

Effect of Tax Reforms on Productivity of Nigeria

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ABSTRACT: This study assessed the Effect of Tax Reforms on Productivity in Nigeria. Value Added Tax, Petroleum Profit Tax, Personal Income Tax and Company Income Tax were used to proxy Tax Reforms, while Gross Domestic Product per Capita was used to measure productivity for a period of twenty eight years spanning from 1992 to 2019. Based on the objectives of the study, four hypotheses were formulated. Ex-Post facto research design was adopted. The time series data were obtained from Federal Inland Revenue Services, Central Bank of Nigeria, National Bureau of Statistics and the World Bank Publications. As a preliminary step in testing, the study employed the Augmented Dickey Fully Unit root test to confirm the order of integration of the time series variables. The study employed descriptive statistics and inferential statistics using Pearson correlation, Ordinary Least Square (OLS) regression analysis, Johansen Cointegration test and Error Correction Model. Specifically, the study found that Value Added Tax, Personal Income Tax and Company Income Tax have a significant negative effect on GDP per Capita of Nigeria while Petroleum Profit Tax has a significant positive effect on GDP per Capita of Nigeria at 5% level of significance respectively. It was recommended that government should diversify the economy for more development in order to increase the overall tax revenue base.

Keywords: Tax Revenue, Gross Domestic Product per Capita, Economic Development,

I. INTRODUCTION

Taxation is a compulsory levy imposed on the citizens of a country by the government, in order to generate revenue that will be used in general administration (Okeke, Mbonu & Amahalu, 2018). Tax reform is a way of changing the way taxes are collected and managed by the government. Consequently, tax reform is a fundamental fiscal policy strategy designed to enhance tax administration. Since 1986, Nigerian government has embarked on several tax reforms.

Some of the objectives of the tax reforms include: (i) to accelerate improved service delivery to the public, (ii) to boost non-oil tax revenue, (iii) efforts at consistently reviewing the tax laws, in order to curb the incidence of tax evasion and avoidance, (iv) to improve the tax administration, so as to make it more responsive, reliable, skillful and tax payer friendly and (v) to bridge the gap between national development needs and funding of the needs (Federal Inland Revenue Handbook, 2012). Instructively, some of the reforms that have been embarked upon by the Nigerian government since the inauguration of Nigeria's tax system according to Peci (2018) include: (i) the introduction of income tax in Nigeria between 1904 and 1926, (ii) granting of autonomy to Nigeria inland revenue in 1945, (iii) the Raisman Fiscal Commission of 1957, (iv) formation of the Inland Revenue Board in 1958, (v) the promulgation of Petroleum Profit Tax Ordinance No.15 of 1959, (vi) the promulgation of Income Tax Management Act of 1961, (vii) the promulgation of the Companies Income Tax Act of 1979, and (viii) Tax Policy and Administration Reforms Amendment 2001 and 2004. The tax reform of the 90s was preceded by the inauguration of two study groups. One study group examined the direct tax regime, while the second examined indirect tax. A major outcome of the second study group was the introduction of value added tax (VAT) in the year 1993 (Okeke, Mbonu & Amahalu, 2018).

Productivity is a crucial factor in production performance of firms and nations. Increasing national productivity can raise living standards because more real income improves people's ability to purchase goods and services, enjoy leisure, improve housing and education and contribute to social and environmental programs. Productivity growth can also help businesses to be more profitable. Productivity growth is a crucial source of growth in living standards. Productivity growth means more value is added in production and this means more income is available to be

distributed. Hence, the need to empirically examine the effect of tax reforms on productivity in Nigeria

II. STATEMENT OF THE PROBLEM

In Nigeria, tax administration has been encumbered by several factors ranging from inadequate and unreliable data, corrupt tax officials, high incidence of tax avoidance and evasion, and the hydra-headed monster of multiple taxation (Herbert, Nwaorgu & Nwaiwu, 2017). Nigerian government has embarked on several tax reforms, since the year 1991. Prior to tax reforms, tax administration reflected inefficiencies, characterized by deficiencies in the tax administration and collection system, complex legislations and apathy on the part of those outside the tax nets. The divergence of theoretical views on the link between tax reforms and productivity is manifested in empirical literature. One stream of empirical literature reported negative relationship between tax reforms and productivity (Muhammad, Sofia & Amir, 2014; Asaolu, Olabisi, Akinbode & Alebiosu, 2018). The second stream reported positive influence of tax reforms on economic growth (Yahaya & Bakare 2018; Okeke, Mbonu & Amahalu, 2018; Omondi, 2019), while the third stream of literature found evidence of a non-linear effects (inverse U-shaped relationship) (Bonmwa & Ogboru, 2017; Olaoye & Ayeni, 2019). In an attempt to addressing the gap in literature, the dependent variable of this study would be targeted on productivity (variable gap), as prior studies focused on economic growth or development. Again, this study was extended to 2019 as previous works ended in 2018, thereby closing the currency gap.

III. OBJECTIVES OF THE STUDY

The main objective of this study was to examine the effect of Tax Reforms on Productivity of Nigeria. The specific objective was to:

- i. Determine the effect of Tax Reforms on GDP per Capita of Nigeria.

IV. RESEARCH HYPOTHESIS

The following null hypothesis was tested at 5% level of significance in this study:

H₀₁: Tax Reforms have no significant effect on GDP per Capita of Nigeria

Tax Reform

Tax reform is the process of changing the way taxes are collected or managed by the government and is usually undertaken to improve tax administration or to provide economic or social benefits (Institute of Development Studies, 2020).

Tax reform is generally undertaken to improve the efficiency of tax administration and to maximise the economic and social benefits that can be achieved through the tax system. Tax can be defined as a financial charge or other levy imposed upon a taxpayer (an individual or legal entity) by a state, or the functional equivalent of a state (Granger, 2013). Taxes can include direct taxes on income and wealth (e.g. personal and corporate income taxes, property tax), and indirect taxes on consumption (e.g. Value Added Tax (VAT), excise duties). (Granger, 2013). Tax reform can reduce tax evasion and avoidance, and allow for more efficient and fair tax collection that can finance public goods and services. It can make revenue levels more sustainable, and promote future independence from foreign aid and natural resource revenues (Fjeldstad, 2014). It can improve economic growth (Mascagni, Moore & McCluskey, 2014) and address issues of inequality through redistribution and behaviour change (Akitoby, 2018).

Value Added Tax (VAT)

A value-added tax (VAT) is a consumption tax placed on a product whenever value is added at each stage of the supply chain, from production to the point of sale. The amount of VAT that the user pays is on the cost of the product, less any of the costs of materials used in the product that have already been taxed. VAT is essentially a regressive tax that places an increased economic strain on lower-income taxpayers, and also adds bureaucratic burdens for businesses. Value-added taxation is based on a taxpayer's consumption rather than their income (Okoye, Amahalu, Obi & Iliemna, 2019). A value-added tax (VAT) is a consumption tax levied on products at every point of sale where value has been added, starting from raw materials and going all the way to final retail purchase. Value Added Tax (VAT) in Nigeria is a consumption tax that was instated by the Value Added Tax Act of 1993. It is a Federal Tax which is managed by the Federal Inland Revenue Service (FIRS). The main VAT rate in Nigeria is 7.5% (raised from 5% on 1st February 2020).

Petroleum Profit Tax (PPT)

PPT is a tax on the income of companies engaged in upstream petroleum operations in lieu of CIT. Petroleum profit tax (PPT) is a tax applicable to upstream operations in the oil industry. It is particularly related to rents, royalties, margins and profit sharing elements associated with oil mining, prospecting and exploration leases. It is the most important tax in Nigeria in terms of

its share of total revenue contributing 95 and 70 percent of foreign exchange earnings and government revenue, respectively (Afuberoh & Okoye, 2014). The Petroleum Profit Tax is regulated by the Petroleum Profit Tax Act of 1959 as amended by the Petroleum Profit Tax Act of 2007. Although the initial law was passed in 1959 to capture the first oil export made in that year (Okeke, Mbonu & Amahalu, 2018). Section 8 of Petroleum Profit Tax Act (PPTA) states that every industry engaged in petroleum operations is under an obligation to render return, together with properly annual audited accounts and computations, within a specified time after the end of its accounting period. Petroleum profit tax involves the charging of tax on the incomes accruing from petroleum operations (Abdullahi, Madu & Abdullahi, 2015).

Personal Income Tax (PIT)

Personal income tax is a direct tax on the income from all sources of an individual adult, communities and families, and on executors and trustees. Personal income tax is calculated after some reliefs have been given and or certain expenses exempted according to a graduated rate specifies by PIT (Oyedele, 2019). Personal Income Tax is a direct tax charged on the income of a person. In the context of personal income tax, a 'person' means an individual, a sole proprietorship (non-juristic person), communities and families and on executors and trustees (of an undivided estate).

Under Nigerian Personal Income Tax Laws all taxable persons are entitled to a consolidated relief allowance of 20% of gross income plus higher of 1% of gross income or N200,000.

The tax rate payable is:

| Annual Taxable Income | Rate |
|-----------------------|------|
| First N300,000 | 7% |
| Next N300,000 | 11% |
| Next N500,000 | 15% |
| Next N500,000 | 19% |
| Next N1,600,000 | 21% |
| Over N3,200,000 | 24% |

Personal Income Tax Act 1993 which was amended in 2011 by the Personal Income Tax Amendment Act 2011 is the prevailing law on personal income tax.

Companies Income Tax (CIT)

Company income tax is a tax imposed by the Government on the income and profits of

companies operating in the country. The law governing the administration of Companies Income Tax is the Companies Income Tax Act. The law which was first enacted in 1961 has undergone so many amendments, the latest being that of April, 2007. Companies Income Tax (CIT) is a tax on the profits of registered companies in Nigeria. It also includes the tax on the profits of foreign companies carrying on business in Nigeria. The tax is paid by limited liability companies inclusive of the public limited liability companies. It is therefore commonly referred to as the corporate tax (Onyeyiri, 2019). All public limited liability companies in Nigeria outside the Petroleum sector of the economy are required to pay income and education tax. The rate is 30% of total profit for income tax and 2% of assessable profit for education tax.

Productivity

Productivity is a measure of the efficiency with which a country combines capital and labour to produce more with the same level of factor inputs (Reenen, 2020). Productivity is the key source of economic growth and competitiveness. A country's ability to improve its standard of living depends almost entirely on its ability to raise its output per worker, i.e., producing more goods and services for a given number of hours of work. Economists use productivity growth to model the productive capacity of economies and determine their capacity utilization rates. This, in turn, is used to forecast business cycles and predict future levels of gross domestic product (GDP) growth. In addition, production capacity and utilization are used to assess demand and inflationary pressures (Riley, 2020). Productivity is an important determinant of living standards, it quantifies how an economy uses the resources it has available, by relating the quantity of inputs to output (Kenton, 2019).

Gross Domestic Product (GDP) per Capita

GDP per capita is a measure of a country's economic output that accounts for its number of people. It divides the country's gross domestic product by its total population. That makes it a good measurement of a country's standard of living. It tells you how prosperous a country feels to each of its citizens (Chappelow, 2019). Per capita gross domestic product (GDP) is a metric that breaks down a country's GDP per person. It is calculated by dividing GDP over a country's population. GDP per capita is a universal measure globally for gauging the prosperity of nations (Tushar, 2020). GDP per capita shows how much

economic production value can be attributed to each individual citizen. Alternatively, this translates to a measure of national wealth since GDP market value per person also readily serves as a prosperity measure (Seth, 2020). GDP per capita is a nation's gross domestic product divided by its population. The GDP is the total output of goods and services produced in a year by everyone within the country's borders (World Bank, 2019). GDP is the primary measure of a country's economic productivity. A country's economic GDP shows the market value of goods and services it produces. GDP per capita is an important indicator of economic performance and a useful unit to make cross-country comparisons of average living standards and economic wellbeing (Amadeo, 2020).

Value Added Tax and Productivity

Fasoranti (2013) submitted that development is increased economic activities. Amahalu, Nweze and Obi (2017) summarized a country's economic development as a long-term rise in capacity to supply increasingly diverse economic goods to its citizens. Amahalu, Nweze and Obi (2017) added that the growth capacity is based on advancing technology, institutional and ideological adjustments. Economic growth indicates expansion of a country's potential Gross Domestic Product. Salami, Apelogun, Omidiya and Ojoye (2015) concluded that, at the early stage of economic growth, the rate of growth in public expenditure will be very high because government provides basic infrastructural facilities and most these projects are capital intensive.

Petroleum Profit Tax and Productivity

The importance of taxation on petroleum profits cannot be overemphasized as tax revenue derived from taxing petroleum profits contributes largely to the total tax revenue available to the Nigerian government. Petroleum taxation is the instrument of choice for sharing wealth between host governments and international oil companies. It is a direct tax, levied annually on net profit of a petroleum tax payer, who is carrying on the business of petroleum exploration and production (Macek & Janků, 2015). Petroleum taxation has some particular features as a result of oil industry's unique characteristics: the huge central contribution of revenue to the economy, the volatility of oil prices, the large operating and development costs, the high uncertainty associated with petroleum geology, the specific characteristics of individual oilfields, and the possibility of re-investment (Hunady & Orviska, 2014). Naomi and Sule (2015)

found a negative relationship between petroleum profit tax and economic growth. On the contrary, Abiahu and Amahalu, (2017) found a positive relationship between petroleum profit tax and economic growth.

Personal Income Tax and Productivity

Umoru and Anyiwe (2013) noted that the policy of taxation in Nigeria is directed towards achieving some specific objectives which include amongst others revenue generation and upholding economic growth". Tax revenue is a core instrument in the hands of the government to fulfill expenditures and it helps in acquiring sustained growth targets. The nature of taxes can help predict a growth pattern (Romer & Romer, 2010). Musgrave and Musgrave (2004) maintained that the "economic effects of taxation include micro effects on the distribution of income and efficiency of resource use as well as macro effects on the level of capacity output, employment, prices and growth. Government exists in order to effectively collect taxes from available economic resources and make use of same to create economic prosperity. Ojong, Ogar and Oka (2016) found no significant relationship between personal income tax and economic growth; Akhor and Ekundayo (2016) found a significant negative relationship between personal income tax and economic growth, while Okoh, Onyekwelu and Iyidiobi (2016) found a positive relationship between personal income tax and economic growth.

Companies' Income Tax and Productivity

Tax revenue mobilization as a source for financing development activities in Nigeria has been a difficult issue primarily because of various forms of resistance, such as evasion, avoidance corrupt practices attending to it. These activities are considered as sabotaging the economy and are readily presented as reasons for the underdevelopment of the country. Developing countries must be able to raise the revenue required to finance the services demanded by their citizens and the infrastructure (physical and social) that will enable them to move out of poverty. Taxation will play the key role in this revenue mobilization (Wambai & Hanga, 2013). Several empirical studies have been conducted on the effect of company income tax on economic development, which has provided different evidences. The empirical studies of Aderibigbe and Peter (2014); Kiabel (2017) documented a positive relationship between company income tax and economic growth; while Omitogun and Ayinla (2017); Okeke, Mbonu and Amahalu (2018) reported a

negative relationship between tax revenue and economic growth.

V. THEORETICAL FRAMEWORK

Solow Growth Model

The Solow growth model is an economic model of long-run economic growth set within the framework of neoclassical economics. It attempts to explain long-run economic growth by looking at capital accumulation, labor or population growth, and increases in productivity, commonly referred to as technological progress. Robert Solow developed the neo-classical theory of economic growth in 1956. The Solow Growth Model is an exogenous model of economic growth that analyze changes in the level of output in an economy over time as a result of changes in the population growth rate, the savings rate, and the rate of technological progress (Breston, 2013).

New Growth Theory

The new growth theory is an economic concept, positing that humans' desires and unlimited wants foster ever-increasing productivity and economic growth. New growth theory was propounded by Paul Romer in 1994. The new growth theory argues that real gross domestic product (GDP) per person will perpetually increase because of people's pursuit of profits (Parente, 2018). New/Endogenous growth theory holds that economic growth is primarily the result of endogenous and not external forces. Endogenous growth theory holds that investment in human capital, innovation, and knowledge are significant contributors to economic growth. The theory also focuses on positive externalities and spillover effects of a knowledge-based economy which will lead to economic development (Abiahu, & Amahalu, 2017). The endogenous growth theory primarily holds that the long run growth rate of an economy depends on policy measures.

Empirical Review

Okeke, Mbonu and Amahalu (2018) examined the effect of tax revenue on economic development in Nigeria during the period 1994 - 2016. Data were obtained from the Central Bank of Nigeria, Office of the Federal Inland Revenue Service and Annual Abstract of statistics of the National Bureau of Statistics. This study was based on time series data. The Augmented Dickey Fuller test, Multiple linear regression, Multicollinearity test, Granger Causality test, Johansen cointegration test and Error correction model were employed in the analysis of the data. The findings of this study showed that tax revenue has a statistically

significant relationship with primary school enrolment, life expectancy and per capita income, in Nigeria at 5% level of significance respectively. On the basis of the findings, it was recommended among others that since tax revenue has been proven to contribute to economic development in Nigeria, Government should ensure that the tax revenues are expended judiciously in order to ensure that marginal benefits are accrued for all members of the economy.

Olaoye and Ayeni (2019) examined value added tax and customs duties on revenue generation in Nigeria. Secondary data were sourced from Federal Inland Revenue Service (FIRS) ranging from 2000 to 2016. Autoregressive Distributed Lag (ARDL) and Granger causality tests were used as the estimation techniques. The findings of the study revealed that the F-statistics value was 2.883868 which is lesser than both the lower bound and the upper bound values of 3.79 and 4.85 respectively at the 5percent level of significance which implies that there is no long-run relationship among value-added tax, customs duties and revenue generation. It was equally revealed that there is no causality among value-added tax, customs duties, and revenue generation. The study concluded that value-added tax and customs duties have no significant effect on revenue generation and there is no long-run relationship among value-added tax, customs duties and revenue generation in Nigeria during the study period. Thus, it was recommended that the fiscal policy should discourage tax avoidance by emulating measures for compliance of value added tax and customs duties

Omondi (2019) analyzed the effect of custom and excise duties on economic growth in Kenya for the period 1973 to 2010. The study was motivated by two developments. First, by the inconsistency in existing empirics and secondly by the wide knowledge gap occasioned by the paucity of empirical literature on Kenya. Therefore, the study attempted to reconcile the different positions and also close the knowledge gap. The study adopted a correlation research design based on its ability determine the strength and direction of relationships between variables while the theoretical framework was anchored on endogenous growth model. The empirical results indicated that custom and excise duties are positively correlated with economic growth in Kenya.

Ironkwe and Agu (2019) analysed the relationship between total tax revenue and economic growth in Nigeria. Time series data on different types of total tax revenue and economic

development from 1986-2016 were collected from Central Bank of Nigeria statistical bulletin, Federal Inland Revenue Service and National Bureau of Statistics. Multiple regression analysis was used in analysing the data with the aid of STATA version 13. The results indicated that there exists a significant positive relationship between total tax revenue and unemployment in Nigeria; company income tax has no significant relationship with economic growth. The study concluded that total tax revenue relate positively to unemployment and recommends that government should distribute its social welfare programmes in such a way to provide direct benefit to tax payers. This makes them believe that the portion of their hard earned money paid for purposes, is being effectively utilised by the government. The tax official needs improvement through adequate training and provision of suitable working materials and facilities.

VI. METHODOLOGY

Research Design

This study focused on ascertaining the effect of tax reforms on productivity of Nigeria. This study employed Ex-post facto research design.

Nature and Sources of Data

Time series data were obtained from the publications of Federal Inland Revenue Service (FIRS) bulletin of various years, Central Bank of Nigeria (CBN) publications, like Statistical Bulletin various years, Annual Reports for various years; National Bureau of Statistics (NBS) and the

World Bank Publications for twenty eight years (1992-2019) period.

Model Specification

In the determination of the effect of tax reform on productivity, this study adapted the model of Okeke, Mbonu & Amahalu (2018):

$$GDP = \alpha + \beta_1 CED + \beta_2 VAT + \beta_3 PIT + \xi$$

Where:

GDP = Gross Domestic Product

CED = Custom and Excise Duties

VAT = Value Added Tax

PIT = Personal Income Tax

α = Intercept

$\beta_1 - \beta_3$ = Coefficients of independent variables;

Thus, this study specifies a functional relationship between productivity and tax reform:

$$Productivity = f(\text{tax reform}) + \mu$$

Representing the equations with the variables of the construct, hence the model below was formulated based on the stated hypothesis:

$$GDPPC_t = \beta_0 + \beta_1 VAT_t + \beta_2 PPT_t + \beta_3 PIT_t + \beta_4 CIT_t + \mu_t \dots \text{Model 1}$$

Where:

$GDPPC_t$ = Gross Domestic Product per Capita for period t

VAT_t = Value Added Tax for period t

PPT_t = Petroleum Profit Tax for period t

PIT_t = Personal Income Tax for period t

CIT_t = Company Income Tax for period t

μ_t = Error term for period t

β_0 = Constant term

β_1 = Coefficient of Tax Reforms

t denotes the annual time-period

Table 1 Operationalisation of Model Variables

| Variable Type | Indicators | Measurement Unit | Variable Symbols | Definition |
|--|----------------------|------------------|------------------|---|
| Independent Variable (Tax Reform) | | | | |
| | Value Added Tax | | VAT | 5% of total value of the goods or services purchased (Okeke, Mbonu, Amahalu, 2018) |
| | Petroleum Profit Tax | | PPT | 50% for petroleum operations under production sharing contracts (PSC) with the Nigerian National Petroleum Corporation (NNPC) (Olaoye |

| | | | | |
|--|---------------------|----------------|-------|---|
| | Personal Income Tax | | PIT | & Ayeni, 2019) First N300,000 7% Next N300,000 11% Next N500,000 15% Next N500,000 19% Next N1,600,000 21% (Ironkwe & Agu, 2019) |
| | Company Income Tax | | CIT | 30% of taxable income (Etale & Bibilar, 2016) |
| Dependent Variable (Productivity) | | | | |
| | Standard of Living | GDP per Capita | GDPPC | GDP of a country/ population (Kenton, 2019) |

Data Presentation and Analysis
Table 2: Pearson Correlation Matrix

| | | | | | |
|-------|--------|--------|--------|--------|--------|
| | GDPPC | VAT | PPT | PIT | CIT |
| GDPPC | 1.0000 | 0.6663 | 0.6416 | 0.6265 | 0.6783 |
| VAT | 0.6663 | 1.0000 | 0.6369 | 0.6107 | 0.6222 |
| PPT | 0.6416 | 0.6369 | 1.0000 | 0.6893 | 0.6449 |
| PIT | 0.6265 | 0.6107 | 0.6893 | 1.0000 | 0.6953 |
| CIT | 0.6783 | 0.6222 | 0.6449 | 0.6953 | 1.0000 |

Source: E-Views 10.0 Correlation Output, 2021

Interpretation of Correlation Matrix

Table 2 indicates that there is a positive correlation between VAT (0.6663), PPT (0.6416), PIT (0.6265), CIT (0.6783) and GDPPC.

Test of Reliability (Unit Root Test)

The test for unit root is invariably, the test for stationarity. The test was carried out on each

variable in the model in order to avoid the estimation of a spurious relationship arising from using two or more non-stationary time series data to estimate long-run relationship. The Augmented Dickey Fuller (ADF) method was used to test for the unit root.

The results of the unit root are presented in Table 1

Table 3 Differenced Results

| Variables | Test Statistic | Test Critical Values | | | Status | Prob. |
|-----------|----------------|----------------------|-----------|-----------|--------|--------|
| | | 1% level | 5% level | 10% level | | |
| DVAT | -8.329172 | -3.724070 | -2.986225 | -2.632604 | 1(1) | 0.0000 |
| DCIT | -8.023727 | -3.724070 | -2.986225 | -2.632604 | 1(1) | 0.0000 |
| DGDPPC | -8.427994 | -3.724070 | -2.986225 | -2.632604 | 1(1) | 0.0000 |
| DPIT | -6.776844 | -3.737853 | -2.991878 | -2.635542 | 1(1) | 0.0000 |
| DPPT | -6.596439 | -3.737853 | -2.991878 | -2.635542 | 1(1) | 0.0000 |

Source: E-views 10.0, Output File, 2021

Test of Hypothesis

$$GDPPC_t = \beta_0 + \beta_1VAT_t + \beta_2PPT_t + \beta_3PIT_t + \beta_4CIT_t + \mu_t \dots \text{Equ (1)}$$

Table 4: Ordinary Least Square regression (OLS) analysis showing the effect of VAT, PPT, PIT, CIT on GDPPC

Dependent Variable: DGDPPC
 Method: Least Squares
 Date: 01/12/21 Time: 10:40
 Sample (adjusted): 1993 2019
 Included observations: 27 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|--------|
| C | 0.003857 | 0.017988 | 6.955718 | 0.0000 |
| DVAT | -0.367736 | 0.256076 | -4.699543 | 0.0001 |
| DPPT | 0.038399 | 0.067173 | 2.577915 | 0.0162 |
| DPIT | -0.789609 | 0.098695 | -11.14582 | 0.0000 |
| DCIT | -0.453571 | 0.066215 | -2.470444 | 0.0207 |
| R-squared | 0.838705 | Mean dependent var | 0.024815 | |
| Adjusted R-squared | 0.825264 | S.D. dependent var | 0.078367 | |
| S.E. of regression | 0.077717 | Akaike info criterion | -2.105912 | |
| Sum squared resid | 0.132878 | Schwarz criterion | -1.865942 | |
| Log likelihood | 33.42982 | Hannan-Quinn criter. | -2.034557 | |
| F-statistic | 62.39778 | Durbin-Watson stat | 1.732524 | |
| Prob(F-statistic) | 0.000000 | | | |

Source: E-Views 10.0 regression Output, 2021

Interpretation of Estimated Regression Coefficients

The effect of tax reform productivity of Nigeria is evaluated based on the result of table 4:

$$GDPPC = 0.003857 - 0.367736VAT + 0.038399PPT - 0.789609PIT - 0.453571CIT$$

The drawn inference from the model implies that one unit increase in VAT will cause GDP per Capita to decrease by 36.77%; a unit increase in PPT will lead to an increase of 3.84% in GDP per Capita; one naira increase in PIT will exert 79% decrease in GDP per Capita; one naira in increase CIT will make GDP per Capita to reduce by 45.36%. From table 4, VAT with a negative coefficient of 0.367736 has a significant effect on GDP per Capita as indicated by the t-statistic of -4.699543 and its associated probability value of $0.0001 < 0.05$; PPT is positively and significantly related to GDP per Capita as indicated by the t-statistic of 0.0162 and p-value of $0.0162 < 0.05$; PIT has a negative but significant relationship with GDP per Capita as denoted by the t-statistic = -11.14582 and p-value = $0.0000 < 0.05$; an inverse relationship exists between CIT and GDP per Capita at t-statistic = -2.470444, however, significant with the p-value = $0.0207 < 0.005$. The adjusted R squared which examines the extent to which the predictors (VAT, PPT, PIT and CIT)

explain the variations in the dependent variable (GDPPC) shows that the adjusted R Squared figure of 0.825264 indicates that, reliance on this model will account for 82.53% of the variations in the dependent variable (GDPPC), while the remaining 17.47% is accounted by other factors outside the scope of this model The Durbin-Watson value of 1.732524 buttressed the fact that the model does not contain auto-correlation, since the value 1.732524 is not more than 2 approximately, thereby, making the regression fit for prediction purpose. The analysis resulted in F-value of 62.39778 with corresponding p-value of 0.000000. This confirms that, the model is significantly reliable. That means one can rely on the model to predict GDPPC with high accuracy.

VII. DECISION

Since the p-value of the test = 0.000000 is less than the critical significant value of 5%, thus H_1 is accepted and H_0 rejected. Therefore, this study upholds that VAT has a significant negative effect on GDP per Capita; PPT has a significant positive effect on GDP per Capita; PIT has a significant negative effect on GDP per Capita; CIT has a significant negative effect on GDP per Capita at 5% level of significance.

Table 5: Johansen Co-integration Test

Date: 01/12/21 Time: 11:09
 Sample (adjusted): 1994 2019
 Included observations: 26 after adjustments
 Trend assumption: Linear deterministic trend
 Series: DGDPPC DVAT DPPT DPIT DCIT
 Lags interval (in first differences): No lags

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|------------|--------------------|------------------------|---------|
| None * | 0.785611 | 130.2848 | 69.81889 | 0.0000 |
| At most 1 * | 0.733692 | 90.24580 | 47.85613 | 0.0000 |
| At most 2 * | 0.637299 | 55.84519 | 29.79707 | 0.0000 |
| At most 3 * | 0.462530 | 29.47658 | 15.49471 | 0.0002 |
| At most 4 * | 0.401203 | 13.33366 | 3.841466 | 0.0003 |

Trace test indicates 5 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 * | 0.785611 | 40.03901 | 33.87687 | 0.0081 |
| At most 1 * | 0.733692 | 34.40061 | 27.58434 | 0.0057 |
| At most 2 * | 0.637299 | 26.36861 | 21.13162 | 0.0083 |
| At most 3 * | 0.462530 | 16.14292 | 14.26460 | 0.0249 |
| At most 4 * | 0.401203 | 13.33366 | 3.841466 | 0.0003 |

Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

Source: E-Views 10.0 Co-integration Output, 2021

Interpretation of Co-integration Result

Given the unit-root properties of the variables, we proceeded to establish whether or not there is a long-run cointegrating relationship among the variables in the various equations using the Johansen full information maximum likelihood method. The Johansen cointegration tests revealed that the maximal Eigen value statistics show existence of 5 cointegrating equations for VAT,

PPT, PIT and CIT all at 5% level of significance (Table 5). From the cointegration test result presented in table 4.5, the decision rule is to reject the null hypothesis of no cointegration if the computed trace statistic is greater than the 5% critical value. The conclusion drawn from this result is that there exists a unique long-run relationship among the explanatory (independent) variables in the model.

Table 6: Vector Error Correction Model

Vector Error Correction Estimates

Date: 12/03/20 Time: 11:02

Sample (adjusted): 1994 2019

Included observations: 26 after adjustments

Standard errors in () & t-statistics in []

| Cointegrating Eq: | CointEq1 | | | | |
|-------------------|---------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|
| DGDPPC(-1) | 1.000000 | | | | |
| DVAT(-1) | -0.085566 (0.18678) [-5.81206] | | | | |
| DPPT(-1) | 0.103059 (0.04843) [2.12794] | | | | |
| DPIT(-1) | -0.190667 (0.07037) [-2.70949] | | | | |
| DCIT(-1) | -0.171553 (0.04764) [-3.60132] | | | | |
| C | 0.018334 | | | | |
| Error Correction: | D(DGDPPC) | D(DVAT) | D(DPPT) | D(DPIT) | D(DCIT) |
| CointEq1 | -0.402090 (0.15606) [-2.57656] | 0.305008 (0.16023) [1.90360] | -0.815525 (0.68436) [-1.19167] | -0.367117 (0.42681) [-0.86015] | 2.48 4967 (0.5 2388) [4.74 342] |
| C | 0.011154 (0.01589) [0.70207] | -0.000385 (0.01631) [-0.02358] | -0.005000 (0.06967) [-0.07177] | 6.83E-17 (0.04345) [1.6e-15] | - 0.00 5385 (0.0 5333) [- 0.10 096] |
| R-squared | 0.216676 | 0.131181 | 0.055864 | 0.029905 | 0.48 3871 |
| Adj. R-squared | 0.184037 | 0.094980 | 0.016525 | -0.010515 | 0.46 2366 |

| | | | | | |
|---|-----------|-----------|-----------|-----------|-------------------|
| Sum sq. resids | 0.157499 | 0.166028 | 3.028834 | 1.178083 | 1.77 4888 |
| S.E. equation | 0.081009 | 0.083174 | 0.355248 | 0.221555 | 0.27 1944 |
| F-statistic | 6.638660 | 3.623707 | 1.420076 | 0.739854 | 22.5 0002 |
| Log likelihood | 29.49119 | 28.80564 | -8.943459 | 3.332303 | - 1.99 5730 |
| Akaike AIC | -2.114707 | -2.061972 | 0.841805 | -0.102485 | 0.30 7364 |
| Schwarz SC | -2.017931 | -1.965196 | 0.938581 | -0.005708 | 0.40 4141 |
| Mean dependent | 0.011154 | -0.000385 | -0.005000 | 6.83E-17 | - 0.00 5385 |
| S.D. dependent | 0.089681 | 0.087429 | 0.358221 | 0.220400 | 0.37 0883 |
| Determinant resid covariance (dof adj.) | | 9.86E-09 | | | |
| Determinant resid covariance | | 6.61E-09 | | | |
| Log likelihood | | 60.39052 | | | |
| Akaike information criterion | | -3.491578 | | | |
| Schwarz criterion | | -2.765753 | | | |
| Number of coefficients | | 15 | | | |

Source: E-Views 10.0 Output, 2021

Interpretation of Vector Error Corrector Model (VECM) Analysis

The result of the VECM analysis in table 6 reveals that the value of the error correction coefficient is 59.38%. This indicates that 0.402090 of the short run errors of the GDP per Capita is corrected each year. In other words, GDP per Capita adjusts to its long run equilibrium at a speed of 40.21. The VECM analysis indicates that VAT, PPT, PIT and CIT are significant in determining productivity in the long run. 1% increase in VAT leads to a decrease of 8.56% in GDP per Capita; 1% increase in PPT leads to a corresponding increase of 10.31% in GDP per Capita; 1% increase in PIT leads to a decrease of 19.07% in GDP per Capita; 1% increase in CIT leads to a corresponding decrease of 17.16% in GDP per Capita.

VIII. FINDINGS, CONCLUSION AND RECOMMENDATIONS

Findings

- i. Value Added Tax has a significant negative effect on GDP per Capita of Nigeria at 5% level of significance.
- ii. Petroleum Profit Tax has a significant positive effect on GDP per Capita of Nigeria at 5% level of significance.

- iii. Personal Income Tax has a significant negative effect on GDP per Capita of Nigeria at 5% level of significance.
- iv. Company Income Tax has a significant negative effect on GDP per Capita of Nigeria at 5% level of significance.

Conclusion

This study explored the effect of Tax Reforms on Productivity of Nigeria. The data set used for this analysis is the annual series of the selected relevant macroeconomic variables from 1992 to 2019. Data for value added tax, petroleum profit tax, personal income tax and company income tax were used as tax reform variables. Data for gross domestic product per capita were used as productivity variable. The time series data were obtained from Federal Inland Revenue Services, Central Bank of Nigeria, National Bureau of Statistics and the World Bank Publications. As a preliminary step in testing, the study employed the Augmented Dickey Fuller Unit root test to confirm the order of integration of the time series variables. The findings indicate clearly that tax reform components exert significant influence on Nigeria productivity at 5% level of significance.

Recommendations

The following recommendation was proffered based on the findings of the study:

- i. For the tax reform to have a more significant effect on the productivity of Nigeria, Government should devise means of curbing corruption and leakages in the PPT administration. Government should transparently and judiciously account for the revenue it generates through taxation by investing in the provision of infrastructure and public goods and services.

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