

Macro-Economics Determinants and Public Revenue Generation in Nigeria

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Abstract: *The extent to which the dynamics of the macro - economic environment impacts public revenue of a country has not received a consensus in the literature and this is what motivated the investigation. The study therefore, explored the effect of macroeconomic indicators on public revenue in Nigeria. The study made use of ex post facto research design and secondary data were obtained from, CBN statistical bulletin, and National bureau of statistics for the period of (1993-2022). Descriptive statistics, Linear regression technique and correlation analysis were used to analyse the data based on SPSS 2.0 and Advanced Excel analytical -Tool pack, 2018. The result of the study indicated that share of agriculture (SHOA) has a negative and statistically significant effect on total tax revenue in Nigeria. The study has also established that per capita income has a positive and statistically insignificant effect on total tax revenue in Nigeria. Finally, the study has also confirmed that foreign direct investment has a negative and statistically significant effect on total tax revenue in Nigeria. Based on the foregoing empirical analysis therefore, the study has concluded that macro-economic factors or determinants have a statistically significant effect on government revenue in Nigeria. The following recommendations are made from the findings discussed above; firstly, Government should intensify her efforts in addressing the problem of sector informality in agricultural sub-sector in Nigeria through free registration of agricultural firms and provision of a database to capture all agricultural and Agro-based firms in the country, government should also intensify and extend tax farming policy to the grass root farmers so to minimize the sector informality problem. Secondly, to boost tax capacity from foreign direct investment (FDI) in Nigeria, the government should optimise FDI inflow and outflow. Besides, the Government should strive to develop the economy to increase the average income of Nigerian people to stimulate "ability to pay" principle of taxation and voluntary compliance in Nigeria.*

Keywords: *Foreign direct investment, Macro-economic determinants, Per capita income, Public revenue, Share of agriculture in GDP, Tax revenue.*

INTRODUCTION

The dynamics of the macro - economic environment impacts public revenue of a country. That is why the economists, analysts and the government and other policy makers often worry about the knowledge of key macroeconomic indicators for planning purposes and policy formulation as a key to revenue generation, economic growth and development in a country. Government cannot carry out her numerous functions in any society without money (revenue). There are internal and external sources of government revenue. Internally, Government derives revenue from both tax and non-tax sources available to her. Tax revenue can be said to be all the receipts that accrue to the government from tax. Tax revenue means government income due to taxation. Steinmo (1993) posited that “Governments need money. Modern governments need lots of money, how they get this money and whom they take it from are two of the common difficult political issues faced in any modern political economy”.

Over the years tax revenue performance has been reported to be very poor in Nigeria, as in many other developing countries of the world, which of course has been characterised by slow pace of development, the huge debt burden, over reliance on foreign aids and so on. Government uses tax proceeds to execute her traditional functions and obligations to the people, which may include, but not limited to; general administration, the provision of public goods, maintenance of law and order, defence against external aggression, security, trade and business regulation to ensure social and economic growth and sustainable development. Taxation is an important element of Macro-Economics used by the Government to control the economy, it assists the decision makers in formulating fiscal and monetary policies of Government. A macroeconomic factor has been said to be a geopolitical, environmental or economic event that can impact the monetary stability related to the whole economy of a country or region instead of a specific part of the population. Many evidences contended that macro-economic factors affect public revenue performance of a country. Public revenue (measured by total tax revenue) is used in this study as dependent variable while the macro variables such as; Share of agriculture in GDP, Per capita income and Foreign direct investment (FDI) respectively, are used as predictor or independent variables.

Per Capita income is a measurement of the GDP per person in a country's population. It indicates the amount of output or income that accrues to a person or average income of a citizen in an economy. It indicates average productivity or average living standards of people in Nigeria which of course, determines tax payment ability of the citizens. The share of agriculture in the GDP on the hand, is another independent variable used in this study, which is the ratio of the contribution of Agriculture to the GDP or national income. A broad summary of the literature contended that tax performance is lower with a larger share of agriculture in GDP. A large agricultural sector reduces taxable capacity because, in developing economies agriculture is principally, a subsistence activity which is difficult to tax directly owing to the problem of sector informality. Foreign direct investment (FDI) is said to be the cross-border investment by individuals, group, company or government in another country with the intent to get control of the firm and make profit. In some cases, it comes as international joint venture investments. In any case, there are at least two nations involved, the investing nation and the recipient nation.

Any of the above macro-economic aggregates/determinants (independent variables) can affect revenue generation in a country such as Nigeria—which means that economy situation, in the form of GDP per capita, growth and development can seriously determine tax revenue generation in a country.

Agida *et al.*, (2020), Akoye (2022), Ola (2021), Atolagbe (2021), Ruto (2020), Odunsi *et al.*, (2018) and Nalyanya *et al.*, (2020), Ruto (2020) and Dike (2019) had variously provided evidences which confirmed the existence and non- existence of relationship between the (share of

Agricultural, Per capita income and Foreign direct investment) on government revenue in Nigeria, respectively. This work therefore, is a modest attempt to empirically assessed and validate the effect of macro – economic variables/indicators on public revenue in Nigeria, as a special case.

Statement of the Problem

One of the major sources of Government revenue in Nigeria is taxation. Revenue from tax sources is now particularly very crucial to Nigerian economy more than ever before, particularly owing to the falling oil and gas revenue in the country, on one hand and in other hand, because of the problem of the ever-increasing Government expenditure in Nigeria. Emerging economies such as Nigeria are facing phenomenal and yearly rise in population growth which exerts pressure and demanded more public expenditure. Besides, the cost of coping with security problem and the challenges of modern 21st century life compliance, impacts more on government spending in Nigeria as in other developing economies.

The problem of the imbalance between government revenue and expenditure has becomes a recurrent decimal in Nigeria, and this has led to the problem of budget deficit and the resultant government borrowing and perpetual dependence on foreign aids. This has long been a serious problem in Nigeria and the world over. As a corollary to the problems presented above, the United Nations in year 2005 indicated that the achievement of the Millennium Development Goals (MDG) by developing countries requires increasing tax revenue up to 4% of Gross Domestic Product.

However, generating public income in Nigeria has over the years, been plagued with economic factors influencing development of the country. The state of economic development in a country determines tax capacity or revenue generating ability of various taxpayers. That is to say, that macro-economic variables such as; employment, share of industry to GDP, share of agriculture to GDP, Per capita income, Foreign direct investment, inflation, international trade, exchange rate and so on, affect generation of public revenue.

Many works have been done on this topic and related ones in the past and came up with different evidences without a consensus: Akoyeke (2022) appraised the effect of tax farming on revenue collection in Nigeria; Atolagbe (2021) investigated the impact of trade liberalization on revenue; Nalyanya *et al*, (2020) did a work on effects of inflation on tax revenue performance in kenya; Agida *et al*, (2020) studied agriculture and value added tax revenue on sustainable economic growth in Nigeria and so on. However, only but a few studies actually, explored effect of share of agriculture, Foreign direct investment and income per capita on public revenue - this is a dimension gap which motivated this investigation, the study is also a modest attempt to fills the existing gap in the literatures reviewed in this work.

LITERATURE REVIEW AND HYPOTHESES

This section presents the literature reports of the previous works done on macro-economic and tax revenue in Nigeria and the related topics. This was required to guide the present investigation and also helps the investigator's better understanding of the topic. This section is sub-divided into conceptual, theoretical framework and empirical review.

The Concept of Macro Economics Indicators and Tax Revenue

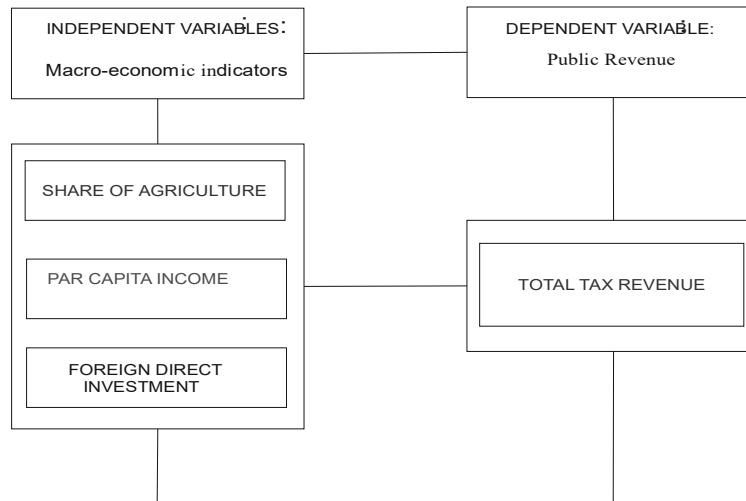


Figure 1: Conceptual Framework of Macroeconomic Determinants and Public- Revenues in Nigeria.

Sources: Ola (2021) and Atolagbe (2021)

Macroeconomic Determinants

Macroeconomic determinant or indicators are said to essential data or statistics or readings that reflect the economic conditions of a particular country, region or sector. They are commonly used by analysts and governments to assess overall or aggregate current and future health of the economy and financial markets – they are factors that broadly indicate of financial growth or failure that affect an economy. A macroeconomic factor is a geopolitical, environmental or economic event that can impact the monetary stability related to the whole economy of a country or region instead of a specific part of the population.

A macroeconomic factor may be considered positive, negative or neutral, based on the way it affects the economy. A natural disaster can negatively impact the production and sale of goods while higher production rates due to a demand for more goods are considered positive macroeconomic factors.

Macroeconomic factors are studied by economists, financial analysts and other professionals who help report on the financial health of a country. These factors also aid policymakers and economic advisers who work with governments, businesses and international markets. This study investigates the effect of macroeconomic factors on tax revenue or performance. Macroeconomic determinants considered in the study include; share of agriculture, Per capita income and Foreign direct investment.

2.1.2 Foreign Direct Investment (FDI)

Foreign direct investment (FDI) has been defined as oversea or cross-border investment by individuals, group, corporations or government with the intent to get control of the firm and make profit. It may come in the form of international joint venture. Using the direction of flow, there

are FDI inflow and FDI outflows. FDI inflow occurs when foreign capital is invested in a nation while FDI outflows results from investment of local capital abroad. FDI enterprise is an incorporated or unincorporated enterprise in which a foreign investor owns at least ten percent of the equity share capital or voting power of an incorporated enterprise or the equivalent of an unincorporated enterprise. At least ten percent ownership of ordinary shares or voting stock determines the existence of a direct investment relationship called minority interest. It does not require absolute control by the foreign investor before it could be seen as FDI-led enterprise. FDI was also said to be refers to net inflows of investment in an economy of a country comprising the sum of equity capital, reinvestment of earnings, long term and short-term capital, (Ola 2021). Foreign companies are obligated to pay tax to the government of the country where they operate from the profit made. The study therefore, examines the effect of FDI on tax performance in Nigeria.

Share of Agriculture and Industry (SHOA) in GDP

This is the measurement of the ratio of the contribution of Agriculture or industry to the GDP. A broad summary of the literature suggests that tax performance is lower with a larger share of Agriculture in GDP and smaller share of industry and vice versa. A large agricultural sector reduces taxable capacity because, in low - income countries agriculture is largely a subsistence activity which is difficult to tax directly, owing to sector informality. Industrial sector is easier to monitor and tax, and a larger share of manufacturing in GDP indicates economic development and a larger formal (taxable) sector.

Gross Domestic Product (GDP)

Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a country in a specific time period. It is the primary measure of a country's economic productivity and development. As a broad measure of overall domestic production, it functions as a comprehensive scorecard of a country's economic health. GDP is typically calculated on an annual basis, but it is sometimes, also calculated on a quarterly basis as well. Economists are said to have been watching this quarterly report closely for the quarterly and annual growth figures or index which can assist them in analysing the overall health of the economy. Legislators make use GDP when making fiscal policy decisions. GDP can also influence central bank when they are deciding on the future monetary policy. GDP can be calculated in three ways, using expenditure, production, and income approach.

Income Per Capita

GDP per capita is a measurement of the GDP per person in a country's population. It is an important indicator of economic performance and shows an average living standards and economic wellbeing of a country. A rise in per capita GDP signals growth in the economy and tends to reflect an increase in productivity. A higher per capita GDP is equal to a higher standard of living. It indicates average productivity or average living standards. GDP per capita can be stated in nominal, real (inflation adjusted).

Per capita GDP is often analysed alongside GDP. Economists use this metric for insight on both their own country's domestic productivity as well as the productivity of other countries. Per capita GDP considers both a country's GDP and its population. Therefore, it can be important to

understand how each factor contributes to the overall result and how each factor is affecting per capita GDP growth. GDP per capita is used in this work as a proxy for the level of economic development to capture increased taxperformance (the responsiveness of revenue to income growth) and collection efficiency ("Gross Part guide to economics").

Tax Revenue

Tax revenue is said to be monies collected from taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes. Total tax revenue as a percentage of GDP indicates the share of a country's output that is collected by the government through taxes. It can be regarded as one measure of the degree to which the government controls the economy's resources. The tax burden is measured by taking the total tax revenues received as a percentage of GDP. This indicator relates to government as a whole (all government levels). Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded from tax revenue. Refunds and corrections of erroneously collected tax revenue are recognized as negative revenue.

Tax Gap

Tax gap refers to the difference between actual tax revenues collected and estimated potential tax revenue based on specific economic characteristics and income level. This definition identifies tax gap as "the difference between tax collected and the tax that should be collected; which theoretically, is the tax that would be collected if all individuals and companies complied. This aggregate gap is the sum of individual tax gaps, or components of the aggregate tax gap. There is a considerable agreement among research findings on taxation in developing countries that there is huge potential to increase tax revenue in most low-income countries (Ihvarulam, 2021). Reasons for tax gap range from policy choices by government to administrative problems such as tax avoidance and weak administrative systems and capacities.

Theoretical Framework

This work is anchored on benefits-received theory and economic growth and The Socio-Political Theory as they have much bearing on the contemporary macroeconomic and revenue issues in Nigeria.

The Benefits-Received Theory

The theory was initially developed by Knut Wicksell (1896) and Erik Lindahl (1919), two economists of the Stockholm School. Wicksell's near-unanimous formulation of the principle was premised on a just income distribution. The approach was extended in the work of Paul Samuelson, Richard Musgrave and others. This theory proceeds on the assumption that there is basically an exchange or contractual relationship between tax-payers and the state. The state provides certain goods and services to the members of the society who in return contributes to the cost of these supplies in proportion to the benefits received. According to this theory, the state should levy taxes on individuals according to the benefit conferred on them. The more benefits a person derives from the activities of the state, the more he should pay to the government.

By implication, the higher the Per-capita income, or the higher the corporate profit or profit accruing to those in agriculture, the more tax revenue paid to the government. This theory has been subjected to severe *criticism* on the following grounds: It was argued;

Firstly, there is no direct quid pro quo in the tax paid by tax payers since benefits or returns are not in monetary form.

Secondly, most of the expenditure incurred by the state is for the general benefit of its citizens, it is not possible to estimate the benefit enjoyed by a particular individual every year.

Thirdly, if we apply this principle in practice, then the poor will have to pay the heaviest taxes, because they benefit more from the services of the state. If we get more from the poor by way of taxes, it is not against the principle of justice?

Besides, the researcher also contended as follows: the 'quid pro quo' set up in the theory runs counter with the principle of equitable distribution of income and wealth – the percentage of the income paid by the poor as benefits is higher. Also, the theory did not include the cost of negative externalities, borne by the public in its cost matrix.

The Socio-Political Theory

Adolph Wagner (1835–1917) advocated that social and political objectives should be the deciding factors in choosing taxes. Wagner did not believe in individualist approach to a problem. Accordingly, a tax system should not be designed to serve individual members of the society, but should be used to cure the ills of society as a whole. Wagner, in other words, was advocating a modern welfare approach in evolving and adopting a tax policy. Such theories on taxation are based on a relationship between the state responsibilities and liability to tax. This however, justifies the need for the imposition of tax to aid the financing of state activities. It also emphasised the need for cost-of-service delivery and benefit received theory. This theory indeed justifies the need for the imposition of tax on individual income, profit of corporations such as agricultural firms and foreign investors in Nigeria to aid the financing of state activities. The theory also emphasised on the need for cost-of-service delivery and benefit received theory (Olaniyi & Akinola, 2020). The theory was however, been criticised for having not been empirically substantiated

Empirical Review

This section reviews the literature of various related works done on this topic by different scholars in the past with their results and recommendations, which include but not limited to;

Akoyeke (2022) appraised the effect of tax farming on tax revenue collection in Nigeria: evidence from Federal Inland Revenue Service of Nigeria. The study used monthly data obtained from Annual Accounts/Financial Statement for sixty months (2013-2018). The variables used in this study include: tax revenue payable into Federation Account (TRFPA); Value Added Tax (VAT); National Information Technology Development Levy (NITDL) and Tax Revenue Payable into Consolidated Account (TRPCA). The study adopted time series statistical analysis by using the technique of t-test suitable for analysing structural break in policy. The study tested stationarity using the Augmented Dickey Fuller (ADF) test statistics to ensure the reliability and validity of the result obtained. Evidence from the result indicated that the series were stationary at level and free from producing misleading result. Furthermore, the result indicated positive significant

difference in tax revenue payable into Federation Account (TRFPA) since the implementation of tax farming. The result also showed positive significant difference of VAT, NITDL and TRPCA collected by FIRS in Nigeria after tax farming during the period under study. Specifically, the findings showed that FIRS revenue increased significantly after tax-farming implying that the policy was worthwhile since it contributed to the rise in revenue generation of FIRS. The study recommended the strengthening of the services of tax consultants to sustain the current momentum of revenue generation.

Salman *et al.*, (2022) did a work on Governance transparency of tax revenue performance in West Africa. The aim was to investigate the impact of regulatory quality (political stability) and (voice and accountability) on tax revenue performance in West African countries; and to assess the effect of governance efficiency (the rule of law and control of corruption) on the performance of tax generation of West African countries. Secondary data were sourced from Governance indicators which cover 2005 to 2017. Regression analysis was employed to test the research hypotheses. Sixteen West African countries were purposively chosen because of governance issues such as political instability and government ineffectiveness. The results showed that regulatory quality, political stability and absence of violence, and voice and accountability have insignificant impacts on tax revenue performance. Moreover, government effectiveness, the rule of law and control of corruption have positive and significant impacts on tax revenue performance in West African countries. The study concludes that governance affects tax revenue performance in West African Countries; thus, the study recommends, among others that government should come up with realistic policies that will increase public and civil service quality.

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Atolagbe (2021) studied the impact of some macroeconomic variables on tax revenue in Nigeria. This study was carried out to investigate the impact of trade liberalization and six macroeconomic variables on tax revenue in Nigeria from 1981-2019, using the autoregressive distributed lag (ARDL) approach to cointegration and the Error Correction Model (ECM). The macroeconomic variables found to be predictors of both domestic and external tax revenues are share of

petroleum and mining in GDP, foreign direct investment, share of agriculture in GDP, per capita income, exchange rate and inflation rate. These are therefore important to explain tax revenue in Nigeria. The study recommended improved and sustained tax revenue to embark on comprehensive trade liberalization policies as well as regulate changes in macroeconomic variables.

Ihvarulam *et al.*, (2021) empirically, investigated macroeconomic determinants of tax revenue in economic community of west African states. Panel data analysis is employed on six ECOWAS countries' data set on tax revenue, gross domestic product, inflation, unemployment, trade openness and exchange rate over 2005-2019. The Wald's test and Hausman test indicated that the fixed effects regression was appropriate for the study. The results showed that inflation was positively related to tax revenue and statistically significant at 5 percent. A unit increase in inflation led to 0.007 increase in tax revenue measure; economic growth was also positive and statistically significant at 5 percent; a unit rise in GDP resulted in 0.78 rise in governmental tax revenue variable. Finally, Tax revenue variable decreased by 0.10 with a unit increase in unemployment. It is recommended that ECOWAS countries should carefully manage their macroeconomic environment to boost tax revenue.

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Yaro *et al.*, (2021) investigated the relationship between taxation and economic growth in Nigeria. The research's major objective is to see how tax is being collected by the tax authority and how it's being used in the development of the economy. The finding shows that the effective management of FIRS enhances their revenue years. This means there were positive significance relationship between non-oil revenue profit tax and growth of the Nigeria economy. It was recommended that there is need for the Nigerian government to restructure the tax system in other to meets demand of the 21st century. The Federal Inland Revenue Service (FIRS), the government should ensure that taxation is properly manage in a manner that will accelerate economic growth, reduce inflation rate and generate employment in the country.

Ola (2021) foreign direct investment inflows and tax revenue performance in Nigeria, using time series data that covers periods from 1987 to 2019. The empirical techniques used in this study are unit root test, co-integration test and VECM. According to the unit root test results, all the

series are integrated of order (1). The Johansen co-integration test suggests that long-run relationship exists among the selected series. The study found that Real gross domestic product (log first difference RGDP) exhibits positive and significant relationship with tax revenue performance in the short run, while Foreign direct investment (FDI) and Real gross domestic product (RGDP) have positive and significant effect on Tax Revenue Performance in the long run. As well the VEC granger causality/Exogeneity Wald Chi-squared Test shows that the explanatory variables have joint significant effect on Tax revenue performance in the short-run. It was recommended that, government should create enabling socio-economic environment through the provision of sustainable infrastructure, review the current list of tax incentives, tackling corruption and terrorism that will promote inflow of foreign direct investment and thus, resulting in higher tax revenue yield in Nigeria.

Joseph *et al.*, (2021) did a work on tax farming as panacea for increased revenue generation in Nigeria -empirical review. The study revealed that tax farming leads to excessive exploitation of taxpayers, lack of investment in the system because tax-farmers investments were not secured as their contract could be terminated by the state at any time thereby discouraging investment in the long-run. Again, it ensured a highly coherent and efficient system of resource allocation. The system similarly provided guidance for resource allocation not only to the tax-farmers but also to the state. The tax-farming system was a very efficient revenue collection tactic for the state. It played a substantial role behind the decision of the state to invest directly in the various industries where it generated enormous tax revenue. The tax-farming system contributed significantly to the increase in capital in the private sector both by the massive profits it helped create and by compelling the entrepreneurs to form partnerships. Based on the findings obtained from relevant literatures reviewed, the study recommended that tax farming should be given legal backing in Nigeria as a veritable strategy for taxes and levies collection. Government should also ensure efficient tax administration as this would guarantee efficient revenue collection and accountability since the amount to be collected is already determined.

Nalyanya *et al.*, (2020) did a work on effects of inflation on tax revenue performance in Kenya. The aim was to examine the effects of macroeconomic variables on tax revenue performance in Kenya using annual time series data of ten years for the period 2008 to 2018, to estimate a linear model of tax revenue performance and the selected macro-economic factors. The study adopted a correlation research design which is a non-experimental research design technique that helps researchers establish a relationship between two closely connected variables. Secondary data from the Central Bank of Kenya, Kenya National Bureau of Statistics (KNBS), Kenya Revenue Authority (KRA) and World Bank were collected and presented using tables and figures. The study established that there is a link between the macroeconomic variables and tax revenue performance. It indicated that the foreign direct investment is statistically significant and has a positive relationship with tax revenue performance, whereas the inflation and unemployment rates, negatively influenced tax revenue performance in Kenya for the period of time under the study. The results also revealed that the model was good in terms of goodness of fit and overall significance. The findings recommended that the government and its tax administration should initiate measures to improve revenue growth and performance. The government should also develop strong mechanism to mobilize more resources for its revenue.

Atuhairwe *et al.*, (2020) investigated tax administration and tax revenue performance of Kiboga District Local Government, Uganda. The main aim was to examine the relationship between tax administration and tax revenue performance. This was accomplished by taking Kiboga district as a case study. It adopted a cross sectional study and used both qualitative and quantitative approaches to gather the required data. The study sample was 136 respondents selected by simple random sampling and purposive sampling. Questionnaires and documentary review were used for data collection. The study indicated that an increasing level of tax registration has a positive impact on revenue performance. The findings for increasing levels of tax assessment have direct positive impact on revenue performance. The study findings for increasing the level of tax collection procedures have a direct positive impact on the level of performance and economic development. And from the regression analysis, the independent variable, tax administration through tax registration, assessment and collection procedures has positive significant influence in the dependent variable (local revenue performance). The study recommends that the local governments engage in registration of all stakeholders, businesses and people to broaden the tax base for which local revenue is based so as to improve service delivery.

Agida *et al.*, (2020) studied empirical analysis of the contributions of agriculture and value added tax (VAT) revenue on sustainable economic growth in Nigeria. The objective was to examine the extent to which revenue generated from agriculture and value added tax sources can influence sustainable economic growth in Nigeria. Expost facto research design was adopted for the study and time series data collected from the Central Bank of Nigeria (CBN) statistical bulletin and Nigeria Bureau of Statistics (NBS) for the period 1995 to 2018 were used. Ordinary Least Square (OLS) regression technique was adopted to ascertain the extent to which revenue from agriculture and Value Added Tax (VAT) contribute to sustainable economic growth in Nigeria. The findings of the study show that agriculture revenue contributes significantly to sustainable economic growth in Nigeria. VAT equally show a significant contribution in terms of revenue generated to sustainable economic growth in Nigeria. The researchers then concluded that agriculture and VAT revenue has significant contribution to sustainable economic growth in Nigeria. It was equally concluded that agriculture if given proper attention alongside value added tax, will lead to sustainable economic growth in Nigeria as both impact each other. It was then recommended that government has a role to play for the two sources of revenue generation (agriculture and value added tax) to contribute adequately to sustainable economic growth in Nigeria. Government will need to strengthen the agriculture sector for increase production, and equally prudently manage revenue generated from value added tax and be accountable to the citizens in providing basic amenities and security for continuous existence.

Omodero *et al.*, (2020) examined the impact of internally generated revenue (IGR) of the three tiers of government on economic performance in Nigeria. The specific objectives of the study were basically to establish the influence of internally generated revenue of the federal, state and local governments on per capita income in Nigeria. The study made use of annual time series data which spanned from 1981-2016 and were obtained from CBN Statistical Bulletin, CBN Annual Reports and World Bank website. The data were collected on Per Capita Income (PCI), Federal Government Independent Revenue (FGIR), State Government Internally Generated Revenue (SIGR) and Local government Internally Generated Revenue (LIGR). Ordinary Least Squares (OLS)

method was employed to carry out the multi-regression analysis with the aid of e-views version 9. The result indicated that FGIR has insignificant positive impact on PCI while SGIR and LGIR have significant positive impact on PCI. Based on these findings, the study suggests that government at all levels should put more efforts in taking advantage of all IGR sources within their domain in order to achieve the desired economic goals in the country.

Ruto (2020) did a work on effects of foreign Direct Investment on tax revenue performance in Kenya any government to effectively carry out its primary function and other subsidiary functions, it requires adequate funding. Taxation generates public funds to governments through structured approaches. Tax is a compulsory payment imposed by the government on the incomes and profits of individuals and corporate bodies. The amount of tax revenue realized or expected by any state is determined and influenced by various economic factors ranging from micro to macro-economic. In Kenya, tax revenues have, for quite some time, remained low relative to the effort and tax policies in place. This study examined the effects of macroeconomic variables on tax revenue performance in Kenya using annual time series data of ten years for the period 2009 to 2018, to estimate a linear model of tax revenue performance and the selected macro-economic factors. The period is extensive enough to give accurate results. The study adopted a correlation research design which is a non-experimental research design technique that helps researchers establish a relationship between two closely connected variables. Secondary data from the Central Bank of Kenya, Kenya National Bureau of Statistics (KNBS), Kenya Revenue Authority (KRA) and World Bank were collected and presented using tables and figures. The study carried out pre-estimation tests so as to validate the results. Unit Root Tests was done to detect for stationarity using Augmented Dickey Fuller (ADF) test, Cointegration was done to test for long run relationship between the dependent variable and the independent or predictor variables. Multicollinearity test was done to find out if the predictor variables are highly correlated using Vector Integrating Factor (VIF), heteroscedasticity test was done to find out if residuals are equally distributed using Breusch-Pagan-Godfrey test. Time series data was collected using documentary analysis and analysed using Stata and E-views software programs. Time series data rules out the option of collecting biased data from primary sources, it also provides larger and higher-quality databases that would be unfeasible for any individual researcher to collect on their own. The study established that there is a link between the macroeconomic variables and tax revenue performance. It indicated that the coefficient of foreign direct investment (0.311568) units and GDP per capita (0.8128243) from the model exhibited a statistically significant positive relationship with tax revenue performance, whereas the inflation (-0.183015) and unemployment rates (-0.343756) negatively influenced tax revenue performance in Kenya for the period of time under the study. The results also revealed that the model was good in terms of goodness of fit and overall significance with R² value of (0.7371) and a probability value of 0.0000.

Andrejovska *et al.*, (2019) assessed tax revenues in the context of economic determinants in Slovak Republic. The aim of the contribution is to quantify the impact of selected macroeconomic indicators (gross domestic product, level of employment, public debt, foreign direct investments, effective tax rate, statutory tax rate) on the total amount of tax revenues, taking into account the tax competitiveness of the 28 EU member states. There was used methods of three models of

regression analysis: the pooling model, the fixed effects model and the random effects model. The hypothesis that the gross domestic product has the greatest impact on tax revenue has been tested. In conclusion, the analysis confirmed very strong correlation between tax revenues and employment rate. Followed by foreign direct investment and gross domestic product. Increasing these determinants by 1 mil. € (increase in employment by 1%) would increase tax revenues by 10 072 mil. € at the employment rate, by 383.1 thousand € for gross domestic product and by 434.2 thousand € for foreign direct investment.

Ndiaye (2019) investigated tax administration and revenue mobilization in Senegal for the period of 1970- 2014 using various econometric methods based on ordinary least squares, instrumental variable two-stage least squares, and iteratively reweighted least squares, the paper assesses whether reforms are important for increasing tax revenue. The results show that, tax reforms, institutional reforms, and all reforms combined have contributed to significantly increased tax revenue performance. The key implication is that more tax-related reforms and more institutions-related reforms are crucial to sustainably improved tax revenue mobilization.

Dike (2019) is examined the relationship between foreign direct investment and tax revenue in Nigeria. Hypotheses were developed in response to the objective of the study. Data were sourced from Inland Revenue Services (FIRS) and Central Bank of Nigeria (CBN) statistical Bulletins between 2000 - 2017. Econometric techniques of ordinary least square (OLS), Augmented Dickey Fuller (ADF), Johansen co integration test, Error Correction Model (ECM) and pair wise Granger Causality test were employed in the empirical analysis. R^2 , Regression Coefficient, Probability value, T-Statistics and F-Statistics were used to determine the extent to which the independent variables can affect dependent variables. The result revealed that PPT has significant relationship with FDI while CIT has negative relationship with FDI. It is recommended that Nigerian government should ensure policy consistencies in her tax revenue drive. More so, investment and political stability are pertinent in attracting foreign direct investment into Nigeria.

Oluwatobi *et al.*, (2019) investigated Economic variables and tax revenue in Nigeria. The purpose of the work was to examine the link between economic variables and tax revenue in Nigeria for the period 2005-2015. It investigated impact of; Human Development Index, Foreign direct investment and Gross Domestic Product in Nigeria impact on tax revenue. Annual time series data were used for the period. Multiple Regression analysis and product moment Pearson correlation coefficient technique was used to examine the impact and relationship between economic variables and tax revenue in Nigeria. The findings revealed that there is no significant relationship between Human Development Index, Foreign Direct Investment and Total tax revenue collected while Gross Domestic Product has significant impact on Total Tax Revenue Collected. The study recommends that the government should strive to achieve sustainable price stability and fiscal discipline that channels funds to productive sectors to encourage private investors.

Andrejovska *et al.*, (2019) assessed tax revenues in the context of economic determinants in Slovak Republic. The aim of the work is to quantify the impact of selected macroeconomic indicators (gross domestic product, level of employment, public debt, foreign direct investments,

effective tax rate, statutory tax rate) on the total amount of tax revenues, taking into account the tax competitiveness of the 28 EU member states. The hypothesis that the gross domestic product has the greatest impact on tax revenue has been tested. In conclusion, the analysis confirmed very strong correlation between tax revenues and employment rate. Followed by foreign direct investment and gross domestic product. Increasing these determinants by 1 mil. € (increase in employment by 1%) would increase tax revenues by 10 072 mil. € at the employment rate, by 383.1 thousand € for gross domestic product and by 434.2 thousand € for foreign direct investment.

Odunsi *et al.*, (2018) recorded evidences on the effect of macroeconomic variables on tax revenue performance in Nigeria from the year 1987 to 2016. Ordinary Least Square (OLS) was used for the estimation. Pre and post diagnostics test were conducted prior to analysis. Adjusted R^2 denotes that the explanatory variables explain about 95% of all the changes in the dependent variable. The p-value and F-statistics were statistically significant at 1% (0.000), meaning that the explanatory variables jointly influence the dependent variable of tax revenue performance. On the aggregate, the results show a significantly positive effect of exchange rate and real gross domestic product on tax revenue performance but inflation rate had negative, but insignificant effect on tax revenue performance in Nigeria within the timeframe. The results indicated that some macroeconomic variables exerted effect on tax revenue performance.

From the review of literature, the following hypotheses were raised:

H₀₁: There is no significant effect of the share of agriculture on total tax revenue in Nigeria.

H₀₂: There is no significant effect of Par capita income on total tax revenue in Nigeria.

H₀₃: There is no significant effect of Foreign direct investment on total tax revenue in Nigeria.

RESEARCH METHODOLOGY

Research Design

Ex post facto research design was adopted for this study to analyse the time series data which were obtained for all the variables in the study. Ex post facto research design was implemented to analyse the time series data which were obtained for all the variables (both dependent and independent) from Central Bank of Nigeria Statistical Bulletin, IFRS, Ministry of Finance and National Department of statistics for the period (1993-2022). The data were analysed using descriptive, Simple Linear regression and correlation techniques with the use of SPSS 2.0 and Advanced Excel Analytical Tool Pack-2018. Empirical analysis is used to validate effects of macroeconomic determinants on tax revenue in Nigeria. The model is developed based on the theories, related literatures on developed and developing countries and taking into consideration the Nigeria's environment. Government revenue, operationalised with (total tax revenue) is used here as the dependent variable while macroeconomic indicators with dimensions (share of agriculture in GDP, Par capita income and Foreign direct investment) are used as independent variable. The rejection criterion for testing of null hypotheses is at 5% level of significance, the p-value of individual result below 5% (0.05) significance level is accepted and is rejected if

otherwise. The research technique has been employed and found to be suitable in prior similar researches, such as those of

Model Specification

Regression model is used for testing the hypotheses. This is formulated by inserting the study variables to test the stated hypotheses and useful for answering the research questions, this is stated as follows;

To determine the responsiveness of dependent variable to the independent variables, the general panel econometric model is as specified in equation

$$TT = f(SHOA, PCI, FDI)$$

Panel Regression Model

$$TT = f(SHOA) + \mu$$

$$TT = f(PCI) + \mu$$

$$TT = f(FDI) + \mu$$

Hence, the models for the study are;

$$TT_{it} = \alpha_0 + \alpha_1 SHOA_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

$$TT_{it} = \beta_0 + \beta_1 PCI_{it} + \varepsilon_{it} \dots \dots \dots (2)$$

$$TT_{it} = \varphi_0 + \varphi_1 FDI_{it} + \varepsilon_{it} \dots \dots \dots (3)$$

Where; TT= Total tax revenue;SHOA =Share of Agriculture in(GDP);FDI= Foreign Direct Investment; PCI = Per Capita Income; $\alpha_0, \beta_0, \varphi_0$ = constant (intercept on Y-axis); $\alpha_1, \beta_1, \varphi_1$ = co-efficient of regression; ε_{it} = error term.

Table 1 **Variables and Measurement**

Concepts	Variables	Indicators	Measurement
Public Revenue	Total Tax Revenue (TT)	Total tax revenue for the year.	Total money income received from all taxes in a year.
Macro- Economics	Share of agriculture (SHOA)	Total values of all agricultural produce in a period	Value of Agricultural production to GDP in a year
	Par capita Income (PCI)	Average income of each citizen in the year	Value industrial production to GDP in a year
	Foreign Direct investment (FDI)	FDI inflow in the year	Foreign capital Investment to GDP in a year

Sources: Andrejovska *et al*, (2019); Ola (2021); Joseph *et al*, (2021)

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Total tax	30	160.1924	5325.0000	2042.772167	1560.4529332
FDI %	30	.1838	5.7908	1.615927	1.2430086
SHOA %	30	19.1000	37.0000	24.403333	3.8601843
PCI	30	.2996	8.8411	3.350805	2.5770066
Valid N (listwise)	30				

The descriptive statistic for this work is presented in Table 2. The mean value of Foreign direct investment(FDI),share of Agriculture (SHOA) and Par capital income (PCI) are1.62, 24.4 and3.4 respectively. while mean of total tax (TT) is shown as2042.8. The table therefore, reveals that the contribution of Foreign direct investment (FDI) to total tax revenue is the least (1.6%)compared to that of share of agriculture (24%)and Par capita income (3.4).A relatively higher Share ofagriculture in total tax revenue may be accounted for by tax farming and other factors which hasrecently cometo revolutionised tax collection in the sector to address the problemof sector informality.Also disclosed on the table is the average total tax income of N2042.8 billion which depicts a little improvement in tax capacity in Nigeria.

BivariateCorrelation

Table 3 Bivariate Correlation

		Total tax	FDI %	SHOA %	PCI
Total tax	Pearson Correlation	1	-.534**	-.506**	.168
	Sig. (2-tailed)		.002	.004	.376
	N	30	30	30	30
FDI %	Pearson Correlation	-.534**	1	.222	.195
	Sig. (2-tailed)	.002		.238	.302
	N	30	30	30	30
SHOA %	Pearson Correlation	-.506**	.222	1	-.196
	Sig. (2-tailed)	.004	.238		.299
	N	30	30	30	30
	Pearson Correlation	.168	.195	-.196	1
	Sig. (2-tailed)	.376	.302	.299	
	N	30	30	30	30

****.** Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation between the variables of the study is presented in Table 3. Total tax revenue and FDI are significant at (p-value = 0.02) and negatively correlated at the value of ($r = -0.534$), suggesting low level of foreign direct investment inflow in Nigeria. The correlation between Share of Agriculture (SHOA) and Total tax revenue is significant at (p-value of 0.004) and negative ($r = -0.506$), signifying an indirect relationship between the two variables -the higher the share of agriculture in the economy the lower tax revenue performance in the developing economy like Nigeria, owing to sector informality, which is the problem of the agricultural sub-sector in Nigerian. Also, there is a positive ($r = 0.168$) and insignificant association at (p-value = 0.376) between Per capita income (PCI) and Total tax revenue (TT), depicting a direct relationship between the two variables.

Multivariate Analysis

Result from regression Analysis of model 1

Result of the regression analysis of model-1 is obtained from Table 4. Model-1 addresses the relationship between Total tax and independent variable: Share of Agriculture (SHOA), the model is stated as follows; $TT_{it} = \alpha_0 + \alpha_1 SHOA_{it} + \varepsilon_i$

Table 4. Regression Result (model-1)

Model		Unstandardized Coefficients		Std Coefficients Beta	T	Sig.
		B	Std. Error			
1	(Constant)	7029.933	1627.842		4.319	.000
	SHOA %	-204.364	65.913	-.506	-3.100	.004
Model	R	R ²	Adjusted R ²		Std. Error of the Estimate	
1	.506 ^a	.256	.229		1370.1884404	

a. Predictors: SHOA %, b. Dependent Variable: Total tax.

Table 4. shows that the

independent variable explained about 25.6% of the variations in Total tax revenue (TT). The estimate of the equation reveals a positive intercept which stand at 7029.9, which implies that when share of agriculture (SHOA) is zero, total tax revenue (TT) would stand at 7029.933. The slope of the estimated model-1 shows a negative and statically significant relationship between share of agriculture (SHOA) and Total tax revenue (TT) with its value being (-204.364) and p-value of (0.004), which means that one unit change in share of Agriculture (SHOA) would cause Total tax revenue (TT) to change by (-204.364) units in the same direction. Since the p-value is less than (0.05), consequently, there is sufficient evidence to reject hypothesis-1, which stated that there is no significant effect of the share of agriculture on total tax revenue in Nigeria. Consequently, this investigation has confirmed that agriculture has indirect and significant effect on tax revenue in Nigeria.

Table 5. Regression Result (model-2)

Model		Unstandardized Coefficients		Std Coefficients	T	Sig.
		B	Std. Error	Beta		
2	(Constant)	1702.791	473.929		3.593	.001
	PCI	101.462	112.816	.168	.899	.376
Model	R	R ²	Adjusted R ² Square	Std. Error of the Estimate		
2	.168 ^a	.028	-.007	1565.6213340		

a. Predictors: (Constant), PCI, a. Dependent Variable: Total tax

Result of the regression analysis of model-2 is obtained from Table 5. Model-2 addresses the relationship between macroeconomics and independent variable: Per capita income(PCI), which is stated as follows; $TT_{it} = \beta_0 + \beta_1 PCI_{it} + \epsilon_{it}$

Table 5 shows that the independent variable explained about 28% of the variations in Total tax revenue (TT). The estimate of the equation reveals a positive intercept which stand at 1702.791, which implies that when per capita income (PCI) is zero, total tax revenue (TT) would stand at 1702.791. The slope of the estimated model-2 shows a positive and statically insignificant relationship between per capita income (PCI) and Total tax revenue (TT) with its value being 101.468, and p-value of 0.376, this means that one unit change in per capita income (PCI) would make Total tax revenue (TT) to change by 101.468 units in the same direction. Since the p-value is greater than 0.05, consequently, there is sufficient evidence to accept hypothesis-2, which stated that there is no significant effect of the share of per capita income (PCI) in Nigeria. Therefore, this study has established that, per capita income (PCI) has a direct and insignificant effect on total tax revenue (TT) in Nigeria.

Result from regression Analysis of model-3

Result of the regression analysis of model-3 is obtained from Table 6. Model-3 addresses the relationship between macroeconomics and independent variable: Foreign direct investment (FDI), which is stated as follows; $TT_{it} = \varphi_0 + \varphi_1 FDI_{it} + \epsilon_{it}$

Table 6. Regression Result (model 3)

Model-		Unstandardized Coefficients		Std Coefficients	T	Sig.
		B	Std. Error	Beta		
3	(Constant)	3126.640	406.307		7.695	.000
	FDI %	-670.741	200.543	-.534	-3.345	.002
Model	R	R ²	Adjusted R ²	Std. Error of the Estimate		
3	.534 ^a	.285	.260	1342.3991907		

a. Predictors: (Constant), FDI %, b. Dependent Variable: Total tax

Table 6. shows that the independent variable explained about 29% of the variations in Total tax revenue (TT). The estimate of the equation reveals a positive intercept which stand at 3126.640, which implies that when foreign direct investment (FDI) is zero, total tax (TT) would stand at 3126.6. The slope of the estimated model-3 shows a negative and statically significant relationship between Foreign direct investment (FDI) and Total tax (TT) with its value being (-670.741), and p-value of (0.002), which implies that one unit change in foreign direct investment (FDI) would make Total tax revenue (TT) to change by (-670.741) units in the same direction. Since the p-value is less than 0.05,so, there is no sufficient evidence to accept hypothesis-3, which stated that there is no significant effect offoreign direct investment (FDI) on total tax revenue (TT) in Nigeria. Therefore, this work has confirmed thatforeign direct investment (FDI) has indirect and a significant effect on total tax revenue (TT) in Nigeria.

In the first regression model share of agriculture (SHOA) has a negative and a significant effect on total tax revenue (TT) in Nigeria, which signifies the fact that agriculture has indirect relationship with tax revenue in Nigeria. This is to say, the higher the share of agriculture in the economy the lower tax revenue performance in Nigeria, which of course may be as a result of sector informality which has been the problem of the agricultural sub-sector in the developing economy like Nigerian. Consequently, this investigation has also confirmed that agriculture has indirect and a significant effect on Government revenue in Nigeria.The second model showed a positive and statically insignificant effect of per capita income (PCI) on and Total tax revenue (TT) in Nigeria, this result may arise as a result low level of economic development that has affected taxpayers' personal income and their ability to pay tax, giving rise to high level of tax evasion in Nigeria. Therefore, this study has also established that, per capita income (PCI) has a direct and statistically insignificant effect on public revenue in Nigeria. Also, the third Model discovered that foreign direct investment (FDI) has a negative and significant relationship with total tax revenue (TT) in Nigeria. Hence, this work has also confirmed that foreign direct investment (FDI) has indirect and statistically significant effect on public revenue in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The study investigated effect of macroeconomics determinants onpublic revenue generation in Nigeria. The existing evidences showed that scholars are yet to reach a consensus about the effect of macro-economic factors on public revenue in Nigeria. The aim was to explore effect of macroeconomics determinants on government revenue in Nigeria. The dimensions of macroeconomics determinants in the study are;share of agriculture in GDP (SHOA), Par capita income (PCI) and Foreign direct investment (FDI). The result of the study indicated that share of agriculture (SHOA) has a negative and statistically significant effect on total tax revenue (TT) in Nigeria.The study has also established that per capita income (PCI) has a positive and statistically insignificant effect on total tax revenue (TT) in Nigeria.

Finally, the study has also confirmed that foreign direct investment (FDI) has indirect and statistically significant effect on total tax revenue (TT) in Nigeria. Based on the foregoing empirical analysis the study has concluded that macro-economic factors or determinants has a statistically significant effect on government revenue in Nigeria. The study has therefore, provided an

understanding of the effect of macroeconomics indicators on public revenue generation in Nigeria.

The following recommendations are made from the findings discussed above; (i) Government should intensify her efforts in addressing the problem of sector informality in agricultural sub-sector in Nigeria through free registration of agricultural firms and provision of a database to capture all agricultural and Agro-based firms in the country, government should also, intensify and extend tax farming policy to the grass root so to minimize the sector informality problem. (ii) To boost tax capacity from foreign direct investment (FDI) in Nigeria the government should optimise FDI inflow and outflow. (iii) Besides, the Government should strive to develop the economy to increase the average income of Nigerian people to stimulate “ability to pay” principle of taxation and voluntary compliance in Nigeria.

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