

Direct Taxes and Income Redistribution in Nigeria

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ABSTRACT

Introduction- Income redistribution is central to the development of any nation. However, the issue of generating income and its redistribution in Nigeria has been challenging overtime, with the nation depending largely on oil with little consideration on other sources of income. Also, insufficient tax resources, tax collectors' illicit activities and a lack of awareness of the value of paying tax by taxpayers are some of the problems facing the country in terms of tax revenue generation.

Objective - Our study therefore investigated the impact of direct taxes on income redistribution in the context of Nigeria, using company income tax, personal income tax, petroleum profit tax and education tax as direct tax variables.

Methodology –The study covered the period 1990 to 2019 using annualized data set from Federal Inland Revenue Service (FIRS) and Central Bank of Nigeria Statistical Bulletin. The study employed the Fully Modified Least Squares (FMOLS) to analyze the data.

Research Findings– Empirical results of our study revealed that, company income tax and education tax had insignificant negative effects on income redistribution, while personal income tax and petroleum profit tax had significant positive effects on income redistribution, thus reducing income inequality in the context of Nigeria.

Recommendations – We thus recommended “inter alia” that, revenue generated from taxes should be effectively used by government in providing quality infrastructures like schools, railway, healthcare facilities and other business outfits across various states for the general wellbeing of the citizens as this is hoped to close the income distribution gap between the rich and the less privileged in the country.

Type of Paper: Empirical.

JEL Classification: E21; E42; E62; O23

Keywords: Income redistribution; direct taxes; government expenditure on infrastructural goods; Fully Modified Least Squares (FMOLS), Nigeria; Income Inequality.

Reference to this paper should be made as follows: Ikechukwu, O.F; Christopher, E.O; Emmanuel, A; Osaremen, E.I. (2021). Direct Taxes and Income Redistribution in Nigeria, *GATR Global J. Bus. Soc. Sci. Review*,9(2), 182 – 196. [https://doi.org/10.35609/gjbssr.2021.9.2\(8\)](https://doi.org/10.35609/gjbssr.2021.9.2(8))

1. Introduction

The variations in disposable income and the widening disparity between the rich and the poor is a consequence of income inequality.

* Paper Info: Revised: April 17, 2021

Accepted: June 30, 2021

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Household income has seen no corrective increase, but has continued in a skewed direction, with a cloud of unevenness, especially in developing countries. Holding all factors constant, and with the continued eruption of the corona virus, inequality will continue to rise, and income will remain unevenly distributed. Consequently, poverty and unemployment will further surge (Africa, 2020). Income inequality is accompanied with increased poverty, a drastic decline in real incomes, private per capita spending, social services and a general decrease in welfare (The Guardian, 2019). In developing economies, and with Nigeria in focus, the perceived rise in income inequality is centered on several factors, including limited job prospects that are met by a high concentration of economic opportunities in a few cities, the exorbitant cost of governance which represents a larger proportion of government spending, while about 60 percent of the population live in poverty, with a microscopic few among the world's highest politicians, earning as much as \$65,000 a month.

The United Nations is not oblivious of this peculiarity and as such, set out as one of its maintainable objectives to diminish income disparity, focusing to continuously accomplish and maintain income growth of the bottom 40 per cent of the populace at a rate higher than the national minimum wage and to embrace approaches, particularly monetary, wage and social security approaches towards equality (United Nations, 2019) With the oblique direction of income in Africa and Nigeria, and to bring poverty and inequality in check, literature posits that income redistribution and taxation could champion this course.

Redistribution is broadly defined as the use of taxes and transfer policy to reduce income disparity; while this does not equate the rich with the poor, it however graduates the spending capacity of the poor to a more comfortable spending threshold. Bridging the income inequality gap requires effective economic policies such as taxation (Lustig, 2017). According to Edo, Okafor and Akhigbodemhe (2020) and Ezu and Okoh (2016) imposing taxes helps to generate funds utilized to provide social conveniences and guarantee proper condition for the financial prosperity of the general, thus, highlighting the redistributive effect. However, taxes could also have negative effect on the spending power of individuals and corporations, if not administered effectively (Edo, Okafor, and Justice 2020b, 2020a).

Tax enthusiasts have concentrated on possibilities of bridging uneven distribution of income and wealth, with emphasis on direct taxes. However, there still exists a wide gap between the rich and the poor, which questions the effectiveness of taxes in redistributing income. Therefore, the efficacy of taxes as an antidote for inequality appears to be a fairytale. Although, there are a handful of studies that have looked at the role of taxes as a medium for generating and redistributing income (Claus, Martinez-Vazquez & Vulovic, 2012; Meadowcroft, 2007; Obaretin, Akhor & Oseghale, 2017; Olusanya, Medunoye & Oyebo, 2012), nevertheless, a number of gaps were identified.

Firstly, questionnaire and ratios were employed to ascertain the distributive roles of taxes in distributing income; others made use of Gini-coefficient. From literature, we understand that Gini coefficient measures the dispersion of income or distribution of wealth among the members of a population (Mariacristina, Liquian & Chao, 2000). It however does not account for the redistributive effect of income; it is therefore only a measure of inequality. Secondly, these studies did not take account of the individual tax elements with regard to income redistribution. This study intends to do that by focusing on direct taxes in Nigeria. It is the position of this paper that higher shares of Gross Domestic Product (GDP) on social welfare, education, health, housing, among other public expenditures can impact income redistribution, individually and collectively. In terms of the magnitude of tax impact, income redistribution changes tend to be of an equivalent scale to those for public expenditures.

This study, however, contributes to literature by employing a different measure of income redistribution. GINI co-efficient as used in prior studies focuses on income disparity and the width of the income inequality

gap, as opposed to showing how income is distributed. The study therefore adopts government expenditure on infrastructural goods to measure redistribution.

The study therefore seeks to ascertain the effectiveness of direct taxes in redistributing income, taking cognizance of Petroleum Profit Tax (PPT), Personal Income Tax (PIT), Company Income Tax (CIT) and Education Tax (ED). The study covers direct taxes in Nigeria as a veritable tool for income redistribution, with a timeframe from 1990-2019 (30 years), the data were sourced from the Central Bank of Nigeria statistical bulletin and Federal Inland Federal Revenue Service.

The remainder of the study is followed by a review of literature, thereafter the methodology and discussion of findings, and finally a conclusion and recommendations.

2. Literature review and hypothesis development

Income taxes have two differing effects, the substitution effect and the income effect, the former focuses on taxes that reduce the income of citizens from their labour, leading to more work, less reward encouraging citizens to reduce their work also and the latter encourages more work in order to meet up to the required standard of living (Akhori & Ekundayo, 2016). Therefore, the two effects above move in different directions. Among the purposes of taxation, Sani, wambai and Hanga (2013) considers it to be an asset rearrangement instrument in the economy to even the disparity among rich and poor. As such taxes can be used to bridge the income imbalance.

Chu, Davoodi and Gupta (2004) studied the relationship between tax, income redistribution and the social spending of government in emerging countries for a period of 20 years from 1980-1990. The findings of the study showed that in contrast to advanced nations, emerging countries have been unable to utilize taxes as a means of redistributing income, transfer policy to reduce the disparity of income. Much weight has been put on urbanization and tax proportion as factors that are significantly important, and this importance was discovered to be strong.

In another study, Randall (2007) studied the effect of tax structure, income inequality and economic growth, data from sixty-five nations were used from 1970 to 2006 (36 years). The ordinary least square, fixed effect and random effect techniques were used. The findings of the study showed that CIT rate has a negative relationship with the disparity in income after considering other factors of income redistribution and economic growth. The study revealed that PIT has no influence on income disparity. In addition, they posit that CIT rate below 40% is not significant in reducing the disparity in income.

In another attempt, Cubero and Ivanna (2010) scrutinized fiscal and equity policy, concentrating on the distributive role of social expenditure and taxes in Central America. The study discovered that the effect of tax on the distributional role of income is regressive but not significant. The study further revealed that increased public spending directed to social expenditures will invariably increase the income of low-income family units.

Similarly, Claus et al., (2012) investigated the role of taxation in influencing government spending. They made use of different firms as the sample size and found out that PIT is progressive and is effective in redistributing income.

In the same vein, Olusanya et al., (2012) studied taxation as a tax policy instrument for income redistribution among Lagos State officials using the rank correlation coefficient of spearman, the analysis found a positive relationship between tax as an instrument of fiscal policy and income redistribution.

Duncan and Sabirianova (2011) investigated how the systemic progressivity of the national income tax structures influenced income inequality. For a wide panel of countries, they used Comprehensive Personal Income Tax schedules. They developed a detailed estimate of time shifting indicators of the systemic progressiveness of national income tax systems from 1981 to 2005. The study found that while progressiveness decreased observed difference in registered gross and net income, it had a statistically

significant lesser impact on the right inequality measured by GINI co-efficient consumer-based steps. They discovered that tax efficiency can increase real income inequality under certain circumstances, mainly in countries with poor law and order and wide informal non-taxable market.

Out of curiosity, Adigun and Awoyemi (2014) investigated the change and degree of poverty in rural Nigeria in the period 1996 to 2004. This explores the contributions of growth and redistribution factors to poverty shift during these eight years. The study is based on 1996 National Consumer Survey (NCS) of households and 2004 National Living Standard Survey (NLSS) data both collected by the National Statistical Bureau (NBS). Using Shapley Decomposition Method, the research shows that poverty rates in the rural sector marginally declined during the second study period (2004). The decomposition of changes in poverty into growth and redistribution components indicates that both growth and redistribution have reduced poverty, but the deterioration of income inequality has contributed to the worsening of poverty in Nigeria at different levels.

Obaretin et al., (2017) completed an investigation at the connection among tax assessment and its utilization for income redistribution in Nigeria. The information utilized for this examination was taken from secondary sources, from the Federal Inland Revenue administration and the World Bank, utilizing data from 1981 to 2014. OLS technique was used to analyze the data; the result showed that the various alternatives to tax have no significant influence on income disparity with GINI being at five percent level. Also, it was found out that taxation has been utilized to the fullest, its role in re-distributing income in Nigeria.

There have additionally been contentions advanced that tax is definitely not a viable conveyor for income redistribution, the other elective contention has upheld for government spending all things considered. It was contended by De Mello and Tiongson (2006) that empirical literature on inequality and government expenditures is indecisive. They stated that while the redistribution of income is more vital for emerging economies, it might be ineffective due to the presence of market imperfections which hamper the low-income bracket from benefiting from the capital market. It is observed from experience that market imperfection's role is not significant in helping the poor to increase their income as it is barely enough to meet basic needs. There are two significant arguments put forward by De Mello and Tiongson (2006) on the inability of government expenditures to reduce income inequality is due to those in the medium to high income bracket commanding the expenditures and secondly, the reluctance of government to make expenditures on redistributive programs.

A similar study by Baer and Galvão (2008) revealed that the tax burden in Brazil and government expenditure have a reduced distributional effect favoring high income groups, suggesting that effectively redistributing income will take place from fiscal policy change in tax structure and government expenditure. Bird and Zolt (2014) postulated that government expenditure is a suitable tool for redistributing income in emerging nations and additionally, this would not be effective in an environment where corruption is rampant.

Bird and Zolt (2014) also examined the role of PIT in redistributing income in developing nations. Though, they put forward 3 arguments opposing the use of PIT as a tool in income redistribution in emerging nations namely, opportunity costs, efficiency consideration and low-income base.

An empirical study by Meadowcroft (2007) in the United Kingdom postulated that increased progressive tax leads to increased distributional effect of income, he enumerated that ten percent of high-income earners has before tax profit 28 times bigger than the pretax income of 10% of low-income earners, this decreased to five times after tax. Though, Meadowcroft (2007) argued this type of tax is unsuitable as it creates adverse effects for the economy and high taxed individual.

Ugondah and Amadi (2019) investigated the difference between taxation and income inequality. The research design employed was the Quasi-experimental Design. Data for the study was analyzed using the Ordinary Least Square technique. The co-integration, unit root and error correction mechanism were also employed. The findings revealed that Company Income Tax has a positive relationship with income

inequality while Petroleum Profit Tax, Personal Income Tax has a negative relationship with income inequality.

Anyaduba and Otulugbu (2019) investigated the impact of taxes on income inequality (GINI), explicitly; they determined the effect of Value Added Tax (VAT), Custom and Excise Duties (CED), Petroleum Profit Tax (PPT) and Company Income Tax (CIT) on GINI in Nigeria from the year 1990 to 2016. The Cointegration and Error Correction Models (ECMs) were utilized to examine the variables. Augmented Dickey Fuller unit root was utilized to test for stationarity. They found that VAT, CED and PPT had positive relationship with GINI when estimated at 5% critical level, however VAT and CED were not significant.

CIT fundamentally affected GINI. In light of the discoveries, they infer that CIT alone was largely responsible for inequality. They consequently suggest that VAT ought to be imposed on products services consumed by high income earners.

Similarly, Kaisa, Mika and Jukka (2019) examined the effect of tax on revenue and inequality. The fixed effects ordinary least square technique was employed to analyze the data derived from multiple countries in Africa and America. The study used high-quality macro data, and fixed country effect approach combined with instrumental variables. The results of the study showed that tax adoption has not automatically contributed to increased inequality on average. We find relatively clear proof, however, that where inequality is measured on the basis of disposable income, countries with taxes have experienced rises in inequality, while in countries where inequality is measured on the basis of consumption; inequality has not increased following tax adoption.

Countries where inequality is calculated using income-based GINI are more generally high-income countries and thus the findings indicate that there is no evidence for low-income countries that the tax might have contributed to increasing inequalities in welfare. Admittedly, the effect of the tax on income disparity cannot be investigated in the absence of an income-based indicator of disparity for those countries.

Therefore, we hypothesize as follows:

H1: company income tax has no significant effect on income redistribution.

H2 personal income tax has no significant effect on income redistribution.

H3: petroleum profit tax has no significant effect on income redistribution.

H4: education tax has no significant effect on income redistribution.

3. Theoretical Framework and Methodology

The tax system is a means of ensuring the reallocation of income and wealth in order to reduce poverty and reasonable development through fiscal policy. Government additionally has obligation regarding rising inflation, unemployment and creating a sound infrastructure for business. Adam Smith advocated for the equality and justice in the payment of taxes and according to ability. The distribution of this tax payable should be equal, this by implication means that, tax payable should be proportional to income earned.

Equity and justice is assumed only when the tax system is able to serve as a channel for growth and development of the economy and its role in redistribution of funds to areas where it is needed and the use of these funds to provide benefits that will benefit all. This was highlighted in the study of Obaretin et al., (2017), whose model this study adopts. The model of Obaretin et al., (2017) is stated below:

$$\text{GINI}_t = \beta_0 + \beta_1 \text{TIT}_t + \beta_2 \text{TDT}_t + \beta_3 \text{OPN}_t + \beta_4 \text{FDI}_t + \beta_5 \text{INF}_t + \varepsilon_t \quad (1)$$

TIT = Total indirect tax revenue, TDT= Total direct tax revenue, FDI = Foreign direct investment, OPN= Economic openness, INF= Inflation rate, GINI= Gini coefficient

Companies' income tax	CIT	Measured using total companies' income collected by FIRS in Nigeria	(Olusanya et al., 2012)
Personal income tax	PIT	Measured using total personal income collected by FIRS in Nigeria	(Anyaduba&Otulugbu, 2019)
Petroleum profit tax	PPT	Measured using total petroleum tax paid by petroleum companies in Nigeria	(Anyaduba&Otulugbu, 2019)
Education tax	EDT	Measured using values derived from CBN statistical bulletin	(Olusanya et al., 2012)

Source: Researcher's Compilation (2020)

8. Data Analysis, Presentation, and Discussion of Findings

9. Descriptive Statistics

Essentially, Table 2 presents the summary statistics about the variables studied over the specified period of time. As observed, Government Expenditure on infrastructural goods has a mean value of ₦156.46 billion with a standard deviation of 158.23 billion. Maximum and minimum values are ₦562.75 billion and ₦1.30 billion, respectively. Company Income Tax mean and standard deviation stood at ₦442.19 billion and ₦508.84 billion, respectively. The minimum and maximum values were ₦3.0 billion and ₦1, 622.86 billion, respectively.

Personal Income Tax averaged ₦38.97 billion with a standard deviation, minimum and maximum values of ₦27.50 billion, ₦4.20 billion and ₦102.61 billion, respectively. Petroleum Profit Tax and Education Tax had means of ₦1, 182.81 billion and ₦81.10 billion, respectively. Their standard deviation was ₦1,135.47 billion and ₦88.02 billion, respectively. The minimum and maximum value for Petroleum Profit Tax was ₦26.91 billion and ₦3,657.00 billion, while education tax minimum and maximum values stood at ₦0.84 billion and ₦279.36 billion, respectively.

Similarly, all the variables were found to have positive skewness implying that, they have sequences that are tailed to the right. i.e., each of the variables tends to increase more than they decrease. It was further established that all the variables had kurtosis values lower than 3, suggestive of leptokurtic distribution (indication of no outliers) in the period of assessment. The Jarque Berra statistics show that all the variables in consideration are normally distributed, since their p-values are greater than 0.05 respectively.

Table ii: Descriptive Statistics

statistic	CIT (N'BN)	EDT (N'BN)	GE_INFRAS(N'BN)	PIT (N'BN)	PPT (N'BN)
Mean	442.19	81.10	156.46	38.97	1,182.81
Maximum	1,622.86	279.36	562.75	102.61	3,657.00
Minimum	3.00	0.84	1.30	4.20	26.91
Std. Dev.	508.84	88.02	158.23	27.50	1,135.47
Skewness	0.96	0.76	0.78	0.45	0.61
Kurtosis	2.72	2.27	2.60	2.76	2.07
Jarque-Bera	4.70	3.10	3.01	0.60	2.90
Probability	0.10	0.21	0.22	0.74	0.23

Sum	13,265.75	2,108.71	4,380.96	662.41	35,484.35
Obs	30	26	28	17	30

Source: Authors' computation, 2021

10. Correlation Statistics

Table 3 reveals the results of the correlation analysis. The correlation co-efficient revealed the existence of a linear relationship between the regress and the regressors. From the result, the co-efficient of correlation of the variable with respect to itself was (1.00) which revealed perfect correlation. All variables exhibited positive correlation. For example, CIT and GE_INFRAS (0.58), PIT and GE_INFRAS (0.58), PPT and GE_INFRAS (0.32); EDT and GE_INFRAS (0.50). This implies that an appreciable improvement in the tax revenue variables will lead to an improvement in the level of income redistribution in Nigeria.

Table iii: Linearity of variables

	GE_INFRAS	CIT	PIT	PPT	EDT
GE_INFRAS	1.00				
CIT	0.58*	1.00			
PIT	0.58*	0.87*	1.00		
PPT	0.32	0.29	0.20	1.00	
EDT	0.50*	0.86*	0.80*	0.42	1.00

NB: * Significant at 5% level

Source: Authors' computation, 2021

11. Unit Root Test

Table 4 reveals the stationarity test conducted using the Augmented Dickey-Fuller test. From the table, it was observed that most of the variables (GE_INFRAS, CIT and PPT) were found to be non-stationary at levels but all the variables became stationary at 1st difference. This implies that, all the series are integrated of order one (I(1)). Evidently, all the variables drift round a long-run mean that is around zero. This supports our choice of the FMOLS.

Table iv: Augmented Dickey Fuller unit root test at levels and first difference

Unit root tests at levels				
Variables	ADF-Test Statistic	95% Critical ADF Value	Prob	Remarks
GE_INFRAS	-2.35	-3.58	0.40	Non-stationary
CIT	-3.60	-0.77	0.96	Non-stationary
PIT	-4.18	-3.76	0.02	Stationary
PPT	-3.24	-3.57	0.10	Non-stationary
EDT	-3.85	-3.61	0.03	Stationary
Unit root test at 1st difference				
Variables	ADF-Test Statistic	95% Critical ADF Value	Prob	Remarks
GE_INFRAS	-4.50	-3.59	0.01	Stationary
CIT	-7.80	-3.60	0.00	Stationary
PIT	-4.92	-3.79	0.01	Stationary
PPT	-7.90	-3.58	0.00	Stationary

EDT	-5.75	-3.62	0.00	Stationary
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Source: Authors' computation, 2021

12. Co-integration Test

This study adopted the single equation method of Engle and Granger (1987). Essentially, the Engle-Granger accounts for serial correlations by applying the parametric ADF methodology. From Table 5, the Engel-Granger co-integration test conducted revealed that there is no evidence of a long run relationship in the model. This is justified from the tau-statistic (t-statistic) as well as the normalized coefficient of autocorrelation (z-statistic) that revealed probability values that are greater than the critical 5% value. Therefore, we failed to reject the null hypothesis of no co-integration in the model of the study.

Table V: Tests for Co-integration

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
D(GE_INFRAS)	-2.85	0.71	-10.78	0.71
D(CIT)	-3.27	0.54	-13.04	0.48
D(PIT)	-0.48	1.00	-1.78	1.00
D(PPT)	-4.22	0.22	-15.98	0.21
D(EDT)	-3.86	0.32	-14.96	0.29

Source: Authors' computation, 2021

13. Estimation Results

From Table 6, it was observed that Company Income Tax and Education Tax were found to have negative impact on government expenditure on infrastructural goods which is a measure for income redistribution. However, this relationship was found to be statistically insignificant in the estimated model. Conversely, Personal Income Tax and Petroleum Profit Tax had a statistically significant positive impact on government expenditure on infrastructural goods at 1% critical level respectively. From the result, the estimations from the regression result above showed the effect of direct taxes revenue on income redistribution as measured by the government expenditure on infrastructural goods. In line with the R² value of 0.56, about 56% of the systematic variation in the dependent variable is caused by the independent variables in the model, while the remaining 44% of the variation is accounted for by other variables not included in the model but were efficiently captured by the error term.

Table VI: Fully Modified Least Squares (FMOLS)

Dependent Variable: Government Expenditure on Infrastructural Goods

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22281.75	14183.69	1.57	0.13
CIT	-0.07	0.06	-1.03	0.31
PIT	3.86	0.96	4.04	0.00
PPT	0.07	0.01	5.63	0.00
EDT	-0.27	0.35	-0.78	0.44
R-squared	0.56	Adjusted R-squared	0.49	

Source: Authors' computation, 2021

14. Multi-co-linearity test

Table 7 reveals Multi-co-linearity test result. From the result, we observed that the centred Variance Inflation Factor (VIF) for all variables were less than the statistically recommended 10 (Studenmund & Cassidy, 2016). This implies that the variables and model in the study was free from Multi-co-linearity problems.

Table VII: Multicollinearity test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	7.07E+09	7.148	NA
CIT	0.03	22.46	5.917
PIT	6.16	12.81	4.29
PPT	0.002	7.22	1.29
EDT	0.79	15.72	4.85

Source: Authors' computation, 2021

15. Serial Correlation Test

Table 8 reveals the Autocorrelation (AC) and Partial Correlation (PAC) result, using the Q-Statistic. The null hypothesis of no serial correlation was accepted, since $p > 0.05$ at the various lags estimated.

Table VIII: Serial Correlation test

Autocorrelation	Partial Correlation	Lag	AC	PAC	Q-Stat	Prob*
. * .	. * .	1	0.11	0.11	0.40	0.53
. .	. .	2	0.02	0.01	0.42	0.81
. * .	. * .	3	-0.13	-0.14	1.01	0.80
*** .	. *** .	4	-0.35	-0.33	5.34	0.25
. * .	. * .	5	0.11	0.20	5.79	0.33
. * .	. * .	6	0.09	0.08	6.11	0.41
. .	. .	7	0.06	-0.06	6.26	0.51
. * .	. .	8	0.12	0.03	6.86	0.55
. ** .	. ** .	9	-0.31	-0.24	11.06	0.27
. * .	. * .	10	-0.18	-0.12	12.61	0.25
. .	. * .	11	0.02	0.11	12.62	0.32
. * .	. * .	12	-0.12	-0.16	13.38	0.34

Source: Authors' computation, 2021

16. Normality Test

As part of robustness checks, the researchers conducted the normality test with the aid of the Jarque-Bera statistic. From result, the associated Jarque-Bera probability value (0.115) was greater than the 5% critical values. This indicates that the residuals regenerated from the FMOLS model follow normal distribution. Thus, the estimates are robust.

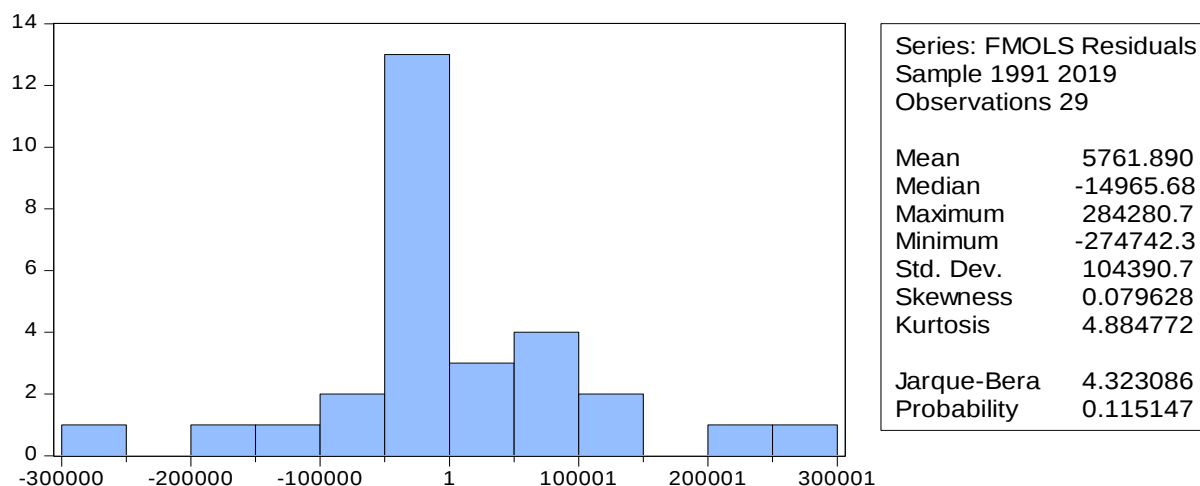


Figure I: Normality Test results

Source: Authors' computation, 2021

17. Graph of the Residual, Actual and Fitted Observations

The graph in Figure 2 below shows that, the actual and the fitted observations from the model are practically close to each other. Thus, the estimated model is robust.



Figure II: Graph of the Residual, Actual and Fitted Observation

Source: Authors' computation, 2021

18. Forecasting income redistribution in Nigeria

In order to further corroborate the above empirical results, it becomes valuable to simulate the actual behavior of government expenditure on infrastructural goods with vacillations in Company Income Tax, Personal Income Tax, Petroleum Profit Tax and Education Tax. This is achieved by utilizing predicting

method with the E-views application and the result is reported in Figure 3 below. Obviously, the result shows that, the forecasted government expenditure on infrastructural goods (GE_INFRASF) for Nigeria remained inside the 2 standard error critical lines, thus confirming the strength and accuracy of the forecast. However, the significance of the forecast is established by the inequality indicator of 0.25. Following relevant econometric postulations, the closer the value of this index to zero, the more precise the forecast procedure.

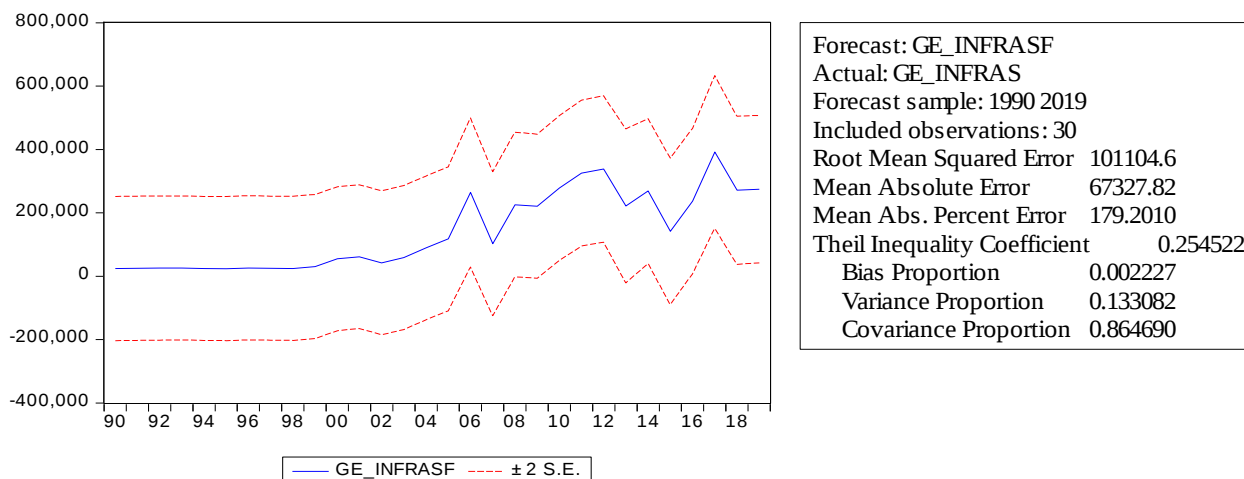


Figure III: Income Redistribution Forecast

Source: Authors' computation, 2021

19. Discussion of Findings

From the descriptive statistics, we observed that the standard deviation of government expenditure on infrastructural goods did not exhibit a considerable clustering around the mean. This implies that government expenditure is not enough to achieve the desired level of income redistribution in Nigeria. This finding is in line with the argument of Obaretin et al., (2017) that in time past Nigeria has always had a problem with income generation and its redistribution, because of the high dependency on a single source of income. Likewise, the standard deviation of Company Income Tax and Education Tax, which also did not exhibit considerable clustering around the means, suggest the need for tax administrators to be more effective and efficient in the collection of the various taxes.

The post-estimation tests result of Multi-co-linearity (variance inflation factors test), Serial Correlation, and Normality test (histogram normality graph) fulfilled the basic assumption of the Ordinary Least Squares. However, the pre-estimation with particular reference to the co-integration (Engel-Granger) test, shows no evidence of co-integrating relationship, notwithstanding the fact that, all the variables were stationary at first difference as evidenced from the Augmented Dickey Fuller test result. This is what informed the choice of the Fully Modified Least Squares, which utilizes the variables at their points of stationarity.

From the regression result, Company Income Tax had negative but insignificant relationship with government expenditure on infrastructural goods (a proxy for income redistribution, $\beta_1 = -0.07$, $SE = 0.06$, $p = 0.31$). This implies that an increase/decrease in the Company Income Taxes will not significantly affect government expenditure on infrastructural goods. Thus, such change will not significantly improve income redistribution in Nigeria. This finding is consistent with the earlier finding of Chu et al., (2004); Obaretin et al., (2017) who congruently submitted that, emerging countries have been unable to utilize taxes as a means of redistributing income, and transfer policy to reduce the disparity of income. The result is also partly in conformity with earlier findings of Anyaduba and Otulugbu (2019) who noted that CIT had a negative but significant impact on income

inequality as proxied by the GINI coefficient. However, this finding negates previous findings of Randall (2007); Olusanya et al., (2012); Ugondah and Amadi (2019) who averred that, CIT rate has a positive relationship with income redistribution after considering other factors of income redistribution and economic growth.

In addition, Personal Income Tax had a statistically significant positive relationship with income redistribution in Nigeria ($\beta_2 = 3.86$, $SE = 0.96$, $p < 0.001$). The implication of this finding is that, an increase in inflows from Personal Income Taxes by 1 unit will lead to a corresponding increase in government expenditure on infrastructural goods by 3.86 units. Thus, this will lead to increased equitable income redistribution (reduction in income inequality) in Nigeria. This finding is consistent with the study of Claus et al., (2012); Olusanya et al., (2012) and Ugondah and Amadi, (2019) who found that PIT is progressive and highly effective in redistributing income in a country.

Similarly, Petroleum Profit Tax had a statistically significant positive relationship with income redistribution ($\beta_3 = 0.07$, $SE = 0.01$, $p < 0.001$). This implies that 1 unit increase in the Petroleum Profit Taxes will consequently lead to a rise in government expenditure on infrastructural goods by 0.07 units. This finding further corroborates previous finding of Ugondah and Amadi (2019) who testified that Petroleum Profit Tax has a positive relationship with income redistribution, suggestive that when countries take advantage of inflows from Petroleum Profit Taxes, the citizens will substantially benefit from the redistribution process in the area of adequate provision of social amenities, which enhance the socio-economic wellbeing of the citizenry. Contrary to this finding, Anyaduba and Otulugbu, (2019) reported that PPT inhibits income redistribution and promotes economic inequality when measured at 5% critical level.

Lastly, Education Tax maintained a negative, though, insignificant relationship with income redistribution ($\beta_4 = -0.27$, $SE = 0.35$, $p > 0.1$). This implies that an increase in the revenues from Education Taxes will not significantly influence government expenditure on infrastructural goods. Our finding is consistent with the study of Kaisa et al., (2019) who submitted that on average, Education Taxes do not automatically translate to equitable income redistribution process. This finding partly substantiates the poverty-growth-inequality theory, that governments may be inefficient (more government means less or insignificant growth) but appear to be benevolent, since more government spending may reduce inequality.

Thus, as evidenced in the empirical result, it was established that, only Personal Income Tax and Petroleum Profit Tax significantly enhances income redistribution and reduces economic inequality in the context of Nigeria, subject to the adopted methodology in the study and period of assessments. The policy implication of these findings is that a tax regime targeting higher tax burden on the rich through their tax base such as luxury tax becomes essential and needs to be (re) considered by tax authorities. Also, there should be a swift and holistic implementation of the long debated minimum wage (N30, 000), so as to stimulate Personal Income Tax revenues in the country. The summary of hypotheses tested @ 5% significance level is reported in Table 9.

Table IX: Summary of hypotheses tested @ 5% significance level

S/N.	Hypothesis	Prob.	Decision
Ho1	Company income tax has no significant effect on income redistribution.	0.31	Accept
Ho2	Personal income tax has no significant effect on income redistribution	0.00	Reject
Ho3	Petroleum profit tax has no significant effect on income redistribution	0.00	Reject
Ho4	Education tax has no significant effect on income redistribution	0.44	Accept

Source: Authors' computation, 2021

20. Conclusion and recommendations

The study investigated the role of direct taxes in income redistribution by establishing the effect of Company Income Tax, Personal Income Tax, Petroleum Profit Tax and Education Tax on income redistribution in the context of Nigeria for the period, 1990 to 2019 using annualized data set from Federal Inland Revenue Service (FIRS) and Central Bank of Nigeria Statistical Bulletin. Results from the inferential statistic revealed that Company Income Tax and Education Tax had insignificant negative effects on income redistribution, while Personal Income Tax and Petroleum Profit Tax had significant positive effects on income redistribution, thus reducing income inequality.

Based on the findings of the study, it can be established that, direct taxes partly affect income redistribution in Nigeria. Essentially, this study exposes the flaws of poverty-growth-inequality theory, since only Personal Income Tax and Petroleum Profit Tax significantly enhance income redistribution and reduce economic inequality, while Company Income Tax and Education Tax do not have statistically significant impact on income redistribution in Nigeria.

Arising from the findings of this study, it is recommended that; revenue generated from taxes should be used by government in building quality infrastructures like schools, railway, roads, healthcare facilities and other business outfits across various states in Nigeria for the general wellbeing of the citizens. Also, there should be introduction and proper implementation of a luxury tax system where the rich will be made to pay tax on the consumption of more luxury goods than the poor so that, the revenue generated from luxury tax will be effectively utilized for the provision of free education and medical services for the citizens.

References

- Toyin, A. G., & Timothy, A. T. (2014). Economic Growth, Income Redistribution and Poverty Reduction: Experiences from Rural Nigeria. *Asian Journal of Agricultural Extension, Economics & Sociology*, 638-653.
- Africa. (2020). Covid-19 to Sink Millions into Extreme Poverty. *Africa Research Bulletin: Economic, Financial and Technical Series*, 57(7), 23075A-23075B. <https://doi.org/https://doi.org/10.1111/j.1467-6346.2020.09615>.
- Akhor, S. O., & Ekundayo, O. U. (2016). The impact of indirect tax revenue on economic growth: The Nigeria experience. *Igbinedion University Journal of Accounting*, 2(08), 62-87.
- Anyaduba, J. O., & Otulugbu, O. P. (2019). Taxation and Income Inequality in Nigeria. *Accounting and Finance Research*, 8(3). <https://doi.org/10.5430/afr.v8n3p118>
- Baer, W., & Galvão Jr, A. F. (2008). Tax burden, government expenditures and income distribution in Brazil. *The Quarterly Review of Economics and Finance*, 48(2), 345-358.
- Bird, R. M., & Zolt, E. M. (2014). Redistribution via taxation: The limited role of the personal income tax in developing countries. *Annals of Economics and Finance*, 15(2), 625-683.
- Chu, K. Y., Davoodi, H., & Gupta, S. (2003). Income distribution and tax, and government social spending policies in developing countries. Best: *XV Seminario Regional de Política Fiscal: compendio de documentos-Santiago: ECLAC, 2000-p. reg.*
- Claus, I., Martinez-Vazquez, J., & Vulovic, V. (2014). *Government fiscal policies and redistribution in Asian countries* (pp. 197-225). Routledge.
- Hollar, I. V., & Cubero, R. (2010). Equity and fiscal policy: the income distribution effects of taxation and social spending in Central America. *IMF Working Papers*, 1-42.
- De Mello, L., & Tiongson, E. R. (2006). Income inequality and redistributive government spending. *Public finance review*, 34(3), 282-305.
- Duncan, D., & Sabirianova Peter, K. (2008). Tax progressivity and income inequality. *Andrew Young School of Policy Studies Research Paper Series*, (08-26).
- Edo, O. C, Okafor, A. & Justice., A, E.(2020). *Corporate Taxes and Foreign Direct Investments: An Impact Analysis, Public Policy and Administration Research*, 10(9), 51-62.
- Edo, O.C; Okafor, A; Emmanuel, A. (2020). Tax Policy and Foreign Direct Investment: A Regime Change Analysis., *J. Fin. Bank. Review*, 5 (3): 84 – 98 [https://doi.org/10.35609/jfbr.2020.5.3\(3\)](https://doi.org/10.35609/jfbr.2020.5.3(3))

- Edo, O. C., Okafor, A., & Justice, A. E. (2020). Tax Policy and Foreign Direct Investment: A Regime Change Analysis. *Journals and Edo, Onome Christopher and Okafor, Anthony and Justice, Akhigbodemhe Emmanuel*, Tax Policy and Foreign Direct Investment: A Regime Change Analysis.(December 31, 2020). Reference to this paper should be made as follows: Edo, OC, 84-98.
- Ezu, G. K., & Okoh, J. I. (2016). Effects of tax revenue on selected macroeconomic variables in Nigeria. *Journal of the Management Sciences*, 12(1), 41–58
- Alavuotunki, K., Haapanen, M., & Pirttilä, J. (2019). The effects of the value-added tax on revenue and inequality. *The Journal of Development Studies*, 55(4), 490-508.
- Lustig, N. (2017). Fiscal policy, income redistribution and poverty reduction in low- and middle-income countries. *Center for global development working paper*, (448).
- Madzinová, R. (2017). Impact of government spending on income inequality. *Annals of the University of Oradea, Economic Science Series*, 26(2), 210-220.
- De Nardi, M., Ren, L., & Wei, C. (2000). *Income inequality and redistribution in five countries*. Ceps / Insead-Center for Studies of Populations, Poverty And Socio-Economic Policies / International Networks for Studies in Technology, Environment, Alternatives, Development.
- Meadowcroft, J. (2007). Tax, Equity and Redistribution. *Economic Affairs*, 27(1), 90.
- Obaretin, O., Akhor, S. O., & Oseghale, O. E. (2017). Taxation an effective tool for income re-distribution in Nigeria. *Mediterranean Journal of Social Sciences*, 8(4), 187-187.
- Olusanya, S. O., Medunoye, P., & Oluwatosin, O. A. (2012). Taxation as a fiscal policy instrument for income redistribution among Lagos State civil servants. *IOSR Journal of Humanities and Social Sciences*, 5(5), 60-70.
- Jones, R. S. (2007). Income inequality, poverty and social spending in Japan.
- Wambai, U. S. K., & Hanga, B. Y. (2013). Taxation and societal development in Nigeria: Tackling Kano's hidden economy. *International Journal of Academic Research in Business and Social Sciences*, 3(3), 113.
- Studenmund, A. H. (2014). *Using econometrics a practical guide*. Pearson.
- The Guardian. (2019, July 30). Lingerin poverty and consequences.
- Ugondah, N. C., & Amadi, N. N. (2019). Taxation and income inequality in Nigeria. *Advance Journal of Economics and Marketing Research*, 4(3), 104–116.
- United Nations. (2019). Sustainable Development Goal 10–Reduced Inequalities: Progress and Prospects. In *an Expert Group Meeting in preparation for HLPF 2019: Empowering people and ensuring inclusiveness and equality*.