

An Empirical Investigation of the Effect of Taxation on Macroeconomic Performance in Nigeria

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Abstract

The main objective of this paper is to critically investigate the impact of taxation on the macroeconomic performance of the Nigerian economy ranging from 2002 to 2011. Ordinary least squares regression method was applied in analyzing obtained data. Result obtained showed that government earnings from taxation has positive significant effect on real gross domestic product in Nigeria; government revenue from taxation has negative significant influence on unemployment rate in Nigeria; and that petroleum profit tax has negative significant effect on real interest rate in Nigeria. The implication of the above study shows that revenue generation from taxation enhances economic growth and that changes in taxation, automatically will affect individuals real standard of living (GDP), employment rate and interest rate. In view of above findings, the Researcher recommends that: the current draft national policy should be passed into law by the National Assembly so as to make it a working document; the government should consider taxpayers and other key stakeholders' interest in fiscal policy formulation and implementation in order to achieve improved tax compliance rate in the country and that government needs to improve the revenue allocation system so as to boost the taxation drive by the different tiers of government.

Keywords: Unemployment rate; taxation; Gross Domestic Product (GDP); Petroleum Profit Tax (PPT); Interest Rate

1. Introduction

Capitalism as advocated by Smith (1776) in his book, *The Wealth of Nation* implies an economic system where the means of production and distribution of goods and services lies in the hands of individuals. To enhance the smooth running of the economic system, a well secured environment through the maintenance of law and order and the provision of social infrastructures by the government is required. The Government needs resources in the form of finance to meet up with this endless task. Hence, the concept of taxation becomes eminent (Oriakhi, 2008).

Taxation has existed since the birth of early civilization and it could be said that it is part of the price to be paid for living in an organized society. However, taxation is not just a means of transferring money to the Government to spend as it thinks fit, it has a tendency to reflect prevailing social values and priorities. The system of taxation is a socio-economic model, representing society's social, political and economic needs often being reflected by changes to the system of taxation (Anyaduba, 1999). The broad objective of the study is to determine the effect of taxation on the macroeconomic performance on the Nigerian economy. The specific objectives are:

- 1) To determine the effect of government expenditure from tax generated on the Real Gross Domestic Production in Nigeria.
- 2) To determine the influence of government revenue from taxation on economic growth in Nigeria.
- 3) To determine the extent to which petroleum profit tax affects real interest rate in Nigeria.

2. Concept of Taxation

Oriakhi (2002) defines taxation as a compulsory levy and those who are taxed have to pay the sums irrespective of any corresponding returns of services or goods by the government. The government of the most developing countries professes a design to stimulate and guide the economic and social development of their nations. The tax system is often identified as one of the most powerful levers available to those governments to move the economy. Anyanwu (1997) views taxation as a compulsory transfer of payment of money from private

individuals, institutions or groups to the government. Taxation is a system of raising money to finance government projects. All governments require payments of money as taxes from people (Soyode and Kajola, 2006). The government uses tax revenues to pay soldiers and police, to build dams and roads, to operate schools and hospitals, and for hundreds of their purposes, generating increased revenue among others (Haggins, 1976).

Since the implementation of the Structural Adjustment Program (SAP) in 1986, taxes have been used to enhance the productivity of public sector workers. They have also been used to enhance competitiveness of business enterprises. Consequently, the attention has been focused on promotion exports of manufacturers. It is also focused in reducing the tax burden of individuals and companies. In line with this change in policy focus, many measures were undertaken (C.B.N., 2008).

2.1 Empirical Investigation of Tax Jurisdiction and Tax Collection in Nigeria

Towards achieving a higher level of efficiency and competitiveness in manufacturing operations, the Taxation is double-barred as it is a tool of fiscal policy and also a measuring instrument of government expenditures. Fiscal policies are policies of government with respect to taxation and government spending. It was described by Lavacic and Rebreman in 1983 as the involvement of exogenous change either in government expenditures or revenue collected by the appropriate authority. Taxation is an important tool of fiscal policy (Henderson and Pool, 1991).

Nigeria's fiscal jurisdiction like any other country is clearly defined in the Constitution with regard to tax policy. The central authority provides the framework and oversees certain decisions that are made. Corporate tax, petroleum tax and assessment of revenue from indirect taxes are undertaken by the central authority while the power to tax individuals is vested in the state. The local government is also given the chance to generate income from finee entertainment and local rates (Hicks, 1965). However, the state and local governments report all tax activities to the federal government for effective fiscal policy to ensure uniform development. For effectiveness, the following Acts were enacted in Nigeria namely:

- 1) Petroleum Profit Tax Act 1959.
- 2) The Income Tax Management Act 1961.
- 3) Capital Gain Tax Act (CGTA).
- 4) The Company Income Tax Act (CITA) 1979.
- 5) Capital Transfer Tax Act (CTTA) 1979 (Okigbu Commission, 1990).

These Acts have been operative till date.

The Income Tax Management Act (ITMA) of 1961 which resulted from Raiseman Commission of 1957 remains the source of taxation laws in Nigeria. The deficiency in the I.T.M.A with respect to company income tax led to the gradual amendment of 1961 Act. Consequently, improvement on the Act to the extent that the company income tax law was enacted in 1979, and was empowered to regulate laws of taxation of company in Nigeria (Okigbo Commission, 1990).

The 1979 Act was comprehensive enough to maintain a uniformity and stability in the Nigerian tax system. Embodied in the Act (1979) are the following:

- i) The Joint Tax Board (JTB); and
- ii) Scrutiny Committee (SC). The responsibility of regulating taxation within the framework of the Company Income Tax law is vested in the Federal Board of Inland Revenue (FBIR).

The Joint Tax Board has been serving as a clearing house for tax disputes and as a forum for Heads of Inland Revenue Departments for the exchange of views.

2.2 Rostow's Stages of Economic Growth

The Traditional Society

A traditional society has been defined as one whose structure is developed within limited production functions based on pre-Newtonian science and technology and as pre-Newtonian attitudes towards the physical world. This does not mean that there was little economic change in such societies. In fact, more land could be brought under cultivation, the scale, and pattern of trade could be expanded, manufacturers could be developed and agricultural productivity could be raised along with increase in population and real income. But the undeniable fact remains that for want of a regular and systematic use of modern science and technology a ceiling existed on the level of attainable output per head. It did not lack inventiveness and innovations, but lacked the tools and the outlook toward the physical world of the post-Newtonian era (Iyoha, 2008).

The social structure of such societies was hierarchical in which family and clan connections played a dominant role. Political power was concentrated in the regions, in the hands of the landed aristocracy supported by a large retinue of soldiers and civil servants. More than 75 per cent of the working population was engaged in agriculture. Naturally, agriculture happened to be the main source of income of the state and the nobles, which was dissipated on the construction of temples and other monuments, on expensive funerals and weddings and on the prosecution of wars (Jhingian, 2008).

The Pre-conditions for Take-off

The second stage is a transitional era in which the pre-conditions for sustained growth are created. The pre-conditions for sustained growth were created slowly in Britain and Western Europe, from the end of the 15th and the beginning of the 16th centuries, when the Mediaeval Age ended and the modern Age began. The pre-conditions for take-off were encouraged or initiated by four forces: The New Learning or Renaissance, the New Monarchy, the New World and the New Religion or the Reformation. These forces led to Reasoning and Skepticism in place of Faith and Authority, brought an end of feudalism and led to the rise of national states; inculcated the spirit of adventure which led to new discoveries and inventions and consequently the rise of the bourgeoisie – the elite – in the new mercantile cities. Thus these forces were instrumental in bringing about changes in social attitudes, expectations, structure and values. Generally speaking, the pre-conditions arise not endogenously but from some external invasion. For example, the pre-conditions ended in Europe (excluding Britain) with the domination of Napoleon Bonaparte whose victorious armies set in motion new ideas and attitudes which brought about changes in the structure of traditional societies and paved the way for the unification of Germany and Italy (Anyanwu and Oaikhenan, 2004).

The Take-off

The take-off is the great watershed in the life of a society when growth becomes its normal condition, forces of modernization contend against the habits and institutions. The value and interests of the traditional society make a decisive breakthrough; and compound interest gets built into the society's structure. By the phrase *compound interest*, Rostow implies that growth normally proceeds by geometric progression, such as a saving account its interest is left to compound with principal. At another place, Rostow defines the take-off as an industrial revolution, tied directly to radical changes in the methods of production, having their decisive consequence over a relatively short period of time (Iyoha, 2008).

2.3 Empirical Review

(Abdul-Rahamoh, et al., 2013) who examined critically the effect of petroleum profit tax on Nigerian economy using multiple regression method from 1970 to 2010 found that petroleum profit tax and other variables had significant impact on Nigerian economic growth and therefore concluded that the abundance of petroleum and its associated income has been beneficial to the Nigerian economy from 1970 to 2010

(Afuero & Okoye, 2014) also studied the impact of taxation on revenue generation in Nigeria. Regression analysis using SPSS Version 17 was employed by the researcher in testing categorical statements, he discovered that taxation has a significant contribution to revenue generation and that taxation has a significant contribution on Gross Domestic Product (GDP).

(Onoh, 2013) looked at impact of value added tax on Nigerian economic growth, ordinary least squares was used by the researcher to analyze obtained data; the analysis revealed a strong positive impact of Value Added Tax on economic growth in Nigeria. The study also recommended that VAT should not be high on the infant industries, so as to enable them grow.

(Okafor, 2012) looked at tax revenue generation and Nigerian economic development. The aim of the research paper was to explore the impact of income tax revenue on the economic growth of Nigeria as proxied by the gross domestic product (GDP). Ordinary Least Squares regression method was adopted by the researcher to explore the relationship between GDP as proxy for economic growth and a set of federal government income tax revenue heads from 1981 to 2007. However the researcher found that there is a positive significant relationship between tax revenue and economic development in Nigeria.

3. Research Methodology

The research design employed by the researcher is ex post-facto research which aims at determining or establishing or measuring the relationship between one variable and another or the impact of one variable on another (Onwumere, 2009).

The nature of data for the analysis of this study is secondary and data for this study is gotten from the Central

Bank of Nigeria Statistical Bulletin, 2013, World Bank Database, and Federal Inland Revenue Service.

A regression model has been employed, the essence of regression is to use a mathematical equation to express the nature of the relationship existing between variables and ultimately to use this equation to predict the value of one variable given a specific value of the other variable (Ugbam, 2001).

The Researcher therefore forms econometric models to capture the interaction between taxation and relative macroeconomic variables:

The following is sample of simple regression model

$$Y = b_0 + b_1X + \mu.$$

Where:

Y = the variable we are trying to predict; b_0 = the intercept, b_1 = the slope; X = the variable we are using to predict Y; μ = the error term

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

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

$$RGDP = b_0 + b_1Taxation + \mu \dots\dots\dots \text{Eqn. (1)}$$

$$UNEMP = b_0 + b_1Taxation + \mu \dots\dots\dots \text{Eqn. (2)}$$

$$INTR = b_0 + b_1PPT + \mu \dots\dots\dots \text{Eqn. (3)}$$

Where:

RGDP – Real Gross Domestic Product,

Unemp – Unemployment Rate,

INTR – Real Interest Rate,

Taxation – Total Revenue Generated from Taxation

PPT – Petroleum Profit Tax

Techniques of Data Analysis

Techniques of data analysis employed by the researcher is the ordinary least square method using Statistical Package for Social Sciences (SPSS) version 22.0. The aim of using this method is to minimize the error in our prediction of the dependent variable, and by minimizing the residuals, error will be minimized. By using the "squares" the researcher is precluding the problem of signs thereby giving positive and negative prediction errors the same importance.

Population of the Study

The population for this study comprises all the macroeconomic variables and all tax revenue generated by the Federal Government of Nigeria from 2002 to 2011.

Sample of the Study

The macroeconomic variables adopted for the study are Gross Domestic Product (GDP), Unemployment Rate, and Interest Rate from 2002 to 2011 while the sample drawn from all tax revenue generated by the federal government are Petroleum Profit Tax (PPT) and total tax revenue from 2002 to 2011. This data were used because it was available and accessible.

4. DATA PRESENTATION AND ANALYSIS

See Appendix

Decision Rule: Reject H_0 if p-value \leq .05, otherwise accept H_0

First Model

The R of .897 shows that the relationship between the explanatory variable (taxation) and the dependent variable (Real Gross Domestic Product) is positively strong as the R is close to 1 (see table 2 in the appendix). The R^2 of .804 shows that 80.4% of the variation in RGDP can be explained by taxation (see table 2 in the appendix). Table 3 (ANOVA) in the appendix shows that the model fit is very significant (p-value<.001) thus valid for prediction. The intercept of -3255.321 shows the value of the RGDP when taxation is constant (as shown in table 4). The slope of 13.810 shows that at every unit increase in taxation, Real Gross Domestic Product will increase

by 13.810 units. The independent variable (taxation) is very significant ($p\text{-value} < .001$) in explaining the variation in GDP (see table 4). After replacing the intercept, the slope and the standard error from the above regression output, we will have $GDP = -3255.321 + 13.810\text{taxation} + 8835.495$.

Decision

Hypothesis I

Ho: Government earnings from taxation has no significant effect on real gross domestic product in Nigeria

The P-value on which basis we can reject the null hypothesis that government earnings from taxation has no significant effect on real gross domestic product in Nigeria is $p\text{-value} < .001$. Since the $P\text{-value} < .05$, we conclude that government earnings from taxation has significant effect on real gross domestic product in Nigeria.

Second Model

The R of .529 shows that the relationship between the explanatory variable (taxation) and the dependent variable (employment rate) is fairly positive (as shown in table 5). The R^2 of .280 shows that 28.0% of the variation in unemployment rate can be explained by taxation (see table 5). The Anova table shows that the model fit is non-significant ($p\text{-value} = .116 > .001$) (see table 6). The intercept of 7.657 shows the value of the employment rate when taxation is constant (see table 7). The slope of -0.00001823 shows that at every percentage increase in taxation, unemployment rate will decrease by 0.001823 percent (as shown in table 7). The independent variable (taxation) is statistically non-significant ($p\text{-value} = .116 > .05$) (see table 7) in explaining the variation in employment rate. After replacing the intercept, the slope and the standard error from the above regression output, we will have $GDP = 7.657 - 0.00001823\text{taxation} + .038$.

Decision

Hypothesis II

Ho: Government Revenue from taxation has negative significant influence on unemployment rate in Nigeria

The P-value on which basis we can reject the null hypothesis that government earnings from taxation has no significant effect on economic development in Nigeria is .116. Since the $P\text{-value} > .05$, we accept the null hypothesis and state that government revenue from taxation has negative significant influence on unemployment rate in Nigeria.

Third Model

As shown in table 8, the R of .243 shows that there is a weak positive relationship between the explanatory variable (Petroleum Profit Tax) and the dependent variable (real interest rate) as the R is far from 1. The R^2 of .059 shows that 5.9% of the variation in real interest rate can be explained by petroleum profit tax (see table 8). The Anova table shows that the model fit is non-significant ($p\text{-value} = .499 > .05$) (see table 9). The intercept of 15.198 shows the value of the real interest rate when petroleum profit tax is constant. The slope of -0.000001 shows that at every unit increase in taxation, interest rate will decrease by 0.000001 units. The independent variable (petroleum profit tax) is statistically non-significant ($p\text{-value} = .499 > .05$) in explaining the variation in real interest rate (see table 10). After replacing the intercept, the slope and the standard error from the above regression output, we will have $INTR = 15.198 - 0.000001\text{taxation} + 4.608$.

Decision

Hypothesis III

Ho: Petroleum profit tax has negative significant effect on real interest rate in Nigeria

The P-value on which basis to reject the null hypothesis that petroleum profit tax has negative significant effect on real interest rate in Nigeria is .499. Since the $P\text{-value} > .05$, we accept the null hypothesis and assert that petroleum profit tax has negative significant effect on real interest rate in Nigeria.

5. Summary of Findings, Conclusion and Recommendation

Summary of Findings

The study was undertaken to examine the Nigerian tax system and its effect on her macroeconomic performance between the periods of 2002 – 2011. The study tends to sought out the effects of earnings from government revenue on RGDP, unemployment rate and interest rate as indicators of macroeconomic performance. It was found that:

- (a) Government earnings from taxation has significant effect on real gross domestic product in Nigeria.
- (b) Government Revenue from taxation has negative significant influence on unemployment rate in

Nigeria. (i.e. an increase in taxation will cause a reduction in the rate of unemployment in Nigeria thereby creating job opportunities.)

- (c) Petroleum profit tax has negative significant effect on real interest rate in Nigeria. (i.e. an increase in petroleum profit tax will affect real interest rate in a negative way)

Conclusion

Taxation has a positive effect on the macroeconomic performance of the Nigerian Economy. This change in taxation will positively affect macroeconomic variables leading to high standard of living, provision of employment and reduction in interest rate.

Recommendations

Having considered the importance of taxation to Nigeria macroeconomic performance, modalities should be put in place to rectify faults in the tax system of Nigeria in order to boost generation of revenue. Hence the government is advised to adopt the best tax administration system. This best tax administration is not one that yields the highest revenue but one that determines how the taxes are raised i.e. the effect of equity and level of socio-economic welfare of the people. In order to reduce the level of loopholes in tax payment, the following suggestions are made that:

1. The current draft national policy should be passed into law by the National Assembly so as to make it a working document.
2. Government should consider taxpayers and other key stakeholders' interest in fiscal policy formulation and implementation in order to achieve improved tax compliance rate in the country.
3. Government needs to improve the revenue allocation system so as to boost the taxation drive by the different tiers of government.

Suggested future works include developing a software package to facilitate the WOZIP data input and conversion processes, exploring the use of WOZIP in the other forms of labour-intensive manufacturing (e.g. flow-line production and work-cell assembly), and attaching a costing framework to determine the specific cost of each resource or to help minimise the aggregate cost of production.

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APPENDIX

Table 1 Necessary Macro Economic Variables needed for Analysis from 2002 to 2011

Year	Unemployment Rate	Taxation	GDP	PPT	INTR
2002	7.7	433.9	7795.758	224,400.00	24.85
2003	7.6	703.1	9913.518	438,000.00	13.1
2004	7.7	1194.8	11411.07	878,600.00	12.5
2005	7.6	1741.8	14610.88	1,352,200.00	10.4
2006	7.6	1866.2	18564.59	1,352,500.00	9.3
2007	7.6	1846.9	20657.32	1,132,000.00	9.7
2008	7.6	2972.2	24296.33	2,060,900.00	11.9
2009	7.6	2197.6	24794.24	939,410.00	13.5
2010	7.6	2839.3	54204.8	1,480,360.00	13.5
2011	7.6	4628.5	63258.58	3,070,580.00	16

Sources: CBN Statistical Bulletin, 2013; World Bank Database; Federal Inland Revenue Service; (Ehikioya, 2014)

$$RGDP = b_0 + b_1 \text{Taxation} + \mu$$

Table 2 Model Summary

Equation 1	R	.897
	R Square	.804
	Adjusted R Square	.780
	Std. Error of the Estimate	8835.495

Table 3 ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Equation 1	Regression	2569078355.112	1	2569078355.112	32.909	.000
	Residual	624527845.207	8	78065980.651		
	Total	3193606200.319	9			

Table 4 **Coefficients**

		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
Equation 1	(Constant)	-3255.321	5655.237		-.576	.581
	Taxation	13.810	2.407	.897	5.737	.000

$$\text{INTR} = b_0 + b_1\text{PPT} + \mu$$

Table 5 **Model Summary**

Equation 1	R	.243
	R Square	.059
	Adjusted R Square	-.059
	Std. Error of the Estimate	4.608

Table 6 **ANOVA**

		Sum of Squares	Df	Mean Square	F	Sig.
Equation 1	Regression	10.632	1	10.632	.501	.499
	Residual	169.844	8	21.231		
	Total	180.476	9			

Table 7 **Coefficients**

		Unstandardized Coefficients		Beta	T	Sig.
		B	Std. Error			
Equation 1	(Constant)	15.198	2.837		5.356	.001
	PPTM	-1.333E-6	.000	-.243	-.708	.499

$$\text{UNEMP} = b_0 + b_1\text{Taxation} + \mu$$

Table 8 Model Summary

Equation 1	R	.529
	R Square	.280
	Adjusted R Square	.190
	Std. Error of the Estimate	.038

Table 9 ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Equation 1	Regression	.004	1	.004	3.110	.116
	Residual	.012	8	.001		
	Total	.016	9			

Table 10 Coefficients

		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
Equation 1	(Constant)	7.657	.024		315.240	.000
	Taxation	-0.00001823	.000	-.529	-1.763	.116

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