujarati & Porter, 2009). As pointed out in Idowu(2005), if structural changes occur, the Augmented Dickey-Fuller test may be biased in identifying variables as being integrated.

The ADF test consists of estimating the following equation:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad \text{----------(1)}$$

where: ε_i is a pure white noise error term; t is time trend; Y_t is the variable of interest; β_1, β_2, δ and α_i are parameters to be estimated; and Δ is difference operator. In the ADF approach, we test whether δ =0. (In the ADF test, the null hypothesis is that the variable in question has a unit root)

The associated Lagrange Multiplier (LM) statistic is defined as:

$$LM = \sum_t S(t)^2/(T^2 f_o) \quad \text{---------- (2)}$$

where: f_o is an estimator of the residual spectrum at frequency zero and where $S(t)$ is a cumulative residual function:

$$S(t) = \sum_{r=1}^{t} \hat{\mu}_r \quad \text{---------- (3); this is based on the residual from Equation (2).}$$

In analyzing the equilibrium relationship among macro-economic variables, (that is, the issue of cointegration), the Engel-Granger (EG) and the Johansen tests are very popular tests. The EG test is contained in Engel & Granger (1987) while the Johansen test is found in Johansen (1988) and Johansen & Juselius(1990). The EG test involves testing for stationarity of the residual from a relevant regression equation. If the residual is stationary at level, it implies that the variables under consideration are cointegrated. The EG approach could exhibit some degree of bias

arising from the stationarity test of the residual from the equation As pointed out in Idowu(2005), the EG assumes one cointegrating vector in a system with more than two variables and it assumes arbitrary normalisation of the cointegrating vector. To address the foregoing shortcomings of the EG approach it is necessary to utilize the Johansen test. The Johansen cointegration test is a full information maximum likelihood approach. It is based on the following vector autoregressive (VAR) model of order p:

$$Y_t = A_1 Y_{t-1} + - - - + A_p Y_{t-p} + BX_t + e_t \quad \text{----------(4)}$$

where: Y_t is a k-vector of non-stationary I(1) variables; X_t is a d-vector of deterministic variables; and e_t is a vector of innovations.

One can rewrite this VAR as follows:

$$\Delta Y_t = \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_t \Delta Y_{t-i} + BX_t + e_t \quad \text{----------(5)}$$

Where $\Pi = \sum_{i=1}^{p} A_i - I$, $\Gamma_i = -\sum_{j=i+1}^{p} A_j$ ----------(6)

Granger's representation theorem asserts that if the coefficient matrix Π has reduced rank r<k, then there exist kxr matrices α and β each with rank r such that $\Pi = \alpha\beta'$ and $\beta' Y_t$ is I(0); r is the number of cointegrating relations(i.e the rank) and each column of β is the cointegrating vector. It is worthwhile to state here that the elements of α are known as the adjustment parameters in the vector error correction model. Johansen's approach is to estimate the Π matrix from an unrestricted VAR and to test whether we can reject the restrictions implied by the reduced rank of Π.When given time series variables are found to be cointegrated, then an error-correction model may be estimated. Suffice it to say that cointegration provides the theoretical underpinning for error-correction model.

The Structural Empirical Model

This section is preoccupied with the formulation of an appropriate model, which theoretically establishes the relationships between our petroleum profit tax variables and economic development variable. For this purpose, the equation below have been formulated and simultaneously analyzed:

$$PCI = f(PPT, CED, ORE) - - - - - - - - 7$$

Specifying equation (7) in an exponential regression model, we have;

$$PCI = \phi PPT^{\beta_1} CED^{\beta_2} ORE^{\beta_3} e^{\mu_t} \text{ -------8}$$

In this form, the coefficients $\beta_1, \beta_2, \beta_3$ can be directly estimated by applying log-linear regression techniques via logarithmic transformation; and those coefficients will be the elasticities.

Taking natural logs of both sides of the equation, we have:

$$\ln PCI = \ln \phi + \beta_1 \ln PPT + \beta_2 \ln CED + \beta_3 \ln ORE + \mu_t \text{ -------9}$$

Where;

ln= Natural logarithm

ϕ = is the autonomous parameter (or the intercept)

***PCI* =** Per capita income (Proxy for economic development)

***PPT* =** Petroleum profit tax

***CED* =** Custom and excise duties

***ORE* =** Oil revenue exports

μ_t = represents the stochastic error term.

If the variables under consideration are cointegrated, there will be need to estimate an error-correction model to examine the impact of PPT, CED, ORE on PCI. Suffice it to reiterate that cointegration provides the theoretical underpinning for error-correction model. The following error-correction model will be utilized:

$$\Delta \ln PCI_t = c + \sum_{i=1}^{m} \beta_i \Delta \ln PPT_{t-i} + \sum_{i=1}^{n} \lambda_i \Delta \ln CED_{t-i} + \sum_{i=1}^{p} \delta_i \Delta \ln ORE_{t-i} + \alpha \mu_{-1} + \upsilon_t \text{ ----10}$$

Where: Δ is difference operator; μ_{-1}(ECM) is one period lag of the residual from Equation 9; it is the equilibrium term; c is the constant term; $\beta_i, \lambda_i, \delta_i$ and α are respective parameters; and υ_t is the white noise error term.

We then differentiate partially with respect to the log of each variable to obtain elasticity of per capita income and *apriori* sign expectation of equation (10);

$$\frac{\partial \ln PCI}{\partial \ln PPT} = \left(\frac{\partial PCI}{\partial PPT}\right)\left(\frac{PPT}{PCI}\right) = \beta_1 > 0 \text{ ----------11}$$

$$\frac{\partial \ln PCI}{\partial \ln CED} = \left(\frac{\partial PCI}{\partial CED}\right)\left(\frac{CED}{PCI}\right) = \beta_2 > 0 \text{----------12}$$

$$\frac{\partial \ln PCI}{\partial \ln ORE} = \left(\frac{\partial PCI}{\partial ORE}\right)\left(\frac{ORE}{PCI}\right) = \beta_3 > 0 \text{----------13}$$

$$\frac{\partial \ln PCI}{\partial \mu_{-1}} = \left(\frac{\partial PCI}{\partial \mu_{-1}}\right)\left(\frac{\mu_{-1}}{PCI}\right) = -\alpha < 0 \text{----------14}$$

The parameter estimates associated with PPT, CED, and ORE of petroleum industry show short-run effects of changes in these variables on short-run changes in PCI; the absolute value of the parameter estimate associated with the error correction term shows how quickly the equilibrium is restored (Gujarati & Porter, 2009).

ANALYSIS & FINDINGS

Unit Root /Stationarity Test Results

To avoid the possibility of having spurious regression results, the variables are tested for stationarity to ascertain the order of their integration. The Augmented Dickey-Fuller (ADF) unit root tests for stationarity was utilized. The result is presented in Table 1 below.

Table 1: Summary of Unit Root Test Results, Eview-7

Variables	ADF Test Statistic(at first difference)	Order of Integration
PCI	-7.075895(-4.284580)**	*I(1)*
PPT	-11.01805(-4.374307)*	*I(1)*
CED	-3.693498(-3.622033)*	*I(1)*
OR	-5.929077(-4.296729)**	*I(1)*

Note: (a) MacKinnon critical values for the rejection of hypothesis of unit root are in parenthesis in Columns 2 and the tests include intercept and trend; the star imply 5% and 1% level of significance.

As shown in Table 1, the ADF unit root tests indicate that the null hypothesis of unit root is rejected at first difference for two of the variables at 1%level of significance, with the exception of CED and PPT which were found stationary at 5%(ADF). Thus all the variables are stationary at first difference as the case may be. The stationary values shall be used for the analysis.

Co-integration Test

After the tests for stationarity are concluded and all the variables found to be integrated of the same order, the next stage will be to conduct a robust test for cointegration to see if there is a long-run or equilibrium relationship among the variables. Economically, variables are cointegrated if they have a long term, or equilibrium relationship between them. The Johansen cointegration test is utilized.

Table 2: Results of Johansen Multivariate Cointegration Test

Date: 04/17/14 Time: 16:27

Sample (adjusted): 1983 2013

Included observations: 31 after adjustments

Trend assumption: Linear deterministic trend

Series: PCI PPT CED ORE

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.683043	58.58979	47.85613	0.0036
At most 1	0.321893	22.97109	29.79707	0.2475
At most 2	0.293778	10.92916	15.49471	0.2159
At most 3	0.004717	0.146576	3.841466	0.7018

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.683043	35.61870	27.58434	0.0038
At most 1	0.321893	12.04194	21.13162	0.5435
At most 2	0.293778	10.78258	14.26460	0.1654
At most 3	0.004717	0.146576	3.841466	0.7018

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

The Johansen cointegration test results (both the trace test and the maximum eigenvalue test) show that the variables in Equations 7 and 9 are cointegrated. Therefore we conclude that there is a long-run or equilibrium relationship among PCI, PPT, CED and ORE

Analysis of Findings and Policy Implications

We will now estimate our error correction model. As is the tradition, the over-parameterized model was reduced to achieve parsimonious model, which are data admissible, theory consistent and interpretable. Parsimony maximizes the goodness of fit of the model with a minimum number of explanatory variables. The reduction process is mostly guided by statistical considerations, economic theory and interpretability of the estimates (Adam, 1992). Thus, our parsimonious reduction process made use of a stepwise regression procedure (*through the elimination of those variables and their lags that are highly not significant*), before finally arriving at an interpretable model.

Therefore, simplifying the model by reducing the number of variable and lagged variable through general to specific procedure gave birth to the parsimonious error-correction model presented in table 3 below:

Table 3: Error Correction Model Result

Dependent Variable: D(PCI)
Method: Least Squares
Date: 04/17/14 Time: 21:57
Sample (adjusted): 1982 2013
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.939495	13.15661	-0.299431	0.7669
D(PPT)	-6.41E-05	3.81E-05	-1.679521	0.1046
D(CED)	-0.000222	0.000440	-0.504978	0.6177
D(ORE)	16.15621	2.261862	7.142878	0.0000
ECM(-1)	-0.392974	0.099737	-3.940087	0.0005

R-squared	0.797409	Mean dependent var	24.71147
Adjusted R-squared	0.767396	S.D. dependent var	136.7794
S.E. of regression	65.96740	Akaike info criterion	11.35880
Sum squared resid	117495.8	Schwarz criterion	11.58782
Log likelihood	-176.7408	Hannan-Quinn criter.	11.43471
F-statistic	26.56840	Durbin-Watson stat	1.703985
Prob(F-statistic)	0.000000		

*Heteroscedasticity Test: ARCH: F-statistic=0.988341, Probability=0.3284; Obs*R-squared=1.021683, Probability=0.3121;*
*Breusch-Godfrey Serial Correlation LM Test: F-statistic=0.936518, Probability=0.4053, Obs*R-squared=2.230383, Probability=0.3279*
Note: The parsimonious estimates were achieved by considering improvement in adjusted R^2, DW statistic and AIC.

By examining the overall fit of the model, it can be observed that the model have better fit as indicated by a higher value of the F-statistic 26.57 and it is significant at the 1% level. It can be observed also from the results that the coefficient of the error correction term ECM (-1) have the expected negative sign, less than unity and it is highly significant at the 1.0 per cent level of significance. The significance of the error correction mechanism ECM (-1) supports co-integration and suggests the existence of long-run steady-state equilibrium between PCI, PPT, CED and ORE. In fact, the ECM (-1) indicates a feedback of about 39.29 per cent of the previous year's disequilibrium. The adjusted R^2 of 0.7974 indicates that about 79.74 per cent of the variation in PCI is explained by PPT, CED and ORE.

The model estimates are generally desirable. The Durbin Watson (DW) statistic of equal to 1.7(approximating 2) suggests that there is absence of first order serial correlation; the Breusch-Godfrey serial correlation Lagrange Multiplier test. This test is general in the sense that it allows for (a) nonstochastic regressors such as lagged values of the regress and; (b) higher order autoregressive schemes; and (c) simple or higher-order moving averages of white noise error terms. This shows that we cannot reject the null hypothesis of no serial correlation among the variables. Thus we can safely conclude that our model is free from any order of serial correlation. The Auto regressive conditional hetereoscedasticity (ARCH) test shows that we cannot reject the null hypothesis of no heteroskedasticity. Thus we can again safely conclude that our model is not plagued by heteroskedasticity. It is evident from the foregoing that our model estimates are generally robust; this is validated by the F-statistic which is statistically significant at 1%.

From the model, it could be observed that petroleum profit tax (PPT) is statistically insignificant and has a negative relationship with economic development which was proxied by per capita income (PCI). This is in line with the World Bank Report (2010) which stated that as a result of corruption, 80% of Nigerian energy tax revenue benefits only 1% of the population. This means that 99% of Nigerians do not benefit from tax proceeds of petroleum revenue according to World Bank Report. The result thus shows that, a 1.0 percent change in PPT holding other variables constant, decreases PCI by 6.41 percent.

Moreso, the customs and excise duties (CED) variable showed a negative relationship with PCI and it is statistically insignificant at 5 percent level. It showed that revenue generated via these duties has not contributed to the improvement of standard of living of Nigerians. This could be attributed to corruption, inadequate record keeping and mis-management of generated funds.

However, it was observed that oil revenue exports had a positive and significant impact on per capita income. This result suggests that income per person in the country increases as oil revenue increases. This implies that Nigerians are made well off as a result of increasing oil revenue during the period under review. This study finds petroleum income to have a positive effect on the standard of living of Nigerian, and this agrees with the opinions of previous studies (for example Iyoha (2007)) that per capita income in Nigeria grew over the period under review. The function thus shows that a 1.0 % increases in ORE, leads to 16.16 % increase in PCI.

CONCLUSION AND RECOMMENDATION

Our findings from the estimation of our model indicate that oil revenue has had a positive and statistically significant relation with GDP per capita (PCI), but its relationship with PPT and CED are negative and not statistically significant. It thus shows that PPT and CED have not had any significant impact on the Nigeria's economic development within the period under review.

The study thus recommends that Government should create strong institution that transparently and judiciously account for the revenue it generates through PPT and CED by investing in the provision of infrastructure and public goods and services (Soludo, 2009). There is the need for diversification of the economy away from oil and use oil generated revenue to develop other key sectors of the economy. When natural resources such as crude oil are exported, jobs and employment opportunities are exported along with it to other countries and structural unemployment are imported into the country and that depresses the standard of living. Furthermore, It is expected that the more effectively and efficiently revenue is utilized by Government to create employment opportunities and wealth in the economy, the more willing taxpayers would be to meet their obligations to the Government and discharge their duties in the overriding goal of achieving National Development. The huge revenue earned by the government through the PPT and CED could help the government to fund public expenditure that stimulates the national economy and improve economic development. Corrupt practices in the oil and gas sector of the economy must also be checked and strong legal actions (rule of law) set aside for checks and balances to ensure compliance and efficient utilization of oil generated revenues for harnessing economic development. Fraudulent cases must be tried and those found guilty be made to take the law no matter how highly placed they may be. This will serve as a wakeup call to all Nigerians that corruption is a thing to be avoided and deter.

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