

## PRODUCTIVITY AND THE EFFECT OF TAXATION ON ECONOMIC GROWTH IN NIGERIA

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### ABSTRACT

*This paper sets out to examine the productivity and effect of taxation on economic growth of Nigeria. The question of whether tax policy regime efforts have improved the flexibility of the tax system and how far taxation has led to economic growth of Nigeria is the central focus of the paper. To achieve our objectives, log-transformation models of tax revenues and their bases were used to estimate the buoyancy of taxation while formulating a discretionary multiplier to isolate the effect of discretionary changes in tax policy on tax revenue in order to calculate the elasticity of taxes. To assess the impact of taxation on economic growth, we employed the two-stage least squares method on a set of simultaneous equations which was found to be over identified under both the order and rank conditions for identification. Our empirical analysis reveals that though the company income tax and excise tax seem promising, the general tax system is inflexible and may not produce the desired objective, if it should be used for correction of fiscal imbalances. It is also found that higher taxes discourage the growth in capital stock which by itself is a positive function of economic growth. Taxes attenuate labor supply growth which exerts a positive and significant impact on economic growth. The author therefore recommends that to achieve a flexible tax policy, the government should ensure that every individual tax is designed, so that its yield is responsive to national income (or its base) changes. Also government should refrain from the use of higher taxes especially where they affect labor and capital.*

### INTRODUCTION

In the words Ebajemito, Bamidele, Enendu and Abdulahi (2004), “economic growth indicates the ability of an economy to increase production of goods and services with the stock of capital and other factors of production within the economy”.

Myles (2000) has it that “economic growth is the basis of increased prosperity” and maintained that the implementation of new production techniques which leads to introduction of new products, are the fundamentals of the growth process.

Taxation and its reforms are sometimes touted by some economists as having strong macroeconomic growth effects while others have questioned whether tax reform would have such beneficial effects on economic growth and contend that if tax cuts fail to produce the projected boost in economic growth, tax revenues could decline, putting upward pressure on the deficit, worsening levels of national saving and leading to laggard economic growth in the future (Engen and Skinner, 1996).

Interest in the topic is fueled further when firms complain about the business climate in general or about taxation in particular. Wasylenko (2004) maintained that in such situations, state or local policy makers would have the inevitable task of deciphering firms' complaints and deciding whether additional tax incentives and lower taxes represent economic rents or constitute a timely and necessary response. He further argued that the assertion that tax policy influences economic behavior has become a basic tenet for economic policy makers. According to him, periodically, the World Bank relates economic performance in developing countries to the level of taxation and finds that countries with lower marginal tax rates have higher economic growth.

Bartik (1994) has suggested that the interregional elasticity of economic activity with respect to taxes is between -0.1 and -0.6, or that 10 percent lower tax will raise employment, investment, or firm births between 1 and 6 percent. Wasylenko (2004) argues further, that policy makers' interest in the elasticity of economic activity with respect to taxes suggests that states and regions are indeed interested in manipulating their tax system in an attempt to attract business or to foster growth.

In this paper, we shall examine the productivity of the Nigerian tax system and also investigate the effect of taxation on economic growth, in the light of the accumulated economic evidence from the Nigerian data and make recommendations based on our findings. This study is needful to an economy such as Nigeria's, where fiscal and monetary policies are jointly used for correction of economic imbalances. Taxation as a variant of fiscal policy must be flexible, buoyant and hence productive if it must achieve the growth objective. The investigation of the efficiency and productivity of the Nigerian tax system and the recommendation thereof will not only inform the tax authorities but also the government at large on the position of the Nigerian tax system and how to gear towards perfection.

### AN OVERVIEW OF THE NIGERIAN TAX SYSTEM

Taxation in Nigeria has been in existence even before the amalgamation of Nigeria as a political entity in 1914. It existed in the form of direct taxes and was introduced as a community tax into the Northern part of Nigeria in 1904 by Lord Lugard. With the amalgamation of the North and the south in 1914, direct taxation was introduced into the western territory in 1917 and extended to the East in 1928. The three regions, as Nigeria was previously constituted had various legislations for direct and indirect income taxes prior to independence in 1960. The enabling laws and regulations were fashioned based on 1948 British tax laws. The need to tax personal incomes of the entire Nigerians necessitated a uniform income Tax Law, known as the Income Tax Management Act (ITMA) of 1961 that came into force for the whole federation.

Today in Nigeria, the public sector is stratified into three levels of government, federal, state and local government, each having a different set of expenditure responsibility and taxing power. To avoid conflict among the three levels, the 1999 constitution classified governmental responsibilities and powers into exclusive, concurrent and residual categories or lists. The National Assembly is empowered to issue legislation on the taxation of incomes, profits and capital gains. It is also authorized to legislate on matters classified in the concurrent lists, particularly those related to the 'division of public revenue' – tax collection. The State Houses of Assembly, on the other hand, may prescribe the collection of any tax, fee or rate, or the administration of a law to provide for such collection by a local government council (1999 FRN: A1060-63). This constitutional provision enables the state government to impose, collect and spend any tax, fee or rate which is not expressly stipulated as being within the authority of the federal government. Consequently, the state government is empowered to impose tax on all items in the



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concurrent list as well as residual matters. However, according to the 1999 constitution, such laws are void if inconsistent with those of the National Assembly (Odusola 2006).

The Nigerian tax system is lopsided as it is dominated by tax revenue from oil. The federal government has jurisdiction over the most revenue yielding tax sources while the lower tiers are responsible for the less buoyant ones. For instance, in 1995, the break down of total tax and levy collection of the three tiers of government was 96.4 percent for the federal government, 3.2 percent for the state and 0.4 percent for the local government (Philips 1997:40). The federal government has jurisdiction over the petroleum profit tax, company income tax, custom and exercise duties, value added tax, personal income tax of armed forces, police, staff of the ministry of external affairs and federal capital residents, custom levies and education taxes. Taxes to be collected by the state government include personal income tax, withholding tax on turnover of individuals, stamp duties, road taxes, pools betting, lotteries gaming and casino taxes. The list of taxes and levies to be collected by the local government is very lengthy such taxes and levies include shop and kiosk rates, tenement rates, market taxes and levies excluding any market where state finance is involved, motor park levies, merriment and road closure levy to mention a few. Nevertheless, some of the tax revenue sources assigned to the local government are more expensive and hence unviable to pursue.

However, the mono-cultural (oil dominated) nature of the Nigerian economy seems to have placed the role of taxation in the country's management of fiscal policy to a dormant role or at most to a less active position. As Odusola (2006) noted, over the past four decades, the country's revenues were largely derived from primary products. Between 1960 and the early 1970s, revenue from agricultural products dominated, while revenue from other sources was considered as residual. Since the oil boom of 1973/4 to date, however, oil has dominated Nigeria's revenue structure, and its share in federally collected revenue rose from 26.3 per cent in 1970 to 81.8, 72.6 and 76.3 in 1979, 1989 and 1999, respectively. Over the past two decades oil has accounted for at least 70 per cent of the revenue, thus indicating that traditional tax revenue has never assumed a strong role in the country's management of fiscal policy. Instead of transforming or diversifying the existing revenue base, fiscal management has merely transited from one primary product-based revenue to another, making the economy susceptible to fluctuations of the international oil market.

The need to address this problem has led to several tax- policy reforms. Personal income tax for instance which is based on a 'pay as you earn' (PAYE) system have undergone several amendments to the 1961 ITMA Act. Also in 1985 PIT was increased from N600 or 10 percent of earned income to N2,000 plus 12.5 per cent of income exceeding N6,000. In 1989, a 15 per cent withholding tax was applied to savings deposits valued at N50,000 or more while tax on rental income was extended to cover chartered vessels, ships or aircraft. In addition, tax on the fees of directors was fixed at 15 per cent. These policies were geared to achieving effective protection for local industries, greater use of local raw materials and generating increased government revenue among others.

Since the implementation of the structural adjustment programme (SAP), however, taxes have been used to enhance the productivity and competitiveness of business enterprises. Consequently, attention has been focused on promoting exports of manufactures and reducing the tax burden of individual and companies. In line with this change in policy focus, many measures were undertaken. These involved, among others, reviewing custom and excise duties, continuing with the reduction of company and income taxes, expanding the range of tax exemptions and rebates, introducing capital allowance, expanding the duty drawback scheme and manufacturing-in-bond scheme, abolishing excise duty, implementing VAT, monetizing fringe benefits and increasing tax relief to low-income earners (<http://www.buzzle.com> 2006).

There were significant downward revisions in tax rates and import tariffs, as well the corporate tax rate was reduced from 45% to 40% in 1987 in order to encourage reinvestment activities by existing organizations and to encourage new investments. Similarly, import duties on certain categories of imports were reviewed. Among these was the elimination of duties on trucks and commercial vehicles to ease transportation problem in the country. Also, duty exemptions were granted on items required on some public sector projects. Generous tariff concessions were also allowed on machinery and raw materials that could not be sourced locally, at least not in the short run (Ariyo; 1997).

In 1990 further amendments were made to PIT, apart from providing additional individual tax allowances, minimum taxation was reduced from 1 percent to 0.5 percent, so that individuals with incomes of N3,000 or less were exempt from submitting tax returns. Non-residents were exempt from withholding tax on interest accruing in deposit accounts. Personal allowances were further extended in 1992 to reduce the tax burden of individuals while the monetization and taxation of fringe benefits were introduced.

The application of ITMA varied across regions/states, causing the burden of multiple taxes on individuals. As a result two study groups were subsequently set up in 1991 to review the situation and improve tax collection. The 1961 ITMA was effectively repealed and replaced by the personal income tax, decree, generally referred to as decree No. 104 of 1993 which was applicable with nation wide coverage and regulates income taxation in Nigeria (Aguolu 1997). However, there have been some amendments since its implementation. For instance in 1994, to achieve progressive taxation, the withholding tax was increased from 5 to 10 per cent. Directors' fees payable by property and investment companies were raised from N3,000 to N10,000 when a 30 per cent ceiling was set for PIT. Child allowance was first increased to N1,000 and then, in 1996, to N1,500 per child payable up to four children. In 1998 this became N2,500, and individual marginal taxes were decreased from 30 per cent in 1995 to 25 per cent in 1996.

A recurring problem with PIT is the non-compliance of employers to register their employees and to remit such taxes to relevant authorities. To address this, in 2002 the government amended the 1993 PIT Act to make non-compliant employers liable to penalties up to N25,000, as well as liable for the payment of all tax arrears. Employers failing to keep proper records would also face a penalty of N5,000. Company income tax (CIT) which was introduced in 1961 has been amended many times and is currently codified as the company income tax act 1990 (CITA). The Federal Board of Inland Revenue, whose operational arm is the Federal Inland Revenue Services (FIRS), is empowered to administer the tax. CITA policy regimes can be divided into two phases, namely, pre 1992 and post – 1992. The CIT policies in the pre-1992 era were narrowly based and characterized with increasing tax rates and overburdening of the taxpayers, which induced negative effects on savings and investment. Since 1992, however, measures have been taken to address these structural problems. For instance, excess profit tax was eliminated in 1991, and the capital transfer tax scrapped in 1996. Tax rates on company profits, payable on trade profits and investment income, fell from 45 per cent during 1970 to 1986 (when SAP was introduced) to 40 per cent between 1987 and 1991, further to 35 per cent for the period 1992-95 and to 30 per cent from 1996 to date. There is, however, a 20 per cent tax concession for certain companies: i.e, those engaged in agricultural production or mining of solid minerals with a maximum turnover of N0.5 million and those in manufacturing or the export promotion sector with a turnover not exceeding N1 million. The rates on capital allowances have been reduced continually to reflect the economic reality of the country (Odusola, 2006)

In a similar manner, marginal personal income tax rate which was 70% from 1st April 1997 to 31st December 1986 was reduced to 55% between 1st January 1987 and December 1991. From 1992 to 1995, it was further reduced to 35 percent while from 1996 to date it went down to 25 percent (see table 1)

These amendments however, are said to have created no much impact. One is therefore not in the know of the productivity and the effect of tax system on the growth of the Nigerian economy. In the light of this, the following policy questions are posed; what has been the place of tax in the growth of the Nigerian economy? Has the Nigerian tax policy regime efforts enhanced the flexibility (buoyancy and elasticity) of tax system? If the flexibility is enhanced, which components of the tax structure have been most responsive? If not which amongst them have been rigid?

### MODEL SPECIFICATION

The growth theory of the 1950s and 1960s, typified by Solow (1956) and Swan (1956) was based on production function that had capital and labor (with labor measured in man-hours) as the inputs into production. In the approach, the output Y of an economy typically measured by GDP is determined by its economic resources, labor and capital. In stating this model, we shall adopt the Cobb-Douglas production function which resulted from the statistical investigations conducted jointly by C.W Cobb (a mathematician) and his friend P.H. Douglas (a congregational economist) in the field of industrial manufacturing in USA. This production function is given as

$$Y = Q = f(L, K) = AL^\alpha K^\beta \quad (1)$$

Where Y, (Q) = output,

L = labor

K = capital

A = a scale efficiency parameter

$\alpha$  = the output elasticity of labor

$\beta$  = the marginal productivity of capital

The Cobb-Douglas production function is intrinsically linear in the log of the variables. Thus,

$$\log Y = \log A + \alpha \log L + \beta \log K + U_{t1} \quad (1b)$$

Where

$U_{t1}$  is the usual error term.

But higher taxes can discourage the net growth in the capital stock (k), that is the rate of investment. When there are high statutory tax rates on corporate and individual income, high effective capital gains tax rates and low depreciation allowances, the net growth in the capital stock will invariably decreases. Thus,

$$K = f(\text{CIT, CED})$$

Explicitly,

$$K = b_0 + b_1 \text{CIT} + b_2 \text{CED} + U_{t2} \quad (2)$$

Where CIT is company income tax, CED is custom and excise duty and  $U_{t2}$  is the error term.. The  $b_i$ s are the parameters to be estimated.

Also, taxes may attenuate labor supply growth L by discouraging labor force participation or by discouraging occupational choice like acquisition of education or certain skills and training. Also heavy taxation on labor supply can distort the efficient use of human capital by discouraging workers from employment in sectors with high social productivity but a heavy tax burden.

In the light of the above argument, we state the labor-tax relationship as follows

$$L = f(\text{tax rate})$$

or

$$L = \lambda_0 + \lambda_1 \text{TR} + e_t \quad (3)$$

Where TR is the tax rate and  $e_t$  is the stochastic term while  $\lambda_i$  are the parameters to be estimated.

The complete macro-economic simultaneous equations for the explanation of tax impact on economic growth are therefore given by

$$Y = AL^\alpha K^\beta \quad (1)$$

$$K = b_0 + b_1 \text{CIT} + b_2 \text{CED} + U_{t2} \quad (2)$$

$$L = \lambda_0 + \lambda_1 \text{TR} + e_t \quad (3)$$

Having established the system of equations, we examine the identification condition of the equation as follows.

### IDENTIFICATION CONDITION OF THE SYSTEM

A system of equation is identified if the equation is exactly identified or over identified. The order condition for identification states that for an equation to be identified, the total number of variables excluded from it but included in other equations must be at least as great as the number of equations of the system less one (Koutsoyiannis 1976:352). Symbolically it is expressed as.

$$K - M \geq G - 1$$

Where

K = total number of variables (endogenous and predetermined in the Model).

M = number of variables, endogenous and exogenous included in a particular equation.

G = total number of endogenous variables

Applying this to our complete system of equations, we get

$$1. \quad 6-3 > 3-1 \Rightarrow 3 > 2 \text{ over identified}$$

$$2. \quad 6-3 > 3-1 \Rightarrow 3 > 2 \text{ over identified}$$

$$3. \quad 6-2 > 3-1 \Rightarrow 4 > 2 \text{ over identified.}$$

However, the order condition for identification is necessary for a relation to be identified, but it is not sufficient, that is, it may be fulfilled in any particular equation and yet the relation may not be identified (Koutsoyiannis 1976:353).

In the light of this, we carry out a confirmatory test using the rank condition for identification.

**RANK CONDITION FOR IDENTIFICATION**

This condition states that in a system of G equations, any particular equation is identified if and only if it is possible to construct at least one non zero determinant of order (G – 1) from the coefficients of the variables excluded from that particular equation but contained in other equations of the model. In consideration of this, we restate our models in the tabular form as follows.

**Table of Structural Parameters**

| Equations | Variables |   |   |     |     |    |
|-----------|-----------|---|---|-----|-----|----|
|           | Y         | L | K | CIT | CED | TR |

All the equations are identified using the rank condition for identification. For instance the first equation (and others) have non zero determinants. The table of parameters of excluded variables of the first equation and the determinants are shown as follows.

**Table of Parameters of Excluded Variables**

| CIT | CED | TR |
|-----|-----|----|
| 1   | 1   | 0  |

$$\Delta_1 = \begin{vmatrix} 1 & 1 \end{vmatrix} = 0, \Delta_2 = \begin{vmatrix} 1 & 0 \\ - & - \end{vmatrix} \neq 0, \Delta_3 = \begin{vmatrix} 1 & 0 \\ & \end{vmatrix} \neq 0$$

Note that  $\Delta_i$  stands for determinant

The productivity of the tax system will be measured using the income elasticity and buoyancy of tax revenue. While elasticity measures the change in tax revenue due to change in income, buoyancy measures the change in tax revenue due to change in income as well as other discretionary changes in tax policy. Following Rao (1979) Osoro (1991) and Murithi and Moyi (2003), buoyancy can be measures by the following equation.

$$T = a_0 Y^a e_t$$

Where

T = tax revenue,

Y = gross domestic product and

$e_t$  = usual error term

$a_1$  = the estimate of tax buoyancy.

Thus, buoyancy of taxes is derived from the logarithmic regressions of unadjusted tax revenue data on their bases (or GDP). This is presented in logarithmic transformation as:

$$\log_e T_t = \log_e a_0 + a_1 \log_e Y_t + e_t$$

The equations on tax revenues and their bases are stated as follows.

$$\log_e CIT = C_0 + \log_e NOGDP + e_{t1}$$

$$\log_e PPT = d_0 + d_1 \log TOR + e_{t2}$$

$$\log_e CED = f_0 + f_1 \log NOGDP + e_{t3}$$

$$\log_e PIT = g_0 + g_1 \log_e GDP$$

$$\log_e VAT = k_0 + k_1 \log_e NOGDP$$

where

CIT = Company income tax

NOGDP = Non oil GDP

PPT = Petroleum profit tax

TOR = Total oil revenue

CED = Custom and excise duties

GDP = Gross domestic product

PIT = Personal income tax (Federally collected)

VAT = Value added tax

$e_{ti}$  = the usual error term

To measure the elasticity, it is necessary to get the adjusted tax revenue. This is done by isolating the effect of discretionary changes in tax policy on tax revenue. Various methods have been used in deriving this isolation effect. Mansfield (1972), Muriithi and Moyi (2003) and

other authors have used the proportional adjustment (PA) method to eliminate or isolate the discretionary effect from the revenue series. This method is described as follows, firstly compute

$$T_{tt} = T_t - D$$

Where

$T_t$  = the actual tax yield in the  $t^{\text{th}}$  year

$D_t$  = the budget estimate of the discretionary change(s) in the  $t^{\text{th}}$  year

$T_{tt}$  = the  $t^{\text{th}}$  years actual tax collection adjusted to the tax structure that existed that year. Secondly, obtain the adjusted series for the  $t^{\text{th}}$  year,  $T_{tt}$  is then multiplied by the previous years ratio of the adjusted tax revenue with reference to the base year ( $T^*$ )<sub>t-1</sub> over the actual tax revenue  $T_{t-1}$ . This could be illustrated as follows

$$T_{1,1}^* = T_{1,1}$$

$$T_{2,2}^* = (T_{1,1} / T_1) T_{2,2}$$

$$T_{t,t}^* = (T_{t-1,1}^* / T_{t-1,1}) T_{t,t}$$

Ariyo (1997) identified three problems associated with this approach first, there will be no data on revenue receipts directly and strictly attributable to discretionary changes in tax policy. Second, the approach assumes that the discretionary changes are as progressive as the underlying tax structure, an assumption that is not likely to hold. Thirdly, the approach is highly aggregative. Traditionally, elasticity is given by change in tax revenue over change in its base times the ratio of the value of the base to the tax yield at any point in time that is

$$\frac{dT}{dB} \quad \frac{B}{T}$$

Singer (1986) used the dummy variable technique, assigning dummy variable for each year in which there was an exogenous tax policy change. The resulting model is

$$\log T_g = a_0 + a_1 \log Y + \sum_i D_i + e_i$$

Ariyo (1979) used the slope dummy variable equation resulting to the model

$$\log GTR = a_0 + a_1 \log GDP + a_2 D_1 + a_3 D_2$$

where

$$D_2 = D_1 \times GDP$$

His function was applied to SAP and oil boom variables for all the equations.

In this study, we take cognizance of the fact that discretionary tax policy is not every year affair. For instance, the years when tax policy led to changes in tax rates (CIT, PIT) and others in Nigeria are 1970 – 1986, 1987 – 1991, 1992 – 1995 and 1996 – 2006 even if it is our contention still holds. In this regard, we introduce what, henceforth, will be referred to as 'discretionary multiplier' ( $r_d$ ) which adjusts tax revenue to isolate the effect of discretionary changes in tax policy. The non discretionary tax revenue for each year is given by

$$TRa = (1 - r_d) TR = TR - \left( \frac{r_1 - r_2}{r_1} (TR) \right)$$

Where

$$r_d = \frac{r_1 - r_2}{r_1}$$

$TRa$  = adjusted total tax revenue

$rd$  = discretionary multiplier

$r_1$  = tax rate prior to preceding change in tax rate

$r_2$  = tax rate succeeding the former tax rate

Using the discretionary multiplier, we shall evaluate the elasticity of the personal income tax (PIT) (federally collected, that is proxied by the federal government independent revenues) and the company income tax (CIT).

## METHOD OF DATA ANALYSIS

Having determined that the model is over identified, the appropriate econometric technique to be used in the estimation of the model is the two-stage least squares (2SLS) method. Simple regression will be used on the tax revenues and their bases to determine their buoyancy and elasticity.

### MODEL ESTIMATION AND EVALUATION

The results of the estimated equations for capital and labor in the simultaneous equation model are summarized as follows.

$$1. \quad K_t = 26088.96 - 2.107CIT + 2.935CED$$

$$SE \quad (17035.66) \quad (0.481) \quad (0.372)$$

$$t \quad (1.531) \quad (-4.383) \quad (7.892)$$

$$R^2 = 79.8\%, F(2,24) = 47.32, DW = 2.2$$

$$2. \quad L_t = 59.774 - 0.344Taxrate$$

$$SE \quad (2.635) \quad (0.056)$$

$$t \quad (22.68) \quad (-6.201)$$

$$R^2 = 60.6\%, f(1,25) = 38.45, DW = 2.013$$

The figures in parentheses are the standard errors (SE) and the t statistics (t) respectively.

The above result shows that (equation 1) the company income tax exerts a negative and significant influence on the capital outlay while the capital stock is a positive and significant function of custom and exercise duties. The dependent and explanatory variables are highly correlated, highly fitted and the overall regression is significant. There is also no presence of autocorrelation.

Equation 2 shows that tax rate exerts a negative and significant influence on the labor force. The higher the tax rate, the lower the labor forces. The two variables are highly correlated, highly fitted and have no autocorrelation. The overall regression is also significant.

The result of the reduced form equation of the GDP in the simultaneous in term of labor and capital is given as follows

$$\ln GDP = -31.092 + 10.574 \ln L_f + 0.386 \ln K_t$$

$$SE \quad = \quad (4.123) \quad (1.605) \quad (0.255)$$

$$t \quad = \quad (-7.541) \quad (6.589) \quad (1.516)$$

$$R^2 = 88\%, f(2, 24) = 90.316, DW = 1.17$$

The above equation shows that both labor force and capital have a positive influence on the GDP. However, while the labor force impacts significantly on the GDP, the rate at which capital impacts on GDP is insignificant. The above three regression equations' results look fabulous; the  $R^2$  are extremely high, the t values are generally significant, the parameter estimates mostly meet the a priori expectations and the overall regressions are statistically significant. The only fly in the ointment is that the Durbin-Watson statistic in the third equation is low. However, since the  $R^2$  > DW in all the equations, there is no need suspecting that the estimated regressions suffer from supuriousity (See Gujarati, 2006: 493, Granger and Newbold, 1974).

In summary company income tax negatively and significantly influences capital stock which by itself exerts a positive but insignificant impact on the gross domestic product. In other words, higher taxes discourage the net growth in the capital stock. Perhaps, the negative impact of taxes on capital reduces its efficacy in exerting influence on the GDP and hence, hinders the growth of the economy. Increase in tax rate also reduces labor force which is positive and significant in fostering economic growth. Thus, taxes attenuate labor supply growth by discouraging labor force participation and consequently, the potential productivity growth in Nigeria.

The second part of the data analysis reports the derived productivity indexes for the individual tax revenue sources. In other words, the productivity and buoyancy of the main tax revenue sources of the country (Nigeria) is presented below.

Table 1: Nigeria: Elasticity and Buoyancy of main taxes in Nigeria

|                          | Elasticity | Buoyancy | Difference |
|--------------------------|------------|----------|------------|
| Personal income tax (FC) | 0.0012     | 0.001    | -          |
| Company income tax       | 1.201      | 0.981    | 0.22       |
| Petroleum profit tax     | 0.885      | 0.751    | 0.195      |
| Value added tax          | 0.943      | 0.782    | 0.161      |

A tax structure is said to be buoyant if the buoyancy index is greater than unity implying that as national income or the proxy base changes, tax revenue changes by a larger proportion as a result of built-in elasticity and discretionary changes. Discretionary changes may take the form of changes in the tax rates, widening the tax base, legislative enactment and improvement in collection technique. While tax elasticity is concerned with the responsiveness of revenue yields to movements in (the base) economic activity alone.

A comparison of the tax handles (in our result) reveals that personal income tax (federally collected), petroleum profit tax and value added tax have the lowest tax to income elasticity coefficient, indicating inflexibility and inefficiency in the petroleum profit tax, VAT and the Nigerian personal income tax structure. Company income tax and custom and excise tax are approximately, of unitary elasticity with no record of buoyancy.

In the light of the above attributes the present tax system in Nigeria may not be effective in correcting fiscal imbalances.

### SUMMARY AND CONCLUSION

The Nigerian public sector is stratified into three levels of government federal, state and local government, each having a different set of expenditure responsibility and taxing powers. The country is however governed by a federal system. The federal government has jurisdiction over the most revenue yielding sources while the lower tiers are responsible for the less buoyant ones.

Prior to the Mid 1980's, tax policies in Nigeria were geared towards achieving such specific objectives as protection of local industries and local raw materials, promoting greater geographical dispersion of domestic manufacturing activities and generating increased government revenue. With the introduction of structural adjustment program in 1986, emphasis was shifted to enhancing the productivity and competitiveness of business enterprises. This objective led to promoting exports of manufactures and reducing the tax burden of individuals and companies. For instance marginal tax rate on personal income tax was reduced from 70 percent in 1977 – 1986 to 55 percent in 1987 – 1991, 35 percent in 1992 – 1995 and to 25 percent from 1996 to date. While tax rates on company profits payable on trade profits and investment income fell from 45 percent during 1970 to 1986 to 40 percent between 1987 and 1991, further to 35 percent for the period 1992 to 1995 and to 30 percent from 1996 to date. Within this period, other tax reforms such as amendment of the custom and excise tariffs to accommodate certain goods, introduction of tax rebate on interest charges paid on loans for financing owner-occupier homes, increasing tax allowances to individuals, extending tax exemption status to companies in rural areas, widening VAT base, reducing custom duties on raw materials for certain manufacturing etc were made. The extent of this tax reformation to the productivity and growth of the economy is our analytical concern.

Our empirical analysis on the productivity of taxation reveals that though, the company income tax and the custom and excise tax are promising, The Nigerian present tax system is inflexible and may not produce the desired objective, if it should be used for correction of fiscal imbalances. To achieve a flexible tax policy, the government cum the taxing authority should ensure that every individual tax is designed so that its yield is responsive to national income changes. Especially, the predominant tax revenue source must have a highly elastic yield with respect to national income or their proxy bases.

Our analysis also reveals that higher taxes discourage the net growth in capital stock which by itself is a positive function of economic growth. Taxes attenuate labor supply growth which exerts a positive and significant influence on economic growth. Thus, the use of higher taxes where it affects capital and labor is destabilizing rather than stabilizing and should be avoided by the government.

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## APPENDIX: DATA ON THE ALREADY DEFINED VARIABLES

| YEAR | GDPCBP  | Lt    | Kt      | CIT   | CED    | Taxrate | PPT    | PITFC  |
|------|---------|-------|---------|-------|--------|---------|--------|--------|
| 1980 | 42300   | 40.1  | 10841.2 | 579.2 | 1813.5 | 70      | 8564.3 | 487.5  |
| 1981 | 47619.7 | 36.24 | 12215   | 403   | 2325.8 | 70      | 6325.8 | 1997.3 |
| 1982 | 49069.3 | 30    | 10922   | 550   | 2336   | 70      | 4846.4 | 732.8  |

| 1983 | 53107.4  | 33.1    | 8135     | 561.5   | 1984.1   | 70    | 3746.9   | 710.1   |
|------|----------|---------|----------|---------|----------|-------|----------|---------|
| 1984 | 59622.5  | 35.62   | 5417     | 787.2   | 1616     | 70    | 4761.4   | 580.9   |
| 1985 | 67908.6  | 36.56   | 5573     | 1004.3  | 2183.5   | 70    | 6711     | 938.9   |
| 1986 | 69147    | 37.56   | 7323     | 1102.5  | 1728.2   | 70    | 4811     | 433.7   |
| 1987 | 105222.9 | 38.59   | 10661.1  | 1235.2  | 3540.8   | 55    | 12504    | 407.6   |
| 1988 | 139085.3 | 39.65   | 12383.7  | 1550.8  | 5672     | 55    | 6814.4   | 540.5   |
| 1989 | 216797.5 | 40.74   | 18414.1  | 1914.3  | 5815.5   | 55    | 10598.1  | 938     |
| 1990 | 26755    | 41.85   | 30626.8  | 2997.3  | 8640.9   | 55    | 26909    | 1724    |
| 1991 | 312139.8 | 43.06   | 35423.9  | 3827.9  | 11456.9  | 55    | 38615.9  | 3040.4  |
| 1992 | 532613.8 | 44.31   | 58640.3  | 5417.2  | 16054.8  | 35    | 51476.7  | 4903.1  |
| 1993 | 683869.8 | 45.6    | 80948.1  | 9554.1  | 15486.4  | 35    | 59207.6  | 5626.5  |
| 1994 | 899863.2 | 50.2    | 85021.9  | 12274.8 | 18294.6  | 35    | 42802.7  | 3888.2  |
| 1995 | 1933212  | 63.1    | 114476.3 | 21878.3 | 37364    | 30    | 42857.9  | 20436.4 |
| 1996 | 2702719  | 44.68   | 172105.7 | 22000   | 55000    | 25    | 76667    | 3407    |
| 1997 | 2801973  | 33.6    | 205553.2 | 26000   | 63000    | 25    | 68574.1  | 8339.9  |
| 1998 | 2708431  | 57.53   | 192984.4 | 33315.3 | 57683    | 25    | 67986.6  | 1140    |
| 1999 | 3194024  | 47      | 175735.8 | 46212.2 | 87906.9  | 25    | 164273.4 | 2010    |
| 2000 | 4537640  | 50      | 268894.5 | 51147.4 | 101523.6 | 25    | 525072.9 | 3810    |
| 2001 | 4685912  | 51      | 371897.9 | 68660   | 170557.1 | 25    | 639234   | 4440    |
| 2002 | 5403007  | 51.23   | 438114.9 | 89100   | 181400   | 25    | 392200   | 6810    |
| 2003 | 6947820  | 53      | 429230   | 114800  | 195500   | 25    | 683500   | 5420    |
| 2004 | 11411067 | 54      | 456970   | 130100  | 217200   | 25    | 1183500  | 5890    |
| 2005 | 14610882 | 54      | 92273.43 | 162200  | 232800   | 25    | 1904900  | 21210   |
| 2006 | 18564595 | 57.21   | 93247.3  | 244900  | 177700   | 25    | 2038300  | 3330    |
| YEAR | NOGDP    | TOR     | VAT      | LnCIT   | LnNOGDP  | LnPPT | LnTOR    | LnCED   |
| 1980 |          | 12353.3 | —        | 6.36    |          | 9.06  | 9.42     | 7.5     |
| 1981 | 37399.9  | 8564.4  | —        | 6       | 10.53    | 8.75  | 9.06     | 7.75    |
| 1982 | 40556.3  | 7814.9  | —        | 6.31    | 10.61    | 8.49  | 8.96     | 7.76    |
| 1983 | 45718.7  | 7253    | —        | 6.33    | 10.73    | 8.23  | 8.89     | 7.59    |

|      |            |          |        |       |       |       |       |       |
|------|------------|----------|--------|-------|-------|-------|-------|-------|
| 1984 | 50585.1    | 8269.2   | —      | 6.67  | 10.83 | 8.47  | 9.02  | 7.39  |
| 1985 | 56533.4    | 10923.7  | —      | 6.91  | 10.94 | 8.81  | 9.29  | 7.69  |
| 1986 | 59588.1    | 8107.3   | —      | 7     | 11    | 8.48  | 9     | 7.46  |
| 1987 | 78500      | 19027    | —      | 7.12  | 11.27 | 9.43  | 9.85  | 8.17  |
| 1988 | 109226.1   | 19831.7  | —      | 7.35  | 11.6  | 8.83  | 9.9   | 8.64  |
| 1989 | 140267.2   | 39130.5  | —      | 7.56  | 11.85 | 9.27  | 10.58 | 8.67  |
| 1990 | 167326.6   | 71887.1  | —      | 8     | 12.03 | 10.2  | 11.18 | 9.06  |
| 1991 | 195614     | 82666.4  | —      | 8.25  | 12.18 | 10.56 | 11.32 | 9.35  |
| 1992 | 285785.9   | 164078.1 | —      | 8.6   | 12.56 | 10.85 | 12.01 | 9.68  |
| 1993 | 441760.1   | 162102.4 | —      | 9.16  | 13    | 10.99 | 11.99 | 9.65  |
| 1994 | 680754     | 160192.4 | 7260.8 | 9.42  | 13.43 | 10.66 | 11.98 | 9.81  |
| 1995 | 1166693.6  | 324547.6 | 20761  | 9.99  | 13.97 | 10.67 | 12.69 | 10.53 |
| 1996 | 1544807.8  | 408783   | 31000  | 10    | 14.25 | 11.25 | 12.92 | 10.92 |
| 1997 | 1732994.1  | 416811.1 | 34000  | 10.17 | 14.37 | 11.14 | 12.94 | 11.05 |
| 1998 | 1971635.6  | 324300   | 36900  | 10.41 | 14.49 | 11.13 | 12.69 | 10.96 |
| 1999 | 2169559.3  | 724400   | 47100  | 10.74 | 14.59 | 12.01 | 13.49 | 11.38 |
| 2000 | 2350957.5  | 1591700  | 58500  | 10.84 | 14.67 | 13.17 | 14.28 | 11.53 |
| 2001 | 3016911.1  | 1707500  | 91800  | 11.14 | 17.22 | 13.37 | 14.35 | 12.05 |
| 2002 | 3604183.3  | 1230900  | 108600 | 11.4  | 15.1  | 12.88 | 14.02 | 12.11 |
| 2003 | 4206266.1  | 2074300  | 136400 | 11.65 | 15.25 | 13.44 | 14.55 | 12.18 |
| 2004 | 7163350.9  | 3354800  | 159500 | 11.78 | 15.78 | 13.99 | 15.03 | 12.29 |
| 2005 | 8945998.3  | 4762400  | 178100 | 12    | 16    | 14.46 | 15.38 | 12.36 |
| 2006 | 11581659.3 | 5287600  | 221600 | 12.41 | 16.26 | 14.53 | 15.48 | 12.09 |

| YEAR | LnPITFC | LnGDP | LnNDPIT | LnNDCIT | LnVAT |
|------|---------|-------|---------|---------|-------|
| 1980 | 6.19    | 10.65 | 4.65    | 4.16    | -     |
| 1981 | 7.6     | 10.77 | 6.06    | 3.8     | -     |
| 1982 | 6.6     | 1080  | 5.06    | 4.11    | -     |
| 1983 | 6.57    | 10.88 | 5.02    | 4.13    | -     |
| 1984 | 6.37    | 10.99 | 4.82    | 4.47    | -     |

|      |      |       |      |       |       |
|------|------|-------|------|-------|-------|
| 1985 | 6.85 | 11.13 | 5.3  | 4.71  | -     |
| 1986 | 6.07 | 11.14 | 4.53 | 4.81  | -     |
| 1987 | 6.01 | 11.56 | 4.47 | 4.92  | -     |
| 1988 | 6.29 | 11.84 | 4.75 | 5.15  | -     |
| 1989 | 6.84 | 12.29 | 5.3  | 5.36  | -     |
| 1990 | 7.45 | 10.19 | 5.91 | 5.81  | -     |
| 1991 | 8.02 | 12.65 | 6.48 | 6.05  | -     |
| 1992 | 8.5  | 13.19 | 7.48 | 7.59  | -     |
| 1993 | 8.64 | 13.44 | 7.62 | 8.15  | -     |
| 1994 | 8.27 | 13.71 | 7.25 | 8.4   | 8.89  |
| 1995 | 9.93 | 14.47 | 8.91 | 8.98  | 9.94  |
| 1996 | 8.13 | 14.81 | 6.88 | 9.08  | 10.34 |
| 1997 | 9.03 | 14.85 | 7.78 | 9.25  | 10.43 |
| 1998 | 7.04 | 14.81 | 5.79 | 9.5   | 10.52 |
| 1999 | 9.61 | 14.98 | 6.35 | 9.82  | 10.76 |
| 2000 | 8.25 | 15.33 | 6.99 | 9.93  | 10.98 |
| 2001 | 8.4  | 15.36 | 7.15 | 10.22 | 11.43 |
| 2002 | 8.83 | 15.5  | 7.57 | 10.48 | 11.6  |
| 2003 | 8.6  | 15.75 | 7.35 | 7.93  | 11.82 |
| 2004 | 8.68 | 16.25 | 7.43 | 10.86 | 11.98 |
| 2005 | 9.96 | 16.5  | 8.71 | 11.02 | 12.09 |
| 2006 | 8.1  | 16.74 | 6.86 | 11.49 | 12.31 |

**Sources:**

1. National Planning Commission, Abuja Nigeria, April/July 2006.
2. National Bureau of Statistics – Nigeria
3. Federal Ministry of Employment and Productivity Lagos –Nigeria
4. CIA World Fact Book(<http://www.indexmundi.com>)
5. Statistical Bulletin of the Central Bank of Nigeria.

**Note:** The logarithmic calculation was done by the author.

## **REQUEST FOR FEEDBACK**

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