TAXES AND INCOME INEQUALITY IN NIGERIA: 1980 – 2020

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ABSTRACT: This study investigated the relationship between taxes and income inequality in Nigeria from 1980 to 2020. The specific objectives were to investigate the relationship between personal income tax and Gini coefficient, evaluate the relationship between company's income tax and Gini coefficient, assess the relationship between petroleum profit tax and Gini coefficient, determine the relationship between capital gain tax and Gini coefficient, investigate the relationship between value added tax and Gini coefficient, evaluate the relationship between custom and excise duty and Gini coefficient from 1980 to 2020 in Nigeria. The study adopted ex post facto and correlational research design. The population of the study consisted of taxes and gini coefficient in Nigeria from 1980 to 2020. The secondary data were sourced from Federal Inland Revenue Service (FIRS), Central Bank of Nigeria (CBN), and National Bureau of Statistics (NBS) of various publications ranging from 1980 to 2020. The study used univariate, bivariate and multivariate analysis. The results revealed a positive and insignificant relationship between personal income tax company's income tax (CIT), petroleum profit tax (PPT), capital gain tax (CGT), value added tax (VAT), custom excise duties (CED) and Gini coefficient for the period under study, while strong positive relationship when literacy rate moderate tax structure, and weak positive and insignificant relationship. On the basis of the findings, the study concluded that taxes such as personal income tax, company income tax, petroleum profit tax, capital gain tax, value added tax and customs and excise duties influence the level of income inequality in Nigeria. The study recommends, amongst other things, that the government should ensure compliance to tax payments, because taxes provide a powerful policy tool effectively used for curing economic and social ills and should not to be set too high, as this would discourage investments.

KEYWORDS: Personal Income tax, Company income tax, Petroleum profit tax, Income inequality, Gini coefficient.

INTRODUCTION

There has been increasing anxiety in the examination of income inequality and taxes in the fields of accounting and economics. Chen et al. (2019) state that the rising income inequality globally is a single most major challenge confronting humanity in the 21st century and interest in this subject has improved considerably since the 2008–2009 International Recession. According to Atkinson (2014) and Piketty (2015), the long-run improvement of income and wealth disparity in most developed and developing nations and the recent public debate has predominantly focused on the relevance of taxes in decreasing inequality. Cano (2017) noted that taxes are fiscal policy instruments that are often engaged when the central drive is to change the post-tax income distribution. Equally, the prospects of decreasing income inequality through taxes significantly rest on how the country's taxes are. Consequently, the redistributive influence of income taxes has progressively turned out to be an essential subject in both developed and developing countries (Omesi & Appah, 2020; Atkinson & Leigh, 2010; Sameti & Rafie, 2010; Iris et al., 2012; Awe & Rufus, 2012; Bakare, 2012; Ilaboya & Ohonba, 2013; Ogbeide & Agu, 2015; Obaretin et al., 2017; Oboh & Eromonsele, 2018; Anyaduba & Otubugbu, 2019).

Inequitable distribution of income and its influence on poverty and human development is one of the most discussed economic issues in sub-Saharan Africa, especially in Nigeria (Christian Aid Report, 2014; Ogbeide & Agu, 2015). The increasing income inequality in Nigeria has brought on an argument based on the level to which taxes are to be used as a means of curbing inequality. Generally, taxes can cause inequality as well as reduce inequality. Taxes in the least-developed countries have been found to be inefficient in addressing redistribution of income, politically demanding to execute, and potentially harmful to growth (Bird & Zolt, 2014; International Monetary Fund, 2014). Meanwhile, there are few studies, which focused on taxation and income inequality in Nigeria (Obaretin et al., 2017; Omesi & Appah, 2020). Most existing studies are from developed countries (Iris, Martinez-Vazquez & Vulovic, 2012; Fu, 2016; ONS, 2016).

Tax is a compulsory contribution made by the citizens of any given country to the state or even an alien, subject to the jurisdiction of the government, for reasons of residence or property and this contribution is for the provision of social amenities for the well-being of that given society (Appah & Zibaghafa, 2018; Appah, 2019). Omesi and Appah (2020) are of the view that inequality is a situation where individuals have diverse levels of income. Oboh and Eromonsele (2018) pointed out that income inequality is essentially concerned with the comparative point of various persons within the income distribution. The nexus between taxes and income inequality in countries has been studied for a long time. Hanni et al. (2015) are of the view that the vast majority of studies concluded that taxes have a modest effect on income distribution. According to Goñi et al. (2011), this is because of the neutrality of the taxes on the weak performance in collecting revenue. Bird and Zolt (2014) stated that taxes in developing countries have been observed to be inefficient in solving the redistribution of income. However, as a result of Nigeria's dependence on crude oil and gas, Martin and Crookes (2013), Omesi and Appah (2020) noted that there are strong suggestions of income inequality rising further as a result of higher levels of oil and gas production. Rosen and Gayer (2014) stated that taxes can be used to redistribute income, however the extent is debatable. The various empirical studies on tax structure and income inequality have shown different and disaggregated results. Studies, such as Manukeji (2018), Babatundel et al. (2017), Nasira et al. (2016), Apere and

Durojaiye (2016), Gopar et al. (2016), Okoli et al. (2014), Otu and Adejumo (2013), and Umeora (2013), revealed a positive association between tax components and income inequality. On the other hand, a negative association was reported in the studies of Zellner and Ngoie (2015), Stoilova (2017), Njogu (2015), Ojong et al. (2016), Chigbu and Njoku (2015), Akhor and Ekundayo (2016). It remains unclear the explanations and empirical evidence often showing inconsistent results. These conflicting results reveal that taxes and income inequality are still inconclusive. Hence, this study investigates the effects of taxes on income inequality in Nigeria. The main objective of this study is to empirically investigate the relationship between taxes and income inequality in Nigeria 1980 - 2020.

The following research questions were analyzed:

1. What is the relationship between personal income tax and gini coefficient for the period 1980 to 2020 in Nigeria?

2. What is the relationship between company income tax and gini coefficient for the period 1980 to 2020 in Nigeria?

3. What is the relationship between petroleum profit tax and gini coefficient for the period 1980 to 2020 in Nigeria?

4. What is the relationship between capital gain tax and gini coefficient for the period 1980 to 2020 in Nigeria?

5. What is the relationship between value added tax and gini coefficient for the period 1980 to 2020 in Nigeria?

6. What is the relationship between custom and excise duties and gini coefficient for the period 1980 to 2020 in Nigeria?

This study is guided by the following research hypotheses:

Ho_1: There is no significant relationship between personal income tax and gini coefficient for the period 1980 to 2020 in Nigeria.

Ho_2: There is no significant relationship between company income tax and gini coefficient for the period 1980 to 2020 in Nigeria.

Ho_3: There is no significant relationship between petroleum profit tax and gini coefficient for the period 1980 to 2020 in Nigeria.

Ho_4: There is no significant relationship between capital gains tax and gini coefficient for the period 1980 to 2020 in Nigeria.

Ho_5: There is no significant relationship between value added tax and gini coefficient for the period 1980 to 2020 in Nigeria.

Ho_6: There is no significant relationship between custom and excise duties and gini coefficient for the period 1980 to 2020 in Nigeria.

LITERATURE REVIEW

Concept of Tax: Tax is a compulsory contribution made by the residents of any given state to the government or even an alien, subject to the jurisdiction of the government, for reasons of residence or property and this contribution is for the provision of social amenities for the well-being of that given society (Appah & Zibaghafa, 2018; Appah, 2019). According to Onwuchekwa and Aruwa (2014), tax is a compulsory payment made by all concerned economic units to the government of a given tax jurisdiction from which social services are provided, without necessarily providing an explanation on how the funds generated was spent or equating services with the money collected. Taxes can be divided into direct and indirect. There are different categories of direct taxes. These include the personal income tax, petroleum profit tax, companies' income tax, educational tax. The different major categories of indirect taxation in Nigeria include Value Added Tax and Custom and Excise Duty (Manukaji, 2018). The Nigerian system of taxation is a means to address unequal distribution of income by charging the rich more and directing public expenditure to benefit the poor (Anyaduba & Otulugbu, 2019). Martinez-Vazquez et al. (2011) stated that the effects of taxes on inequality depend on the size of the system of taxation; since countries with a smaller tax system have a positive effect on inequality while nations with larger size of the system of taxation have a negative effect on income inequality. Maina (2017) stated that taxes can directly affect income distribution in terms of the impact of tax or how tax revenue is spent.

Concept of Personal Income Tax: This is a tax that is imposed on different sources of income such as labor, interest, dividends and rent of individuals. According to Manukaji (2018), personal income tax is charged on the income of an individual. Similarly, Ogbonna and Appah (2016) noted that the chargeable income of an individual is the aggregate amount from employment, investment, profit from trade, profession or vocation etc) after deducting all non-taxable incomes and relief granted. Also Omesi and Appah (2021) described personal income tax as a tax on an individual's income which he earned during a given period of time, usually a year. The authors further noted that this type of tax varies with the size and sources of the taxpayer's income and various other features stated by the relevant law. Appah (2019) argued that personal income tax is payable on incomes from sources within and outside Nigeria, but not limited to gains and profit arising from trade, business, profession or vocation, remuneration (*e.g.* salaries, wages, fees, allowances, commissions, bonuses, or benefits premiums), or other prerequisites allowed, given or granted by any person to an employee, from an employment from both public and private sectors, dividend, interest or rent, any charge or annuity, gains or profits including any premiums arising from a right granted to any person for the use or occupation of any property and so on. Omesi and Appah (2021) results revealed a significant negative relationship between personal income tax and inequality and also Nyenke and Amadi (2019) results suggested that personal income tax (PIT) and per capita income (PCI) showed a negative relationship with income inequality (IEQ).

Concept of Company Income Tax: This is a type of tax that is imposed on companies' profit. According to Ogbonna and Appah (2016), companies' income tax is a form of tax that is imposed on the profit of companies accruing in, derived from, brought into or received in Nigeria in respect of any trade or business, rent, premium, dividends, interest, loyalties and any other source of annual profit excluding profit from companies engaged in petroleum operations. Abomaye-Nimenibo et al. (2018) opine that this tax is payable for each year of assessment of the profits of any company at a rate of 30%. The current enabling law that governs the collection of taxes on profits made by companies operating in Nigeria excluding companies

engaged in petroleum exploration activities is Companies Income Tax Act, 1990. This tax is payable for each year of assessment (based on actual year) of the profits of any company at a rate of 30 percent. Chigbu and Njoku (2015) denote that company income tax is a tax on profit made by companies. Nyenke and Amadi (2019) findings revealed company income tax (CIT) has a positive relationship with income inequality (IEQ). Nwidobie (2021) result showed that income significantly influenced tax structure. Omesi and Appah (2021) results revealed a significant negative relationship between company's income tax and inequality.

Concept of Petroleum Profit Tax: Manukaji (2018), Ogbonna and Appah (2016), Chigbu and Njoku (2015), and Ehigiamusoe (2014) noted that petroleum profit tax is a type of tax imposed on companies in Nigeria that are engaged in extraction and transportation of petroleum products. It is particularly related to rents, royalties, margins and profit-sharing elements associated with oil mining, prospecting and exploration leases. This type of tax is imposed to provide revenue for the government, also to serve as an instrument through which the government regulates the number of participants in the petroleum industry and gain control over public assets (Abdul-Rahamoh et al., 2013). It is an instrument for wealth redistribution between the wealthy and industrialized economies represented by the multinational organizations, who own the technology, expertise and capital needed to develop the industry and the poor and emerging economies from where the petroleum resources are extracted. Chigbu and Njoku (2015) noted that this tax is applicable to upstream operations in the oil sector and the most important tax in Nigeria in-terms of its share of 95% of government revenue and 70% of total foreign exchange earnings. The problem of this type of tax is the fluctuations in the international market. Juliana (2018) empirical findings suggested that petroleum profit tax revenue has a significant effect on income inequality of economic growth in Nigeria.

Concept of Capital Gain Tax: Capital Gain Tax in Nigeria is regulated by the Capital Gain Tax Act LFN (2004) as amended. The tax applies to individuals, partnerships and limited companies and is chargeable on all capital gains arising on disposal of assets. Appah and Zibaghafa (2018) opine that capital gains tax is income derived from the sale of a capital asset. Gain, here, means increases resulting in the market value of assets to a person who does not regularly offer them for sale and in whose hands they do not constitute stock in trade. Capital gains may arise in two instances, in the first place, where the asset appreciates in value while still in the hands of the owner or maybe he realized gains when the assets are sold or disposed of. Capital gains tax is payable on stocks, shares, securities, land and buildings, plant and machinery, and all business assets such as good will and secret processes. Capital gains tax has been justified on the ground that capital gain on assets increases a person or person's taxable capacity by increasing his power to spend or save. Capital gains are not distributed among the different members of the tax paying community in fair proportion to their taxable incomes, but are concentrated in the hands of property owners and it has been argued that their exclusion from the scope of taxation constitutes a serious discrimination in tax treatment in favor of a particular class of taxpayers. Umoru and Anyiwe (2013) results suggested that indirect taxation has an insignificant negative impact on income inequality. Further empirical studies carried out by Duc et al. (2019) and Oboh and Eromonsele (2018) results also indicated that tax was found to be negatively related to income inequality in Nigeria.

Concept of Value Added Tax: This is a form of indirect tax that is applied at each stage of production to the value added. Akhor and Ekundayo (2016) opine that value added tax is a consumption tax levied at each stage of the consumption chain and borne by the final consumer of the product or service. Abomaye-Nimenibo et al. (2018) suggest that value added tax is

collected by the seller when taxable items are sold. The seller then nets off the VAT and submits it to FIRS through a designated bank. However, Manukaji (2018) noted that value added tax is an estimated market value added to a product or service at each stage of its manufacture or distribution and the additions are ultimately added to and services bear the tax burden or the incidence because they cannot recover the tax paid on consumption of goods and services. It was introduced by The Federal Government of Nigeria in January, 1993 and requires a taxable person to register with the Federal Inland Revenue Service to charge and collect VAT at a flat rate of 7.5%. Okatch et al. (2013) investigated the determinants of income inequality in Botswana. Their results showed that VAT contributes significantly to income inequality. Fu (2016) investigated indirect tax increments on income gap between urban and rural areas in China using the analysis of Thayer Index from 1994 to 2013. Specifically, the study result shows that value added tax had a negative effect on income gap. He further stated that indirect tax, especially VAT, reduces income distribution as a whole. Omesi and Appah (2021) results revealed that there is an insignificant relationship between value added tax and income inequality. Similarly, Alavuotunk et al. (2019) empirical findings revealed that the revenue consequences of the VAT have not been positive. The results indicate that income-based inequality has increased due to the VAT adoption, whereas consumption inequality has remained unaffected. However, the results from Anyaduba and Otulugbu (2019), Uzoka and Chiedu (2017) showed that VAT contributes significantly to income inequality.

Concept of Custom and Excise Duties: This is one of the oldest forms of modern taxation in Nigeria having been introduced in 1860 as import duties (Ehigiamusoe, 2014). It is a tax imposed on imports either as a percentage of the value of the imports or as a fixed amount contingent on quality. Imports duties are the country's highest yielding indirect tax and are administered by the Nigerian Custom Service. Custom duties are commodity taxes of imports and exports while excise duties are commodity taxes levied on goods manufactured within the country (Manukaji, 2018; Abomaye-Nimenibo et al., 2018). Fasoranti (2013) described import duty as a levy on imports by custom authorities in Nigeria to raise revenue for the government and protect domestic industries from predator competitors abroad. Oladipupo and Ibasdin (2015) argued that import duty is generally on the value of goods or on the weight, dimensions or some other criteria that are determined by the government. They are charged as a percentage of the value of import or a fixed amount of specific quantity (Fasoranti, 2013). Import duties are either fixed or calculated as a percentage of the product's value, which can change (Olurotimi, 2013). Sometimes, the government may want to protect certain domestic products from foreign competition. One way of doing so is by imposing import duty, which makes foreign products more expensive, thus keeping the same domestic products more competitive (Ilaboya, 2012). Okoye and Gbegi (2013) held that the government sometimes imposes duties to hurt another country by making its exports more expensive. This is usually done as a retaliatory measure in a trade war. It is based on the value of goods called ad valorem duty or the weight, dimensions, or other criteria of the item such as its size (Oladipupo & Ibadin, 2015). Olurotimi (2013) asserted that export duty is levied on the goods passing through a customs area with a route to another area or country. Egbuhuzor and Tomquin (2021) result revealed a positive and insignificant effect of custom and excise duties on income inequity. Anyaduba and Otubugbu (2019) study also confirmed that custom and excise duty were not significant with gini coefficient.

The Concept of Income Inequality: Inequality is the differences in the share of something between or among two or more individuals where the share of one or some is more than that of the others. Inequality can be in income, consumption, wealth, gender, employment, health variables and many more (Ogbeide & Agu, 2015). Income inequality is defined as the inequitable distribution of income among the members of a particular society. Maina (2017) stated that inequality can be reflected in terms of access to basic services, opportunities, income, among others. Income is generated from the factors of production: labor, capital, land and entrepreneurship. Krugman (2014) stated that unequal compensation and high incomes have led to accumulation of wealth on a few rich people, rather than high capital to income as provided by Piketty (2014). The wages income at the top is rising at a high rate (Krugman, 2014). The wages of the top executives are increasing at a much higher rate than that of the other workers, which provides huge disparities between the two classes; this has contributed to the accumulation of capital on a few hands (Krugman, 2014). The high wages of the political elites and top executives are driven mainly by technology. Social and political forces also provided the high wage difference (Piketty, 2014). Globalization, technological change, falling tax rates for the rich, changes in demography and disparities in distribution of wages and salaries are seen as the major cause of inequality (Maina, 2017). Igbuzor (2017) stated that the drivers of inequality in Nigeria include retrogressive taxation, inadequate budgeting system and allocation, insufficient resource management and policy implementation, elite capture, cronyism and favoritism, and prohibitive cost of governance. While Ilaboya and Ohonba (2013) noted that income inequality of income can be reduced through public policies, such as good governance represented by transparency and accountability, public expenditure on health, housing and education, policies of more comprehensive growth pattern, and taxation. OECD (2012) report states that income inequality measures fall into two categories: the Gini index known as one-number summary statistics and shares of income or percentile ratios also known as income distribution at various points. Lee et al. (2013) noted that the Gini- coefficient or index is a range on which Zero (0) is perfect equality and (1) is perfect inequality. According to Index Mundi, Gini index (World Bank estimate) measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. The Gini is given by the area between the Lorenz curve and the 45^0 line of equity from the origin. Bourguignon as cited in Omotola and Kabir (2015) states that a value of 0.55 and above is a high level of inequality, 0.45-0.55 is middle-high, 0.35-0.45 is middle and 0.35 and below is a low level of inequality. Appergis (2015) posits that unequal distribution has been accredited to a variety of factors, such as changes in skilled-based technology, globalization, liberalization of product and factor markets, and improved labor-force participation by low-skilled workers, raising share of high-income in couples and single parent households and the declining top marginal income tax rates of high earners.

Concept of Gini Coefficient: This is a measure of inequality in income distribution. It is based on the Lorenz curve. Lorenz curve shows the income and wealth distribution in a graphical form. It was developed by Lorenz (1905) to analyze wealth inequalities of a society in different periods. It shows the percentage of income and wealth held by a certain proportion of the population. The curve reveals the deviation from the line of perfect equality. This coefficient measures income inequality based on the Lorenz curve and has values between 0 and 1 (0 and 1 inclusive) where figures closer to 0 signifies more equality in the distribution, values closer to 1 shows higher inequitable distribution of income while 0 signifies absolute equality in the distribution (Maina, 2017; Omesi & Appah, 2020). Income inequality can be within the country or between two or more countries. Ortiz and Cummins (2011) found the Gini for sub-Saharan

Africa to average to 0.442 in 2008. This can be compared to 0.483 for Latin America, 0.354 for Eastern Europe and Central Asia, and 0.309 for high-income countries for the same period. Ratios such as decile ratio or quintile ratio are also measures of income distribution. The Gini Coefficient has been the most popular tool for measuring income inequality in literature. Several scholars, such as Mallaye et al. (2015), Maina (2017), Anyaduba and Otulugbu (2019), and Omesi and Appah (2020), have applied Gini coefficient as a measure for inequality in their various researches.

Theoretical Review: This study is anchored on the ability to pay theory. Arthur Cecil Pigou (1877- 1959) advanced the ability to pay theory of taxation. According to Omesi and Appah (2021), the ability to pay theory of taxation is a just, equitable and the most accepted theory of taxation that explains the rationale for a better society where income inequality is minimized in any given society for the welfare of citizens. Ogbonna and Appah (2016) opine that the ability to pay theory explains that citizens with higher income should contribute to support government activities on the basis of their relative ability. Anyaduba and Otubugbu (2019) suggest that this theory provides the argument that taxes paid by a citizen, and his comparative share in the total tax burden are determined in accordance to his or her capacity to pay. The authors further suggest that high-income earners should pay more than low-income earners. However, Jhingan (2014) criticized the ability to pay theory on the basis that there is no meaning in taking consumption expenditure as an index of ability to pay and ignoring saving and investment expenditure. On the other hand, Appah (2019) argues that the ability to pay is a system that discourages economic success as it penalizes those who earn the most. The threat of significantly larger taxes disincentivizes hard work if making more money means paying more taxes, making more money becomes unappealing. Instead, many would prefer a 'flat tax' or proportional tax system where everyone pays the same percentage in taxes. Also, critics argue that it is difficult to measure the ability to pay from each taxpayer reliably. The application of the theory actually punishes those who work hard. Someone has a high income because they have worked harder. Furthermore, tax authorities are vulnerable to manipulating the tax system. Tax rates vary according to income, making this system subjective and dependent on the personal opinions of tax officials. Omesi and Appah's (2021) study revealed that this theory is justified in income inequality research because ability to pay provides the objective of maximum welfare of society.

Table 1: Summary of Empirical Review

S/N	Authors/Year	Research Topic	Methodology Adopted	Major Findings
1	Karakotsios and Katrakilidis (2020)	The relationships between income inequality, taxation and economic freedom.	Ex Post-facto research design, A panel cointegration techniques and Pooled Mean Group (PMG) estimation method was employed	The result revealed that the long-run causal effect between taxes-to-GDP ratio and income inequality with tax-to-GDP ratio caused a negative impact on income inequality. Also, the study found a positive effect of the

				economic freedom on income inequality
2	Nwidobie (2021)	Income inequality and tax evasion in Nigeria from 1985-2018	The study adopted augmented Dickey-Fuller, the Johansen cointegration, the vector error correction model (VECM), and the ordinary least squares method of data analysis	The result shows that income inequality in Nigeria positively and significantly influences tax evaded by the top 10% and lower 40% of the income distribution brackets in Nigeria. The result further revealed that the initiation and implementation of manufacturing, employment, fiscal, monetary, social, human, and educational policies to reduce income inequality with expected positive reduction on tax evasion in Nigeria
3	Nyenke and Amadi (2019)	Taxation and income inequality in Nigeria	The study employed quasi-experimental research design. The study adopted Ordinary Least Squares (OLS) estimation technique, unit root, Johansen cointegration, and the Error Correction Mechanism (ECM)	The analysis revealed that petroleum profit tax (PPT), personal income tax (PIT) and per capita income (PCI) showed a negative relationship with income inequality (IEQ). Company income tax (CIT) indicated a positive relationship with income inequality (IEQ).
4	Anyaduba and Otulugbu (2019)	Taxation and income inequality in Nigeria	The study employed an ex post-facto research design, The Cointegration, Error Correction Models (ECMs) and Augmented Dickey Fuller unit root were used.	The result revealed that VAT, CED and PPT had positive relationships with GINI when measured at 5% critical level, though VAT and CED were not significant. CIT had a negative but significant impact on GINI

7	Omesi and Appah (2021)	Taxes and income inequality in Nigeria for the period 1980 to 2018	The study employed ex post facto and correlational research design. The data collected were analyzed using univariate, bivariate and multivariate analysis	The error correction mechanism revealed a significant negative relationship exists between personal income tax, company income tax and inequality; a negative but statistically insignificant relationship exist between value added tax and income inequality; a positive but statistically insignificant relationship exist between value added tax, government spending on education, government spending on health and income inequality
8.	Azis et al (2016)	The effect of fiscal policy on income inequality and economy growth in Java	The study employed an ex post facto research design, secondary sources and a panel data regression model	The results showed that the redistribution value of the district/city is negative, indicating that the redistribution through taxes is not effective. Also result show that the relation between equity income and economic growth show greater influence in the region with high income, whereas in regions with low income, incidence of such influence is very small indeed
9	Ilaboya and Ohonba (2013)	The effects of direct and indirect tax on income inequality in Nigeria	The study employed time series data, diagnostic tests, Phillip-Perron test, Autoregressive Distributed Lag (ARDL) approach to error correction mechanism	The study found a significant negative relationship between total tax revenue to GDP and income inequality in Nigeria. The study also found an insignificant negative effect between GDPPC, PCREDIT/GDP,

				TDT/TIT *TTR. While LFP and TDT/TIT had an insignificant positive impact on income inequality in Nigeria
10.	Oboh and Eromonsele (2018)	Taxation and income inequality in Nigeria for the period 1980-2014	The study used a secondary source. Ex Post facto research design. The study adopted Heteroskedasticity test; Auto/serial correlation; Model misspecification; co integration and Error Correction Model (ECM).	From the regression results, indirect tax was found to be negatively related to income inequality in Nigeria. On the other hand, direct tax was found to have a positive impact on income inequality in Nigeria.
11.	Anyaduba and Otubugbu (2019)	Taxation and income inequality in Nigeria	The study employed secondary sources, ex post facto research design was adopted while the Augmented Dickey Fuller (ADF) unit root test Cointegration and Error Correction Models (ECMs) were used for the analysis of data	The result showed that VAT, CED and PPT had positive relationships with GINI when measured at 5% critical level, though VAT and CED were not significant. CIT had a negative but significant impact on GINI. Based on the findings, we conclude that only CIT was able to reduce income inequality.
12.	Okatch, et al (2013)	The determinants of income inequality in Botswana	The utilized the Ordinary Least Square (OLS) regression method	Their results showed that VAT contributes significantly to income inequality. They further suggested that VAT on goods and services highly consumed by low-income households, like food items, should be either zero rated or exempt while VAT should be imposed on goods heavily consumed by high-income households

13.	Neog and Gaur (2020)	The long-run and short-run relationship between tax structure and state-level growth performance in India	The study adopted a model of Acosta-Ormaechea and Yoo (2012), and a panel regression method was used.	The study result indicates that income tax and commodity–service tax have negative effects whilst property and capital transaction tax have a significant positive effect on state economic growth. The study also finds the 'U' shape relationship between tax structure and growth performance.
14.	Biswas et al (2017)	income inequality, tax policy and economic growth using U.S. state-level data and micro-level household tax returns over the last three decades	The study employed secondary sources of data collection. The study adopted a co-integration and error correction model.	The study result indicates that reducing income inequality between low and median income households improves economic growth. The study result also indicates that reducing income inequality through taxation between median and high-income households reduces economic growth.

Source: Desk Research (2023)

METHODOLOGY

This study employed ex post facto and correlational research designs. The data for the study was collected from the Federal Inland Revenue Service (FIRS), Central Bank of Nigeria (CBN), and National Bureau of Statistics (NBS) of various publications ranging from 1980 to 2020. The data obtained from secondary sources will be analyzed using univariate, bivariate and multivariate analysis. The model was from after modification from prior studies as follows:

INE = f(Tax) -- (1)

Gini = f(PIT, CIT, PPT, CED, VAT, CGT) -- (2)

Where: GINI (Gini coefficient), LR (literacy rate), PIT (Personal Income Tax), CIT (Company Income Tax), PPT (Petroleum Profit Tax), CED (Custom & Excise Duty), VAT (Value Added Tax), CGT (Capital Gain Tax).

$LGINI = \beta_0 + \beta_1 LPIT + \beta_2 LCIT + \beta_3 LPPT + \beta_4 LCED + \beta_5 LVAT + \beta_6 LCGT + \mu$ ------------ (3)

RESULTS AND DISCUSSIONS

Univariate analysis of data

Table 4.2:   Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
GINI	39	36.20	56.00	44.0574	5.30281	.633	.378	-.380	.741
PIT	39	3.90	634857.70	167299.33	230267.79	1.128	.378	-.543	.741
CIT	39	403.00	1836473.00	297323.57	456214.37	1.686	.378	2.320	.741
PPT	39	3746.90	3201000.00	855156.18	1036659.23	.916	.378	-.520	.741
CGT	39	12459.00	196559.00	63699.66	42871.35	1.046	.378	.835	.741
CED	39	1616.00	817264.00	181814.87	216390.30	1.342	.378	1.282	.741
VAT	39	759.40	802965.00	155609.81	241873.96	1.727	.378	1.756	.741
Valid N (listwise)	39								

Source: SPSS Output

Table 2 presents the descriptive statistics of variables considered in this study. The mean, standard deviation, minimum, maximum, skewness and kurtosis values of the observations across tax structure and income inequality in Nigeria over the period covered in the study were reported in the table. Mean values reported in the table for Gini coefficient (GINI) stood at 44.05 which indicated that the average Gini coefficient for income inequality sampled in the study was 44.05%. The minimum and maximum of Gini coefficient (GINI) stood at 36.20% and 56.00% indicates that, Gini coefficient (GINI) grow from 36.20% to 56.00%. Mean values for personal income tax (PIT), company income tax (CIT), petroleum profit tax (PPT), capital gain tax (CGT), customs excise duties (CED) and value added tax (VAT) stood at 167299.33, 297323.57, 855156.18, 63699.66, 181814.87 and 155609.81 respectively, which indicated the average measures of tax structure in this study. Minimum and maximum personal income tax (PIT) was 3.90 and 634857.70, company income tax (CIT) was 403.00 and 1836473.00, petroleum profit tax (PPT) was 3746.90 and 3201000.00, capital gain tax (CGT) was 12459.00 and 196559.00, customs excise duties (CED) was 1616.00 and 817264.00, value added tax (VAT) was 759.40 and 802965.00 respectively. As reported in the table, the coefficient of Skewness for Gini coefficient (GINI), personal income tax (PIT), company income tax (CIT), petroleum profit tax (PPT), capital gain tax (CGT), customs excise duties (CED), value added tax (VAT), and literacy rate (LR) stood at 0.633, 1.128, 1.686, 0.916, 1.046, 1.342, 1.727, 0.944 respectively implies that all the variables is positively skewed, and therefore did not conform to the symmetrical distribution requirement. Finally, the coefficient of Kurtosis for Gini coefficient (GINI), personal income tax (PIT) and petroleum profit tax (PPT) stood at -0.380, -0.543, -0.520 respectively implies that Gini coefficient (GINI), personal income tax (PIT) and petroleum profit tax (PPT) is negatively Kurtosis which implies that the extent of flatness of the distribution is less than the normal curve while company income tax (CIT), capital gain tax (CGT), customs excise duties (CED), and value added tax (VAT) stood at 2.320,

0.835,1.282,1.756, is positively kurtosis implying that, the extent of flatness of the distribution is normal among these variables.

Bivariate analysis

Table 3: Correlation Matrix of GINI Coefficient

		GINI	PIT	CIT	PPT	CGT	CED	VAT
GINI	Pearson Correlation	1	.152	.061	.051	.267	.133	.047
	Sig. (2-tailed)		.354	.711	.757	.100	.419	.776
	N		39	39	39	39	39	39
PIT	Pearson Correlation		1	.937**	.756**	.262	.914**	.608**
	Sig. (2-tailed)			.000	.000	.107	.000	.000
	N			39	39	39	39	39
CIT	Pearson Correlation			1	.725**	.273	.927**	.523**
	Sig. (2-tailed)				.000	.093	.000	.001
	N				39	39	39	39
PPT	Pearson Correlation				1	.462**	.781**	.826**
	Sig. (2-tailed)					.003	.000	.000
	N					39	39	39
CGT	Pearson Correlation					1	.346*	.373*
	Sig. (2-tailed)						.031	.019
	N						39	39
CED	Pearson Correlation						1	.470**
	Sig. (2-tailed)							.003
	N							39
VAT	Pearson Correlation							1
	Sig. (2-tailed)							

Source: SPSS Output

Correlation results presented in Table 3 revealed that Gini coefficient (GINI) and tax structure measures of personal income tax (PIT), company income tax (CIT), petroleum profit tax (PPT), capital gain tax (CGT), customs excise duties (CED) and value added tax (VAT) are all moved in the same direction with correlation coefficients of 0.152, 0.061, 0.051, 0.267, 0.133, 0.047, 0.193 respectively indicates that, the correlation between Gini coefficient (GINI) and personal income tax (PIT) is positive with statistics of 0.152, correlation between Gini coefficient (GINI) and company income tax (CIT) is positive with statistics of 0.061, correlation between Gini coefficient (GINI) and petroleum profit tax (PPT) is positive with statistics of 0.051, correlation between Gini coefficient (GINI) and capital gain tax (CGT) is positive with statistics of 0.267, correlation between Gini coefficient (GINI) and customs excise duties (CED) is positive with statistics of 0.133 and finally, correlation between Gini coefficient (GINI) and value added tax (VAT) is positive with statistics of 0.047.

Test of Hypotheses

Table 4: Model Summary of Hypothesis One

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.152[a]	.023	-.003	5.31116	.225

a. Predictors: (Constant), PIT
b. Dependent Variable: GINI

From Table 4, the result (R = 0.152, R2 = 0.023, DW=0.225) depicts that there is a weak positive correlation between Gini coefficient (GINI) and personal income tax (PIT). This implies that the smaller the number of personal income tax (PIT) payers in a country, the smaller the Gini coefficient which indicates that the value of Gini coefficient for the sampled period increases by 15% personal income tax (PIT) increases by 1%. The coefficient of determination (R2) shows that Gini coefficient (GINI) accounts for a variation of 2% of the total value of personal income tax (PIT) which means that other factors outside the model accounts for the remaining 98%. The Durbin-Watson d = 0.225` which falls outside the two critical values of $1.5 < d < 2.5$ and therefore we can assume that there is first order linear auto-correlation in the data and it shows that the model has no goodness of fit. The P-plot regression standardized residual trend in the chart also confirmed that normality movement is scattered implies that there is a weak trend between personal income tax PIT) and Gini coefficient (GINI).

Table 5: ANOVA of Hypothesis One

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	24.842	1	24.842	.881	.354[b]
	Residual	1043.711	37	28.208		
	Total	1068.553	38			

a. Dependent Variable: GINI
b. Predictors: (Constant), PIT

The Table above indicated a regression significant P-value of 0.354 < F (0.881) indicating that the overall model is statistically insignificant at 0.05 of between personal income tax (independent variable) and Gini coefficient (income inequity) in Nigeria

Table 6: Coefficients of Hypothesis One

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	43.470	1.056		41.165	.000
	PIT	3.511E-006	.000	.152	.938	.354

a. Dependent Variable: GINI

The above table indicated an insignificant level between personal income tax (PIT) and Gini coefficient (GINI). The probability value P = 0.354 > 0.05 indicates that the relationship between personal income tax PIT) and Gini coefficient (GINI) is statistically insignificant at 0.05 level. Hence, the hypothesis is accepted, implies that there is no significant relationship between personal income tax (PIT) and Gini coefficient (GINI) for the period 1980 to 2020 in Nigeria.

Table 7   Model Summary of Hypothesis Two

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.061[a]	.004	-.023	5.36390	.225

a. Predictors: (Constant), CIT
b. Dependent Variable: GINI

From Table 7, the result (R = 0.061, R2 = 0.004, DW=0.2250) depicts that there is a weak positive correlation between Gini coefficient (GINI) and company income tax (CIT). This implies that the smaller the number of company income tax (CIT) paid in a country, the smaller the Gini coefficient which indicates that the value of Gini coefficient for the sampled period increases by only 6% company income tax (CIT) increases by 1%. The coefficient of determination (R2) shows that Gini coefficient (GINI) accounts for a variation of 0.04% of the total value of company income tax (CIT) which means that other factors outside the model accounts for the remaining 99.6%. The Durbin-Watson d = 0.225` which falls outside the two critical values of 1.5 <d < 2.5 and therefore we can assume that there is first order linear auto-correlation in the data and it shows that the model has no goodness of fit. The P-plot regression standardized residual trend in the chart also confirmed that, the normality movement is scatter implies that there is a very weak trend between company income tax (CIT) and Gini coefficient (GINI).

Table 8: ANOVA of Hypothesis Two

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.012	1	4.012	.139	.711[b]
	Residual	1064.541	37	28.771		
	Total	1068.553	38			

a. Dependent Variable: GINI
b. Predictors: (Constant), CIT

The Table above indicated a regression significant P-value of 0.711 < F (0.139) indicating that the overall model is statistically insignificant at 0.05 of between company income tax (CIT) (independent variable) and Gini coefficient (income inequity) in Nigeria.

Table 9: Coefficients of Hypothesis Two

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	43.846	1.029		42.600	.000
	CIT	7.122E-007	.000	.061	.373	.711

a. Dependent Variable: GINI

The above Table indicated an insignificant level between company income tax (CIT) and Gini coefficient (GINI). The probability value P= 0.711>0.05 indicates that the relationship between company income tax (CIT) and Gini coefficient (GINI) is statistically insignificant at 0.05 level. Hence, the hypothesis is accepted, implies that there is no significant relationship between company income tax (CIT) and Gini coefficient (GINI) for the period 1980 to 2020 in Nigeria.

Table 10: Model Summary of Hypothesis Three

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.051[a]	.003	-.024	5.36693	.213

a. Predictors: (Constant), PPT
b. Dependent Variable: GINI

From Table 10, the result (R = 0.051, R2 = 0.003, DW=0.213) depicts that there is a very weak positive correlation between Gini coefficient (GINI) and petroleum profit tax (PPT). This implies that the smaller the number of petroleum profit tax (PPT) revenue in a country, the smaller the Gini coefficient which indicates that the value of Gini coefficient for the sampled period increases by only 6% petroleum profit tax (PPT) increases by 1%. The coefficient of determination (R2) shows that Gini coefficient (GINI) accounts for a variation of 0.03% of the total value of petroleum profit tax (PPT) which means that other factors outside the model accounts for the remaining 99.7%. The Durbin-Watson d = 0.213 which falls outside the two critical values of 1.5 <d < 2.5 and therefore we can assume that there is first order linear auto-correlation in the data and it shows that the model has no goodness of fit. The P-plot regression standardized residual trend in the chart also confirmed that the normality movement is scatter implies that there is a very weak trend between petroleum profit tax (PPT) and Gini coefficient (GINI).

Table 11: ANOVA of Hypothesis Three

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.809	1	2.809	.098	.757[b]
	Residual	1065.744	37	28.804		
	Total	1068.553	38			

a. Dependent Variable: GINI
b. Predictors: (Constant), PPT

The Table above indicated a regression significant P-value of 0.757 > F (0.098) indicating that the overall model is statistically insignificant at 0.05 of between petroleum profit tax (PPT) (independent variable) and Gini coefficient (income inequity) in Nigeria.

Table 4.12: Coefficients of Hypothesis Three

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	43.833	1.120		39.137	.000
	PPT	2.623E-007	.000	.051	.312	.757

a. Dependent Variable: GINI

The above Table indicated an insignificant level between petroleum profit tax (PPT) and Gini coefficient (GINI). The probability value P= 0.757>0.05 indicates that the relationship between petroleum profit tax (PPT) and Gini coefficient (GINI) is statistically insignificant at 0.05 level. Hence, the hypothesis is accepted, implies that there is no significant relationship between petroleum profit tax (PPT) and Gini coefficient (GINI) for the period 1980 to 2020 in Nigeria.

Table 13: Model Summary of Hypothesis Four

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.267[a]	.072	.046	5.17825	.369

a. Predictors: (Constant), CGT
b. Dependent Variable: GINI

From Table 4.13, the result (R = 0.267, R2 = 0.072, DW=0.369) depicts that there is a moderate positive correlation between Gini coefficient (GINI) and capital gain tax (CGT). This implies that the higher the number of capital gain tax (CGT) is revenued in a country, the higher the Gini coefficient which indicates that the value of Gini coefficient for the sampled period increases by only 26.7% capital gain tax (CGT) increases by 1%. The coefficient of determination (R2) shows that Gini coefficient (GINI) accounts for a variation of 7% of the total value of capital gain tax (CGT) which means that other factors outside the model account for the remaining 93%. The Durbin-Watson d = 0.369 which falls outside the two critical values of 1.5 <d < 2.5 and therefore we can assume that there is first order linear auto-correlation in the data and it shows that the model has no goodness of fit. The P-plot regression standardized residual trend in the chart also confirmed that, the normality movement is greater in line implies that there is a moderate trend between capital gain tax (CGT) and Gini coefficient (GINI).

Table 14: ANOVA of Hypothesis Four

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	76.424	1	76.424	2.850	.100[b]
	Residual	992.128	37	26.814		
	Total	1068.553	38			

a. Dependent Variable: GINI
b. Predictors: (Constant), CGT

The Table above indicated a regression significant P-value of 0.100 < F (2.850) indicating that the overall model is statistically insignificant at 0.05 of between capital gain tax (CGT) (independent variable) and Gini coefficient (income inequity) in Nigeria.

Table 15: Coefficients of Hypothesis Four

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	41.950	1.498		27.996	.000
	CGT	3.308E-005	.000	.267	1.688	.100

a. Dependent Variable: GINI

The above Table indicated an insignificant level between capital gain tax (CGT) and Gini coefficient (GINI). The probability value, P= 0.100>0.05, indicates that the relationship between capital gain tax (CGT) and Gini coefficient (GINI) is statistically insignificant at 0.05 level. Hence, the hypothesis is accepted; this implies that there is no significant relationship between capital gain tax (CGT) and Gini coefficient (GINI) for the period 1980 to 2020 in Nigeria.

Table 16: Model Summary of Hypothesis Five

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.133[a]	.018	-.009	5.32605	.223

a. Predictors: (Constant), CED

From Table 16, the result (R = 0.133, R2 = 0.018, DW=0.223) depicts that there is a weak positive correlation between Gini coefficient (GINI) and customs excise duties (CED). This implies that the higher the number of customs excise duties (CED) generated in a country, the higher the Gini coefficient which indicates that the value of Gini coefficient for the sampled period increases by only 13.3%, while customs excise duties (CED) increases by 1%. The coefficient of determination (R2) shows that Gini coefficient (GINI) accounts for a variation of 1.8% of the total value of customs excise duties (CED) which means that other factors outside the model account for the remaining 98.2%. The Durbin-Watson d = 0.223 falls outside the two critical values of 1.5 <d < 2.5 and therefore we can assume that there is first order linear auto-correlation in the data and it shows that the model has no goodness of fit. The P-plot regression standardized residual trend in the chart also confirmed that the normality movement is scattered in the line implies that there is a weak trend between customs excise duties (CED) and Gini coefficient (GINI).

Table 17: ANOVA of Hypothesis Five

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	18.980	1	18.980	.669	.419[b]
	Residual	1049.573	37	28.367		
	Total	1068.553	38			

a. Dependent Variable: GINI

b. Predictors: (Constant), CED

The Table above indicated a regression significant P-value of 0.419 > F (0.669) indicating that the overall model is statistically insignificant at 0.05 of between customs excise duties (CED) (independent variable) and Gini coefficient (income inequity) in Nigeria.

Table 18: Coefficients of Hypothesis Five

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	43.464	1.120		38.808	.000
	CED	3.266E-006	.000	.133	.818	.419

a. Dependent Variable: GINI

The above Table indicated an insignificant level between customs excise duties (CED) and Gini coefficient (GINI). The probability value P= 0.419>0.05 indicates that the relationship between customs excise duties (CED) and Gini coefficient (GINI) is statistically insignificant at 0.05 level. Hence, the hypothesis is accepted; this implies that there is no significant relationship between customs excise duties (CED) and Gini coefficient (GINI) for the period 1980 to 2020 in Nigeria.

Table 19: Model Summary of Hypothesis Six

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.047[a]	.002	-.025	5.36804	.217

a. Predictors: (Constant), VAT

b. Dependent Variable: GINI

From Table 19, the result (R = 0.047, R2 = 0.002, DW= 0.217) depicts that there is a weak positive correlation between Gini coefficient (GINI) and value added tax (VAT). This implies that the higher the number of value added tax (VAT) generated in a country, the higher the Gini coefficient which indicates that the value of Gini coefficient for the sampled period increases by only 4.7%, while value added tax (VAT) increases by 1%. The coefficient of determination (R2) shows that Gini coefficient (GINI) accounts for a variation of 0.2% of the total value of value added tax (VAT) which means that other factors outside the model accounts for the remaining 99.8%. The Durbin-Watson d = 0.217 falls outside the two critical values of 1.5 <d < 2.5 and therefore we can assume that there is first order linear auto-correlation in the data and it shows that the model has no goodness of fit. The P-plot regression standardized

residual trend in the chart also confirmed that the normality movement is scattered in the line implies that there is a weak trend between value added tax (VAT) and Gini coefficient (GINI).

Table 20: ANOVA of Hypothesis Six

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	2.368	1	2.368	.082	.776[b]
1	Residual	1066.185	37	28.816		
	Total	1068.553	38			

a. Dependent Variable: GINI
b. Predictors: (Constant), VAT

The Table above indicated a regression significant P-value of $0.776 > F (0.082)$ indicating that the overall model is statistically insignificant at 0.05 of between value added tax (VAT) (independent variable) and Gini coefficient (income inequity) in Nigeria.

Table 21: Coefficients of Hypothesis Six

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	43.897	1.026		42.783	.000
	VAT	1.032E-006	.000	.047	.287	.776

a. Dependent Variable: GINI

The above Table indicated an insignificant level between value added tax (VAT) and Gini coefficient (GINI). The probability value $P= 0.776>0.05$ indicates that the relationship between value added tax (VAT) and Gini coefficient (GINI) is statistically insignificant at 0.05 level. Hence, the hypothesis is accepted, implies that there is no significant relationship between value added tax (VAT) and Gini coefficient (GINI) for the period 1980 to 2020 in Nigeria.

DISCUSSION OF FINDINGS

Personal Income Tax and Income Inequality: The study used Pearson correlation analysis to establish the relationship between personal income tax and gini coefficient in the study. The correlation findings and regression findings as presented indicate that the correlation between personal income tax and gini coefficient was 0.152 with a corresponding significant P-value of $0.354 > 0.05$. The correlation coefficient and regression coefficient was therefore positive and insignificant implying that there is no significant relationship between personal income tax and gini coefficient for the period 1980-2020 in Nigeria. The findings concur with Ilaboya (2013) findings whose results revealed a positive but insignificant relationship between personal income tax and income inequality. The findings further agreed with Oshiobugie and Akporere (2019) findings who also revealed that there is an insignificant effect of tax revenue on economic growth under the period study and they concluded that personal income tax affects economic growth in Nigeria either negatively or positively. Other empirical support includes

Moradi (2009),Duc et al. (2019), Neog and Gaur (2020), among others. However, the study result disagreed with Omesi and Appah (2020) whose result revealed a significant negative relationship between personal income tax and inequality and also Nyenke and Amadi (2019) disagreed with this study, their result suggested that personal income tax (PIT) and per capita income (PCI) showed negative relationship with income inequality (IEQ).

Company's Income Tax and Income Inequality: The correlation findings and regression findings presented in Table 4.3 and Table 4.10 above indicate that the correlation between company's income tax and gini coefficient was 0.061 with a corresponding significant P-value of 0.711 > 0.05. The correlation coefficient and regression coefficient was therefore positive and insignificant implying that there is no significant relationship between company's income tax and gini coefficient for the period 1980-2020 in Nigeria. The findings concur with Nyenke and Amadi (2019) findings whose results revealed company income tax (CIT) has a positive relationship with income inequality (IEQ). The findings further agreed with Oshiobugie and Akporere (2019) findings who also revealed that company income tax affects economic growth in Nigeria positively under the period study. Other empirical support includes Umoru and Anyiwe (2013), Moradi (2009), Duc et al. (2019), Neog and Gaur (2020), among others. However, the study results disagreed with Nwidobie's (2021) result that showed that income inequality in Nigeria positively and significantly influences tax structure. Ramot and Ichihashi (2012) findings also disagreed with a study whose results found that statutory corporate income tax rate has a significant negative relationship with income inequality. Other studies empirically disagreed with the study including Omesi and Appah (2020), and Nyenke and Amadi (2019) whose results revealed a significant negative relationship between company's income tax and inequality.

Petroleum Profit Tax and Income Inequality: The correlation and regression results indicated that the relationship between petroleum profit tax and gini coefficient was positive with a correlation coefficient of 0.051 and a corresponding significant P-value of 0.757 > 0.05. The correlation coefficient and regression coefficient was therefore positive and insignificant implying that there is no significant relationship between petroleum profit tax and gini coefficient for the period 1980-2020 in Nigeria. The finding concur with Azis et al. (2016) whose results showed that the redistribution value of district/city is negative, indicating that the redistribution through taxes is not effective. Similarly, Raimi (2021) also agreed with this study whose result confirmed that petroleum profit taxes are insignificant in revenue generation towards the economic growth of Nigeria. However, the study results disagreed with Anyaduba and Otubugbu (2019); their result showed that petroleum profit taxes had a positive relationship with GINI.

Capital Gain Tax and Income Inequality: The correlation and regression results indicated that the relationship between capital gain tax and gini coefficient was positive with a correlation coefficient of 0.267 and a corresponding significant P-value of 0.100 > 0.05. The correlation coefficient and regression coefficient were therefore positive and insignificant implies that there is no significant relationship between capital gain tax and gini coefficient for the period 1980-2020 in Nigeria. The finding is consistent with the study conducted by Uzoka and Chiedu (2017) whose result found that capital gain tax has no statistically significant effect on economic growth of Nigeria. Also, the empirical findings concur with Umoru and Anyiwe (2013) whose result showed that indirect taxation has insignificant negative impact on income inequality. Further empirical studies carried out by Duc et al. (2019), and Oboh and Eromonsele (2018) also support the findings of this study and their results indicated that tax was found to

be negatively related to income inequality in Nigeria. Nevertheless, Aasness et al. (2002) findings empirically support the study whose results showed that the distributional impact contrasts strongly between the rankings and the tax reform.

Value Added Tax and Income Inequality: The study correlation and regression findings presented indicates that the relationship between value added tax and gini coefficient was 0.047 with a corresponding significant P-value of 0.776 > 0.05. The correlation coefficient and regression coefficient were therefore positive and insignificant which implies that there is no significant relationship between value added tax and gini coefficient for the period 1980-2020 in Nigeria. The findings concur with Omesi and Appah (2021): their result revealed that there is an insignificant relationship between value added tax and income inequality. However, the study result disagreed with Okatch et al. (2013) since their results showed that VAT contributes significantly to income inequality. Others include Anyaduba and Otulugbu (2019), Emmanuel (2013), and Uzoka and Chiedu (2017), among others.

Custom and Excise Duty and Income Inequality: The correlation and regression findings presented indicates that the relationship between custom and excise duty and gini coefficient were 0.133 with a corresponding significant P-value of 0.419 > 0.05. The correlation coefficient and regression coefficient were therefore positive and insignificant which implies that there is no significant relationship between custom and excise duty and gini coefficient for the period 1980-2020 in Nigeria. The findings concur with Egbuhuzor and Tomquin (2021); their result revealed a positive and insignificant effect of custom and excise duties on income inequity. Anyaduba and Otubugbu (2019) study also confirmed that custom and excise duty were not significant with gini coefficient. Others include Karakotsios and Katrakilidis (2020), and Akhor and Ekundayo (2016). But Nmesirionye et al. (2019) disagreed with the findings and their results revealed that custom and excise duties have a positive and significant impact on the real gross domestic product of Nigeria.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

The study investigated the relationship between taxes and income inequality in Nigeria from 1980 to 2020. Ex post facto and correlational research designs were employed and secondary data were collected from Federal Inland Revenue Service (FIRS), Central Bank of Nigeria (CBN), and National Bureau of Statistics (NBS) of various publications. The data collected were analyzed with univariate, bivariate and multivariate analysis. The analysis disclosed a positive and insignificant relationship between personal income tax (PIT), company's income tax (CIT), petroleum profit tax (PPT), capital gain tax (CGT), value added tax VAT), custom excise duties (CED) and Gini coefficient for the period under study. The study concluded that taxes influence the level of income inequality in Nigeria. Hence, the following recommendations were provided:

1. Since we established that taxes are a viable fiscal tool for the government to bridge the gap between the elites and the poor, it is imperative to strengthen the administrative mechanism of government taxation to reduce the several leakages as a means to control the level of disparity between the rich and the poor in Nigeria.

2. Taxation of the Nigerian informal sector is fraught with corruption and inefficiency. Hence the tax ratio was found to increase inequality. It is therefore vital to effectively

harness personal and corporate income taxes in Nigeria. In the case of company income tax, all medium scale businesses should be listed or at least register with CAC so their activities become transparent and accountable. This will no doubt increase the tax ratio and improve our initial position of a positive relationship.

3. Bank lending should be increased so as to upscale the level of private credit to GDP. This will no doubt support the creation of wealth in the organized private sector with the resultant effect of reducing the wealth disparity between the rich and the poor in Nigeria.

4. Revenue loss through the identical problem of tax evasion and avoidance has no doubt minimized total tax to GDP ratio in developing countries (Nigeria inclusive). Hence there is an urgent need for effective computerization of all tax activities in Nigeria, starting with registration of all tax papers with emphasis on the private sector.

5. Effective regulation of the entire tax system is urgently needed. Some tax laws have become very obsolete and require not just a review but constant review.

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