Sources of Public Funds and Economic Prosperity: The Nigerian Case
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Abstract

This study examined the various sources of public funds and their resultant effect on economic growth in Nigeria from 1986-2014. The sources of public funds considered in this study were tax revenue, oil revenue, external debt and national savings. Two models were used in this study; one analyzed the effect of these individual sources of public funds on economic growth, while the other model explained the effect of aggregate government revenue on economic growth. The time series data sourced from Central Bank of Nigeria Statistical Bulletin were analyzed using unit root tests, cointegration tests and vector error correction mechanism (VECM). The unit root test revealed that all the variables were stationary at first difference except tax revenue which was significant at level. The cointegration tests (both Johansen and Engle-Granger) showed that a long run relationship existed between the individual sources of public funds and economic growth, as well as aggregate government revenue and economic growth. The results obtained for model one revealed that tax revenue and oil revenue had a positive effect on economic growth, while national savings and external debt exerted a negative effect on economic growth. With respect to total government revenue, economic growth declined as a result of changes in total government revenue. Finally, it was recommended among other things that government should fulfill her obligations of social and economic welfare to her citizens, so that anyone who enjoys such services will be conscious of tax payment in Nigeria.

Keywords: Total government revenue; Tax revenue; Oil revenue; National savings; External debt; Economic growth

Introduction

Attaining a sustainable economic balance has been a major goal pursued by the government of Nigeria and other countries [1]. This is because the economy is the hub of every nation. The process of growth and development of an economy hinges on the availability of certain infrastructural facilities required to accelerate various economic activities [2]. This plausibly offers an explanation to why government of every country exert her authority towards maintaining a minimum or multiple streams of revenue through which adequate funds are made available towards achieving set goals for the nation [3,4]. Consequently, the government of every country (developed, developing, and under-developed) depends on these funds in order to execute its social and economic obligations to the public and these obligations include provision of infrastructures such as roads, hospitals schools and the rest of them. As such, these funds generated by the government to provide goods and services to the general public are termed “public funds.” Therefore, literature abound that amidst multiple sources of government funds, tax revenue have been the major source of public funds globally [5-7]. On the other hand, several authors have also identified oil revenue, aid, grants, national savings and debt as prominent sources of public funds [4,8,9].

Indeed, one of the most effective and efficient means of internal revenue generation for government is through the tax system [7]. In support of the benefits attributed to tax revenue, Nzotta asserted that taxes constitute the key sources of finance to the federal account distributed among the three tiers of government [6,10]. Following the definition given by Ogundele as cited in Ayuba, taxation is the process by which residents of a country or community are legally mandated to pay a specified fraction of their income for the purpose of administration and development of the society [7,11]. As such, it has been inferred that tax payment is beneficial to payers and the entire citizenry, since it is used to achieve some economic and social goals of the nation [10,12]. These benefits notwithstanding, aggregate tax revenue in Nigeria have been paltry over the years. This is due to poor tax administration coupled with the high rate of tax evasion and avoidance among tax payers (individuals and corporate bodies) which have led to fiscal deficit and epileptic economic performance [13,14]. Also, this could be attributed to the over-reliance on oil revenue as a major source of public funds.

The emergence of crude oil in Nigeria has significantly dictated the pace of economic, political, social and cultural progress in the country. Over the years, the importance of oil commodity has been made manifest in the economy of Nigeria in several ways. In the 1970s, the petroleum industry dominated the Nigeria economy after agriculture, generating substantial foreign exchange revenue. With emphasis on oil revenue and economic development in Nigeria, it is glaring that there have been positive changes in the economic life of Nigeria over the years. However, with the volatility in oil prices worldwide, the aggregate revenue generated from this source have dwindled and waned significantly [15,16]. Surprisingly, the Nigerian economy still depends to a large extent on crude oil, despite the significant decline in oil revenue over the years. As such, there have been agitations and campaign for proper diversification of the economy, especially towards resuscitating the agricultural sector and the manufacturing sector in Nigeria by encouraging small and medium scale enterprises [17].

The saying that non-oil revenue (such as agricultural revenue) was the mainstay of the Nigerian economy in the 1960s, 1970s and 1980s underscores the emphasis placed on non-oil revenue as the engine of growth in the Nigerian economy [18,19]. According to Reynolds in 2000, the Nigerian government depends on oil revenue for about 40% of its revenue...
Chukwuka et al. and Gbaiye, et al., in the decades of 1960s and 1970s, the external sector was dominated by agricultural commodity export, which accounted for about 50% of the gross domestic product (GDP), 90% of foreign exchange earnings, employed more than 75% of the labour force and produced over 70% of total food consumption [20-22]. However, following the discovery of crude oil, coupled with the oil boom of 1970s, the significant revenue generated from agriculture declined drastically as the economy relied solely on oil exports. Notwithstanding the enviable position of the oil sector in the Nigerian economy over the past three decades, the agricultural sector is estimated to be the largest contributor to non-oil foreign exchange earnings [19]. This means that agriculture holds abundant potentials for enhancing and sustaining the country’s foreign exchange earnings [18,19,22].

Following the decline in tax revenue, oil revenue and other sources of funds available to government, fiscal deficit have been on the increase which have automatically led to external borrowing to fill the gap. Hence, with increase in external debt, the savings accumulated domestically continued to deplete significantly because the cost of servicing these debts are drawn from national savings. As such, a vicious circle of aggregate revenue, external debt and national savings is created. Consequently, the sources of public funds emphasized in this study are tax revenue, oil revenue, national savings and debt finance. Hence, going through the aforementioned sources of public funds, it becomes paramount to investigate if funds generated through these sources have fostered economic prosperity in Nigeria. Therefore, discoveries from this study will reveal the prominent sources of revenue the government of Nigeria should focus on, and also to investigate the particular source or sources that have contributed to economic growth in Nigeria.

Objectives of the Study

The broad objective of this study is aimed at investigating the relationship between public finance and economic prosperity in Nigeria. The specific objectives are.

- To examine the effect of aggregate tax revenue on real gross domestic product in Nigeria.
- To investigate the relationship between oil revenue on real gross domestic product in Nigeria.
- To ascertain the effect of external and domestic debt on real gross domestic product in Nigeria.
- To investigate the effect of aggregate government revenue on real gross domestic product in Nigeria.

Research questions

- How does aggregate tax revenue affect real gross domestic product in Nigeria?
- What is the relationship between oil revenue and real gross domestic product in Nigeria?
- What effect does external and domestic debt have on real gross domestic product in Nigeria?
- In what way does aggregate government revenue affect real gross domestic product in Nigeria?

Hypotheses

Based on the objectives stated above, the following hypotheses were tested.

- **Ho1:** Aggregate tax revenue have no significant effect on real gross domestic product in Nigeria.
- **Ho2:** Oil revenue have no significant effect on real gross domestic product in Nigeria.
- **Ho3:** External and domestic debt have no significant effect on real gross domestic product in Nigeria.
- **Ho4:** Aggregate government revenue have no significant effect on real gross domestic product in Nigeria.

Conceptual framework

The various terms used with respect to public funds (government revenue) in Nigeria are briefly explained in this section of the study.

Concept of taxation

The concept of taxation has been a concern of global significance as it affects every economy irrespective of national differences. Therefore, taxation is a powerful tool of economic reform and a major player in every economy of the world [6]. By definition, taxation is a compulsory levy by the government through its agent on the profits, income, or consumption of its subjects or citizens [12]. Similarly, Anyanwu defined tax as the compulsory transfer or payment (or occasionally of goods and services) from private individuals, institutions or groups to the government [23]. According to Nzotta, for tax revenue to play its role of amending economic ills for all, the following four important issues must be put to heart [10].

- First, it must be understood that tax is a compulsory contribution that flows from the citizens to the government, and this contribution is for the benefit of all.
- Secondly, tax imposes a general obligation to the tax payer
- Thirdly, there is a presumption that the contribution of the public revenue made by tax payers may not be equal to the benefits enjoyed by the citizens.
- Finally, a tax is not imposed on a citizen by the government as a result of services rendered to the citizens.

The following are federal government collectible taxes are discussed below.

- **Petroleum profit tax:** Petroleum Profits Tax 1990 of Nigeria demands that all firms engaged in extraction and transportation of petroleum to pay tax. This category of tax is levied on the proceeds from the sale of oil and related substances used by the company in its own refineries plus any other income of the company incidental to and arising from its petroleum operations.
- **Companies income tax:** Companies profit tax is levied on the profits made by companies operating in Nigeria, except those companies engaged in petroleum exploration activities [24].
- **Value added tax (VAT):** Value added tax (VAT) was introduced to replace the sales tax. This is a type of consumption tax that is placed on a product whenever value is added at a stage of production and at final sale. The collection of value-added tax (VAT) in Nigeria is regulated by Value-added tax Act, 1993 [24].
- **Personal income tax:** Personal income tax is based on Pay as you Earn (PAYE), that is the tax payable depends on how much is earned by the tax payer. It is a direct tax levied on income of individuals.
- **Custom duties:** Custom duties represents taxes levied on...
imports (and, sometimes, on exports) by the customs authorities of a country to raise state revenue, and/or to protect domestic industries from more efficient or predatory competitors from abroad. This is based on the value of goods imported.

- Excise duty: Excise duties are taxes levied on locally manufactured goods and services.

Concept of public debt

The need for government borrowing is necessitated by the fact that available funds are not sufficient to meet the needs of the society. As such, foreign countries, international financial organizations and other lenders tend to lend their excess funds to capital scarce economies, like Nigeria. According to Imimole et al. debt was derived from the Latin word “debere” meaning to owe [8]. Debt has been conceptualized as resources of money used in an organization which is not contributed by its owners but and other private individuals, organization, or government. It is important to note that two types of debts exist: domestic debt and external debt. According to Imimole et al., public debt is divided into internal (also known as domestic debt) and external debt [8]. Internal or domestic debt entails when a government borrows from surplus units within the country, while external debt is incurred when the government borrows from foreign lenders. However, debt have also been classified as; productive debt and dead weight debt. According to them, when a loan is obtained to enable the state or nation to purchase some sort of assets, the debt is said to be productive e.g. money borrowed for acquiring factories, electricity, refineries etc. However, debt undertaken to finance wars and expenses on current expenditures are termed “dead weight debts.”

A debtor country can obtained the loan by importing goods and services to the value of the loan from the country where the agreement was made without having to give anything in exchange immediately [8]. At the time of maturity of the debt, the borrowing country will have to bear the burden of exporting goods and service without receiving any imports in exchange. However, internal loans do not have the type of burden of exchange of goods and services. These two types of debt, however, require that the borrowers’ future savings must cover the interest and principal payment (debt servicing).

Concept and evolution of oil exploration in Nigeria

Following the definition of petroleum by Obadan in Ujunwa, petroleum is a mixture of hydro carbon oils obtained below the surface which generally occurs at depths below 1,500 meters [25]. According to him, it serves as raw material for productive purposes known as the petroleum industry resolves. It constitutes a major source of energy in the world marketed today and has in fact, become the mainstay of man’s progress and civilization. By this definition, Obadan further emphasized that petroleum serves as raw material for varieties of chemicals for the production of pharmaceuticals, fertilizers, fibers, for the manufacture of textile and numerous other products required for human existence [26]. More so, petroleum jelly for the body, candles for lightening and bitumen for tarring roads are some of the byproducts of petroleum.

According to Anyanwu, the first commercial discovery of crude oil in Nigeria was in 1957 by shell which started production in 1958 [23]. In 1961, the federal government of Nigeria further issued ten oil prospecting licenses, each license on the continental shelf to five companies, each license covered an area of 2,560 squares kilometers and was subject to the payment of ₦1 million with these generous concession, full scale one – share and off-shore oil exploration began. Oil was found in commercial quantities at Oloibiri in the Niger Delta. Further discoveries at Afam and Boma established the country as an oil producing Nation. As such, by April 1967, oil from Nigeria had reached 2 million barrels per day [23].

Nigeria is the 11th member of the organization of petroleum exporting countries (OPEC). As a member of OPEC, Nigeria jointly with other members determine at what minimum price level various member countries should sell their crude oil OPEC now determines the level of crude oil production for its member countries in order to prevent a collapse in the crude oil price. The price oil is sold for is largely determined by the organization of petroleum exporting countries (OPEC).

The direct involvement by government in oil exploration began on the birth of Nigerian National Petroleum Corporation (NNPC). Consequently, the role of government in the oil industry has gradually progressed from regulatory to direct involvement in all exploration. Initially government interest was only limited to the licensed companies royalties and other dues offered it from the companies and making rudimentary laws to regulate the activities of the oil industry. This was partly due to the fact that oil was very insignificant to the economy before the late sixties and the relative lack of trained personnel and expertise, [26]. However, due to the oil boom of the early 1970s and early 1980s, the government of Nigeria fully depended on oil revenue as the bedrock of the economy, while neglecting other sectors of the economy [21].

Empirical review

Literature abound that government revenue is essential for infrastructural development and economic prosperity in all countries, developed, developing and under developed countries. In what follows, these literatures are reviewed under the following headings.

Tax revenue and economic growth

Ojong, Anthony & Arikpo, examined the impact of tax revenue on the Nigerian economy. Ordinary least square of multiple regression models was used to establish the relationship between dependent and independent variables [12]. The finding revealed that there was a significant relationship between petroleum profit tax and the growth of the Nigeria economy. It showed that there was a significant relationship between non-oil revenue and the growth of the Nigeria economy. The finding also revealed that there is no significant relationship between company income tax and the growth of the Nigeria economy. It was recommended that government should endeavour to provide social amenities to all nooks and crannies of the country.

Ayinde, Kuranga and Lukman, investigated the impact of capital expenditure, recurrent expenditure and various sources of Government revenue on Nigeria’s economic growth using secondary data gathered from Central Bank of Nigeria’s publication from 1981 to 2011 [27]. The long-run relationship of economic growth (Gross Domestic Product (GDP) on capital expenditure, recurrent expenditure, oil revenue, non-oil revenue, federation account and federal retained revenue revealed the existence of co-integration. The results from the analysis showed a positive impact of capital expenditure, oil revenue, federation account and federal retained revenue on economic growth. Consequently, the study recommended a re-evaluation and re-assessment of direction of recurrent expenditure and non-oil revenue towards Nigerian development to achieve positive influence on economic growth.

Ayuba analyzed the impact of tax revenue on economic growth using times series data from 1993 to 2012 [7]. The data set sourced
from secondary sources were analyzed using the ordinary least squares approach. From the results, it was discovered that tax revenue exerted a positive impact on economic growth in Nigeria. It was thus recommended *inter alia* that efforts should be intensified by government at all levels towards increased collection of non-oil taxes.

Onwuchekwa and Aruwa, investigated the impact of value added tax on the economic growth of Nigeria. The results showed that VAT contributed significantly to the total tax revenue of government and by extension the economic growth of Nigeria. They recommended that, to boost tax revenue VAT need to be increased. This can be achieved not necessarily by increasing the VAT rate of 5% but by closing every VAT revenue leakage, sensitizing the managers of companies operating in Nigeria on the need to remit the VAT revenue collection and proper training of the Federal Inland Revenue staff in charge of VAT revenue collection.

Adeniyi evaluated the effect of tax administration on revenue generation to the Enugu state government [14]. The study incorporated both primary and secondary data which was analyzed using simple percentages and hypothesis tested using chi – square statistical method at 0.05 level of significant for validity and to make decisions. From the findings, there was rampant incidence of tax evasion and avoidance in Enugu state due to inadequate, ineffective and inefficient tax administration. The researcher concluded among other things that the apathy of Enugu state people towards payment of tax be checked by involving them in the decision making of tax administration, collection and utilization of the tax revenue.

**Oil revenue and economic growth**

Chukwuma et al. examined the impact of crude oil discovery, exploitation and exportation on the agricultural commodity export in Nigeria in the period 1970-2011. Annual time series data sourced mainly from the Central Bank of Nigeria (CBN) statistical bulletins for various years were analyzed using co-integration and vector error correction model in a bid to delineate the long run relationship between agricultural commodity exports and oil export. A 1% increase in oil exports depressed agricultural commodity export by 16%, that is, the more Nigeria produces and exports oil, the lower the output and less competitive the traditional tradable agricultural sector becomes. The paper recommended that policy makers should make considerable investments in developing other economic sectors, re-channel the extra revenue from oil to accumulate income-producing foreign assets, and come up with a number of tax and import duty waivers, import substitution and diversification measures in order to boost productivity in the “lagging” traditional tradable sector and develop other agro-allied industries to improve the value chain.

In a study, Aliyu adapted graphic descriptive statistics and the one-way analysis of variance technique to investigate whether the neglect of agricultural sector was as a result of the discovery and exploitation of oil in Nigeria [28]. The study found a significant increase in the quantity of capital expenditure allocated to agricultural sector during the oil boom period and that more capital expenditure was allocated to agricultural sector than was allocated to either of health, education or defense sector in Nigeria during the period. The study concluded by rejecting the hypothesis that the neglect of agricultural sector was as a result of oil boom.

Henry in Bitrus, indicated that in the mid-1980s, Nigeria emerged as the sole country out of six (Nigeria, Indonesia, Algeria, Iran, Venezuela, Trinidad and Tobago), where the standard of living had fallen below par [29]. As such, Henry summarized the performance of Nigerian economy into three basic categories as follows:

- The specific uses to which petroleum revenue was put conditioned the structure of socio-political sharing. The social interest and class contrast were low because the state was under pressure to render services to the people which continued from military government to military government.
- There was no much pressure to use petroleum revenue to ameliorate the agricultural sector productivity. This is where Nigeria differs from Indonesia in the study. In Indonesia, petroleum revenue was used to ameliorate the agricultural sector. In Nigeria, that was not done. Thus, Indonesia progressed, while Nigeria declined economically.
- Macroeconomic adjustment of Nigeria led to declining national revenue, and this differs from other petroleum exporting countries. Indonesia adopted a rapid exchange rate between 1978 and 1980 in form of devaluation. Venezuela, Trinidad and Tobago experienced a large devaluation in 1981 without any hesitation on such adjustment.

**Government’s external borrowing and economic growth**

Imimole, Imoughele & Okhuese examined the extent to which Nigeria’s external debt related to indices of ability to pay in order to ascertain the sustainability of it and to identify the main determinants of her external indebtedness for the period 1986 to 2010 [8]. The result from the cointegration test showed evidence of long run relationship between external debt and its determinants. The study also discovered that the main determinants of Nigeria’s external debt are gross domestic product, debt service and exchange rate. To reduce the adverse effects of external debt on the Nigerian economy and make it sustainable the study recommended that an analysis of the economic and social profitability of all external debt financial projects be carried out to ensure that the returns would be in excess of the interest and principal repayment.

Folorunso & Falade examined the relationship between Fiscal Deficit and Public Debt in Nigeria [30]. In what follows, the public debt was divided into domestic and external debt with a view to analyzing the causal relationship and relative effect of both categories of debt on fiscal deficit. Bi-directional relationship was confirmed between fiscal balance and public debt as well as its domestic component, while causality only run from external debt to fiscal balance in the country. Both domestic and external debt portends positive effect on fiscal deficit in Nigeria. The study showed that domestic debt has greater impact on fiscal deficit than external debt. Hence, it was advocated that the Nigerian government should consider appropriate mix of domestic debt and external debt as a means of financing budget deficit.

Ezike and Mojekwu opined that the main issue that worsened the Nigeria debt problem is that some of the debt service obligations were in the form of contingent liabilities resulting from Government guarantee of private sector trade transaction that had to be taken on board without adequate planning, due to mismanagement, wide-scale corruption and default by private sector operators, obligations fell on the Federal Government as explicit contingent liabilities in those instances where it had guaranteed the loan [31].

Bader and Magableh noted that the high public debt in Jordan, along with its servicing burden, was obviously hindering the government’s efforts to maintain higher and sustained economic growth rate [32]. It was found that real exchange rate, the financial position of the government and the size of foreign aids significantly affect the outstanding balance of external debt, but real exchange rate
is the most effective among all explanatory variables. The study also showed that the increase in savings gap and fiscal deficit plays a key role in domestic debt accumulation since the government resorts to borrow to finance it.

Osinubi and Olaleru examined how the use of budget deficits as an instrument of stabilization leads to the accumulation of external debt with the attending effects on growth in Nigeria between 1970 and 2003 [33]. Their study concluded that if debt-financed budget deficits are operated in order to stabilize the debt ratio at the optimum sustainable level, debt overhang problems would be avoided and the benefits of external borrowing would be maximized.

Alshara, Khateeb, and Maitah appraised the size and composition of Jordan external public debt and its effect on some macroeconomic variables such as private consumption, public consumption, gross investment, gross tax revenues, direct tax revenues, indirect tax revenues, imports, Gross National Product (GNP), and disposable income [34]. They reported that external loans positively affect consumption, investment, imports and gross national product (GNP).

Theoretical Framework

Theories of taxation

The three theories of taxation to be reviewed in this paper are:

- **The cost of service theory**: Following the assertion of this theory, the cost incurred by government in providing certain services to the people must collectively be met by the people who are the ultimate receivers of the service [12]. This theory is of the opinion that tax is similar to price. So if a person does not utilize the service of a state, he should not be charged any tax. Some criticisms have been leveled against this theory. If the theory is applied, the state will not undertake welfare activities like medical care, education, social amenities, etc. Furthermore, it will be very difficult to compute the cost per head of the various services provided by the state, again, the theory has violated the correct definition and tenets of tax, finally the basis of taxation as propounded by the theory is misleading.

- **Benefit received theory**: According to this theory, the tax expected from citizens should be in proportion to the benefits they enjoy from the services rendered by the government. The theory assumes that there is exchange relationship or *quid pro quo* between tax payers and government. The government confers some benefits on tax payers by providing social goods which the tax payers pay a consideration in the form of taxes for using such goods. The inability to measure the benefits received by an individual from the services rendered by the government has rendered this theory inapplicable.

- **Socio-political theory**: This theory of taxation states that social and political objectives should be the main factors in selecting taxes. The theory advocated that a tax system should not be designed to serve individuals, but should be used to satisfy the desire of the entire society [7]. Hence, this theory forms the basis for this study following the Nigerian case characterized by rate of inequality.

Theory of debt finance

The theoretical framework that justifies the need for external borrowing by developing countries as adapted by Imimole et al. links the increase in gross external debt to (current account deficit - direct and long-term portfolio capital inflows) + (official reserve increases + other private capital outflows) [8]. The model started by summarizing the determinants of the current account (CA) balance, where CA is the difference between items that generate foreign exchange and those that require foreign-exchange expenditure.

\[
CA = X - M - ILF - OTP
\]  
(1)

Where,

- \(X\) = Exports
- \(M\) = Imports
- \(ILF\) = Interest paid on loans from foreigners
- \(OTP\) = Other net factors payments and transfers to foreigners

According to Imimole et al. Eq. (2) is another way of writing the current account surplus of equation (1). This time, the current account is the difference between changes in the international reserves (\(\Delta NIR\)) and foreign bonds placed domestically (\(\Delta BF\)), and an increase in loans from foreigners (\(\Delta LF\)) and foreign direct investment (FDI) [8]. Then, the change in loans from foreigners (\(\Delta LF\)) is basically the difference between new foreign loans (N) and payments of foreign loan principal (PLF). Then, demand for new foreign loans (NFL) would be:

\[
NFL = PLF + ILF + \Delta NIR + \Delta BF - FDI - OTP - X + M
\]  
(3)

Eq. (3) implies that the demand for new foreign loans is an increasing function of payments of foreign loan principal due (PLF); interest paid on loans from foreigners (ILF); \(\Delta NIR\); \(\Delta BF\); OTP; and imports; and a decreasing function of exports (X) and foreign direct investment (FDI).

Now, the sum of interest (ILF) and principal (PLF) payments paid is nothing other than total debt service paid (DSP). The DSP is also nothing else other than the difference between total debt service due (DSD), which incorporates also past arrears outstanding and current arrears (A). Substituting these relationships into equation (3), equation (4) was found, which represents the demand for new foreign loans.

\[
NFL + A = DSD + \Delta NIR + \Delta BF - FDI - OTP - X + M
\]  
(4)

Mebere (2009) postulated that the assumption followed here is that countries prefer to protect their reputation by rolling over their external debt rather than by arrears. This gives an equation for a one period –ahead ex ante demand for new loans, which satisfies:

\[
NL_{t+1} = DSD + \Delta NIR + \Delta BF - FDI - OTP - X_t + M_t
\]  
(5)

Where, \(NL_{t+1}\) stands for new loan demanded, and the superscripts e stands for expectations and other variables are as defined above. From Eq. (5) it implies that the demand for external borrowing is an increasing function of total debt service due (DSD), the change in international reserves, the change in foreign bonds placed domestically (which partly reflects capital flight), net transfers to foreigners, and imports of goods and services. In contrast, capital inflows in the form of foreign direct investment and export revenues reduce the demand for external borrowing.

Research Methodology

Research design

By definition, a research design is a blueprint which guides the researcher in his scientific inquiry, investigation and analysis. In this study, *ex-post facto* research design was adopted in obtaining, analyzing and interpreting data relating to the objectives of the study. *Ex-post facto* study or after-the-fact research is a category of research design
in which the investigation starts after the fact had occurred without interference from the researcher [35].

Nature and sources of data

The data relevant for this study is exclusively secondary as no attempt was made to include primary data in the data set. The data comprises of annual time series spanning from 1986 to 2014. The data set was sourced from Central Bank of Nigeria statistical bulletin 2014 edition, international financial statistics and National Bureau of Statistics (NBS).

Method of data analysis

The method of inferential statistics was adopted in the analysis of data, and it involves the statement and testing of scientific hypotheses. The Vector Error Correction Model (VECM) model was employed using Econometric View (E-view) 8.0 software package for the data analysis. Prior to the regression analysis, diagnostic tests were carried out to ensure the validity of data. The test for stationarity was carried out using the Augmented Dickey-Fuller (ADF) unit root test, while the test for the long run equilibrium adjustment was accomplished using Johansen co-integration test (for the first model in equation 6) and Augmented Engle-Granger co-integration test (for the second model in equation 7).

Model specification

Econometric models aimed at capturing the relationship between sources of public funds and economic prosperity in Nigeria, in line with the theoretical framework and literature reviewed was developed. Hence, the present model was adapted from the works of Ojong et al., Ayinde, Kuranga & Lukman and Ujunwa [12,26,27]. The model is specified below as follow with some modifications.

\[ \text{RGDP}_t = \beta_0 + \beta_1 \text{TAXR}_t + \beta_2 \text{OILR}_t + \beta_3 \text{EXTD}_t + \beta_4 \text{NSAV}_t + \epsilon_t \]  

Where,

- \( \beta_0 \) = Constant
- \( \beta_1, \beta_2, \beta_3, \beta_4 \) = Population parameters

\[ \text{RGDP}_t = \beta_0 + \beta_1 \text{TGRV}_t + \epsilon_t \]  

\[ \text{RGDP}_p = \frac{\text{RGDP}_t - \text{RGDP}_p}{\text{RGDP}_p} \times 100 \]  

Where,

- \( \text{RGDP}_t \) = Current year’s Real gross domestic product
- \( \text{RGDP}_p \) = Previous year’s Real gross domestic product

Independent variables

- Tax Revenue (TAXR): Tax revenue entails the aggregate government revenue generated through all forms of taxes available.
- Oil Revenue (OILR): Oil revenue comprises of the aggregate revenue available to government via the export of oil produce to the rest of the world.
- National Savings (NSAV): National savings denote the sum of nation’s public and private savings. National savings equals a nation’s income minus consumption and government expenditure.
- Total Government Revenue (TGRV): This refers to the sum of revenue generated from all the sources (excluding savings and debt).

Discussion of Results and Hypotheses Testing

Descriptive statistics

The descriptive statistics was used to describe and summarize the basic features of the time series data used for the analysis. The results for the descriptive statistics were presented in Table 1 below.

From the results of the descriptive statistic, the mean values of the variables shows that on average, total government revenue (TGRV) has the highest rate of 20.09655%, followed by oil revenue (OILR) with an average of 15.59379%, with external debt (EXTD) having a mean of 14.46552, while national savings (NSAV) recorded a mean value of 8.793102%. Real gross domestic product growth rate (RGDP) maintained an average rate of 5.204483, with the least average value of 5.50% being for tax revenue. Having gone through these mean values, it was found that the difference between the mean values of total government revenue (TGRV) and external debt (EXTD) is 5.63103% which indicates that the Nigerian economy is dominated by debt finance. Also, the gap between the mean values of total government revenue and oil revenue is 4.50276% which further shows that the Nigerian economy is dependent on oil revenue. The overdependence on oil revenue and high rate of external debt is justified by the low level (mean) of national savings (NSAV) and tax revenue (TAXR), respectively.

With respect to the maximum values, total government revenue recorded its highest rate of 37.97% in 2001, followed by oil revenue reached its highest of 32.59% in 2005, external debt outstanding maintained a maximum rate of 29.12% in 1994, national savings witnessed its highest point of 32.59% in 2005, external debt outstanding maintained a maximum rate of 37.97% in 2001, followed by oil revenue.

In terms of volatility of the variables, the standard deviation in Table 1 showed that total government revenue is more volatile with an index point of 8.523388 being followed by oil revenue (7.430735), external debt (5.299178), national savings (4.144220), real gross domestic product growth rate (3.943143), and tax revenue (1.996282).
The trend of the variables (oil revenue, tax revenue, external debt, national savings, total government revenue and real gross domestic product growth rate in Figure 1. That is, a figure showing how the various sources of public funds identified in the study has fluctuated over the years (1986-2014) (Figure 1).

Test for stationarity using augmented dickey fuller (ADF) unit root test

To test for the presence of non-stationarity of a data set, it is necessary to investigate the order of integration of the individual time series before any other tests. For this purpose, standard unit root tests were conducted using Augmented Dickey–Fuller (ADF) test (Dickey and Fuller 1979). This test results was presented in Table 2 below.

In summary, from Table 2, the variables (external debt, national savings, oil revenue, real gross domestic product growth rate and total government revenue) were found to have a single unit root or are integrated of degree one (I(1)) and they are stationary at their first difference. These results imply that the regression results that would be obtained from the models specified in (Equation 1 and 2) would return spurious results if there is no long-run relationship among the variables in the model. As such, cointegration properties were investigated.

Empirical Results from Model 1 (Equation 6)

The result obtained from the analysis of data associated with equation 6 was presented in Tables 3-5. The results include the Johansen cointegration test for long run causality, lag selection criteria and vector error correction mechanism (VECM); that is, a model that combines both the short-run properties of the economic relationships in the first difference form of equation (6), as well as the long-run information provided by the data in level form.

Johansen cointegration tests

Johansen co-integration test determines whether a long-term relationship exist between the variables or not. The Johansen test of co-integration uses the likelihood ratio to test for co-integration. The hypothesis of co-integration is accepted if the number of co-integrating relationships is greater than or equal to one. Consequently, the Johansen co-integration results are presented below in Table 3.

From the Johansen cointegration test results presented in Table 3 above, the Trace statistic indicates two cointegrating equations judging from the P-values at None and 1* which are both significant at 1% level. Likewise, the Max-Eigen statistic indicates two cointegrating equations following the P-values at None and 1* which both showed a significant level of 5%. Sequel to this result, the number of cointegrating relationships is greater than one, and the null hypothesis of no cointegration was rejected in favour of the alternative hypothesis that the variables used in model 1 (equation 6) are cointegrated.
Vector error correction mechanism

Having ascertained that the variables are cointegrated, the information provided by the lag order selection criteria was used to generate a set of error correction model (ECM) to capture the short run and long-run behaviour of the GDP growth relationship. The changes in the relevant variables represent the short-run elasticities, while the coefficient of the error correction term represents the speed of adjustment back to the long-run relationship among the variables. Tables 4 and 5 provides the results for the real gross domestic product (RGDP) growth rate and government revenue relationship for the period 1986 to 2014 (Tables 3 and 4).

From Table 4, it can be observed that the lag length suggested by Akaike Information criterion is one lag which is attributable to the size of the observations (Table 5).

From the result presented in Table 5, the coefficient of the lagged value of tax revenue (TAXR) entails that real gross domestic product growth rate increased by 17.1% due to 1% change in tax revenue in the short run. However, the variable was neither significant at 5% nor 10% level judging from the P-value (0.7364). The finding supports Ojong et al. and Ayuba who concluded that non-oil revenue (predominantly tax revenue) was insignificant in affecting growth of the Nigerian economy [7,12]. Hence, the insignificance of tax revenue in this regard could be due to the findings that non-compliance to tax laws, lack of skilled tax officers, capital flight, and corruption among tax collectors has a negative effect on tax revenue [13,14,36].

With respect to the one period lagged value of oil revenue (OILR), the coefficient shows that a unit change in oil revenue resulted to 11.5% increase in real gross domestic product (RGDP) growth rate in the short run. This relationship is not significant at 5% level, and lends support to the findings of Ujunwa and Ayinde et al. [26,27], but contradicted the findings of Mustapha who found a negative and significant relationship between oil exports and economic growth in Nigeria. A plausible reason for the non-significance of oil revenue could be attributed to the volatility in oil prices, exchange rate volatility, oil bunkery, oil pipeline vandalism in the Niger-Delta, and misappropriation of oil revenue [21].

In line with literature and theory that a country which is unable to mobilize adequate savings and revenue resort to external borrowing to fill the resource gap. The results reveals that the lagged value of external debt (EXTD) exerted a negative effect on real gross domestic product (RGDP) growth rate in Nigeria. The coefficient suggests that a unit change in external debt caused real gross domestic product (RGDP) growth rate to depress by 28.5% in the short run. This negative effect could be due to the debt burden hanging on the shoulders of the government to clear. Judging from the p-value of external debt, the variable was not significant at 5% level. As such, the null hypothesis of no significance was accepted.

The national income accounting theory suggests that savings is key to investments and economic growth. The results obtained for

Table 3: Johansen cointegration test results.

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Trace Statistic</th>
<th>Prob**</th>
<th>Max-Eigen Statistic</th>
<th>Prob**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>92.45167</td>
<td>0.0003</td>
<td>36.33728</td>
<td>0.0249</td>
</tr>
<tr>
<td>At most 1*</td>
<td>56.11440</td>
<td>0.0069</td>
<td>29.64541</td>
<td>0.0268</td>
</tr>
<tr>
<td>At most 2</td>
<td>26.46899</td>
<td>0.1153</td>
<td>13.82053</td>
<td>0.3799</td>
</tr>
<tr>
<td>At most 3</td>
<td>12.64845</td>
<td>0.1284</td>
<td>10.56526</td>
<td>0.1774</td>
</tr>
<tr>
<td>At most 4</td>
<td>2.03197</td>
<td>0.1489</td>
<td>2.083197</td>
<td>0.1489</td>
</tr>
</tbody>
</table>

Source: Eviews computations (2016).
this study is contrary to this view. The coefficient of national savings shows that a 1% increase in national savings resulted to approximately 24.6% decrease in real gross domestic product (RGDP) growth rate. This result appears to be due to low investments which resulted to low income, and low income resulting to low savings. Also, the low savings rate could be due to capital flight [19]. On the other hand, the P-value suggests no significant relationship between national savings and economic growth (proxied by real gross domestic product growth rate) in the short run.

The constant (C) entails that ceteris paribus (if all the explanatory variables are held constant, real gross domestic product will be reducing by approximately 36.41% in the short run. This is an indication of low economic prosperity in Nigeria.

The long-run error correction mechanisms (ECM) proved to be statistically significant in correcting the disequilibrium at lag one in the two models. It shows that about 81% correction is made to the equilibrium result from the co-integrating vector, at every one year to position real gross domestic product (RGDP) in Nigeria to its equilibrium root. This also means that real gross domestic product adjusts rapidly to changes in the explanatory variables. The long-run factor in the model has the right sign of negative, showing that at every disequilibrium in the real gross domestic product in Nigeria, there is positive adjustment mechanism at every one year to put them back to equilibrium track, provided other factors are controlled.

Going through the results, the overall regression model is significant judging from the F-statistic. The Prob (F-statistic suggests that the overall regression is significant at 5% level. This means that the explanatory variables jointly have a significant effect on real gross domestic product (a proxy for economic growth).

The adjusted R-squared indicates that the explanatory variables (tax revenue, oil revenue, national savings and external debt) explained approximately 47.55% of the total variations in real gross domestic product, while the error term (e) accounted for the remaining 52.45% of the variations unexplained by the explanatory variable used in the study.

**Empirical results from Model 2 (Equation 7)**

The results obtained for model 2 are presented in Tables 6 and 7. It comprises of the Augmented Engle-Granger cointegration test for simple regression, and error correction model (ECM). The results are presented as follow (Table 6).

Table 6 shows that the t-statistic associated with the Engle-Granger cointegration test is significant at 5% level judging from the P-value (0.0250). The implication is that there is evidence of cointegration or long run linear relationship between total government revenue (TGRV) and real gross domestic product (RGDP) growth rate. Consequently, the error correction model (ECM) was adopted as shown below (Table 7).

The long-run error correction term proved to be statistically significant in correcting the disequilibrium at lag one in the model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(TGRV)</td>
<td>-0.0596</td>
<td>0.10985</td>
<td>-0.5422</td>
<td>0.5925</td>
</tr>
<tr>
<td>ECM(-1)</td>
<td>-0.6804</td>
<td>0.18054</td>
<td>-3.7689</td>
<td>0.0009</td>
</tr>
<tr>
<td>C</td>
<td>0.0352</td>
<td>0.65775</td>
<td>0.05351</td>
<td>0.9577</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.38027</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.3307</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>7.67016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob (F-statistic)</td>
<td>0.00253</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.90006</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Eviews Output (2016).

**Table 7: Error correction mechanism (ECM) for model 2.**

It shows that 68.04% correction is made to the disequilibrium result from the co-integrating vector, at every one year to position real gross domestic product in Nigeria to its equilibrium root. The error correction term in the model has the expected negative sign, showing that at every disequilibrium in real gross domestic product (RGDP) in Nigeria, there is positive adjustment mechanism at every one year to put them back to equilibrium track, provided other factors are controlled.

The constant (C) is not significant at the three levels of 1, 5 and 10%, respectively. However, the coefficient suggests that real gross domestic product (RGDP) growth rate will increase by 3.51% if the explanatory variable (total government revenue) is held constant. This implies that without aggregate government revenue, the domestic economy will be positive.

The overall goodness of the model as shown by the coefficient of determination is 0.38027 which shows that the variations in the regressor (total government revenue) explained about 38% variations in real gross domestic product (RGDP) growth rate, while the error term (e) accounted for the remaining 62% having taken degree of freedom into consideration. The F-statistic, a measure of the overall significance of the regression, shows that the simple regression model (model 2) is significant at the 1% level. That is, total government revenue have a significant effect on real gross domestic product in Nigeria.

The results presented in Table 7 explained the relationship between total government revenue (TGRV) and real gross domestic product (RGDP) growth rate in Nigeria. Going through the results, changes in total government revenue (TGRV) depressed real gross domestic product (RGDP) growth rate by 5.95% in the short run. This is a clear indication that the aggregate revenue generated by the Nigerian government cannot be trusted for running the economy. This is linked to high cost of debt servicing, overdependence on the oil sector coupled with corruption of tax officers, capital flight, and the rest of them [3,36]. As such, it obviously means that the aggregate revenue generated from oil and non-oil sources have not been able to increase domestic production in Nigeria.

**Conclusion and Recommendations**

Generally, a government of various countries (developed, developing and under-developed) requires financial resources to boost the economic and social wellbeing of her citizens. Consequently, this pressing need of finance have propelled the government of many nations to introduce various means of raising finances for economic growth and development. Sequel to this, this study examined the effect of various sources of government revenue on the growth of Nigerian economy. Consequently, having collected and analyzed the data on yearly real gross domestic product growth rate, aggregate government revenue generated from oil and non-oil sources, oil revenue, tax revenue, external debt and national savings. It was observed that...
revenue from taxes and oil had a positive effect on economic growth in Nigeria, while the effect of national savings and external debt were negative. On the other hand, the aggregate government revenue was not sufficient enough to foster economic growth in Nigeria, which was assumed to be due to capital flight, leakages of tax revenue, corruption, tax evasion, misappropriation of oil revenue.

Based on the findings of this study, the following recommendations were preferred.

- To boost tax revenue in Nigeria, government should ensure that the citizens willingly comply with tax laws. To achieve this, the government should provide the necessary welfare needs of the citizens. As such, they will find reasons to pay their taxes due to the services they enjoy from the government.
- With respect to accelerating national savings, the monetary and fiscal authorities should ensure that the investment climate is favorable. This can be done by maintaining a stable exchange rate, domestic prices, and interest rate. This will amount to greater investment domestically, and the savings rate will accelerate as a result.
- There is need to develop the agricultural sector to function alongside the oil sector following the recent decline in oil revenue. Hence, the government should lift tariff on the importation of technology that will help expand the agricultural sector in Nigeria. As such, the economy will be diversified to accommodate other sectors, other than the oil sector solely.
- Also, since the government resort to external borrowing due to the fiscal deficit, there is need to appraise the potential benefits of all external debt financial projects by ensuring that the benefits would offset the debt servicing cost.

Finally, the government should put up policies that would prevent the leakage of available resources out of the country. As such, there should be close monitoring on the use of public funds from various sources in order to avoid siphoning of public wealth.

References


