DETERMINANTS OF TAX REVENUE IN NIGERIA (1986 -2010)

BY

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DECLARATION

I hereby declare that the work in this thesis titled "Determinants of Tax Revenue" was performed by me in the department of economics, under the supervision of Prof.G.D.Olowononi and Dr Mike Duru. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this work has been presented for another degree or diploma at any institution.

_____ _____

Akeem Abiodun Oyetunji **Date**

CERTIFICATION

This thesis titled "The Determinants of Tax Revenue in Nigeria (1986 – 2010)"; meets the regulations governing the award of the degree of Masters of Science of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to God Almighty for making this dream come true and to my parents, my lovely wife and children, for their patience and understanding.

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ABSTRACT

This thesis focused on the determinants of tax revenue in Nigeria. Understanding the determinants of tax revenue has become increasingly important based on the need to improve government and economic performances both of which are currently in distress. The prevailing tax system is characterized by a declining tax burden, few broadly-based taxes and inefficient tax administration. The study applied the Vector Auto regression Models over the period 1986-2010 to analyze the impact of per capita income, share of agriculture in GDP, share of service sector in GDP, share of manufacturing sector in GDP, ratio of exports plus imports to GDP,exchange rate of Naira, broad money supply, rate of inflation, external debt, foreign aid and political stability (dummy variable) in Nigeria on tax revenue. The empirical results suggest that per capita income, manufacturing, services, broad money supply and political stability are significant determinant of tax efforts in Nigeria with expected signs.Finally, it is concluded that the Nigerian economy can generate high tax to GDP ratio by boosting the per capita income, manufacturing and service sector. Monetization of the economy and democracy equally boost tax revenue while effort should be made towards mechanizing and reforming the agricultural sector in order to derive maximum tax revenue from the sector.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Tax revenue collection is one significant issue of economic development among others. It has been said that 'what the government gives it must first take away'. The economic resources available to society are limited and so an increase in government expenditure normally means a reduction in private spending. Taxation is one method of transferring resources from the private to the public sector but there are others i.e. creation of more money, to charge for the goods and services it provides or to borrow. Taxation has its limits as well, but they considerably exceed the amounts that can be raised by resorting to the printing press, charging consumers directly, or borrowing. So while governments often use all four methods of raising resources, taxation is usually by far the most important source of government revenue. (Chaudhry and Munir, 2010).

Government revenue has been defined as public receipts which government collects from all sources except loans and borrowing (Ihimodu 1995: 212). Traditional analyses of structure of government revenue have generally proceeded along the line of tax and non-tax revenue classifications which are consistent with budgetary and microeconomic conventions. However, the peculiarities of the Nigerian economy has underscored an alternative classification, namely oil and non-oil revenue. This later categorization derives from the dominance of oil revenue in government receipts has consistently accounted for over 80 percent of total government revenue and over 90 percent of foreign exchange earnings over the past two decades. Nonetheless, the observation that oil revenue is an integral part of tax revenue makes the traditional classification relevant to the present purpose.

The federal government's fiscal operation since 1986 has been experiencing precarious financial condition resulting to inability to provide basic services to Nigerians. The financial resources have been grossly inadequate. While revenue recorded significant growth rate, expenditure outstripped revenue growth rate. Tax collections are still very low leading to large fiscal deficit. Whatever this deficit has been large, the growth rate has faltered, inflation has climbed higher, and most importantly, the economy has faced a widening current account deficit that has culminated frequently in a balance of payment crises. The tax efficiency in Nigeria's tax system remained focal point for the past two decades.

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 individuals and companies. In line with this change in policy focus, many measures were undertaken. These involved among others revenue; customs and excise duties, continuing with the reduction of company and income taxes, expanding the range of tax exemption and rebates, introducing capital allowance, expanding the duty drawback scheme and manufacturing –in- bond scheme, implementing VAT, monetizing fringe benefits and increasing tax relief to low- income earners. Some of these policies in no small way contributed to low revenue from taxation. The sources of inadequacy of revenue from taxation also include tax structure that is not buoyant or income-elastic, long time lag between government revenue collection and spending, lack of fiscal discipline and reluctance of the government to control its expenditures, and lack of information about the determinants of tax revenue.

Tax revenue and its determinants have elicited considerable interest in public finance theory and empirical studies. The famous studies in this area include Harley (1965), Lotz and Morss (1967); Raja (1971); Roy (1979); Dehnashwar Ghura (1998); Guptal (2007) and Chaudhry and Munir (2010). Most of

these studies used Ordinary Least Square method (OLS technique) to find the determinants of total tax to GDP ratio and most common exogenous variables used by the studies were share of agriculture sector, share of foreign trade and per capita income. The other variables tested are monetization, level of education and urbanization in the estimation of tax potential of different developing countries. Recent evidence for Nigeria on this argument is scarce and where available not without methodological gaps. On this note, this study aims to modestly contribute to the knowledge of tax revenue determinants.

1.2 STATEMENT OF THE PROBLEM

Nigeria's reliance on oil revenue (which is based on global crude oil prices) has consequences for the growth and development of the economy. Since global oil prices are determined by factors beyond the control of the Nigeria government, uncertainty and unstoppable fluctuations of prices have further worsened the economic situation in Nigeria. In the same vein the main shortcoming of Nigeria's tax structure since 1986 has been its over-dependence on a small number of sources of tax revenue namely income tax VAT, and custom and excise duties. The trade taxes/VAT on various imported products is vulnerable to external events because their prices are determined in the world market and tend to be volatile. This has resulted in inadequate tax revenue and continuous existence of budget deficit.

The present tax structure does not raise adequate revenues thereby encouraging domestic borrowing and seeking external finance which are only temporary measures of deficit financing. Moreover, external funds can no longer be relied on due to donour conditions as a result of the recent global financial meltdown. Furthermore, potential sources for domestic borrowing are few and external grants reduce autonomy and increase political and economic dependence. The alternatives are therefore to raise money through taxation, curtail desired government expenditure, or continuously

revise the tax structure. This assertion has led a number of economies to conclude that the economic prosperity of a nation depends on its ability to raise revenue. (Gupta 2007, Johnson Etal 1998; and Mogres, 2009)

Recognizing the need and associated effort by government to raise tax revenue in Nigeria, the study tries to investigate the factors affecting tax revenue in the countries. Whether or not the relationship is boisterous is an issue of research. In line with the above, the present study poses a number of questions, objectives and hypotheses that will guide the conduct of this study.

1.3 RESEARCH QUESTION

The study therefore raises the following research questions:

1. What are the determinants of tax revenue in Nigeria?
2. What is the relationship between tax revenue and economic development in Nigeria?

1.4 OBJECTIVE OF THE STUDY

The broad objective of this study is to examine the determinants of tax revenue in Nigeria. The specific objectives are;

1. To establish the determinants of tax revenue in Nigeria.
2. To analyze the relationship between tax revenue and economic development in Nigeria.

1.5 RESEARCH HYPOTHESES

In conducting this study the following hypotheses have been tested:

H_o: Tax revenue is not determined by the general level of economic development in Nigeria.

H_1: Tax revenue is determined by the general level of economic development in Nigeria.

Economic development is proxied by per capita income at current factor cost, share of agriculture in GDP, share of manufacturing in GDP, share of service sector in GDP, ratio of exports plus imports to GDP, exchange rate of naira in terms of dollar, broad money supply, Rate of inflation, external debt, foreign aid and dummy variable for political stability in Nigeria.

1.6 SIGNIFICANCE OF THE STUDY

The study contributes to the existing literature on tax revenue in Nigeria. The result could be used to design growth-oriented programmes and carry out tax changes that are growth enhancing. The study provides an empirical groundwork on Nigeria's tax revenue structures upon which prudent tax measures could be based. It identifies the determinants of tax revenue which when properly understood, documented and captured in relevant tax revenue models, would make it possible to estimate tax revenues within a specific period of time. The study also stimulates further research in the area of taxation.

The study brings together comprehensive evidence on the determinants of tax revenue in Nigeria. It provides an informed ball for taking action on tax policy in addition to filling the gap about what is currently known about tax revenue function in Nigeria. The study is timely given the current effort to reform tax structure, privatize state enterprises, rationalize the budget and eradicate poverty.

1.7 SCOPE AND LIMITATION OF THE STUDY

The study is a macro level study focusing on tax revenue. The period covered in the study is from 1986 to 2010.The choice of the period is to enable us focus from the era in which the Structural Adjustment Programme (SAP) was introduced which had far reaching effects on growth and fiscal deficit. The liberalization policies of the 1990's and the democracy era that began in the late 1990's, also motivated the choice of the period. The study focused on macroeconomic data which include tax revenue as

percentage of GDP in real terms, per capita income at current factor cost, share of agriculture in GDP, share of manufacturing in GDP, share of service sector in GDP, ratio of exports plus imports to GDP, exchange rate of naira in terms of dollar, broad money supply, rate of inflation, external debt, foreign aid and dummy variable for political stability in Nigeria. . The main limitation of the study was the difficulty in obtaining accurate data. The data used for the study are the publications of the central bank of Nigeria (CBN) and which in most cases usually run conflict with data obtained from other sources.

1.8 ORGANIZATION OF CHAPTERS

The study has been organized into five chapters. Chapter one presents the general introduction, while chapter two contains the conceptualization, theoretical and empirical literature. In chapter three, the research methodology is discussed. Chapter four presents the data and discusses the results of the study. Lastly, the summary, conclusion and recommendation of the study are presented in chapter five.

CHAPTER TWO

LITERATURE REVIEW

2.1 A REVIEW OF THEORETICAL LITERATURE

2.1.1 Determinants of tax revenue: theoretical issues

A number of empirical studies have exploited the determinants of tax effort in both developed and developing countries, and several factors have been identified. These include; the general level of development (reflected in per capita income and levels of literacy, urbanization, communication, etc.), the administrative and political constraints on the fiscal system, socio-political values, indigenous institutional arrangements, popular desires for government spending, plus other factors which condition overall willingness to pay taxes (Weiss 1969). Eshag (1983) asserts that in addition to the taxation potential of the individual countries, the taxation targets set by the authorities, and the ability of governments in practice to collect taxes, the actual amount of tax revenue collected depends on a number of other factors. More specifically the literature suggests the determinants of tax revenue to include:

The Level of Economic Development

There is a general conclusion from earlier studies that the tax revenue share raises with the level of economic development. A review of tax system in developing countries reveals a positive relationship between per capita income and total tax revenue as well as income taxes. This finding lends support to the hypothesis that as countries develop tax bases develop more than proportionately to the growth in income. Musgrave (1969) argues that the lack of availability of tax handles might limit revenue collection at low levels of income and these limitations should become less severe as the economy develops. Economic development is assumed to bring about both an increased demand for public expenditure

(Tanzi, 1987) and a larger supply of taxing capacity to meet such demands (Musgrave, 1969). A higher per capita income reflecting a higher level of development is held to indicate a higher capacity to pay taxes as well as a greater capacity to levy and collect them. (Chelliah, 1971). These are also the consideration that, as income grows countries generally become more urbanised.

Fiscal Deficits and Debt

The growth of public spending has generated large fiscal deficits in many countries, leading to increases in the share of public debt relative to GDP. With a large debt, the government needs to raise the revenues necessary to service it. When the interest from the debt exceeds net borrowing plus the possible reduction in non-interest expenditure, the level of taxation must go up unless the rate of growth of the economy is high enough to neutralize the increase. Therefore public debt plays a role in determining the extent to which countries may take advantage of their taxable capacity (Tanzi, 1987). However, a high debt burden can also create macroeconomic imbalances that may tend to reduce the tax level. In general, however, a high debt burden would tend to raise the tax level, *ceteris paribus* (Tanzi, 1992). On the other hand, however, countries faced with an increase in trade deficit may try to restrict imports as an alternative to exchange rate adjustment irrespective of the source of the trade imbalance. This will reduce revenue from import duties.

Openness

The relative size of the overseas sector, which is a measure of openness, reflects the degree of exposure of an economy to external economic influences. In the presence of inward capital flows, the overall level of activity in the economy is artificially and or temporarily increased through foreign borrowing and so is the aggregate tax base. As a consequence, tax revenue becomes artificially buoyant (Seade 1990) and volatile. Certain features of overseas trade make it more amenable to taxation than domestic activities, and in developing countries, the overseas trade sector is typically the most

monetized sector of the economy. The administrative ease with which trade taxes can be collected makes them an attractive source of government revenue when administrative capacities are weak (Linn and Weizel, 1990).

Share of Aid and Grants in Gross National Product

Aid and grants have been a major source of development finance for the majority of developing countries over the past few decades. Empirical literature has tended to evaluate the impact of aid by including it as a variable in a regression for the determinants of some economic performance indicator, emanating from the general concern that it might have a negative impact on some of such indicators. For instance, there is a general concern that aid may decrease taxation revenue in recipient countries. In fact, the results in Franco-Rodriguez, Morrissey, and McGillivray (1998)'s study on Pakistan were in agreement with this concern.

Population Density

It is difficult to point out the direction of the effect, without a systematic study. However, population density is expected to have an adverse effect on the tax ratio, mainly because the higher the density of population the higher will be the use of taxation source (i.e raising the tax base), and the tax authorities could intensify their efforts to collect taxes at a relatively minimal cost as compared to a sparsely populated country. Conversely, in a thinly populated area, administrative costs are expected to be higher in terms of total yields and therefore, less encouraging for collection of tax revenues. In such a situation, the degree of tax evasion and tax avoidance may also be relatively higher than in the densely populated area (Ansari, 1982).

Share of Agriculture in Gross Domestic Product

Agriculture is considered to be a salient feature regarding the structure of the economy and as Tanzi (1992) asserts, a country's economic structure is one of the factors that could be expected to influence the level of taxation. For some developing countries, the share of agriculture may be an important influence on the tax share, from both the demand and supply point of view (Tanzi, 1992). On the supply side, it is very difficult to tax the agricultural sector "explicitly", though it is often very heavily taxed in many implicit ways such as import quotas. Tariffs, controlled prices for output, or overvalued exchange rate (Bird, 1974; Ahmed and Stern, 1991; Tanzi, 1992). On the other hand, small farmers are notoriously difficult to tax and a large share of agriculture is normally subsistence, which does not generate large taxable surpluses, as many countries are unwilling to tax subsistence crops (Stotsky & woldeMariam, 1997). On the demand side, since many public sector activities are largely city-oriented, it may be assumed that the more agricultural a country is, the less it will have to spend for governmental activities and services. Hence as the share of agriculture in GDP rises, the need for total public spending and so for tax revenue may increase.

Share of Manufacturing in Gross Domestic Product

Manufacturing enterprises are easier to tax than agricultural enterprises since business owners typically keep better books of accounts and records. Manufacturing can generate larger surpluses if production is efficient. Therefore the variable is positively related to the tax ratio.

Tax Evasion

Tax evasion is considered to be of serious concern to those dealing with taxation issues of a country because of the detrimental effects it is assumed to have on tax revenue and the tax system as a whole. One obvious consequence of tax evasion is the loss of tax revenue for government. The fact that some

income goes untaxed and also certain indirect taxes such as VAT and excise duties are evaded, leads to the conclusion that tax revenues are lower than if everyone had paid their taxes.

Over the years a growing amount of attention has been focused on the conjecture that a significant and growing hidden economy exists. Most of the authors who have attempted to deal with it have reached one common conclusion that the problem of the hidden economy cannot be dismissed as quantitatively trivial, especially because some of the analytical work done on the subject has uncovered some intriguing issues. The major incentive for the effort to calculate the extent of the hidden economy has been dominated by the worries of fiscal authorities concerned with the loss of tax revenue through tax evasion. Attempts to estimate the amount of the tax revenue loss have produced appalling figures of tax revenue loss. For instance, Feige (1981) estimated the tax revenue loss in the United Kingdom, to be around £9 billion. Other estimates of tax revenue losses in the United Kingdom, according to Pyle (1989) ranged between £1 - £2billion per year. Estimates have also shown that revenue has been lost due to evasion of indirect taxes. Pyle reported the amount to lie between £250m and £500m per year due to evasion of VAT. Estimates have also been done in other countries and still figures are not small.

Per capita income

Tax revenue is expected to increase with the level of per capita income. Theory also suggests that the impact of an increase in income is also different on different categories of taxes. When the government implements good policies that can encourage payment of tax, particularly personal income tax, it is expected that increase in per capita income would increase the tax revenue of the government.

Exchange rate

Economic theory suggests that devaluation of exchange rate- typically brought by the contractionary financial policies- would be expected to have a favourable effect on overall economic activity and thus to increase tax revenue, and same as, an overvaluation of exchange rate typically brought about by expansionary financial policies would be expected to adversely affect overall economic activity, and thus to lower tax revenue (Gupta, 2000).

Monetization and Inflation Rate

Monetization of the economy captured by the variable M2 is expected to be positively related to the tax revenue collection. An increase in inflation (a proxy for expansionary financial policy) is expected to be negatively related to tax revenue as theory suggests (Hinricks, 1966).

2.2 THEORY OF TAX STRUCTURE DEVELOPMENT

The theory of tax structure development explains or expresses the relationship between the structure of the economy or economic growth and development on one hand, and the nature of tax base, the tax handles available to raise revenue, on the other.

A tax system passes through a number of stages in the process of economic development. This is true of both developed and less developed economies. Indeed, it has been argued that economic development has a very strong impact on the tax base of a country's economy (Hinricks, 1966; Musgrave, 1969).

The theory of tax structure development suggests that at the early stages of economic development, the economic structure imposes severe limitations on the structure of the system. During this stage, there is only limited scope for the use of direct taxes. This is because, at this stage, the majority of the people who reside in the rural areas are engaged in subsistence agriculture and their incomes are

difficult to assess. Tax assessment at this stage is based on presumptions that are subject to wide margins of error. As such, personal income tax, to the extent that it must be applied at all, must be on very selective bases, and applicable on distinct sources of income. For example, effective personal income taxation is typically limited to the wage income of civil servants and employees of large firms. On the other hand, much of business income escapes taxation on account of a large share of the self-employed in total employment. Thus, there is a high degree of tax evasion and avoidance. Moreover, taxes are difficult to collect because of the lack or even absence of skills and facilities for tax administration (Hinricks, 1966).

Furthermore, there is absence of industries at this early stage of development, and as such excise tax (an example of indirect tax) yields little or no revenue. Several retail outlets make a sales tax system difficult to implement, and a multiple-stage sales tax system even more so (Musgrave 1969: 127). The large percentage of self-employment to total employment makes effective personal income tax unworkable (Musgrave 1969: 127-128). Another important source of government revenue during this early stage is the foreign trade sector because exports and imports are readily identifiable. Nevertheless, we should note that the revenue generated from export duties and custom duties is not reliable because of the periodic fluctuations in the price of primary products in the world market. This tends to complicate plan implementation in many developing countries (Massell, Pearson and Fitch, 1972; Lim, 1972).

As economic development progresses, it brings with it an increase in the share of direct taxes out of the total revenue. The scope for sales tax is broadened and personal income tax becomes larger as the share of employment in the industrial sector increases and dominance of the agricultural sector decrease. Sales tax may be broadened because a great deal of output and income will tend to go through the money market as the economy becomes more monetized. As Musgrave (1969) pointed out

at this stage, taxes may be imposed on firms or individuals, in expenditures or receipt, on factor inputs or products, etc. He further argued that the tendency would now be to shift from indirect to direct taxes.

2.2.1 Revenue Generation and Trade

Over 200 years ago, Adam Smith argued that greater access to international markets could enhance productivity by encouraging specialization that would be profitable in smaller markets. This doctrine of international trade is enshrined in his famous book, *An Inquiry into the Nature and Causes of the Wealth of Nations,* (1776). He stressed the importance of trade as a vent for surplus production and as a means of widening the market thereby improving the division of labour and productivity.

David Ricardo in his *Principles of Political Economy and Taxation* (1817) developed the theory of comparative advantage. His theory was based on perfect competition and full employment of resources within nations. Trade liberalization may influence economic growth in several ways. From the point of export orientation, there are several conceptions about the link between export expansion and economic growth. An increase in export may promote specialization in the production of exported goods, which in turn may increase the productivity level and cause the general level of efficiency to rise in the export sector. Moreover, the increase in demand enables the exploitation of the economies of scale in case of increasing returns to scale. In this context, the link between export expansion and revenue generation has been intensively investigated by several economists both from theoretic and empirical point of view (Rodrigeuz, and Rodrik, 2001).

There are several key mechanisms through which trade and revenue generation are related. First, opening up to foreign trade can affect economic growth domestically by reallocating resources among relatively more efficient sectors and industries. For instance, an expansion in export may lead to a reallocation of resources away from a relatively inefficient non-trade sector to the more productive

export sector, which in turn may boost the productivity level of the economy thus leading to output growth. Secondly, trade liberalization increases the degree of competition, thus firms improve their productivity through innovation and thus stimulate economic growth as a whole (Elana and Lanchovichina, 2005).

The cornerstone of the neoclassical free-market argument is the assertion that liberalization (opening up) of national markets draws additional domestic and foreign investment and thus increases the rate of capital accumulation. In terms of GNP growth, this is equivalent to raising domestic savings rates, which enhances capital-labour ratios and per capita incomes in capital-poor developing countries. Traditional neoclassical models of growth are a direct outgrowth of the Harrod-Domar and Solow models, which both stress the importance of savings.

According to traditional neoclassical growth theory, output growth results from one or more of three factors ; increase in labour quantity and quality (through population growth and education), increases in capital accumulation through savings and investment, improvements in technology. Closed economies, those without external activities, with low savings rate grow more slowly in the short run than those with high savings rate and tend to converge to lower per capita income levels. Open economies, those with free trade and foreign investments however experience income convergence at higher levels as capital flows from rich countries to poor countries where capital-labour ratios are lower and thus returns on investments are higher. Consequently, by impeding the inflow of foreign investment, governments of LDCs, according to the neoclassical growth theory will retard growth in the economies of the developing world.

2.3 EMPIRICAL LITERATURE

Several empirical studies have been undertaken to assess tax performance across different countries. Most of the studies have used tax share in GNP/GDP or tax ratio as the dependent variable with different combinations of explanatory variables.

Lotz and Morss (1967) used the data of developed and developing countries to find the ratio of tax revenue to GNP. They used per capita GNP and openness for this. Their results showed the positive and statistically significant effect for both per capita GNP and for openness. Tanzi (1987) found only the per capita income effect positive and significant by taking the data of only developing countries.

Ehrhart (2009) assesses the relationship between democracy and domestic taxes in developing countries using a panel of 66 developing countries over 1990 – 2005. He found that democracy matters for achieving higher domestic taxes mobilisation. The constraints on the executive are especially of importance to counter the government's propensity to cave in for special interests and be insufficiently welfare minded. Moreover, democracy is specifically needed in natural resource rich countries to make natural resources rents contribute to higher domestic taxes and no longer an impediment to a sustained tax system.

Bird, Jorge and Torgler (2008) carried out research on "tax effort in developing countries and high income countries by looking at the impact of corruption, voice and accountability". They argue that a more legitimate and responsive state is an essential factor for a more adequate level of tax effort in developing countries and high income countries. While at a first glance giving such advice to poor countries seeking to increase their tax ratios may not seem more helpful than telling them to find oil, it is presumably more feasible for people to improve their governing institutions than to rearrange nature's bounty. Reducing corruption and accountability may not take longer nor be necessarily more difficult than changing the opportunities for tax handles and economic structure. The study also shows

that high income countries have also the potential of improving their tax performance through improving their institutions.

Gupta (2007) contributes to the existing empirical literature on the principal determinants of tax revenue performance across developing countries by using a broad dataset and accounting for some econometric issues that were previously ignored. The results confirm that structural factors such as per capita GDP, agriculture share in GDP, trade openness and foreign aid significantly affect revenue performance of an economy. Other factors include corruption, political stability, share of direct and indirect taxes etc. The study also makes use of a revenue performance index, and finds that while several Sub Saharan African countries are performing well above their potential, some Latin American economies fall short of their revenue potential.

Kunli and Pablo (2010) studied historical tax revenue downturn episodes where tax revenue to GDP ratios decline sharply and explored the link between tax revenues and imports. They documented that downturn episodes of at least one percentage point of GDP in one year are common. The tax types that account for these episodes are different in advanced, emerging and developing, and oil producing countries. They find that tax revenue downturns and import contractions have a statistically significant link. Finally, they show that changes in imports are a statistically significant determinant of changes in tax revenues even when controlling for changes in the output gap and in the terms of trade.

Ajaz and Ahmed (2008) analyses the effect of institutional and structural variables (corruption and governance) on tax revenues using panel data set for 25 developing countries. The Generalized Method of Moments regression results show that institutional variables have significant effect on all taxes. The results show that corruption has adverse effect on tax collection, while good governance contributes to better performance in tax collection.

Leuhold (1991) and Stotsky and Wolde Mariam (1997) examined the tax share for African countries by taking the share of agriculture in income, mining share, per capita income and export ratio as its determinants. Their results showed that agricultural share of foreign grants and loans have also positive and statistically significant relation.

Nelson (2011) established the determinants of VAT revenue and assesses the response of VAT structure to changes in the tax bases. He made use of Paul Samuelson's (1955) fundamental general equilibrium analysis of the public sector to derive its main results. He finds that growth elasticity for VAT are all greater than one. The estimation results show that total GDP elasticity of VAT revenues is less than the elasticity with respect to monetary GDP, suggesting the existence of an underground economy in Kenya over the period of analysis. It is found that VAT revenues respond with substantial lags to changes in its determinants and that VAT revenues are sensitive to unusual circumstances. The study concludes that Kenya's VAT revenue is very responsive to changes in their determinants especially international trade. There is therefore the challenge of creating a stable VAT system so that tax revenues can increase rapidly as the economy grows.

Teera (2002) examined the tax and tax structure of Uganda to investigate the factors effecting tax revenue in the country. He used the time series data of the period 1970 to 2000 and estimated a model as shown below:

Ty = f (Y, M, A, P, Ag, Mf, D, T) ---------- 1

Where

Ty = Tax to GDP ratio

Y = GDP per capital, in international dollars

M = the ratio of imports to GDP

A = the ratio of aid to GNP

P = population density (people per sq.km)

Ag = the ratio of agriculture to GDP

Mf = the ratio of manufacturing to GDP

D = the ratio of external debt to GDP

T = time trend

His results showed that agriculture ratio, population density and tax evasion affect all type of taxes. GDP per capita showed the surprising negative sign. Tax evasion and openness (as measured by import ratio) showed the significant negative impact. Aid variable showed positive sign since aid in Uganda always supports especially raw material so not surprisingly .

Bahl (2003) by using the data of OECD and less developed economies explained the determinants of tax revenue. He used the non-agricultural share of GDP, openness and the rate of population growth all of which showed the positive and statistical significant result. Simple correlation between tax effort and the size of the shadow economy showed the negative but statistically significant result.

Chelliah et al. (1975) by taking the data of 47 countries for period 1969-1971 regressed the tax share in GNP on agriculture share, mining share and export share. The results showed the negative and significant effect for agriculture share, positive and significant effect for mining share and export share. Tait et al (1979) took the data of 47 countries for the period 1972-1976 and found the similar results.

Bird (1976) and Ahmad and Stern (1991) found that an economy with a large GDP share of agriculture is expected to generate low tax revenues. Due to political reasons, it is usually difficult to directly tax the

agriculture sector in Pakistan, though it is often very heavily taxed in many implicit ways, e.g. through import quotas, tariffs, controlled prices for output, and overvalued exchange rates.

Alm et al. (2004) took agricultural/GNP as the determinants of total tax to GDP ratio by using the data of developed and developing countries. His results showed the negative but not significant relation with agricultural/GDP and international trade/DNP, positive and statistically significant relation with mining/ GNP and negative and statistically significant relation with GDP per capita and shadow economy/GDP.

Bilquees (2004) measured the buoyancy and elasticity of tax revenue system in Pakistan over the period 1974 to2003 by using the Divisia lndex Approach and analyzed the factors responsible for the resulting size of elasticity coefficients. Her estimates of buoyancy suggested that tax changes did not lead to significant revenue augmentation. However high coefficient of sales tax with respect to GDP base reflected the inclusion of service sector and utilities in sales tax net, which has serious implications for the poor.

Ahsan and Wu (2005) examined the tax share in GDP for developed and developing countries for 1979 – 2002 and found the negative and significant relation of agriculture share, GDP per capita, and population growth to the tax ratio while trade share in GDP has positive and significant relation.

Kemal (2007) explored the long-run relationship between the underground economy and formal economy. Results showed that underground economy is causing the formal economy but not vice versa. He suggested to the increase in the number of legal documentation, strengthening the institutions, better governance, decrease the number of regulations and restrict smuggling through tariff rationalization to cut down tax evasion.

Lutfunnahar (2007) identified the determinants of tax share and revenue performance for Bangladesh along with 10 other developing countries for the 15 years through a panel data analysis. The results obtained suggest international trade, broad money, external debt and population growth to be significant determinants of tax efforts. The study concluded that Bangladesh and other countries have low tax effort (less than unity index) and are not utilizing their full capacity of tax revenue and therefore have the potential for financing budgetary imbalance through raising tax revenue.

Mahdavi (2008) used the advanced estimation techniques with an unbalanced panel data for 43 DCs over the period 1973-2002 including Pakistan. His results showed that aid had a negative effect, non-tax revenue had also negative effect while agriculture sector share had positive coefficient. Trade sector share had a positive effect and economically active female variable had a net adverse but insignificant effect while the old-age portion of population showed negative association for both income and sales tax. Extent of urbanization and literacy rate both showed positive effect. Population density, monetization and inflation rate remained negatively correlated. Inverse of GDP per capita was strongly and negatively correlated with the level of taxation. Net effect of political rights and civil liberties were significant.

2.3.1 Taxation and Government Revenue in Nigeria

The Nigerian National Tax Policy is an initiative of the Federal Government of Nigeria which is being driven by the Federal Ministry of Finance on the basis of the report from a Study Group in July 2003. The Study Group was inaugurated on 6th August, 2002 to examine the tax system and make appropriate recommendations towards entrenching a better tax policy and improved tax administration in the country. In January 2004, a private sector-driven Working Group was constituted to review the recommendations of the Study Group. Both groups addressed macro and micro issues in tax policy and administration. Among the macro issues discussed were the drafting of a National Tax Policy, Taxation and Federalism, Tax Incentives and Tax Administration generally.

2.3.2 The Contribution of Tax Revenue to GDP in Nigeria (1990-2009)

In Nigeria the contribution of tax revenue to the GDP had shown fluctuated trends. This is due to the fact that the revenue too demonstrated unpredicted ups and downs over years as shown in table 2.1.

Table 2.1: Tax, Non-Tax value, Oil and Non-oil as Percentage of GDP

YEAR	TAX REVENUE N 'million	NON-TAX REVENUE N' million	GDP (N'M)	TAX % OF GDP	NON-TAX % OF GDP	OIL REVENUE AS %OF GDP	NON – OIL REVENUE AS %OF GDPs
1990	52439.8	44145.8	267,550.0	19.60	16.50	26.50	9.60
1991	56185.1	43387.4	312,139.7	18.00	13.90	26.10	26.10
1992	77229.0	111848.9	532,613.8	14.50	21.00	30.60	30.60
1993	89586.9	102580.5	683,869.8	13.10	15.00	23.60	4.40
1994	83687.3	116982.2	899,863.2	9.30	13.0	17.70	4.60
1995	177855.5	282248.9	1,933,211.6	19.20	14.60	16.80	7.00
1996	191893.1	332434.5	2,702,719.1	7.10	12.30	15.10	4.30
1997	204544.0	388672.2	2,801,972.6	7.30	13.80	14.90	6.20
1998	216674.5	243758.8	2,708,430.9	8.00	9.00	11.90	5.10
1999	373699.8	539788.5	3,194,015.0	11.70	16.90	21.90	6.70
2000	815618.7	1035560.8	4,582,127.3	17.80	22.60	33.70	6.60
2001	779639.2	713487.9	4,725,086.0	16.50	16.50	24.20	7.40
2002	185661.0	684325.7	6,912,381.3	11.80	11.80	15.40	6.30
2003	992982.7	1162723.3	8,487,031.6	11.70	13.70	20.50	4.90
2004	1711660.1	2122458.5	11,411,067.0	15.00	18.60	28.70	4.90
2005	2637575.3	2797869.9	14,572,239.1	19.20	19.20	32.00	5.30

2006	2847808.8	3213531.3	18,564,594.7	15.34	17.31	28.48	4.17
2007	3051085.8	2664793.9	20,657,317.7	14.77	12.90	21.16	5.81
2008	1336298.1	6535712.6	24,296,329.3	5.4	26.9	22.1	5.6
2009	127352.8	535354.2	25,272,1	6.3	27.4	23.1	5.8

Source: CBN Statistical Bulletin, 2010

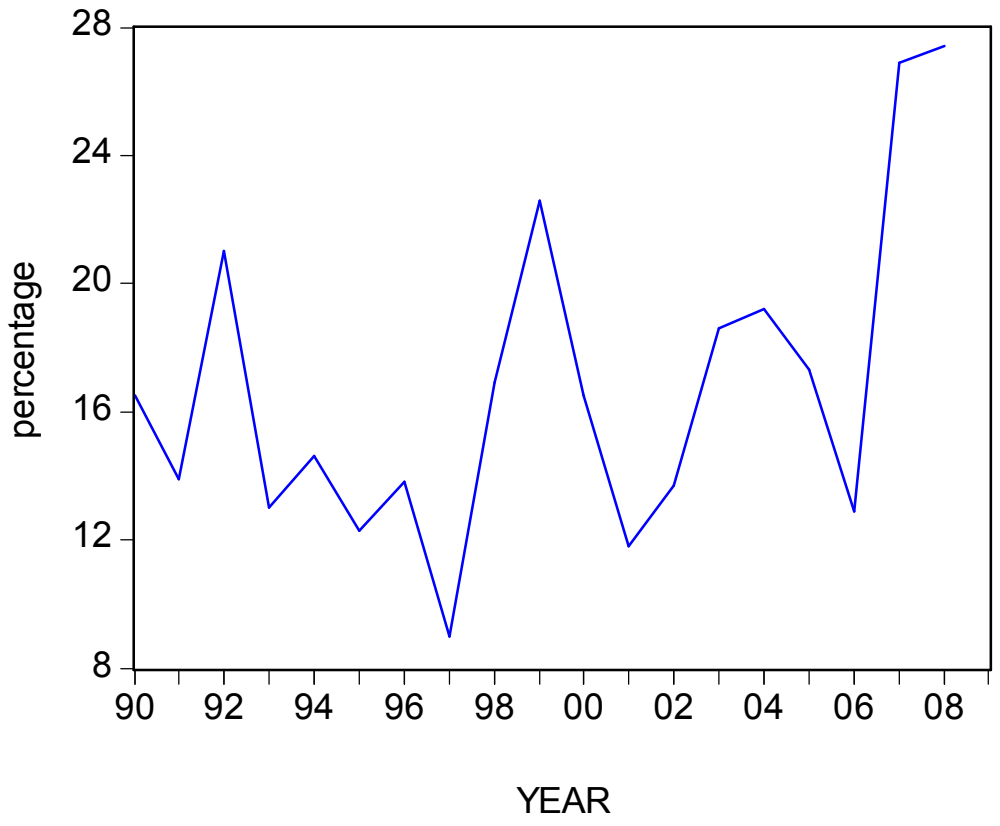
From table 2.1, tax revenue amounted to N191, 893.1 and constituted a paltry 7.1 percent of the GDP in 1996, the smallest in the 1990s. It jumped to N9, 929,827 million or 11.70 percent of GDP in 2003 and maintained a persistent upward trend to a new high of N2, 637, 575.3 million or 18.10 percent of GDP at the end of 2005. In the year 2007, tax revenue amounted to N3, 051.8 million or 14. 77 Per cent of the GDP. The increase in tax revenue was attributed to the emergence of oil but its contribution to GDP has remained low. The relative low tax share of GDP is certainly consistent with the belief in a market –dominated economy. Similarly, Non – tax revenue did not do any better during the period. As a percentage of GDP, it also stayed below 20 percent, except in 1992 and 2000 when it stood respectively at 21 and 22. 6 percent (see table 2.3 above), but its amount has increased consistently. For example, in the year 1996, it's amounted to N332, 434.5 million or 12.3 percent of GDP but increased to N2, 122, 458.5 million or 18.60 percent of GDP in the year 2004. In 2007, non tax revenue stood at N2, 664, 793.9 million or 12.90 percent of GDP. The volatility of revenue from oil is also obvious from the table. Although this was as high as 30.6 percent of GDP in 1992, 33.7 percent in 2000, and 32 percent in 2005, and all time low of 11.9 percent was recorded in 1998.

Trend of Tax to GDP

Figure 2.1 also displayed the trend of tax contribution to gross domestic product from 1990 to 2009. Taxes contributed about 17% to gross domestic product in 1990, fall to 15% in 1991 and moved upward

to about 21% in 1992. The trend continues to fluctuate and be at 9% in 1997, above 23% in 1998 and so on until it get to the peak of 27% in 2009. The table below shows the contributions of total tax revenue from direct and indirect taxes from 1990 to 2009.

Figure 2.1: Trend of Tax to GDP



Contribution to Total Tax Revenue from Direct and indirect Taxes (1990 -2009)

From table 2.2, the increasing importance of revenue from direct taxes relative to indirect taxes is very obvious. This may be explained by the dominance of the oil sector in the economy. There where, however, decreasing shares of direct tax revenue between 1995 and 1999. This was mainly due to declining revenue from petroleum profit tax following the reversal of fortunes in the oil sector. As at

2003, the shares of direct tax revenue amounted to N714, 748 .44 but increased to N2, 394,491.51 in the year 2007. This is largely due to the high price of oil recorded in most parts of the period 2003-2007. The value of direct tax revenue stood at N1, 090,953.77 as at end of 2008.

Table 2.2: Direct Tax Revenue, Indirect Tax Revenue and Total Tax Revenue.

YEAR	DIRECT TAX REVENUE (N'M)	INDIRECT TAX REVENUE (N'M)	TOTAL TAX REVENUE (N'M)
1990	31,222.66	21,217.14	52,439.8
1991	44,880.66	11,304.44	56,185.1
1992	61,304.38	15,924.62	77,229.0
1993	74,151.08	15,435.82	89,586.9
1994	58,380.26	25,307.04	83,687.3
1995	84,961.57	92,893.93	177,855.5
1996	102,298.21	89,594.89	99,893.1
1997	103,090.18	101,454	204,544.8
1998	111,652.37	105,022.13	216,674.5
1999	221,454.50	152,245.30	373,699.8
2000	596,951.33	218,667.37	815,618.7
2001	504,192.6	275,446.53	779,639.13
2002	477,651.08	338,009.92	815,661.0
2003	714,748.44	278,234.26	992,982.7
2005	2,234,817.55	402,757.80	2,637,575.35
2006	2,352,574.85	495,234.00	2,847,808.85
2007	2,394,491.51	656,594.30	3,051,085.81

2008	1,090,953.77	245,344.4O	1,336,298.17
2009	2,106,276,81	320,127.27	2,426,404.08

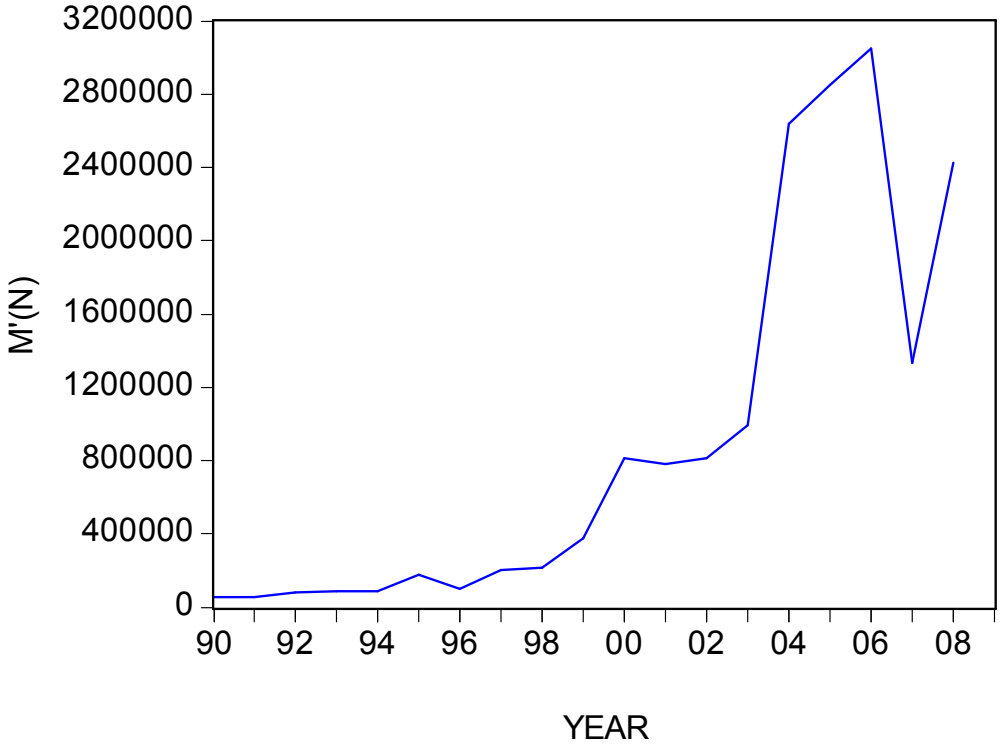
Source: CBN Statistical Bulletin, 2010

From table 2.2, the increasing importance of revenue from direct taxes relative to indirect taxes is very obvious. This may be explained by the dominance of the oil sector in the economy. There is however, decreasing shares of direct tax revenue between 1995 and 1999. This was mainly due to declining revenue from petroleum profit tax following the reversal of fortunes in the oil sector. As at 2003, the shares of direct tax revenue amounted to N714, 748 but increased to N2, 394,491 in the year 2007. This is largely due to the high price of oil recorded in most part of the period 2003-2007. The value of direct tax revenue stood at N1, 090,953 as at end of 2008.

Trend of Total Tax Revenue (1990 – 2009)

Figure 2.2 shows the trend of total tax revenue in Nigeria from 1990 to 2009.The total tax revenue was very low in 1990 but continued to grow as the year increases. The total tax revenue was high in 2006 and dropped in 2007 to about N1500000 million and shoot again in 2009.

Figure 2.2: Trend of Total Tax Revenue (1990 – 2009)



Structure of Federal Government Taxes 1990-2009.

Table 2.3 shows the yields of various components of direct and indirect taxes. From the table it is obvious that petroleum profit tax revenue dominated the direct tax revenue over the years. For instance, in 1990 PPT revenue amounted to N26, 561.12 million (i.e. 85.07 percent of direct taxes) but increased to N84, 961.57 million in 1995. PPT continue to increased in amount except for some few years such as 1998(N111, 652.4), 2002 (N477, 651.1) and 2008 (N1, 090,953.8) when it dropped from their previous year's values of N103, 090.18 (1998), N504, 192.7 (2001) and N2, 394,491.5 (2007).Table 2.3 show that bulk of federal revenue was derived from import duties which are based on foreign–oriented consumption. Also the rising contribution, to total revenue of VAT is noteworthy because ever

since its implementation, it has consistently been on the increase. For instances VAT amounted to N7,189.7 in 1994, increased to N56,787.9 in the year 2000 and stood at N104, 884.7 in the year 2008

Table 2.3: Structure of federal government Taxes, 1990-2009.

YEAR	DIRECT TAXES (N'million)			INDIRECT TAXES (N' million)		
	PPT	CIT	FIR	DUTIEST	VAT	OTHERS
1990	26,561.1	2,959.9	1,701.6	8,529.3	n.a	12,687.9
1991	38,103.7	3,778.9	2,998.1	7,065.3	n.a	4,239.3
1992	51,066.6	5,376	4,861.4	10,350.6	n.a	5,574.2
1993	59,016.8	9,520.9	5,605.8	9,724.6	n.a	5,711.3
1994	42,378.2	12,154.8	3,847.3	15,681.6	7,189.7	2,35.7
1995	42,752.7	21,826.6	20,382.3	37,269.1	20,706.1	34,918.8
1996	76,836.2	22,045.3	3,416.8	55,118.8	31,062.6	3,413.6
1997	68,688.9	26,040.6	8,350.3	63,104.4	34,047.9	4,301.6
1998	67,371.1	32,993.3	11,299.2	57,163.6	35,513.9	12,344.7
1999	157,786.3	44,357.3	19,310.8	84,435.3	45,247.3	22,562.8
2000	510,273.9	49,666.4	37,010.9	98,509.6	56,787.9	63,369.8
2001	428,412.5	46,032.8	29,747.4	114,337.7	61,534.8	99,574.1
2002	340,995.1	77,475.1	59,180.9	178,334.0	106,777.3	52,898.6
2003	573,085.3	96,276.6	45,386.5	163,879.9	98,894.3	15,460.0
2004	1,158,041.7	127,313.4	57,613.4	212,587.6	119,685.1	36,419
2005	1,867,860.5	159,119.1	207,838.0	228,202.6	109,298.4	65,256.8
2006	2,074,265.2	244,903.1	33,406.6	177,689.9	221,617.2	95,926.8
2007	1,850,702.5	276,324.3	267,464.8	241,298.4	289,492.4	125,803.5
2008	920,219.5	97,313.1	7,3421.2	94,359.5	104,884.7	46,100.2

2009	998,327.2	98,472.8	87,385.8	97,934.1	198,846.3	48,394.9

Source: CBN Annual Report and Statement of Account, Various Years.

2.3.3 The Philosophy of National Tax Policy

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Jhingan, 1997). In this context sustainable development refers to the pattern of revenue generation, which is able to meet the needs of the present generation of Nigerians, without negatively impacting the ability of future generations to meet their own needs. Generally, taxation is looked upon as a sustainable source of Government revenue due to the stability and certainty of the tax system. Unlike other sources of revenue, taxes are constantly available in so far as economic activity is carried on in the society. Recent developments in the global and local economy which have significantly impacted Government revenue has directed focus on taxation as a sustainable source of income. It is in line with this that the National Tax Policy intends to create awareness on the importance of the role which taxation can play in securing a stable flow of revenue for the Government.

Nigeria is currently viewed as a mono-product economy with significant reliance on oil revenue due to historical developments in the Nigerian economy. However, taxation has been identified as an alternative to oil revenue and a more reliable source of revenue. The tax policy shall therefore promote and encourage a shift in focus from non-tax revenue to tax revenue by Governments at all levels of the Nigerian economy. Following from the above, it is stated that the tax policy will also promote and encourage healthy competition amongst tax and revenue authorities in Nigeria at the Federal and State level to facilitate rapid development of the tax sector in Nigeria. The focus of the competition shall be to maximise tax revenue within the jurisdiction of each Government in line with constitutional and statutory provisions. It is expected that there would be increased collaboration as a result of the need

to grow tax revenues by each level of Government and that improved collaboration would enhance tax yield – between and amongst Federal, State and Local Government Authorities.

2.3.4 Review of the Existing Tax Policies and Reforms in Nigeria

The Nigerian tax system is lopsided, and dominated by oil revenue (Odusola, 2006). The most veritable tax handles are under the control of the federal government while the lower tiers are responsible for the less buoyant ones—the federal government taxes corporate bodies while state and local government's tax individuals. While the federal government on average accounts for 90 per cent of the overall revenue annually, it only accounts for about 70 per cent of total government expenditure. In 1995, the breakdown of total tax and levy collection of the three tiers was 96.4 per cent for the federal government, 3.2 percent for the state and 0.4 per cent for the local government (Phillips 1997: 40). A major element contributing to this development was the prolonged military rule that had ignored constitutional provision. 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-base revenue to another, making the economy susceptible to fluctuations of the international oil market. Nigeria's fiscal policy measures have been largely driven by the need to promote such macroeconomic objectives as promoting rapid growth of the economy, generating employment, maintaining price levels and improving the balance-of-payment conditions of

the country. Although policy measures change frequently, these objectives have remained relatively constant.

Until the mid 1980s, tax policies, for instance, were geared to achieving such specific objectives as:

i) Ensuring effective protection for local industries.

ii) Encouraging greater use of local raw materials.

iii) Enhancing the value added of locally manufactured and primary products.

iv) Promoting greater geographical dispersion of domestic manufacturing activities.

v) Generating increased government revenue.

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 individuals 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 in line with its federal structure, Nigeria operates a three-tier government, with certain fiscal responsibilities and powers delineated to each level.

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 list; particularly those related to the 'division of public revenue'—tax collection.1 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 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. The major tax laws in existence as of September 2003, and various related amendments include the following:

i) Personal Income Tax Act of 1993;

ii) Company Income Tax Act of 1990;

iii) Petroleum Profits Tax Act of 1990;

iv) The Petroleum Act of 1990;

v) Value-Added Tax Act of 1993;

vi) Education Tax Act of 1993;

vii) Capital Gains Act of 1990;

viii) Customs and Excise Management Act of 1990;

ix) Minerals and Mining Act of 1999;

x) Stamp Duties Act of 1990;

xi) Taxes and Levies (Approved List for Collection) Act of 1998; and

xii) 1999 Constitution of the Federal Republic of Nigeria.

Personal Income Tax (PIT)

This is the oldest tax in the country. It was first introduced as a community tax in northern Nigeria in 1904, before the unification of the country in 1914 (Ola, 2001), and was later implemented through the Native Revenue Ordinances to the Western and Eastern regions in 1917 and 1928, respectively. Among other amendments in the 1930s, it was later incorporated into Direct Taxation Ordinance No. 4 of 1940. The need to tax personal incomes throughout the country prompted the Income Tax Management Act (ITMA) of 1961. In Nigeria, personal income tax for salaried employment is based on a 'pay as you earn' (PAYE) system, and several amendments have been made to the 1961 ITMA Act. For instance, in 1985 PIT was increased from N 600 or 10 per cent of earned income to N2,000 plus 12.5 per cent of income exceeding N 6,000. In 1989, a 15 per cent withholding tax was applied to savings deposits valued at N 50,000 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. In 1990 further amendments were made to PIT: apart from providing additional individual tax allowances, minimum taxation was reduced from 1 per cent to 0.5 percent, so that individuals with incomes of N 3,000 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. Two study groups were subsequently set up in 1991 to review the situation and improve tax collection. The 1961 ITMA was replaced with an amended act, which was superseded in 1993 by Personal Income Tax Act (PITA) No. 104. It was applicable with nationwide coverage. Its administration, however, was assigned to the states, which were empowered to tax individuals, or corporate or bodies of individuals residing in its

territory in a particular year. Rates were also increased. The PITA coordinated the subsidiary legislations for the PAYE system, withholding taxes, among others, as stipulated by the Ministry of Finance. The PITA empowered the Joint Tax Board to administer the tax throughout the country and to coordinate its administration, while the State Board of Internal Revenue (SBIR) became responsible for the administration of the revenue.

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 N 3,000 to N 10,000 when a 30 per cent ceiling was set for PIT. Child allowance was first increased to N 1,000 and then, in 1996, to N1,500 per child payable up to four children. In 1998 this became N 2,500 per child. In addition, tax relief to low-income earners was increased to N 2,500, 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. A fine this small tends to encourage tax evasion since the penalty for being caught is lower than the cost for non-compliance.

The issues of unremitted funds from the PAYE system and withholding taxes particularly among government ministries and agencies as well as lax adherence by all three levels of government to the approved list for (tax) collection, as stipulated by the 1998 Taxes and Levies Act 21, have over the past five years attracted the attention of JTB. Personal income tax failed in Nigeria for lack of equitability. In spite of the fact that the self-employed outnumber paid workers and that they earn as much as four

times that of the formal sector employees, the bulk of PIT is paid by employees whose salaries are deducted at source (Adekanola, 1997).

Inadequate monitoring by tax authorities, the dominance of informal sector activities and the fact that many Nigerians live in rural areas make the coverage of self employed workers difficult. Although regulations were enforced in PIT Act No. 104 of 1993, amendments are still made on a yearly basis. In addition to the fact that amendments are not adequately informed to the public nor incorporated in the relevant legislation, the legal language is also ambiguous, confusing and unprofessional (CITN 2002). There is very little tax education in Nigeria; taxpayers are ignorant of the laws regulating their taxation, and this makes disclosure difficult.

Due to the absence of communication between the government and the people, most citizens view taxes as a mere legal hindrance rather than their civic responsibility.

Company income tax (CIT)

Company income tax (CIT) was introduced in 1961. The original law (Company Income Tax) 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 N 0.5 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. In the spirit of global competitiveness, the 30 per cent tax rate for corporates is still one of the highest in the world. The allocation of all categories of corporate tax to the federal government negates the spirit of decentralization, particularly in a federal system such as Nigeria's. The taxation of companies operating at a loss is not only grossly inequitable but also destructive to business enterprises. The penalty for non-compliance within the provision of the Act is too low and counter-productive to the goals of the Act.

Education tax

Education tax was introduced in 1993 (Education Tax Act No. 7). To prevent the educational system from total collapse due to the financial crisis that had affected the sector for years, this federally collected tax imposed a 2 per cent charge on the assessable profits of Nigerian companies. It was geared towards providing the sector with the opportunity for survival and renewal. The tax is applied to company net profits, and is deducted from net profits before tax, thus it is not subject to company income tax.

The introduction of this tax has added to the list of multiple taxes that eats away at the profit margins of companies. It is a double tax on company profits, and is argued to be a major disincentive to foreign investment in Nigeria. At the technical level, the term 'assessable profits' causes confusion and is considered to be misleading. This, with regard to education tax, could lead to a situation where companies under-report profit margins.

Petroleum Profit Tax (PPT)

The petroleum profit tax (PPT) is applicable to upstream operations in the oil sector. 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 per cent of foreign exchange earning and government revenue, respectively. The PPT covers oil and gas taxation but is complemented with two different contractual relationships not formally covered by tax legislation. The first constitutes joint ventures between international oil companies and the Nigerian National Petroleum Company structured under a Joint Operating Agreement (JOA) as set out in the Memorandum Of Understanding (MOU). Following earlier oil shocks, the MOU was introduced in 1986 to provide necessary incentive, and has been revised in 1991 and 2000. This system has been adjudged complex, creating problems for tax authorities. The second measure relates to deep offshore exploration and development under a production-sharing contract (PSC), which allows an oil company to recover its costs at a pre-established rate and to share in additional revenue according to a pre-determined formula. Taxation is 50 per cent of the cost recovery and production share revenue after deduction for costs in accordance with the PPT provisions. While the JOA imposes some operating and capital expenditures on the federal government, the production sharing contract transfers the funding responsibility and most of the risk to the oil companies. Management problems with the JOA and the PSC are further complicated by the lack of coordination between the Department of Petroleum Resources and tax authorities on tax policy matters and information sharing on various agreements in the upstream subsector.

The amended Petroleum Profit Tax Act (PPTA) of 1959 provides the legal basis for taxing joint venture companies (JVC) and is governed by the memorandum of understanding. The Nigerian statutory rate is 85 per cent (effective rate, however, is 70-80 per cent because of the MOU), as opposed to 65.8 per

cent for Angola, 73 per cent for Gabon, and 48 per cent for Cameroon (World Bank 2002). The PPTA stipulates that oil-producing companies must render accounts annually, while remittance of the tax is done on a monthly basis as required by the CIT Act. Over 95 per cent of Nigeria's crude oil production is covered by the PPT/MOU system, and taxation is calculated according to two different formulas. The first one is based on PPT and royalties without adjustments while the second is based on the MOU which is often referred to as the revised government tax. In order to guarantee an after-tax margin based on crude oil levels, or operating and capital expenditure, the taxpayer is expected to choose the lower of the two taxes. However, the failure to ratify the MOU into law makes the administration of the petroleum profit tax cumbersome. The limitation on capital allowances eliminates the incentives offered by the accelerated capital depreciation policies and discourages investment: a PPT tax rate of 85 per cent in the form of royalties is being imposed (Section 19(1) of PITA) while indigenous firms producing less than 50,000 barrels pay a rate ranging between 85 per cent (PITA) and 30 per cent (CITA).

Taxation of natural gas is a two-part process: upstream and downstream gas operations. Upstream operations enjoy several fiscal incentives, including:

i) A five-year tax holiday (three years in the first instance and two years later) subject to the CIT tax rate which is currently 30 per cent.

ii) Deduction of capital expenditure and operating expenditure against the PPT rate (85 per cent).

iii) Depreciation rate of 60 per cent in the first year and 20 per cent thereafter.

iv) Investment allowance of 20 per cent.

v) 5-7 per cent royalty, which does not apply if gas is transferred to a downstream project.

vi) Exemption from import duty and VAT.

For the downstream subsector, an additional 20 per cent investment allowance is applicable to points (i), (iii) and (vi). The World Bank (2002) considered these incentives very generous, given the international standards. Until recently, gas has been flared without serious penalties, which has encouraged Nigeria to flare 28 per cent of the world total, thus having one of the largest global flare programmes. To address this, efforts have been made to impose tax penalties on the volumes flared and provide tax incentives for utilizing all associated gas to encourage its commercialization.

The existing tax is not sufficiently attractive to encourage marginal gas field projects. Rather, attention is focused on the major fields, where many local operators may not have the financial resources for meaningfully participation (World Bank 2000). To encourage indigenous operations, which could be the beginning of the domestication of operations in this sector, marginal fields should be separated from major operators.

Value Added Tax (VAT)

An important landmark in tax reform in Nigeria was the adoption of the value-added tax (VAT) in January through the VAT Act No. 102 of 1993 but its implementation actually began in January 1994. Since its introduction, 15 of the 42 sections of the Act have been amended. Replacing sales tax, VAT was originally imposed on 17 categories of goods and 24 service categories. Such items as basic foods, medical and pharmaceutical products, books, newspapers and magazines, house rent, commercial vehicles and spare parts and services rendered by community and people's banks, however, were VAT free. The revenue generated was to be shared 20:80 between the federal and state government: currently it is shared 15:50:35 among the federal/state/local levels. The state's allocation was to be earmarked as 30 per cent for the state of origin, 30 per cent for consumption/destination and 40 per cent for equality of the state.

To ensure VAT's effectiveness, certain amendments were made to the existing tax structures. These include:

i) Reduction of the personal income tax burden through increased tax allowances and reduced tax rates.

ii) Monetization and taxation of fringe benefits.

iii) Deduction of R&D expenditure from the gross earnings of companies.

iv) Extension of tax-free status to companies in rural areas and granting of incentives based on the infrastructure available in the areas.

v) Reduction of company tax rate from 40 to 35 per cent, and subsequently to 30 percent.

vi) Payment of petroleum profit tax in dollars.

Although VAT is a consumption tax, a 5 per cent rate is levied on suppliers (i.e., taxable individuals) who are expected to add this amount to invoices for collection from customers and for further remittance to the VAT authorities on a monthly basis. VAT is retained at 5 per cent regardless of the stage of production or distribution. This assumes the absence of cascading effects.

Although enforced by federal legislation, VAT was excluded from federal jurisdiction by the 1999 Constitution. This was unusual because at the time of introduction, the federal government's tax administrative machinery was used to collect VAT on behalf of the state governments, as they had had jurisdiction over the sales tax that was being replaced by VAT. It is a non-discriminatory tax with regard to locally manufactured or imported goods. The Act designated the FIRS as the responsible instance for implementing VAT. In practice, however, the Nigerian Custom Service collects VAT on imports on behalf of FIRS. An important challenge to administering VAT is the Nigerian business environment. Written

records are crucial for VAT; not only do invoices need to be issued, but recordkeeping is also important. Apart from the fact that keeping records is not common in Nigeria yet, the economy is dominated by informal activities where traders are continually on 'the move'. African trading activities hinge on bargaining, and a commodity is sold at different prices, depending on the haggling powers of each buyer.

Capital Gains Tax (CGT)

Although a 20 per cent rate for capital gains tax (CGT) was introduced at its inception in 1967 (Decree No. 44 of 1967), it is currently 10 per cent. The tax is imposed on any gain accruing to any person in connection with the disposal of assets during the assessment year. It is a concurrent tax, implying that the federal government, which has jurisdiction over corporate bodies and over residents of Lagos (now Abuja), administers it through FIRS. The states are empowered to tax individuals within their territories and the board of internal revenue of each state is responsible for capital gains tax with regard to individuals. Sections 27 to 42 of the old Act detailed certain exemptions to the tax. For instance, according to Section 37, a disposed asset, which is a tangible moveable asset valued at N1000 or less, is tax-free. Capital gains accruing to religious, charitable, educational, cooperative organizations and trade unions are also exempted from CGT. Others exceptions include assets for private use, life insurance policies, stocks, shares and government securities. In 1972, however, the CGT was extended to profits accruing from sold stocks and shares, and from 1975, it became applicable to both residents and non-residents. Capital gains arising from the acquisition of company shares through a merger or takeover were also exempted from CGT in 1993, provided that no cash was paid for the acquired shares. However, foreign income and gain were taxable until 1996; by 1998 the CGT had been reduced from 20 per cent to 10 per cent.

CGT is hindered by problems such as the unwieldy scope of the Act, clumsy process of determining taxable gain, the inability to discount for inflation, and the inability of loss relief within transactions. As pointed by the Study Group on Tax Reform (2003) and CITA (2002), the complex provisions of the Act made the implementation of the tax impractical. There is confusion regarding the target of the tax; records and disclosures are scare, and the inequitable tax burden is on the buyer rather the asset owner. These problems have reduced the significance of the tax, which by 2002 accounted for about 0.1 per cent of the revenue of FIRS.

Stamp Duties

Stamp tax is applied to documents, for example, conveyance documents concerning land transfers, bonds, debentures, covenants and warrants, but not to transactions or individuals. The law was introduced during the colonial period in 1939 (Stamp Duty Act). The western regional government gave the stamp tax a local orientation when it was introduced in 1959: it later became Lagos State Law No. 16 of 1972 and now is codified in Cap 411 of the Laws of the Federation of Nigeria 1990. The tax, executed by the commissioners of stamp duties, applies an *ad valorem* rate of 1.5 per cent of the price or value mentioned in the document. Exemptions include share transfers, shipping agreements and documents from the ministries and parastatals. Although stamp duties are regulated by federal law, their administration is a mutual operation. While the federal government is responsible for the administration of the tax on companies through FIRS, the State Board of Internal Revenue (SBIR) handles its administration with regard to individuals. One of the problems facing the stamp tax is the trespassing of federal agents who also tax individuals as opposed to companies only. The penalties of N 40 and N 20 for non-disclosure and bureau trespassing, respectively, are considered to be on the low side.

Custom Duties

Custom duties in Nigeria are the oldest form of modern taxation, and their introduction dates back to 1860. Known otherwise as import duties, these represent taxes on imports into Nigeria, charged either as a percentage of the value of imports or as a fixed amount contingent on quantity. The former rate predominates. Import duties are the country's highest yielding indirect or expenditure tax. Prior to the introduction of SAP in 1986, custom duties were as high as 300 per cent but currently range between 2-75 per cent. The Nigerian Custom Services (NCS) administers the tax.

The Custom and Excise Management Act of 1958 and its amendments provided the statutory backing for the implementation of the tax. The latest revision to this Act dates from March 1995 and articulated the effective customs and excise tariffs for the period 1995-2001. Currently, the expired tariffs are still in use, which contradicts the letter of law. In most cases, consultants are called in to recommend tariff rates, but as the main authorities are not represented, this approach is non-participatory. In addition, several amendments have been made to existing tariffs, and these have been counter-productive to the objective of achieving the stability that promoted the adoption of the multi-year tariff regime in 2001. As pointed out by the Study Group on Tax Reform (2003), nearly 1,500 tariff lines were amended in the two years of the regime. Furthermore, certain amendments were considered inconsistent or subject to multiple interpretations, thus providing loopholes for lower rates of duties.

Excise Duties

Excise duties, introduced in 1962, are an *ad valorem* tax on the output of manufactured goods, as enforced by the Customs and Excise Acts of 1962 and 1965 and the Customs and Excise Tariff Decree of 1995. The tax is administered by the country's custom services. The tax handle is highly unstable, and is applied or reneged at will, as in 1998-2000, for instance, when it was revoked. Since 2001, duties have been abolished on most manufactured goods with the exception of products considered harmful such as

bleaching creams, alcohol, spirits and tobacco. Although excise duty as a tax has lost its revenue objective, it is still used to discourage consumption of harmful goods.

In summary, the argument is that the growth of government revenue from all the above sources depends on the growth of gross domestic product. Also, the growth of public revenue depends on the growth of foreign trade.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the methodology applied in the course of the research work. The mathematical or statistical and econometric tools used to collect, organize and analyze the data relevant to the study have been explained.

This chapter shows the various methods designed to gather the necessary information for the study. This chapter will also deal with models specification and estimation technique. The data for this study are obtained mainly from secondary sources, particularly from Central Bank of Nigeria statistical bulletin of various years.

3.2 Empirical Framework of the Model

The theory of tax structure development is adopted for this study. The model developed here is an extension from other studies i.e. Kunli and Pablo (2010), Gupta (2007), and Bird, Jorge and Torgler (2008), among others.

The Vector Autoregressive model is adopted for this work because it is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system variance. The VAR model sidesteps the need for structural modelling by treating every endogenous variable in the system as a function of the lagged values of all endogenous variables in the system.

This study makes use of vector autoregressive technique in estimating the effects of per capita income (PCI), share of agriculture in GDP (AGRI), Share of manufacturing in GDP (MANF), Share of service sector

in GDP (SER), Ratio of exports plus imports to GDP (OPNES), Exchange rate of naira in terms of dollar (EXR), Broad money supply (M2), Rate of inflation (INF), External debt (EXDBT), Foreign aid (FAID) and Dummy variable for political stability in Nigeria (POLT) on tax revenue as percent of GDP (TAXGDP).

(i) The VAR Model

$$y_t = c + \sum_{s=1}^{L} Bs\, y_{t-s} + u_t \quad \text{----------3.0}$$

In effect, written entirely in terms of "y" because everything in the system is presumed to be jointly endogenous. This is a system of equations, where there are as many equations as Variables, k. yt is understood to be a vector (hence, the name "vector auto regression"), the value of each of the variables at time t. Bs is a matrix of regression parameters, k by k.

(ii) Vector Notation

Note: Brandt & Williams use row-vector notation; Enders and I use column-vector notation. Consider the case of a three-variable system. We therefore wish to estimate the following model:

$$\begin{bmatrix} y1t \\ y2t \\ y3t \end{bmatrix} = \begin{bmatrix} c1 \\ c2 \\ c3 \end{bmatrix} + \sum_{s=1}^{L} \begin{bmatrix} B11 & B12 & B13 \\ B21 & B22 & B23 \\ B31 & B32 & B33 \end{bmatrix} \begin{bmatrix} y1t-s \\ y2t-s \\ y3t-s \end{bmatrix} + \begin{bmatrix} u1t \\ u2t \\ u3t \end{bmatrix}$$

Notice that the ut vector does not allow us to specify disturbance covariances, so we can estimate this system with OLS equations.

(iii) Determining Lag Length

$$E(u_t u'_t) = \sum \quad \text{----------3.1}$$

To test restrictions such as lag specification: Consider a model, UR, with s lags and a restricted model, a proper subset, with s-1. Then:

$\ell = (T - c)(\log |\sum^R| - \log |\sum^{UR}|)$ ----------3.1.1

ℓ is a likelihood ratio test, distributed as x^2 where $\log |\sum R|$ is the log of the determinant of the error covariance of the restricted model and $c = ks + 1$ is a degrees of freedom correction, based on the number of variables times the number of lags in the unrestricted model. You also may want to evaluate your specification by plotting predicted values against the true series. For a VAR (p) model with T observations, k variables, and $|\sum|$the determinant of the error covariance matrix:

$AIC(p) = T \log |s\sum| + 2(k2p + k)$ ----------3.1.2

$BIC(p) = T \log |\sum| + \log(T)(k2p + k)$ ----------3.1.3

$HQ(p) = T \log |\sum| + 2 \log(\log (T))(k2p + k)$ ----------3.1.4

These fit indices can be calculated for any model with a log-likelihood function. They allow for a probabilistic view of model selection.

Various analytical techniques would be employed to test the hypothesis for this study. In order to analyze the determinants of tax revenue in Nigeria, use would be made of the VAR model. This is because the relationship between the variables is complex and dynamic, and can only be best estimated by the use of VAR. The Vector Autoregressive model has been adopted for this work because it is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system variance. The VAR model sidesteps the need for structural

modelling by treating every endogenous variable in the system as a function of the lagged values of all endogenous variables in the system.

The VAR model assumes that the economy can be described by the following:

The VAR model is presented below:

$TGDP_t = f(PCI_{t-i}, AGRI_{t-i}, MANF_{t-i}, SER_{t-i}, OPNES_{t-i}, EXR_{t-i}, M2_{t-i}, INF_{t-i}, EXDB_{t-i}, FAID_{t-i}, POLT_{t-i}, U_{t1})$ -------- 3.2

Where

$TGDP_{t-i}$= Tax revenue as percentage of GDP in real terms at time $_{t-i}$

PCI_{t-i} = Per capita income at current factor cost at time $_{t-i}$

$AGRI_{t-i}$= Share of agriculture in GDPat time $_{t-i}$ (in percent)

$MANF_{t-i}$= Share of manufacturing in GDP at time $_{t-i}$ (in percent)

SER_{t-i} = Share of service sector in GDP at time $_{t-i}$ (in percent)

$OPNES_{t-i}$ = Ratio of exports plus imports to GDP at time $_{t-i}$

EXR_{t-i} = Exchange rate of naira in terms of dollar at time $_{t-i}$

$M2_{t-i}$ = Broad money supply at time $_{t-i}$ (in percent)

INF_{t-i} = Rate of inflation at time $_{t-i}$ (in percent)

$EXDBT_{t-i}$ = External debt at time $_{t-i}$ (in million naira)

$FAID_{t-i}$ = Foreign aid at time $_{t-i}$ (in million naira)

$POLT_{t-i}$ = Dummy variable for political stability in Nigeria at time $_{t-i}$

Note: It takes value 1 for democracy and zero otherwise

The structural form is:

$$tgdp_t = \alpha o + \alpha_1 tgdp_{t-i} + \alpha_2 pci_{t-i} + \alpha_3 agri_{t-i} + \alpha_4 manf_{t-i} + \alpha_5 ser_{t-i} + \alpha_6 opnes_{t-i} + \alpha_7 m2_{t-i} + \alpha_8 inf_{t-i} + \alpha_9 exdbt_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.1}$$

$$pci_t = \alpha o + \alpha_1 pci_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 agri_{t-i} + \alpha_4 manf_{t-i} + \alpha_5 ser_{t-i} + \alpha_6 opnes_{t-i} + \alpha_7 m2_{t-i} + \alpha_8 inf_{t-i} + \alpha_9 exdbt_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.2}$$

$$agri_t = \alpha o + \alpha_1 agri_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 manf_{t-i} + \alpha_5 ser_{t-i} + \alpha_6 opnes_{t-i} + \alpha_7 m2_{t-i} + \alpha_8 inf_{t-i} + \alpha_9 exdbt_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.3}$$

$$manf_t = \alpha o + \alpha_1 manf_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 agri_{t-i} + \alpha_5 ser_{t-i} + \alpha_6 opnes_{t-i} + \alpha_7 m2_{t-i} + \alpha_8 inf_{t-i} + \alpha_9 exdbt_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.4}$$

$$ser_t = \alpha o + \alpha_1 ser_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 agri_{t-i} + \alpha_5 manf_{t-i} + \alpha_6 opnes_{t-i} + \alpha_7 m2_{t-i} + \alpha_8 inf_{t-i} + \alpha_9 exdbt_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.5}$$

$$opnes_t = \alpha o + \alpha_1 opnes_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 agri_{t-i} + \alpha_5 manf_{t-i} + \alpha_6 se_{t-i} + \alpha_7 m2_{t-i} + \alpha_8 inf_{t-i} + \alpha_9 exdbt_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.6}$$

$$m2_t = \alpha o + \alpha_1 m2_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 agri_{t-i} + \alpha_5 manf_{t-i} + \alpha_6 se_{t-i} + \alpha_7 opnes_{t-i} + \alpha_8 inf_{t-i} + \alpha_9 exdbt_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.7}$$

$$inf_t = \alpha o + \alpha_1 inf_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 agri_{t-i} + \alpha_5 manf_{t-i} + \alpha_6 se_{t-i} + \alpha_7 opnes_{t-i} + \alpha_8 m2_{t-i} + \alpha_9 exdbt_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.8}$$

$$exdbt_t = \alpha o + \alpha_1 exdbt_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 agri_{t-i} + \alpha_5 manf_{t-i} + \alpha_6 se_{t-i} + \alpha_7 opnes_{t-i} + \alpha_8 m2_{t-i} + \alpha_9 inft_{t-i} + \alpha_{10} faid_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.9}$$

$$faid_t = \alpha o + \alpha_1 faid_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 agri_{t-i} + \alpha_5 manf_{t-i} + \alpha_6 se_{t-i} + \alpha_7 opnes_{t-i} + \alpha_8 m2_{t-i} + \alpha_9 inft_{t-i} + \alpha_{10} exdbt_{t-i} + \alpha_{11} polt_{t-i} + U_{ti} \text{ ----------3.2.10}$$

$$polt_t = \alpha o + \alpha_1 polt_{t-i} + \alpha_2 tgdp_{t-i} + \alpha_3 pci_{t-i} + \alpha_4 agri_{t-i} + \alpha_5 manf_{t-i} + \alpha_6 se_{t-i} + \alpha_7 opnes_{t-i} + \alpha_8 m2_{t-i} + \alpha_9 inft_{t-i} + \alpha_{10} exdbt_{t-i} + \alpha_{11} faid_{t-i} + U_{ti} \text{ ----------3.2.11}$$

This test assumes that:

$\mu_{1t} \sim N(0, \delta^2)$ and $\mu_{2t} \sim N(0, \delta^2)$ ----------3.3

That is, the error term in the sub-period regression are normally distributed with the same variance δ^2.

3.3 Vector Error Correction Models

These are most associated with the VAR approach to co-integration, as before we can form the VECM; we need to ensure the variables are co-integrated, as with the bi-variate ECMs. There are other considerations though in this case, as if there is more then one co-integrating vector, we can in theory have more than one error correction term. However apart from this the VECM has the same properties as with the bi-variate ECM.

If co-integration is proven to exist, then the third step requires the construction of error correction mechanism to model dynamic relationship. The purpose of the error correction model is to indicate the speed of adjustment from the short-run equilibrium to the long-run equilibrium state. The greater the co-efficient of the parameter, the higher the speed of adjustment of the model from the short run to the long run. We represent equation (3.4) with an error correction form that allows for inclusion of long-run information thus, the error correction model (ECM) can be formulated as follows:

$$\Delta Fd_t = \alpha_0 + \sum_{t=1}^{n} \alpha 1 + \Delta Inf_{t-1} + \sum_{t-1}^{n-1} \alpha 2 \, \Delta Ex_{t-1} + \lambda Pr_{t-1} \, u_t \text{ ---------- 3.4}$$

Where

Δ is the first difference operator

λ is the error correction coefficient and the remaining variables are as defined above.

3.4 Impulse Response Function

An impulse response function traces out the response of a variable of interest to an exogenous shock. Often the response is portrayed graphically, with horizon on the horizontal axis and response on the vertical axis. In the vast majority of applications, the exogenous shock is unobservable because it is a linear combination of unobservable regression disturbances. In other words, the impulse response functions can be used to produce the time path of the dependent variables in the VAR, to shocks from all the explanatory variables. If the system of equations is stable any shock should decline to zero, an unstable system would produce an explosive time path.

3.5 Variance Decomposition

Variance decomposition is an alternative method to the impulse response functions for examining the effects of shocks on the dependent variables. This technique determines how much of the forecast error variance for any variable in a system, is explained by innovations to each explanatory variable, over a series of time horizons. Usually own series shocks explain most of the error variance, although the shock will also affect other variables in the system. It is also important to consider the ordering of the variables when conducting these tests, as in practice the error terms of the equations in the VAR will be correlated, so the result will be dependent on the order in which the equations are estimated in the model.

3.6 Stationarity Test

The study has utilized the Dicker-Fuller (DF) and augmented Dicker-Fuller (ADF) regressions to perform the unit root tests for the variables, namely per capita income (PCI), share of agriculture in GDP (AGRI), share of manufacturing in GDP (MANF), share of service sector in GDP (SER), ratio of exports plus

imports to GDP (OPNES), exchange rate of naira in terms of dollar (EXR), broad money supply (M2), rate of inflation (INF), external debt (EXDBT), foreign aid (FAID), dummy variable for political stability in Nigeria (POLT), and tax revenue as percent of GDP (TAXGDP).This is because the ADF allows for serial correlation in the error term. Here, the observations are firstly tested at levels. To know whether the data is stationary, the values of ADF statistics was compared with the Mackinnon critical values. If an ADF value is greater then Mackinnon critical value at choosing levels of significant, say 5% and then we will reject the null hypothesis of non-stationary and concluded that the data is stationary. In other word, if the series is I(1), it is deemed to have a unit root or it follows a random walk process. This situation does not arise if its first difference is I(0). It is termed stationary. Naturally the ADF test is performed by testing o = 0 against the one-sided alternative, o > 0. The general form of ADF test is estimated by the following regression:

$$\Delta^{yt} = \alpha^0 + \alpha^1 y^{t-1} + \sum_{i-1}^{n} \alpha \Delta y^i + e^t \quad \text{---------- 3.4.1}$$

$$\Delta_{yt} = \alpha_0 + \alpha_1 y_{t-1} + \sum_{n=1}^{n} \alpha 1 \Delta y_i + \delta_t + e_t \quad \text{---------- 3.4.2}$$

Where

Y is a time series, t is a linear time trend, Δ is the first difference operator, α0 is a constant, n is the optimum number of lags in the dependent variable and e is the random error term; and the Phillip-Perron (PP) is equation is thus:

$$\Delta_{yt} = \alpha_0 + \alpha_1 y_{t-1} + e_t \quad \text{---------- 3.4.3}$$

3.7 Co-integration Test

Following ADF tests, if all variables are I(1), the co integration test is usually undertaken. The existence of the co-integrating relationship implies that the variables share mutual stochastic trend and are linked in a common long-run equilibrium. In this research work, test for co-integration will employ the Engle-granger co integration test. This test is only valid when one is working with series that are known to be non-stationary. The test is undertaken by fist running an OLS regression, saving the residuals and then running the ADF test on the residual to determine if it is stationary. The time series are said to be co integrated if the residuals is it-self stationary. In effect the non-stationary 1(1) series have cancelled each other out to produce a stationary 1(0) residual.

The basic idea behind cointegration is that if, in the long-run, two or more series move closely together, even though the series themselves are trended, the difference between them is constant. It is possible to regard these series as defining a long run equilibrium relationship, as the difference between them is stationary (Hall and Henry, 1989). A lack of co-integration suggests that such variables have no long-run relationship. We employ the maximum likelihood test procedure established by Johansen and Juselius (1990) and Johansen (1991). Specifically, if Yt is a vector of n stochastic variables, then there exists a p-lag vector auto regression with Gaussian errors of the following form:

Johansen's methodology takes its starting point in the vector auto regression (VAR) of order P given by

$$Y_t = \mu + \Delta 1\, Y_{t-1} + - - - + \Delta P_{yt-1+t} \text{ ---------- } 3.5$$

Where

Yt is an nx1 vector of variables that are integrated of order commonly denoted (1) and εt is an nx1 vector of innovations.

This VAR can be rewritten as

$$\Delta Y_t = \mu + E_{yt-1} + \sum_{i-1}^{p-1} \tau i \, \Delta y_{t-1} + {}_t \text{ ---------- 3.5.1}$$

Where

$$\prod = \sum_{i-1}^{p} Ai - 1$$

$$\text{And } \tau i = - \sum_{j=i+1}^{p} Aj \text{ ---------- 3.5.2}$$

To determine the number of co-integration vectors, Johansen (1988, 1989) and Johansen and Juselius (1990) suggested two statistic test, the first one is the trace test (λ trace). It tests the null hypothesis that the number of distinct co-integrating vector is less than or equal to q against a general unrestricted alternatives q = r. the test calculated as follows:

$$\lambda \text{ trace } (r) = {}^{-T}\sum_{i=r+1} \text{ in } \{ 1- \lambda t) \text{ ---------- 3.5.3}$$

Where

T is the number of usable observations, and the λ1,s are the estimated eigenvalue from the matrix.

The Second statistical test is the maximum eigenvalue test (λ max) that is calculated according to the following formula

$$\lambda \max (r, r + 1) = -T \ln (1 - \lambda r + 1) \text{ ---------- 3.5.4}$$

The test concerns a test of the null hypothesis that there is r of co-integrating vectors against the alternative that r + 1 co-integrating vector.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.1 Introduction

This chapter deals with the presentation and analysis of results and findings of determinants of tax revenue in Nigeria from 1986 to 2010. We shall present and analysis findings of unit root test, co-integration test and Vector Auto-Regressive results.

4.2 Stationary and Co-integration Test Results

To apply any econometric technique, the variables must be subjected to unit root test. This is to avoid misleading results. In performing the stationarity test we used a maximum lag of 2, and excluded trend. We use the augmented Dickey Fuller (ADF) test to find the existence of unit root in each of the time series. The result shows that all variables were stationary after first difference as indicated in table 4.1 and 4.2:

Table 4.1: Stationary Test on Variables at levels

Variables	ADF statistics	1 % C V	5% C V	10% C V	Remark
PCI	-2.185796	-3.7497	-2.9969	-2.6381	Not stationary
AGRI	-2.413935	-3.7497	-2.9969	-2.6381	Not stationary
MANF	-0.620811	-3.7497	-2.9969	-2.6381	Not stationary
SER	-0.768338	-3.7497	-2.9969	-2.6381	Not stationary
OPENES	-2.754218	-3.7497	-2.9969	-2.6381	Not stationary
EXR	-0.402903	-3.7497	-2.9969	-2.6381	Not stationary
M2	-1.593344	-3.7497	-2.9969	-2.6381	Not stationary
INF	-2.257660	-3.7497	-2.9969	-2.6381	Not stationary
EXDBT	-2.170955	-3.7497	-2.9969	-2.6381	Not stationary
FAID	-2.296807	-3.7497	-2.9969	-2.6381	Not stationary
POLT	-0.909091	-3.7497	-2.9969	-2.6381	Not stationary
TGDP	-2.177903	-3.7497	-2.9969	-2.6381	Not stationary

Source: Author's Calculation using Eviews 4.0

Table 4.2: Stationary Test on Variables at first difference

Variables	ADF statistics	1 % C V	5% C V	10% C V	Remark
PCI	-3.378558	-3.7667	-3.0038	-2.6417	Stationary
AGRI	-4.646437	-3.7667	-3.0038	-2.6417	Stationary
MANF	-3.522213	-3.7667	-3.0038	-2.6417	Stationary
SER	-3.431455	-3.7667	-3.0038	-2.6417	Stationary
OPENES	-5.882811	-3.7667	-3.0038	-2.6417	Stationary
EXR	-2.985959	-3.7667	-3.0038	-2.6417	Stationary
M2	-3.570488	-3.7667	-3.0038	-2.6417	Stationary
INF	-3.726176	-3.7667	-3.0038	-2.6417	Stationary
EXDBT	-3.223266	-3.7667	-3.0038	-2.6417	Stationary
FAID	-3.449887	-3.7667	-3.0038	-2.6417	Stationary
POLT	-3.316625	-3.7667	-3.0038	-2.6417	Stationary
TGDP	-3.299043	-3.7667	-3.0038	-2.6417	Stationary

Source:Author's calculation using Eviews 4.0

We started the co-integration analysis by employing the Johansen co-integration test. The results in appendix A reported for the trace and maximum eigenvalue statistics show ' the null-hypothesis of no-

co-integrating is rejected at both 1% and 5% levels of significance. The trace test statistics reveal that there is presence of co-integrating relationship. The maximal eigenvalue statistics suggests at most five co-integrating relationships among variables. The conclusion drawn from this result is that there exists a long-run equilibrium relationship among the variables in questioned.

4.3 Empirical Results and Discussion

In order to gain possession of both the short run and long run relationship that exist among the variables after confirming the existence of co-integration, we moved further to investigate the dynamic relationship among the variables by specifying the error correction model. The vector error correction result in table 4.3 shows the estimation of the impact of per capita income (PCI), share of agriculture in GDP (AGRI), share of manufacturing in GDP (MANF), share of service sector in GDP (SER), ratio of exports plus imports to GDP (OPNES), exchange rate of naira in terms of dollar (EXR), broad money supply (M2), rate of inflation (INF), External debt (EXDBT), Foreign aid (FAID), and dummy variable for political stability in Nigeria (POLT) on-tax revenue as per cent of GDP (TGDP).

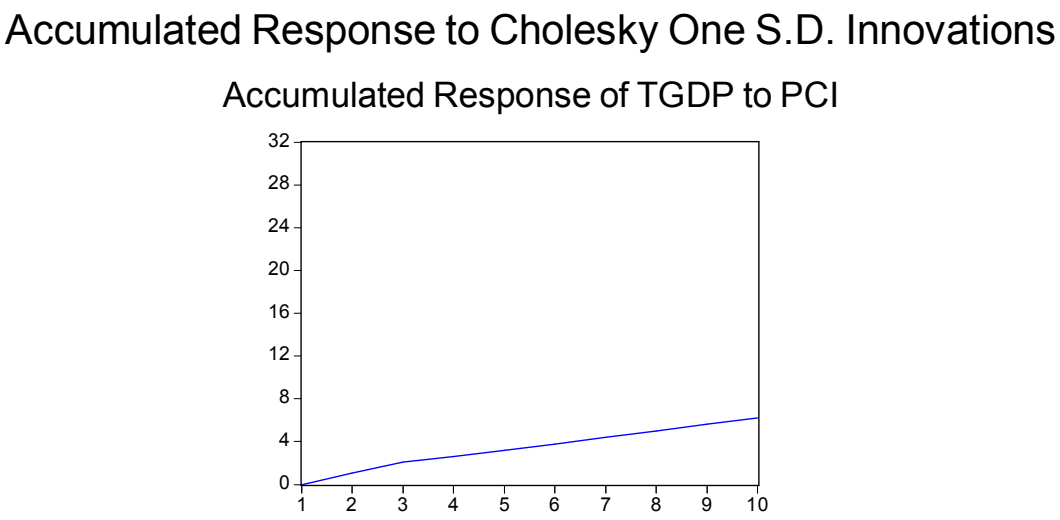
Table 4.3 Error Correction Results of TGDP

REGRESSOR	COEFFICIENT	T-VALUES
INTERCENT		
D(TGDP(-1))	0.910625	0.71380
D(PCI(-1))	0.034358	0.03229
D(AGRI(-1))	-0.074356	0.31637
D(MANF(-1))	2.996239	4.12925
D(SER(-1))	13.82241	18.6112
D(OPENES(-1))	-0.247460	0.16254
D(EXR(-1))	0.090255	0.04519
D(M2(-1))	0.065994	0.03547
D(INF(-1))	0.003460	0.04955
D(EXDBT(-1))	-1.86	8.7
D(FAID(-1))	-0.02	0.03
D(POLT9-1))	6.51	3.3
ECM(-1)	-0.78	0.44

R-SQUARE=0.22 S.E.=3.479864, F-STAT=0.621666

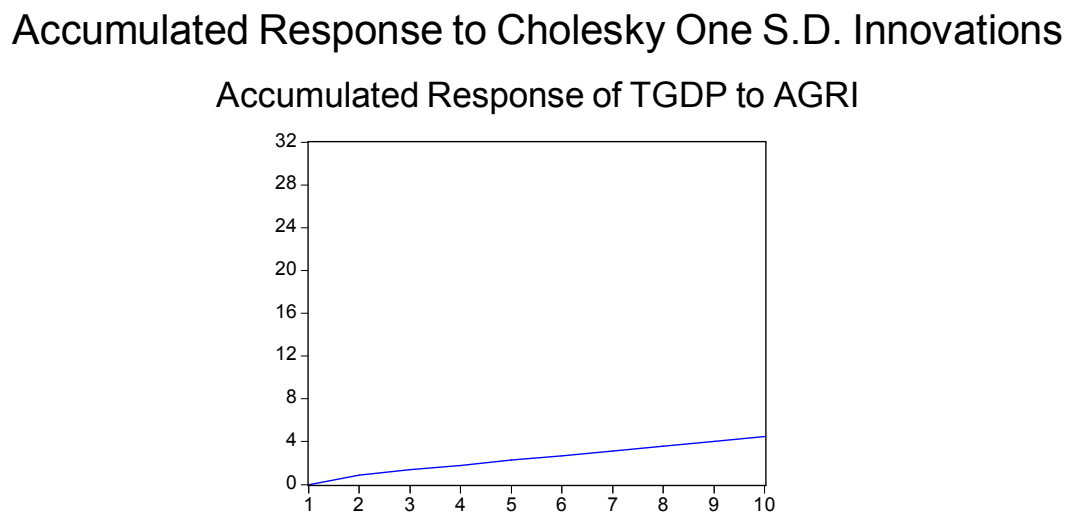
PER CPITA INCOME (PCI)

Per capita income has the positive sign in our regression indicating that tax to GDP ratio increase with the increase of income. This is in line to the a prior expectation as it is expected to be positively correlated with economic development, government's ability to collect taxes and citizen's ability to pay those increases but theory also suggests that the impact of an increase in income is also different on different categories of taxes. The response figure indicated that, the response of Tax revenue as percentage of GDP(TGDP) to per capita income (PCI) is positive and continue to expend further as income increases as shown in the accumulated impulse response of TGDP to PCI below.



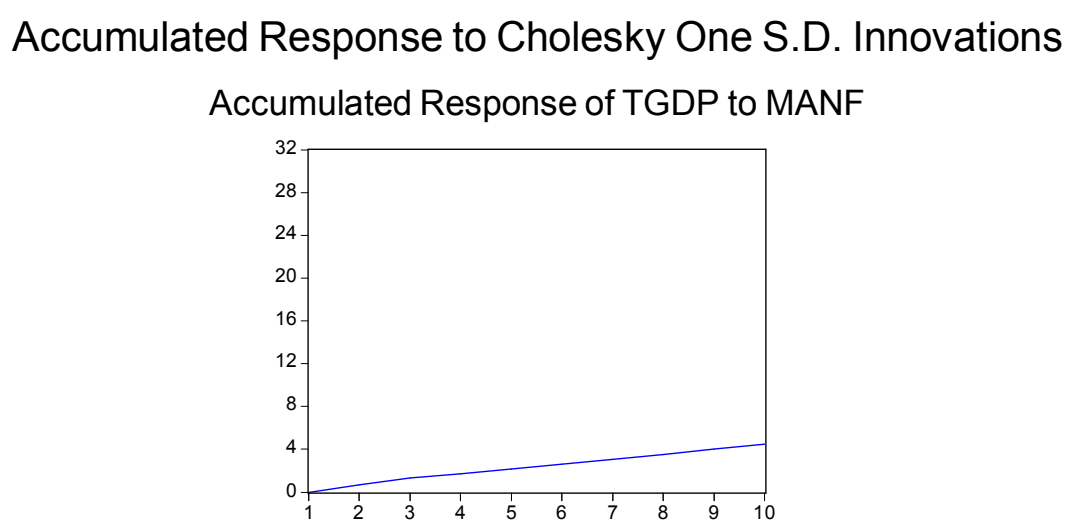
Share of Agriculture to Gross Domestic Product (AGRI)

The results indicate that agriculture is negatively related to the tax revenue as percent to GDP. Since in developing countries, there are normally small farmers and subsistence agriculture, which does not generate large taxable surpluses. Many countries are unwilling to tax the main foods that are used for subsistence. Along this agriculture sector is difficult to tax because it is largely informal. In case of Nigeria, it is also negatively related but it is statistically insignificant at conventional 5 and 10 percent level indicating that agriculture sector is unrelated in our base equation as the determinant of tax to GDP ratio. Stotsky and WoldeMariam (1997), Ghura (1998) and Gupta (2007) also found the negative relation. The accumulated impulse response figure indicated that, the response of Tax revenue as percentage of GDP (TGDP) to agriculture (AGRI) is zero in the first quarter but continue to be positive throughout the quarters.



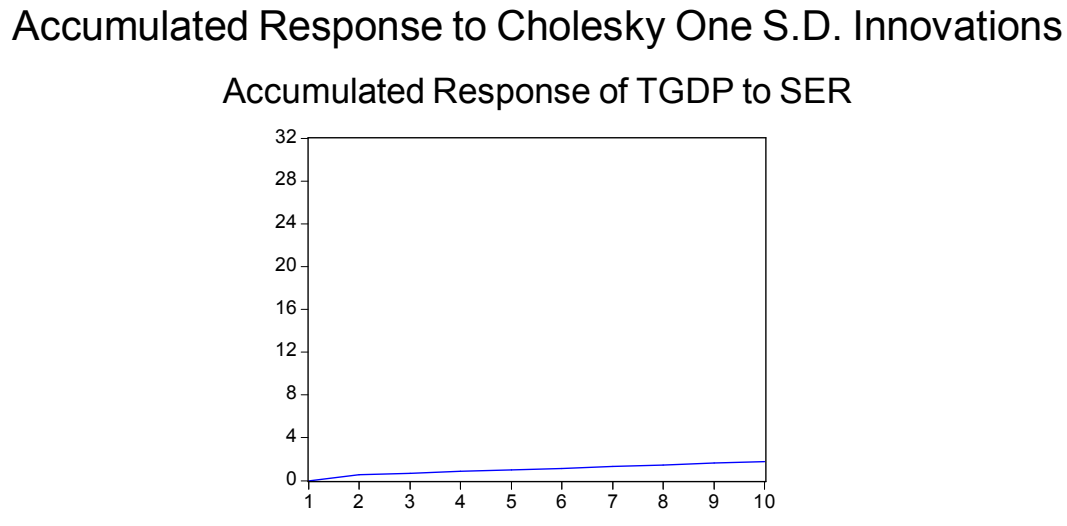
Share of Manufacturing in Gross Domestic Product (MANF)

Manufacturing sector in our results is positively related as predicted in theory that manufacturing enterprises are typically easier to tax than agriculture since business owners typically keep better books and records and is statistically significant in case of Nigeria. The response of Tax revenue as percentage of GDP (TGDP) to manufacturing shock is interesting. A shock to the manufacturing is first followed by a rise in Tax revenue as percentage of GDP (TGDP) in the 2nd quarter and the effect continue to increase as the horizon expands to the 10th quarter.



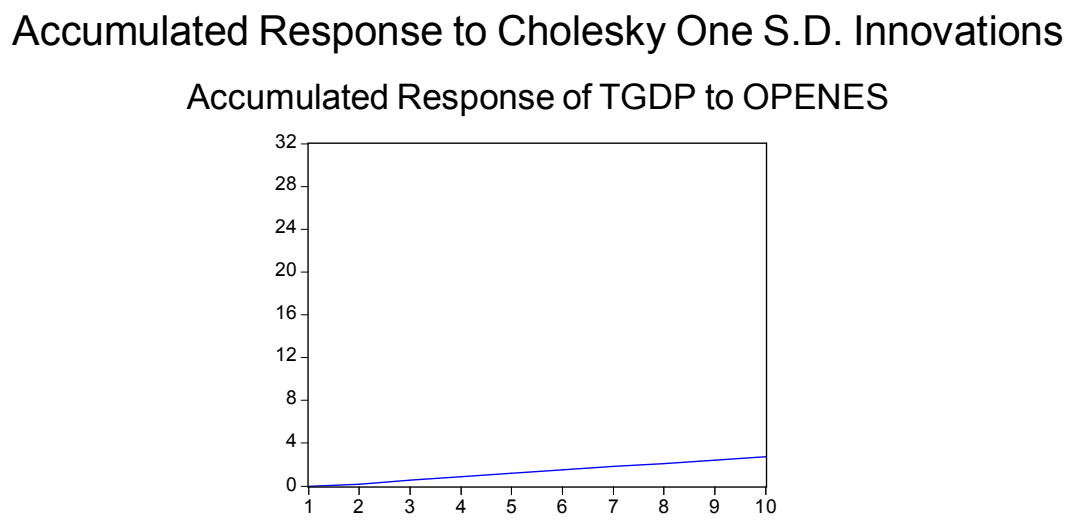
Share of Service Sector in Gross Domestic Product (SER)

Service sector in our results has the positive sign and statistically significant in influencing Tax revenue as expected. The response of tax revenue to share of services in GDP shock is uninteresting. A shock to the share of services is first followed by a rise in tax revenue in the 2nd quarter and the effect continues to increase at a very low rate as the horizon expands to the 10th quarter.



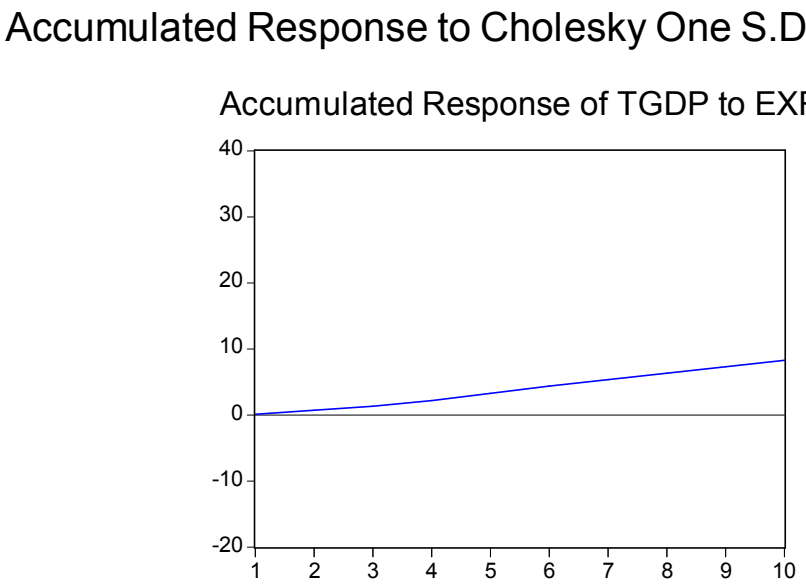
Ratio of Exports plus Imports to Gross Domestic Product (OPENES)

Results also indicate that degree of openness exerts a negative impact on the tax ratio in Nigeria. This result is contrary to our a priori expectation as it is expected exerts a larger impact on the tax revenue. Literature also suggests that certain features of international trade make it more amenable to taxation than domestic activities and also in many developing countries, the international trade sector is typically the most monetized sector of economy because the entrance and exit to the country takes place in specified locations. Farhadian-Lorie and Kartz (1989) have noted that trade taxes have historically been the major source of government revenue during the early stages of economic development because they are easier to collect. Ghura (1998) and Gupta (2007) also found the positive effect. This may be due to the nature of the Nigeria economy as Nigeria depends largely on importation and consumption of foreign products. The response as denotes by the accumulated response of TGDP to OPENES below.



Exchange Rate of Naira (EXR)

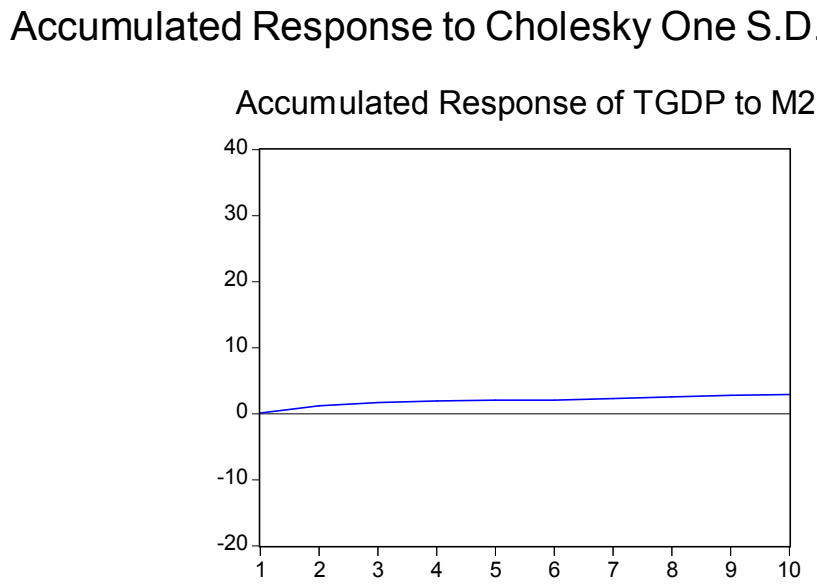
Exchange rate is positively related to tax revenue collection. This is common in theory because theory suggest that devaluation of exchange rate- typically brought by the contractionary financial policies – would be expected to have a favourable effect on overall economic activity and thus to increase tax revenue, and same as an overvaluation of exchange rate typically brought about by expansionary financial policies would be expected to adversely affect overall economic activities, and thus to lower tax revenue. The response function revenue indicated that, the response of tax to exchange rate consistently positive and increasing throughout the horizon.



Broad Money Supply (M2)

Monetization of the economy captured by the variable M2 is positively related to the tax revenue collected and is statistically significant. Theory also suggests that documentation of the economy

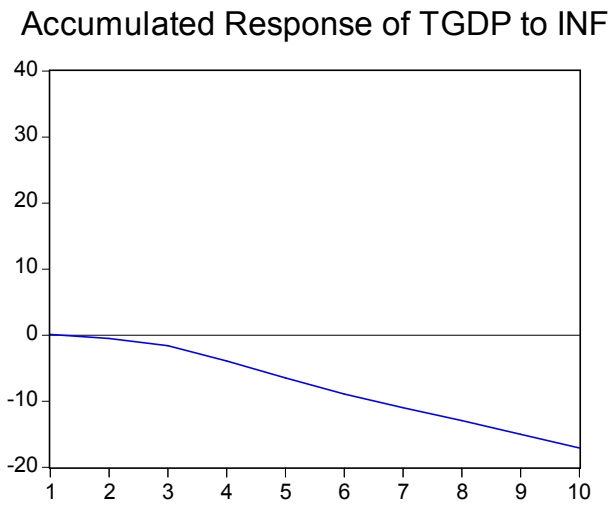
increases formal transaction activity and increase tax revenue. This relationship is also proved by the shock in tax revenue as a result of innovations in broad money supply by the monetary authority.



Rate of Inflation (INF)

Inflation is not related with tax revenue collection in case of Nigeria as it is statistically insignificant. It has a positive sign base on the vector error correction regression result which is surprisingly, as theory suggests a negative sign. But the impulse response denotes negative movement as the theory said. There was no response in period one but as inflation rate expend, the response begging to increase negatively throughout the period.

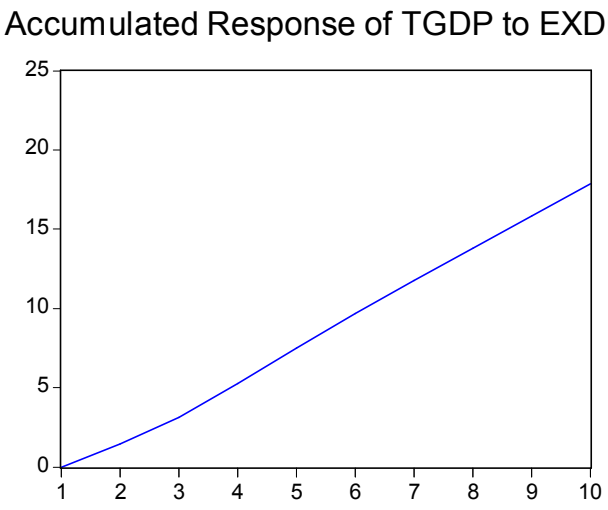
Accumulated Response to Cholesky One S.D. Innovations



External Debt (EXDBT)

External debt in this regression is negatively related to the tax revenue collection but statistically significant. The negative relation does not match with the theory that with a large debt, the government needs more taxes to raise the revenue necessary to service it. A shock to the external debt is first followed by a rise in tax revenue in the first quarter and the effect continues to increase as the horizon expands to the 10th quarter. This seems to be in line to our a priori expectation and economic theories.

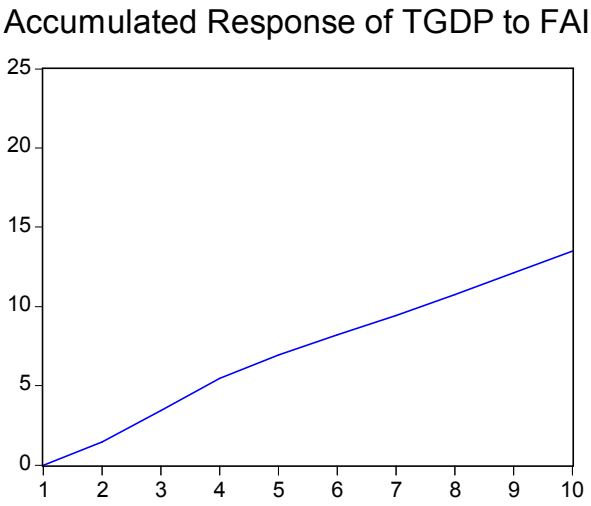
Accumulated Response to Cholesky One S.D. Innovations



Foreign Aid (FAID)

Foreign aid is negatively related to tax ratio in this regression. Reason for this is that the increase in foreign resource inflow make the government of developing countries relax and due to the fear of any political reaction they do not take decisions for domestic resources mobilization, so there is a general concern that aid will decrease taxation revenue in recipient countries but this variable is not related to tax revenue collection in Nigeria since it is statistically insignificant.

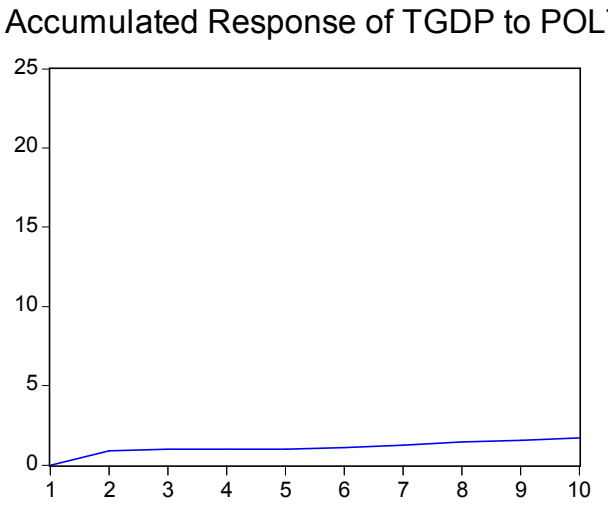
Accumulated Response to Cholesky One S.D. Innovations



Dummy Variable for Political Stability in Nigeria (POLT)

Dummy variable for political stability shows that as democracy increases, tax to GDP ratio also increases in Nigeria as people's compliance to pay taxes increases due to political stability. This can also be seen by the impulse response. This variable is also statistically significant. R^2 is 0.22 and F-statistic is 0.622 and both are statistically insignificant which implies that the explanatory variables are insignificantly explaining the dependent variable.

Accumulated Response to Cholesky One S.D. Innovations



4.4 Variance Decomposition

The forecast variance decomposition provides information on the dynamic behaviour of the variables in the system. It decomposes historical in the variables and attributes same to the effect of all the variables in the system. The full estimate of findings of the variance decomposition is reported in the appendix.

Table 4.4 Variance Decomposition of LPCI

Period	S.B	TGDP	PCI	AGRI	MANF	SER
T=1	69.47907	84.62126	15.37874	0.000000	0.000000	0.000000
T=2	95.54685	84.93533	8.637752	2.260516	4.055440	0.110957
T=4	130.5286	88.56083	5.298935	1.588341	4.424615	0.127277
T=6	156.9378	89.48112	4.121232	1.468191	4.841230	0.088231
T=8	179.8417	89.99357	3.530534	1.405019	5.003094	0.067787
T=10	200.2311	90.33809	3.163114	1.357431	5.086281	0.055081

Period	S.B	OPENES	EXR	M2	INF	EXDBT
T=1	2.874520	0.000000	0.000000	0.000000	0.000000	0.000000
T=2	4.400127	3.629136	2.532375	6.602812	1.566966	10.46502
T=4	6.716204	7.610485	3.366730	3.599210	14.91784	19.92988
T=6	9.350909	6.050817	4.553342	1.864846	21.96326	26.73007
T=8	11.09259	5.686452	4.909275	1.399317	22.36435	29.32053
T=10	12.55716	5.578383	5.033804	1.158606	22.86867	30.64849

Period	S.B	FAID	POLT
T=1	2.668576	0.000000	0.000000
T=2	4.410860	10.43272	4.195665
T=4	6.899858	21.22895	1.737678
T=6	8.482399	19.37557	1.169335
T=8	9.714518	18.19019	0.948006
T=10	10.29234	18.00614	0.863609

Source: Author's calculation using Eviews 4.0

From table 4.4 own shocks constitute a weak source of variation in per capita income forecast errors declining from 15.4 percent to 3.2 percent in period 10. This suggest that changings in per capita income is persistent. External debt constitutes a source of tax revenue variation. External debt by period 10 explains 30.6 percent of tax revenue while inflation rate accounts for 22.8 percent tax revenue variation. Foreign aid accounts for 18 percent, while manufacturing, exchange rate, and ratio of exports plus imports to GDP accounts for 5.1 percent, 5.0 percent and 5.6 percent respectively. Agriculture and Dummy variable for political stability in Nigeria influences tax revenue less in the long run as they account for 1.4 percent and 0.9 percent source of tax revenue variation respectively.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

Tax revenue collection is one significant issue of economic development among others. It has been said that 'what the government gives it must first take away'. The economic resources available to society are limited, and so an increase in government expenditure normally means a reduction in private spending. Taxation is one method of transferring resources from the private to the public sector, but there are others i.e. creation of more money, to charge for the goods and services it provides or to borrow. Taxation has its limits as well, but they considerably exceed the amounts that can be raised by resorting to the printing press, charging consumers directly, or borrowing. So while governments often use all four methods of raising resources, taxation is usually by far the most important source of government revenue.

The major objective of this thesis is to examine empirically the determinants of tax revenue in Nigeria over a period of time. While to capture the variations observed in tax revenue performance in Nigeria, this study takes economic policy variables, external variables and social indicators along with elements of tax base. We also reviewed theoretical and empirical literatures on the determinants of tax revenue. Vector error correction model was adopted for this thesis

This study has attempted to analyse the determinants of tax revenue in Nigeria by looking at the determinants - share of manufacturing in GDP, share of service sector in GDP, exchange rate of naira in terms of dollar, broad money supply, rate of inflation, and dummy variable for political stability in Nigeria, Per capita income, share of agriculture in GDP, ratio of exports plus imports to GDP, external debt, and foreign aid.

The co-integration result indicated the presence of co-integration. That is, there is long run equilibrium relationship between the variables in questioned. In looking at the impact of all the variables on tax

revenue, the vector error correction models were adopted and the results shows that share of manufacturing in GDP (MANF), share of service sector in GDP (SER), exchange rate of naira in terms of dollar (EXR), broad money supply (M2), rate of inflation (INF), and dummy variable for political stability in Nigeria (POLT), are significant determinants of tax efforts with expected signs of the estimated coefficients. per capita income (PCI), share of agriculture in GDP (AGRI), ratio of exports plus imports to GDP (OPNES), external debt (EXDBT), and foreign aid (FAID) turn out to be insignificant.

5.2 CONCLUSION

The self sufficiency of Nigeria depends upon the ability of Nigerian government to increase tax revenue. This study attempted to identify the determinants of tax revenue performance over 24 years in Nigeria through vector error correction analysis. A relatively large set of factors that can potentially influence tax revenue performance such as share of manufacturing in GDP, share of service sector in GDP, exchange rate of naira in terms of dollar, broad money supply, rate of inflation, dummy variable for political stability in Nigeria, per capita income, share of agriculture in GDP, Ratio of exports plus imports to GDP, external debt, and foreign aid.

A major issue in public economics is the appropriate design of a tax system. Such a system is usually viewed as balancing the various desirable attributes of taxation in that taxes must be raised in a way that treats individuals fairly, that minimizes interference in economic decisions, and that does not impose undue costs on tax payers or tax administrators.

In order to deal with such issues, the thesis addressed some analytical issues regarding the determinants of tax revenue in Nigeria. Some interesting results were obtained. A priori analysis indicates that, per capita income, manufacturing, services, exchange rate, monetisation proxy by broad money supply, and political stability should be positive to tax revenue. The result indicates that, some of the variables mentioned above seem to affect total tax revenues. The effect of the individual variable on tax revenue

varies, but in general, they affect taxes. On the other hand, agriculture which is expected to be positive is negatively related to tax revenue. Openness and external debt also influences tax revenue negatively. Finally, the rapid speed of adjustment in the error correction model is also not worthy.

5.3 POLICY RECOMMENDATIONS

Based on the above findings, it is recommended as follows:

Tax collection requires consistency in implementation and consistency in implementation comes with political stability. Taxes and law and order situation is indirectly related. A country with stable law and order situation would mean greater investment being brought in, more jobs being created, resulting in greater purchasing power on the part of the consumers who effectively have to pay tax. Awareness to the people on the benefits of paying taxes which increase the tax morale of the people should be brought as long run policy implication.

Diversification of the economy: In order to ensure an improvement in Federal Government's revenue, there is a need for the diversification of the economy from being dependent on oil as the major source of revenue and foreign exchange earnings. Government needs to invest in the non-oil sector so as to be able to strike a balance between the oil and the non-oil sectors of the economy. Removing all constraints to private investments in the non-oil sectors would be a good measure for such diversification. These would also strengthen the tax base of the country as well as increase tax revenue.

There is an urgent need to upgrade the basic infrastructure to a functional level. Adequate power, good roads and water supplies must be ensured for any meaningful industrialization and export trade to take place. To ensure long-term growth and prosperity, Nigeria must use its resources wisely, invest in advanced technology and rebuild the infrastructure without which the economy will not gain from the "power of productivity". Also there should be establishment of more export processing zones in

strategic locations within the country to facilitate increased production of manufactured goods duty free. All these will strengthen the base and increase tax revenue in the country.

The restructuring of the tax system for efficiency and effectiveness is necessary. Tax rates should be reviewed to discourage evasion. Usually a taxpayer will weigh the penalty of tax evasion if caught against the amount of taxes. If the difference is significant; he/she will prefer to pay the tax but where the difference is small he/she will take the risk of not paying.

Nigeria has had few reforms of tax administration. There have been reforms of the structure and rates. A reform of the tax structure should be accompanied by competent administrative reforms. This requires that the staff in the tax department should be equipped with good working facilities which include good offices and paid a living wage and not minimum wage. Cost minimization by government by way of paying staff of the department minimum wages should stop. The cost should not be low simply because taxes are collected under difficult conditions.

There should be proper use of the excess crude account. The government of this country should ensure that excesses from oil should be properly managed and spent if the need arise on productive activities that will be improve the physical asset and the productive capacity if this country. Finally, corruption and wasteful expenditures by government officials should be checked and discouraged.

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Appendix A

Table 1:

Cointegration Result

Date: 11/04/12 Time: 13:53

Sample(adjusted): 1986 2010

Included observations: 22 after adjusting endpoints

Trend assumption: Linear deterministic trend

Series: TGDP PCI AGRI MANF SER OPENES EXR M2 INF EXDBT FAID POLT

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.999997	764.4180	94.15	103.18
At most 1 **	0.999987	486.3771	68.52	76.07
At most 2 **	0.999085	239.2168	47.21	54.46
At most 3 **	0.942227	85.28038	29.68	35.65
At most 4 **	0.611425	22.55328	15.41	20.04
At most 5	0.076774	1.757379	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level

Trace test indicates 5 cointegrating equation(s) at both 5% and 1% levels

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.999997	278.0409	39.37	45.10
At most 1 **	0.999987	247.1603	33.46	38.77
At most 2 **	0.999085	153.9364	27.07	32.24
At most 3 **	0.942227	62.72710	20.97	25.52
At most 4 **	0.611425	20.79590	14.07	18.63
At most 5	0.076774	1.757379	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level

Max-eigenvalue test indicates 5 cointegrating equation(s) at both 5% and 1% levels

Appendix B

Table 2:

Vector Error Correction Estimates

Date: 04/18/12 Time: 20:15

Sample(adjusted): 1988 2010

Included observations: 23 after adjusting endpoints

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

Cointegrating Eq:	CointEq1
TGDP(-1)	1.000000
PCI(-1)	0.035145
	(0.00254)
	[13.8613]
AGRI(-1)	0.264532
	(0.06971)
	[3.79450]
MANF(-1)	-5.721800
	(0.62709)
	[-9.12440]
SER(-1)	-6.149948
	(1.31504)
	[-4.67663]

OPENES(-1)	-0.398185
	(0.07405)
	[-5.37725]
C	2.777611

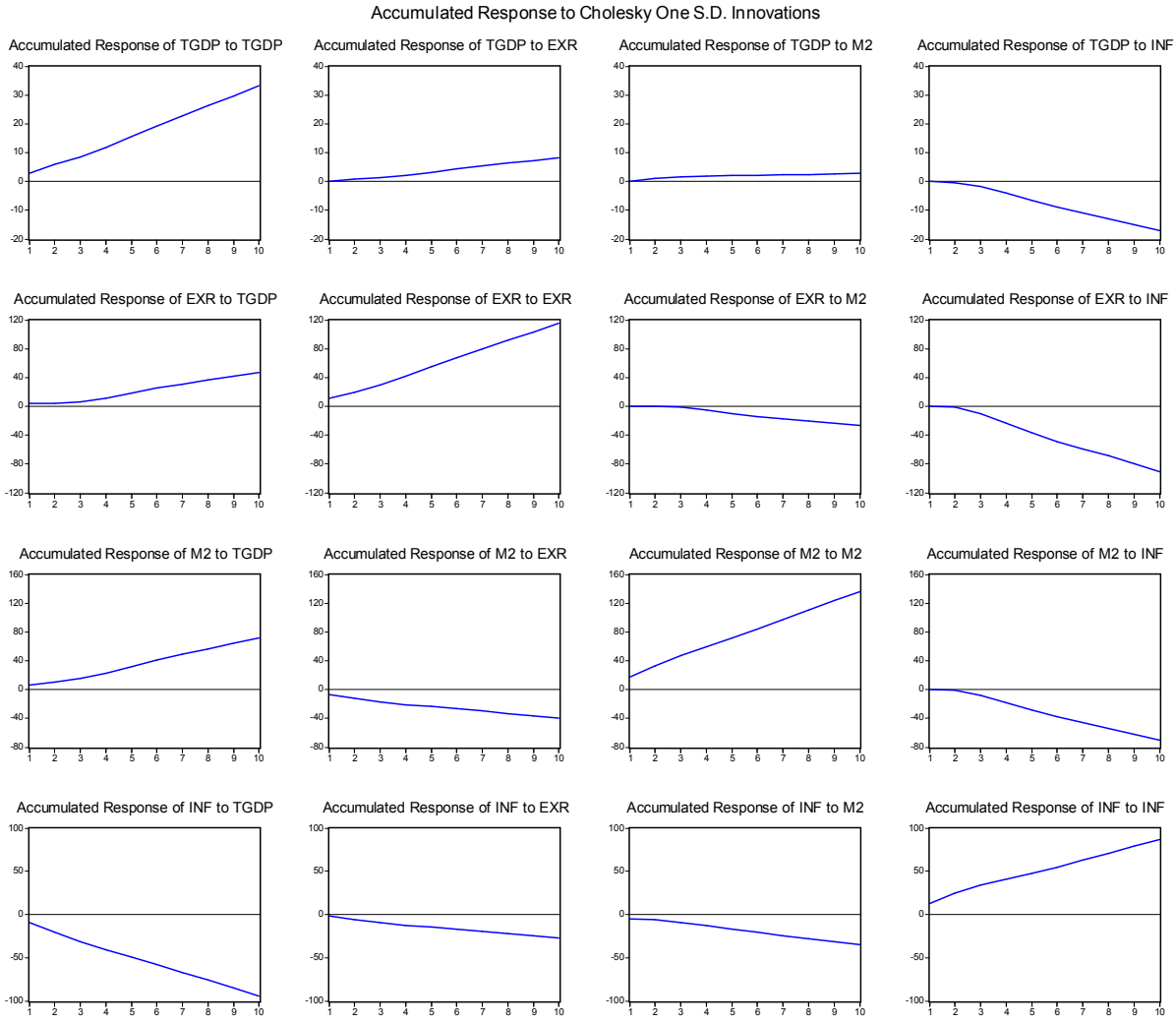
Error Correction:	D(TGDP)	D(PCI)	D(AGRI)	D(MANF)	D(SER)	D(OPENES)
CointEq1	-0.780691	11.34228	-0.502872	0.045811	0.014565	0.982005
	(0.44530)	(8.83592)	(0.49630)	(0.02920)	(0.01181)	(0.64937)
	[-1.75319]	[1.28366]	[-1.01325]	[1.56863]	[1.23352]	[1.51225]
D(TGDP(-1))	0.910625	-13.37365	0.557813	0.020398	-0.003057	-0.396536
	(0.71380)	(14.1637)	(0.79555)	(0.04681)	(0.01893)	(1.04091)
	[1.27575]	[-0.94422]	[0.70117]	[0.43573]	[-0.16154]	[-0.38095]
D(PCI(-1))	0.034358	-0.715735	-0.000286	0.001817	7.33E-07	-0.004171
	(0.03229)	(0.64077)	(0.03599)	(0.00212)	(0.00086)	(0.04709)
	[1.06396]	[-1.11700]	[-0.00796]	[0.85802]	[0.00086]	[-0.08857]
D(AGRI(-1))	-0.074356	-0.576977	-0.503548	0.004188	-0.002222	-0.765437
	(0.31637)	(6.27757)	(0.35260)	(0.02075)	(0.00839)	(0.46135)
	[-0.23503]	[-0.09191]	[-1.42811]	[0.20187]	[-0.26484]	[-1.65913]
D(MANF(-1))	2.996239	-93.18554	5.587673	-0.042933	-0.007359	1.111780
	(4.12925)	(81.9356)	(4.60216)	(0.27081)	(0.10949)	(6.02158)
	[0.72561]	[-1.13730]	[1.21414]	[-0.15853]	[-0.06721]	[0.18463]
D(SER(-1))	13.82241	-98.34354	5.341460	-0.764846	-0.190272	17.63382

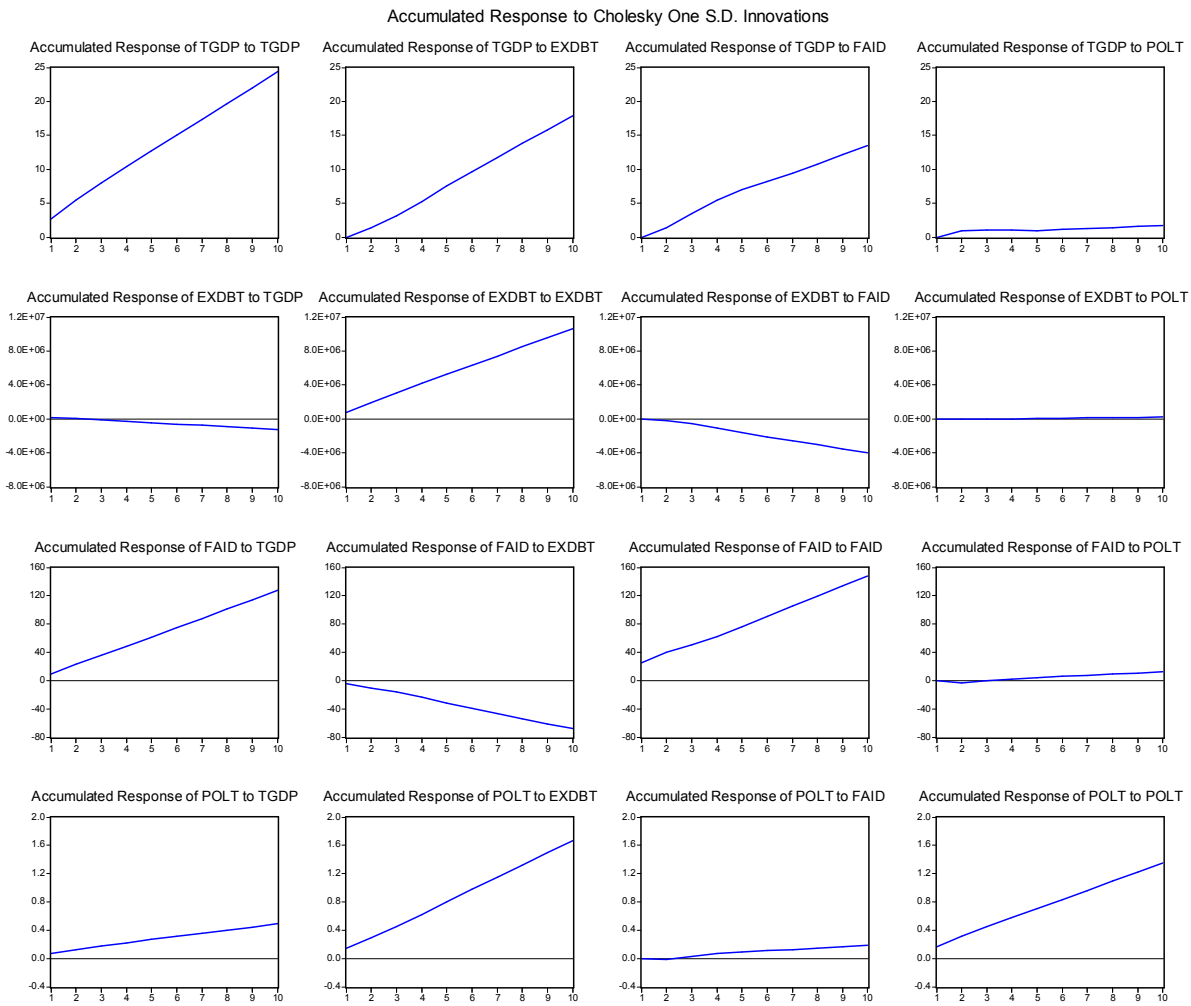
	(18.6112)	(369.296)	(20.7426)	(1.22059)	(0.49349)	(27.1402)
	[0.74269]	[-0.26630]	[0.25751]	[-0.62662]	[-0.38556]	[0.64973]
D(OPENES(-1))	-0.247460	2.321808	-0.020902	0.007295	0.002216	-0.242724
	(0.16254)	(3.22533)	(0.18116)	(0.01066)	(0.00431)	(0.23703)
	[-1.52241]	[0.71987]	[-0.11538]	[0.68431]	[0.51413]	[-1.02400]
C	-0.345168	2.207136	0.320408	-0.060223	0.016634	-0.152086
	(0.82751)	(16.4200)	(0.92228)	(0.05427)	(0.02194)	(1.20673)
	[-0.41712]	[0.13442]	[0.34741]	[-1.10968]	[0.75809]	[-0.12603]
R-squared	0.224873	0.214586	0.463956	0.363982	0.189507	0.512009
Adj. R-squared	-0.136853	-0.151941	0.213803	0.067174	-0.188723	0.284280
Sum sq. resids	181.6418	71518.45	225.6295	0.781279	0.127713	386.2730
S.E. equation	3.479864	69.04996	3.878397	0.228222	0.092272	5.074597
F-statistic	0.621666	0.585457	1.854686	1.226321	0.501036	2.248328
Log likelihood	-56.40082	-125.1211	-58.89468	6.261066	27.08929	-65.07766
Akaike AIC	5.600072	11.57575	5.816929	0.151212	-1.659938	6.354579
Schwarz SC	5.995026	11.97070	6.211884	0.546166	-1.264984	6.749534
Mean dependent	-0.369565	5.022227	0.098696	-0.072174	0.015217	0.508696
S.D. dependent	3.263699	64.33515	4.374078	0.236296	0.084631	5.998327
Determinant Residual Covariance		32.36446				
Log Likelihood		-206.3061				
Log Likelihood (d.f. adjusted)		-235.7997				
Akaike Information Criteria		25.19998				
Schwarz Criteria		27.86592				

D(EXDBT(-1))	-1.86E-07	0.490815	7.13E-06	-1.62E-08
	(8.7E-07)	(0.25667)	(8.9E-06)	(7.4E-08)
	[-0.21506]	[1.91222]	[0.79663]	[-0.21793]
D(FAID(-1))	-0.018151	-2337.639	0.097149	-0.002102
	(0.02708)	(8019.62)	(0.27963)	(0.00232)
	[-0.67021]	[-0.29149]	[0.34742]	[-0.90450]
D(POLT(-1))	6.519041	-102722.8	-27.14398	-0.073923
	(3.30046)	(977315.)	(34.0776)	(0.28314)
	[1.97519]	[-0.10511]	[-0.79653]	[-0.26108]

Appendix c

Impulse Response Function




Accumulated Response to Cholesky One S.D. Innovations
Accumulated Response of TGDP to TGDP
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Accumulated Response of POLT to EXDBT
Accumulated Response of POLT to FAID
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APPENDIX D

TABLE2: VARIANCE DECOMPOSITION

TGDP

Period	S.E.	TGDP	PCI	AGRI	MANF	SER
1	3.567145	100.0000	0.000000	0.000000	0.000000	0.000000
2	5.555490	93.64705	2.078221	1.981936	1.554348	0.738440
3	6.463660	92.43612	3.198057	1.702607	2.071706	0.591509
4	7.378936	92.80777	2.823043	1.629258	2.114536	0.625397
5	8.042308	92.40661	2.845905	1.675257	2.481597	0.590629
6	8.701425	92.46369	2.760647	1.596391	2.622587	0.556687
7	9.313279	92.40659	2.720084	1.590537	2.744197	0.538589
8	9.894289	92.37367	2.703746	1.565734	2.834823	0.522025
9	10.44213	92.35231	2.685428	1.551575	2.900349	0.510338
10	10.96304	92.33089	2.671023	1.540172	2.956760	0.501151

PCI:

Period	S.E.	TGDP	PCI	AGRI	MANF	SER
1	69.47907	84.62126	15.37874	0.000000	0.000000	0.000000
2	95.54685	84.93533	8.637752	2.260516	4.055440	0.110957
3	111.8824	86.98140	6.482583	1.701737	4.690160	0.144123
4	130.5286	88.56083	5.298935	1.588341	4.424615	0.127277
5	143.9068	88.95781	4.573918	1.573389	4.790099	0.104787
6	156.9378	89.48112	4.121232	1.468191	4.841230	0.088231
7	168.7746	89.75342	3.792621	1.445003	4.932114	0.076847
8	179.8417	89.99357	3.530534	1.405019	5.003094	0.067787
9	190.3084	90.18564	3.328947	1.378295	5.046373	0.060747
10	200.2311	90.33809	3.163114	1.357431	5.086281	0.055081

AGRI:

Period	S.E.	TGDP	PCI	AGRI	MANF	SER
1	3.687463	13.83649	15.19890	70.96461	0.000000	0.000000
2	4.958463	12.92466	8.689520	70.84726	6.584096	0.954463
3	5.758280	13.22832	6.522553	71.52652	7.913953	0.808653
4	6.420806	11.18602	6.216584	73.60500	8.160066	0.832322
5	7.084038	9.897627	5.332973	75.05425	9.027011	0.688140
6	7.593481	8.620188	5.057211	76.27942	9.425086	0.618093
7	8.123554	7.658297	4.713549	77.32077	9.752016	0.555368
8	8.594562	6.886963	4.471338	78.09139	10.04130	0.509001
9	9.050802	6.273592	4.272578	78.74037	10.24260	0.470857
10	9.482223	5.761161	4.109789	79.26639	10.42217	0.440494

MANF:

Period	S.E.	TGDP	PCI	AGRI	MANF	SER
1	0.218550	13.04752	31.90703	9.056448	45.98900	0.000000
2	0.327264	12.88793	47.91472	4.039039	33.48902	1.669287
3	0.438470	29.80614	43.23016	2.858396	23.17176	0.933542
4	0.521382	30.02852	45.86083	2.679094	20.76425	0.667303
5	0.589340	31.68869	46.25509	2.353770	19.17612	0.526326
6	0.647265	32.05608	46.71683	2.285472	18.50239	0.439234
7	0.700559	32.33699	47.06234	2.171962	18.04761	0.381107
8	0.749967	32.59073	47.28877	2.100224	17.68291	0.337366
9	0.796801	32.80796	47.45524	2.043649	17.39043	0.302723
10	0.840984	32.96901	47.60299	1.997908	17.15471	0.275377

SER:

Period	S.E.	TGDP	PCI	AGRI	MANF	SER
1	0.092818	10.74499	0.173327	56.66036	15.44894	16.97238
2	0.119064	9.618591	1.008530	50.55831	21.73078	17.08379
3	0.145751	6.853670	0.800674	48.52753	25.69729	18.12083
4	0.168054	5.849976	0.884019	48.11091	26.47650	18.67860
5	0.187184	5.463704	0.864636	47.40105	27.40037	18.87023

6	0.204785	5.125994	0.815371	47.06640	27.92399	19.06824
7	0.220852	4.972549	0.797079	46.81829	28.25668	19.15540
8	0.235799	4.807908	0.777723	46.60955	28.56401	19.24081
9	0.249906	4.684127	0.765609	46.46749	28.77773	19.30505
10	0.263232	4.582663	0.756593	46.34466	28.95817	19.35791

Period	S.E.	TGDP	OPENES	EXR	M2	INF
1	4.031592	36.67792	63.32208	0.000000	0.000000	0.000000
2	4.846246	43.61170	45.35215	1.619981	0.283442	9.132729
3	5.571507	37.14448	39.73483	2.035349	9.596272	11.48906
4	6.138126	37.37595	37.51956	1.720052	13.53546	9.848981
5	6.474318	37.48936	36.39517	1.557739	15.13276	9.424973
6	6.899184	37.77489	36.14879	1.373141	16.02826	8.674917
7	7.211676	38.92549	35.21659	1.280628	16.53857	8.038726
8	7.548125	39.21370	34.62560	1.169177	17.34622	7.645301
9	7.871751	39.60657	34.07483	1.080037	18.00089	7.237676
10	8.174405	39.87492	33.62034	1.004824	18.56631	6.933607

EXR:

Period	S.E.	TGDP	OPENES	EXR	M2	INF
1	12.97155	19.93609	0.235952	79.82796	0.000000	0.000000
2	19.02243	11.26918	7.808214	77.78001	0.448255	2.694346
3	26.01613	9.872262	14.13690	70.93568	3.528109	1.527047
4	32.82274	10.35506	11.16028	65.14512	10.01887	3.320663
5	37.83197	11.02961	9.789725	62.61692	12.61479	3.948947
6	41.92770	11.55741	9.042697	61.87601	13.35893	4.164955
7	45.45677	11.74543	8.699860	61.82679	13.61759	4.110337
8	48.79922	11.86902	8.570159	61.71020	13.79814	4.052481

EXDBT

Period	S.E.	TGDP	EXDBT	FAID	POLT

1	790204.3	2.119005	97.88100	0.000000	0.000000
2	1386714.	0.874662	97.25862	1.865034	0.001683
3	1858572.	1.171824	93.27900	5.535030	0.014147
4	2242055.	1.439713	89.56500	8.978467	0.016823
5	2553595.	1.579056	87.11342	11.26585	0.041672
6	2816121.	1.636343	85.88436	12.41601	0.063281
7	3050395.	1.657198	85.32232	12.94929	0.071184
8	3268925.	1.667422	85.01174	13.24817	0.072669
9	3476158.	1.677360	84.75762	13.49227	0.072743
10	3673006.	1.688075	84.51728	13.72134	0.073312

FAID:

Period	S.E.	TGDP	EXDBT	FAID	POLT
1	27.55331	12.41357	2.097635	85.48880	0.000000
2	34.54631	21.78389	5.033966	72.27304	0.909101
3	38.81438	27.91849	5.871819	65.00922	1.200466
4	43.11560	31.32180	8.062281	59.31462	1.301292
5	47.91702	32.98953	9.350625	56.35201	1.307834
6	52.54050	33.99154	9.965366	54.85405	1.189047
7	56.67801	34.78507	10.19097	53.92634	1.097615
8	60.36739	35.48000	10.36380	53.12007	1.036122
9	63.78015	36.06030	10.53897	52.40145	0.999274
10	67.02754	36.52533	10.71215	51.78981	0.972709

POLT:

Period	S.E.	TGDP	EXDBT	FAID	POLT
1	0.228933	9.252606	39.25507	0.142060	51.35026
2	0.313244	7.957329	42.50854	0.089381	49.44475
3	0.385007	7.016125	46.00234	1.207888	45.77365
4	0.443556	6.496007	49.52906	1.757820	42.21711
5	0.497435	6.000578	52.28440	1.691952	40.02307
6	0.545400	5.620602	53.97573	1.488560	38.91511

7	0.589066	5.357727	54.93654	1.334129	38.37160
8	0.629286	5.186375	55.56073	1.241410	38.01148
9	0.667090	5.064697	56.05083	1.189812	37.69466
10	0.702948	4.967670	56.47509	1.153591	37.40365

Appendix E

VARIABLES CONSIDERED FORREGRESSION

YEAR	TGDP	PCI	AGRI	MANF	SER	OPENES	EXR	M2	INF	EXDBT	FAID	POLT
1986	18.9	105.0794	36.16	4.22	0.27	20.2	2.0206	42.6	42	41,452.4	118.4	0
1987	17.2	115.5233	34.95	4.46	0.27	12.4	4.0179	32.8	34.2	100,789.1	123.1	0
1988	18.3	108.6339	36	4.68	0.26	18.0	4.5367	33.3	38.3	133,956.3	91.7	0
1989	17.8	111.7416	35.27	4.44	0.24	15.0	7.3916	8.5	40.9	240,393.7	190.6	0
1990	19.6	101.5306	22.99	4.66	0.01	8.2	8.0378	40.41	7.5	298,614.4	158.6	0
1991	18	110.6111	34.54	4.69	0.23	19.3	9.9095	32.74	13	328,453.8	140	0
1992	14.5	137.3793	34.66	4.35	0.24	14.1	17.2984	49.83	44.5	544,264.1	92.3	0
1993	13.1	152.1374	35.12	4.1	0.26	24.0	22.0511	53.76	57.2	633,144.4	69.4	0
1994	9.3	214.4086	35.89	4.04	0.29	14.9	21.8861	42.45	57	648,813.0	84	0
1995	9.2	216.8478	36.33	3.73	0.33	12.4	21.8861	12.75	72.8	716,865.6	91.4	0
1996	7.1	281.1268	36.21	3.62	0.36	21.3	21.8861	16.18	29.3	617,320.0	111.7	0
1997	7.3	273.5616	36.71	3.53	0.4	13.4	21.8861	14.4	8.5	595,931.9	113.4	0
1998	8	249.75	37.1	3.3	0.47	17.2	21.8861	25.72	10	633,017.0	100.4	0
1999	11.7	170.8547	38.58	3.38	0.56	19.3	92.6934	29.52	6.6	2,577,374.4	91.5	1
2000	17.8	112.3596	37.88	3.33	0.58	12.3	102.1052	48.7	6.9	3,097,383.9	77.3	1
2001	16.5	121.2727	37.55	3.32	0.61	21.1	111.9433	26.8	18.9	3,176,291.0	72.5	1
2002	11.8	169.661	37.38	3.52	0.67	23.1	120.9702	21.58	12.9	3,932,884.8	79.5	1
2003	11.7	171.1966	36.51	3.39	0.62	21.1	129.3565	24.11	23.8	4,478,329.3	78.4	1
2004	15	133.6	36.48	3.5	0.64	18.3	133.5004	56.97	10	4,890,269.6	98.4	1

2005	18.1	110.7735	41.02	3.87	0.61	19.9	132.147	87.45	11.6	2,695,072.2	99.8	1
2006	15.34	130.7692	41.63	3.83	0.64	17.1	128.6516	98.2	8.5	451,461.7	94.2	1
2007	14.77	135.8835	37.18	3.48	0.69	13.8	125.8331	62.33	6.6	431,079.8	97.3	1
2008	5.4	371.8519	37.2	3.41	0.79	17.9	118.5669	63.38	15.1	493,180.2	98.6	1
2009	7.4	271.4865	30.52	3.5	0.76	23.6	141.8765	85.14	13.9	590,441.1	96.8	1
2010	8.7	231.0345	37.22	2.8	0.62	24.1	149.3245	82	12.6	675,564.10	98.5	1