Effects of Taxes on Income Inequality in Nigeria

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Abstract
This study empirically investigated the effect of taxes on income inequality in Nigeria. To achieve this objective, theoretical, conceptual and empirical literature on taxes and income inequality were extensively reviewed. Taxes were proxied by companies income tax, capital gains tax and value added tax while income inequality is proxied by gini coefficient. Secondary data were obtained from Central Bank of Nigeria statistical bulletin, National Bureau of Statistic and Federal Inland Revenue Service Reports from 1980-2022. The study adopted descriptive statistics for univariate analysis while ordinary least square regression were used to analyze the formulated hypotheses of the study with the aid of Eview 10 econometric statistical software. The findings show that companies income tax had positive and significant effect on gini coefficient. Empirical evidence shows that capital gains tax has positive and significant effect on gini coefficient. Empirical evidence indicates that value added tax had positive and significant effect on gini coefficient. The study concludes that taxes reduced income inequality in Nigeria. The study recommends among others that government should allocate significant portion of companies income tax, capital gains tax and value added tax revenue to invest in quality education, health infrastructure and social welfare programme to reduce income inequality in Nigeria. Government spending should be channeled to rural areas for infrastructural development such as education, health care and agriculture. Government should carryout direct interventions programs such as conditional cash transfer, skill acquisition programs and such programs should be prioritize for vulnerable segments of the society.
Keywords: *Taxes, Income Inequality, Nigeria*

Introduction

Taxation is a pivotal instrument in fiscal policy and plays a vital role in addressing income inequality. Income inequality has been a persistent issue in Nigeria, as evidenced by its high Gini coefficient. The potential of taxation in remedying this issue has not been fully realized due to the prevalent regressive tax policies, inadequate distribution of tax revenues, and widespread tax evasion. Nigeria's reliance on indirect taxes, such as the value added tax, raises concerns. These taxes impose the same rate on everyone, regardless of their income level, making them regressive in nature. The poorer population ends up spending a larger proportion of their income on these taxes compared to wealthier individuals. This amplifies the economic divide, exacerbating income inequality. In contrast, a progressive tax system, where taxes increase with income, could act as a balancing force, redistributing wealth and reducing income inequality. Nigeria's economy is based on oil sector revenue, which provides a substantial proportion of government revenues, presents another dimension of the problem. Iwayemi (2011) points out that there are concerns that this wealth is not being equitably distributed across the population. The unequal distribution of tax revenues tends to concentrate wealth in

the hands of few people, thereby widening the gap between the rich and the poor. If these revenues were to be distributed more equitably, they will help bridge the income divide and improve the living standards of the less affluent. Tax evasion and corruption are major issues that exacerbate income inequality in Nigeria. High income individuals and large corporations often evade taxes, contributing less than their fair share to government revenues. This not only deprives the government of resources that will be used to mitigate income inequality but also perpetuates the wealth divide. A more rigorous enforcement of tax laws will ensure that high income individuals and corporations pay their due share, thus contributing to a more equitable distribution of wealth. 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 tax policies are implemented. The redistributive influence of income taxes has progressively turned out to be an essential subject in both developed and developing countries (Omesi & Appah, 2020; 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 (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 less developed countries have been found to be inefficient in addressing redistribution of income and potentially harmful to growth (Bird & Zolt, 2014; International Monetary Fund, 2014). 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, et al., 2012). Tax is a compulsory financial charge or levy imposed upon taxpayer by a government authority in order to fund government spending and various public expenditures. Taxes are mandatory payments levied by the government on individuals, corporations, and transactions, designed to generate revenue to fund public services and infrastructure, without directly returning benefits of equal value to the taxpayers.

Taxes are a tool for resource allocation, economic stabilization, and redistribution within an economy. Taxation is the process through which governments impose financial charges on citizens, corporations, and transactions to collect revenues required to fund public services, infrastructure, and government operations. Taxation is the legal mechanism by which a sovereign entity enforces the collection of contributions from individuals and businesses within its jurisdiction, based on established laws and regulations. Kiabel (2016) reported that taxes embraces all government impositions on the person, properly, privileges, occupations and enjoyment of the people and includes duties, imports and excises. The national tax policy (2012) view tax as a financial charge or levy imposed upon an individual or legal entity of the state. Kiabel (2014) stated that taxation is the process of collecting taxes within a particular location. He noted that taxation is a means of contributions from individuals and corporate bodies to the government. Omesi and Appah (2020) are of the view that inequality is a situation where individuals have diverse levels of income. Ogbonna and Appah (2016) reported that companies income tax is a tax levied on the profit of companies (excluding profit from companies engaged in upstream operations) accruing in, derived from, brought into or received in Nigeria in respect of any trade or business, rent, premium, dividends, interest, royalties and any other source of annual profit.

Christopher (2021) stated that company's income tax is charged on the profits of incorporated entities in Nigeria. Capital gains are the profits that an investor realizes when he or she sells the capital asset for a price that is higher than the purchase price. Capital gains taxes are only triggered when an asset is realized, not while it is held by an investor. 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 value added tax and submits it to Federal Inland Revenue Service through a designated bank. Progressive tax systems help to reduce income inequality because they transfer resources from the rich to the poor. On the other hand, regressive taxes, where the tax rate decreases as the taxable amount increases, can exacerbate income inequality. A regressive tax is the sales tax, as lower income households spend a larger portion of their income on consumption and therefore pay a larger proportion of their income in taxes (Davis et al., 2019). These factors also contribute to income inequality. The rich are more likely to use tax havens and other methods to avoid or evade taxes, which contribute to income inequality (Zucman, 2014). Taxes are one of the government's primary tools for redistributing income, which reduce income inequality (Piketty, 2014). The government collects taxes and uses the revenue to provide public services and transfers, such as education, health care, and social security, which are beneficial to the poor and middle class. The Organization for Economic Cooperation and Development (OECD) (2021) stated that income inequality is the disparity in the distribution of household income. The Gini coefficient is a measure that ranges from 0 (indicating perfect equality) to 1 (indicating perfect inequality), is commonly used to measure this income disparity. World Bank (2022) reported that income inequality refers not only unequal distribution of income, but also unequal economic opportunities. This lead to disparities in income, wealth, and living standards among different income groups, regions, and social classes. Tax evasion and avoidance, more prevalent among high income individuals and corporations, exacerbate income inequality. This is because it results in a greater burden on lower income taxpayers and reduces the funds available for public services and social transfers that help reduce inequality (Alstadaeter et al., 2018). Indirect taxes, such as sales and consumption taxes, are regressive in nature. They tend to have a disproportionately large impact on the poor as these households typically spend a higher portion of their income on consumption. Thus, such taxes increase income inequality (Warren, 2022).

The United Nations Development Program (UNDP) (2020) reported that Gini coefficient is a statistical measure of the degree of variation or dispersion in a set of values, used as a gauge of economic inequality. The World Bank (2021) describes the Gini coefficient as a measure of inequality derived from the Lorenz curve that quantifies the dispersion in the distribution of a particular quantity, such as income or consumption expenditure. Progressive taxation systems, where the wealthy are taxed at a higher percentage than the poor, reduce income inequality and hence decrease the Gini coefficient (Saez & Zucman, 2019). Regressive taxes, such as sales and consumption taxes exacerbate income inequality and increase the Gini coefficient (Warren, 2022). Progressive tax systems, especially when combined with well targeted social spending, help reduce poverty levels. Redistribution through taxes and transfers has proven to be an effective way to reduce poverty (World Bank, 2018). However, regressive taxes disproportionately affect the poor, potentially leading to an increase in poverty levels. In a progressive tax system, the rich are taxed at higher rates than the poor, which reduce income

inequality. However, the impact of this system on income inequality depends greatly on how the government uses the tax revenue, which is where government expenditure comes into play. If the government uses tax revenue for redistributive spending for example, on social security, unemployment benefits, public healthcare, or education it reduce income inequality. Such expenditures can improve the income distribution by transferring income from the rich to the poor, either directly (through cash transfers) or indirectly (through provision of public goods and services that the poor could not afford otherwise). 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 Goni 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. Rosen and Gayer (2014) stated that taxes can be used to redistribute income, however the extent is debatable. Taxation plays a critical role in economic development and income distribution. However, the effectiveness of Nigeria's tax system in addressing income inequality is a contentious issue. Taxation theoretically has the potential to reduce income inequality; several problems currently undermine its effectiveness in Nigeria. Extensive literature review on taxation and income inequality in Nigeria indicate that there are scanty literature on taxation and income inequality in Nigeria. However, there are very few studies or related studies, for instances Obaratin et al. (2017) examined taxation an effective tool for income redistribution in Nigeria from 1981-2014. Taxation was measured by total indirect tax revenue, total direct tax revenue while income redistribution was measured by foreign direct investment, economic openness, inflation rate, gini coefficient. Aladejana et al. (2019) examined economic growth, inequality and poverty in Nigeria from 1980-2016. Economic growth was proxied by real gross domestic product while inequality and poverty was proxied by gini coefficient, trade openness, inflation. Anyaduba and Otulugbu (2019) examined taxation and income inequality in Nigeria. Taxation was proxied by value added tax, custom and excise duty tax, capital gains tax, company income tax while income inequality was proxied by gini coefficient. Muduli et al. (2022) examined nexus between tax structure and income inequality in India. Tax structure was proxied by marginal tax rate, corporate income tax, excise duty tax, custom duty tax while income inequality was proxied by gini coefficient. Appah and Iweias (2023) examined taxes and income inequality in Nigeria. Taxes was proxied by companies income tax, personal income tax, capital gains tax, value added tax, custom and excise duty while income inequality was poxied by gini coefficient. Israel and Ebimobowei (2021) examined taxes and income inequality in Nigeria: Cointegration and error correction mechanisms evidence from 1980-2018. Taxes was proxied by personal income tax, companies income tax, tax, custom excise duties, value added tax while income inequality was proxied by gini coefficient while health expenditure and education expenditure was used as a moderating variable.

The current study focused on effect of taxes on income inequality in Nigeria evidence from 1980-2022, Taxes was proxied by companies income tax, capital gains tax and value added tax while income inequality was proxied by gini coefficient. The major differenence between our study and previous study is that no single study has adopted the proxies and dimensions which we used in a single study and with the time frame and methodology which we adopted in

carrying out our study. The various empirical studies on tax structure and income inequality have shown mixed 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), shows 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). This empirical studies show inconsistent results. In order to fill the observed gap in literature this study investigates the effect of taxes on income inequality in Nigeria.

Statement of the Problem

The Nigeria tax systems are regressive in nature. Regressive taxes impose the same rate on everyone, regardless of their income level, making them regressive in nature. The poorer population ends up spending a larger proportion of their income on these taxes compared to wealthier individuals. This amplifies the economic divide, exacerbating income inequality. While progressive tax system increase with income, act as a balancing force, redistributing wealth and reducing income inequality. The effectiveness of Nigeria's tax system in addressing income inequality is a contentious issue. The Nigerian tax system has been described as regressive, rather than progressive, meaning that it burdens the poor more heavily than the wealthy. A significant portion of the country's tax revenue comes from indirect taxes, such as the value added tax, which tend to be regressive. In Nigeria, the value added tax rate stands at a flat rate of 7.5% which applies uniformly across all income levels. This puts a disproportionate burden on low income earners and contributes to income inequality. Nigeria has issues with tax compliance and enforcement. The country has a large informal economy, and many of its citizens do not pay income taxes. This lack of tax compliance further exacerbates income inequality as the wealthier individuals or entities who can afford expert advice often exploit loopholes and evade taxes. Tax evasion and avoidance are additional issues plaguing Nigeria's tax system. These practices are more common among high income earners, who often use their resources to exploit legal loopholes and minimize their tax liability. This further exacerbates income inequality, as it means that wealthier individuals and entities contribute less than their fair share to the public purse. Corruption within the tax administration is another significant problem. Nigeria scores high on corruption indices, indicating a pervasive issue that affects various sectors, including tax administration (Transparency International, 2020). Corruption undermines the effectiveness of taxation as a tool for income redistribution by diverting public resources into private hands. Nigeria has struggled with establishing an effective tax administration system. The country's tax administration is marked by operational inefficiencies and absence of effective taxpayer education programs. This weak system hampers tax compliance, encourages evasion, and undermines the capacity of taxation to reduce income inequality.

Conceptual Framework

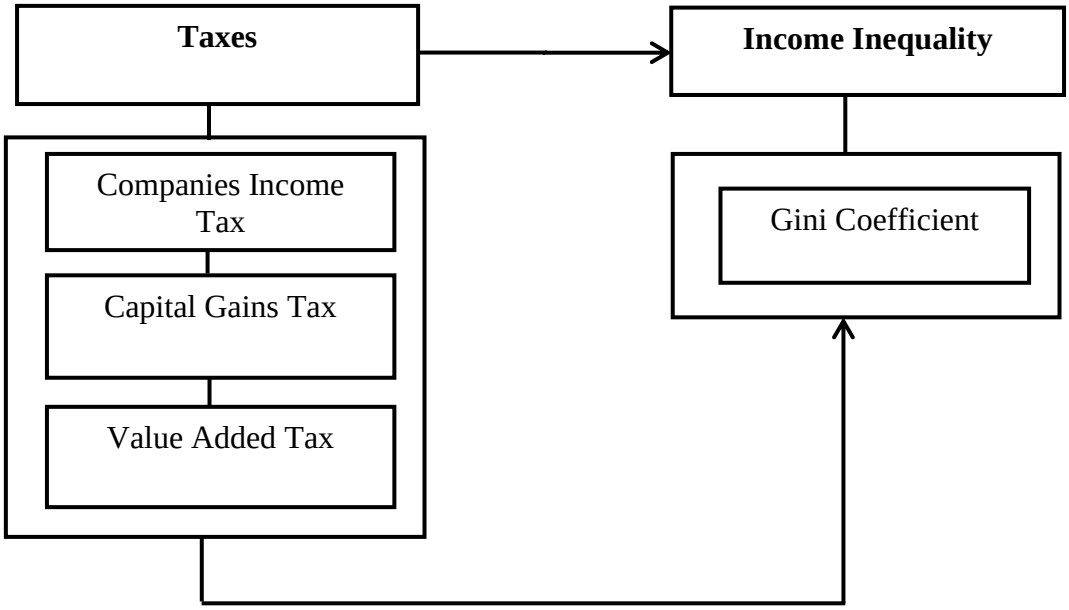


Figure 1.1: Conceptual Framework of the Relationship between Taxes on Income Inequality

Conceptual framework is a theoretical structure that guides research by providing a systematic understanding of the relationships between variables or concepts within a study. Conceptual framework serves as a blueprint or theoretical structure that guides the entire research process. It helps researchers conceptualize their study by providing a systematic understanding of the relationships between variables or concepts under investigation. Conceptual framework helps researchers organize their thoughts and ideas before embarking on a study. It allows them to clarify the key concepts, variables, and relationships that they intend to explore. The conceptual framework above shows the relationship between the independent and dependent variable of the study. The explanatory variable of this study is taxes proxied by companies income tax, capital gains tax and value added tax while the explained variable is income inequality measured by gini coefficient.

Objective of the Study

The purpose of this study was to investigate the effect of taxes on income inequality in Nigeria. The specific objectives are to:

1. Determine the effect of companies income tax on gini coefficient in Nigeria.
2. Investigate the effect of capital gains tax and gini coefficient in Nigeria.
3. Ascertain the effect of value added tax on gini coefficient in Nigeria.

Research Questions

The following research questions were addressed:

1. What is the effect of companies income tax on gini coefficient in Nigeria?
2. What is the effect of capital gains tax and gini coefficient in Nigeria?
3. What is the effect of value added tax on gini coefficient in Nigeria?

Research Hypotheses

The following research hypotheses were tested:

H_{01}: There is no significant effect of companies income tax on gini coefficient in Nigeria.
H_{02}: There is no significant effect of capital gains tax on gini coefficient in Nigeria.
H_{03}: There is no significant effect of value added tax on gini coefficient in Nigeria.

Literature Review

Theoretical Framework

Ability to Pay Theory

The Ability to Pay Theory was propounded by Adam Smith in (1776), Adam Smith in The Wealth of Nations (1776) wrote: "Such things as defending the country and maintaining the institutions of good government are of general benefit to the public. Thus, it is reasonable that the population as a whole should contribute to the tax costs. It is also reasonable to demand certain other things of a tax system for example, that the amounts of tax individuals pay should bear some relationship to their abilities to pay Good taxes meet four major criteria. They are proportionate to incomes or abilities to pay, certain rather than arbitrary, payable at times and in ways convenient to the taxpayers and cheap to administer and collect". Adam Smith laid down the foundations for modern thoughts on taxation, including the idea that taxes should be proportionate to one's ability to pay. The Ability to Pay Theory of taxation is a principle in public finance that suggests taxes should be levied according to an individual's or entity's capacity to bear the tax burden. This theory is grounded in the concept of fairness or equity in taxation, positing that individuals should contribute to government revenues in proportion to their income or wealth, implying that those with higher incomes should pay more taxes both in absolute terms and as a percentage of their income. The study of Taxes and Income Inequality in Nigeria underpins the Ability to Pay Theory due to the country's significant income disparity and the potential of the tax system to either mitigate or exacerbate this inequality. Nigeria, with its vast economic disparities, presents a compelling case for applying the Ability to Pay Theory to ensure tax fairness and promote social equity. By aligning the tax structure with the principles of this theory, the tax system become a powerful tool in reducing income inequality. Progressive taxation, where tax rates increase with income, is a direct application of this theory and can help redistribute wealth and reduce the gap between the rich and the poor. The study is grounded in the Ability to Pay Theory to promote equity in the Nigerian tax system. This theory supports the argument that taxation should be equitable, with individuals contributing to government finances according to their economic capability. In a country like Nigeria, where income inequality is pronounced, applying the Ability to Pay Theory in tax policy will serve as a mechanism for social justice, ensuring that the tax system does not unduly burden the less well off segments of the population. The theory also aligns with the goal of economic efficiency by potentially minimizing the adverse effects of taxation on economic activities. By taxing individuals based on their ability to pay, the tax system avoids excessive burdens on investment and consumption that could hamper economic growth. Grounding the study in this theory helps to ensure that the government will generate sufficient revenue for public services and infrastructure development in a way that is sustainable and does not exacerbate economic inequalities.

Conceptual Review

Taxes

Taxes are compulsory financial contributions imposed by governmental entities on individuals, businesses, and transactions, aimed at generating revenue to fund public services, infrastructure, and governmental operations. Taxes are legally mandated payments required by governmental laws from individuals and organizations towards the support of government functions and the provision of public goods. Taxation is the systematic process through which government bodies collect revenues from individuals and entities by imposing compulsory levies on income, property, goods, and services. Taxation is a crucial instrument for funding public expenditures, thereby facilitating the delivery of essential services, infrastructure development, and the overall functioning of the state. Taxation play significant role in the redistribution of wealth and the achievement of economic stability and growth. The International Monetary Fund (2021) reported that taxes as compulsory, unrequited payments to the government. The Organization for Economic Cooperation and Development (2020) stated that taxes are one of the key tools in public finance. They are compulsory contributions levied by the state on individuals or corporations to finance its activities. The World Bank (2021) describes taxes as the main instrument of fiscal policy. They are mandatory financial charges that a government imposes on individuals, corporations, and goods/services to finance government spending. U.S. Internal Revenue Service (2022) stated that taxes are the primary source of revenue for the government. They are compulsory payments that taxpayers must make, regardless of the benefits they may receive from government spending. Ibadin and Oladipupo (2015) stated that the tax system in a democratic nation is empowered by the bye laws of Local Government authorities and the Acts passed by the National and State House of Assembly. In Nigeria, the Federal Inland Revenue Service administers taxes at the federal level while the State Internal Revenue Service administers taxes at the state. National Tax Policy (2012) stated that taxation is the process by which taxes are collected within a given locality, and tax is a compulsory charge imposed by government on the profit or income of entities, persons, properties or transaction to yield revenue.

Taxation is the process by which the government transfers resources from the private sector to the public sector for the purpose of achieving set economic and social goals. Chellian (2010) defined tax as a tool for restraining too much consumption, increasing inventive to save and invest, mitigating economic inequalities and transferring resources from the hands of the public to the hands of the state for public investment. The Institute of Chartered Accountants of Nigeria (2016) defines tax as an enforced contribution of money pursuant to legislative enactment. Thus, tax is an imposition of levy on the citizens by the government to derive revenue needed to prosecute government's programme including the achievement of the nation's goals (Okpe, 2010). Omotosho (2010) defines taxation as an imposition of a compulsory charge by a public authority on the income and property of individuals and companies as spelt out by decrees, laws and Act without consideration of return of adequate amount of services to the payer. Tax is an important fiscal policy tool employed by the government to mobilize revenue and promote economic growth and development. The traditional functions of government are performed by the use of tax revenue and these among others include the provision of public goods and services; maintenance of law and order; defense against external aggression; and regulation of trade and business to ensure social and economic stability. The main objectives of the Nigeria Tax System are to promote fiscal

accountability, growth and development, provide stable resources for the government in order to provide public goods and services, tackle income inequality, provide stabilized economy, promote equity and justice, and to address market imperfections.

Companies Income Tax

Companies income tax is a financial charge on the economic profit of businesses, aimed at redistributing wealth and financing public expenditure. It plays a critical role in shaping business decisions, including investment, expansion, and resource allocation, while contributing to the equitable distribution of tax burdens among different economic actors. Ogbonna and Appah (2016) reported that 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. Company's income tax is charged on the profits generated by companies, public corporations and unincorporated associations such as industrial and provident societies, clubs and trade associations. A Company is defined by Section 93 (1) of the company's income tax Act CAP 60 Laws of the Federation of Nigeria, 1990 as any company or corporation other than a corporation sole, established by or under any law in force in Nigeria or elsewhere". Company income tax was created by the Companies Income Tax Act 1979 and has its root from the Income Tax Management Act of 1961. Abomaye-Nimenibo et al. (2018) opine that companies income 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. Company income tax is currently charged at the rate of 30% for companies having more than N100 Million Naira turnover. It is also charged at the rate of 20% for companies with a turnover between N25 Million and N100 Million. The tax is assessed on a preceding year basis (i.e. tax is charged on profits for the accounting year ending in the year preceding assessment). The companies having less than N25 Million turnover are not liable to pay companies income tax in line with the Finance Act 2019. In respect of business profits, a non-resident company that has a fixed base or a permanent establishment in Nigeria is taxable on the profits attributable to that fixed base. As such, it is required to register for company income tax and file its tax returns.

Capital Gains Tax

Capital gains tax is considered a tool for taxing the increase in value of an investment, thereby capturing a portion of the economic growth experienced by an individual or entity through investment activities. It serves not only as a source of government revenue but also as a mechanism for addressing income inequality by taxing wealth accumulation. It influences investment decisions and behaviors, including the timing of asset sales and choices between consumption and saving, thereby impacting the broader economy's capital allocation and efficiency. Obi-chukwu (2013) defines capital gains tax as tax charged on the profit obtained from a disposal or exchange of certain kinds of assets. Oba (2014) stated that capital gains tax is a tax payable by the owner of any disposable assets on the profit made from selling the asset, over and above the original cost of purchasing the asset. Capital gains can be considered from the perspective of assets realization in the sense that gains can only be obtained from an asset when it is realized. Embuka (2014) states that capital gains tax is triggered when assets are

realized and not while them are held by an investor. Embuka (2014) considers Capital Gain as the profits realized from the sale of assets at a price. Nneka (2014) views capital gain as profit arising from increases in the market value of capital assets to a person or corporate body who does not habitually offer them for sale and in whose hands they do not constitute stock-in-trade. This suggests that for Capital Gain to be derived, a capital asset has to be sold at a price that is higher than the purchase price of the said asset, and the sale of such asset must not be the usual business of the individual or corporate organization involved, in which case the asset forms part of their primary trading product, and this could include all kinds of assets own by individuals and corporate organization except those excluded by the capital gains tax Act. These could be landed properties, real estates, precious metals, art works, and company stocks. The reasons and objectives for imposing capital gains tax could be linked with some of the reasons for imposing tax in general as was identified by Hanson (1961) which includes revenue generation to meet government expenditure, redistribution of inequitable income which is usually achieved by means of progressive tax. Also identifies as reasons for imposing capital gains tax were equity, revenue generation and economic growth. Capital gains tax is a dual tier tax owing to its administration and collection by two tiers of government that is the Federal government and State governments as provided in the capital gains tax Act. The capital gains tax was introduced through the provisions of the capital gains tax Act No. 44 of 1967 and it applied throughout the Federation, and relate to individuals, partnerships and companies (Edotsel, 2008). The capital gains tax was introduced at the rate of 20% in 1967. It was however reduced to 10% with effect from 1st January, 1996 and is currently backed by the capital gains tax Act CAP C1 LFN 2004.The responsibility of administering and collection of CGT in Nigeria rest with both the Federal Inland Revenue Services and states' internal revenue boards to ensure that every disposal of taxable capital assets either by individuals or corporate organizations are effectively taxed. Nneka (2014) explains that State Board of Internal Revenue collects capital gains tax from individuals while the Federal Inland Revenue Service collects from corporate bodies and other individuals resident in the Federal Capital Territory, including members of the Armed Forces, the Police and foreign serving officers. The capital gains tax legislation simply places state government in the position of administering the capital gains tax Act on individuals on the basis of the residency rule, i.e. individual residents of a state as provided in the Personal Income Tax Act (PITA, 2004 as amended), while capital gains tax from other sources are collected by the federal government through the Federal Inland Revenue Service.

Value Added Tax

Value Added Tax is a consumption tax placed on a product whenever value is added at each stage of the supply chain, from production to the point of sale. The amount of value added tax that the user pays is on the cost of the product, less any of the costs of materials used in the product that have already been taxed. This mechanism ensures that the tax is levied on the added value at each stage of production and distribution, making it a transparent and efficient way of taxing goods and services consumed within the economy, thereby generating significant revenue for governments. Value added tax 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 value added tax

and submits it to Federal Inland Revenue Service through a designated bank. 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 value added tax at a flat rate of 7.5%. Value added tax refers to an ingestion charge imposed at every phase of the absorption sequence and suffered by the ultimate end user of the product or service (Oraka et al., 2017). Prior to the implementation of the 2020 Finance Act in Nigeria and under the value added tax Act of 1993 as emended, it was obligatory for an individual seller to levy and pull together the value added tax at a uniform ratio of 5% on all billed sums for merchandises and services that are not freed from value added tax. However, with the introduction and implementation of the 2020 Finance Act, all materials and business activities that are not excused from value added tax attract a charge of 7.5% value added tax, which accounts for 50% increase in the value added tax rate. Sections 10 and 11 of value added tax act offers the dissimilarity amid contribution value added tax and production value added tax. Involvement value added tax refers to the tax paid to suppliers on the purchase of taxable materials and financial undertakings while the productivity value added tax is the tax received from customers on the value of taxable supplies and business activities sold or rendered (Akhor & Ekundayo, 2016)**.** The idea of introducing value added tax in Nigeria came from the report of the Study group set up by the Federal Government in 1991 to review the entire tax system. Value added tax was proposed and a committee was set up to carry out feasibility study on its implementation. In January 1993, Government agreed to introduce value added tax by the middle of the year. It was latter shifted to 1st September, 1993 by which time the relevant legislation would have been made and proper ground work done. The implementation of value added tax officially commenced on 1st December, 1993when the value added tax Decree No. 102 of 1993 came into effect. However, registered person were given the whole of December to adjust their accounts, particularly the incorporation of value added tax information into their general ledgers, in order to comply with the record keeping requirements of the tax. That means that registered persons started issuing value added tax invoices to their customers from 1st January, 1994.

Income Inequality

Income inequality is the disparity in the distribution of wealth and earnings among the participants of an economy. It signifies the gap between the rich and the poor, where a small percentage of the population holds a large share of the country's income, while a significant portion of the population earns a relatively small share. This condition not only reflects on the economic health and fairness of a society but also affects economic growth, consumer spending, and the economic policy making process, influencing the sustainability of economic development and social stability. Income inequality is the uneven distribution of income and economic resources among individuals, households, or population groups within a society. It highlights disparities in the acquisition of wealth and access to financial opportunities, often measured by statistics such as the Gini coefficient. This concept underscores the social and economic divides that can lead to various forms of disparity in living standards, access to education, healthcare, and opportunities for economic mobility, impacting social cohesion and overall societal welfare. International Labour Organization (2022) noted that income inequality

is largely driven by inequality in labour market outcomes. This includes disparities in wages and salaries, job security, working conditions, and opportunities for advancement. The European Union (2023) reported that income inequality in terms of relative poverty and social exclusion. In this context, income inequality refers to the proportion of people whose income falls below a certain threshold, usually 60% of the median income. Inequality denotes a lack of similarity, evenness, or equality. It is concerned with disparities in the share of something between two or more people, when one or more people have a higher portion than the others. Inequality may exist in a variety of areas, including income, consumption, wealth, gender, and many more. Bakare (2011) defined income inequality as a condition in which money earned over a period of time, particularly as payment for labour or interest on investment, is distributed in unequal volumes, degrees, or situations, resulting in an unjust ranking disparity. Inequality is considered as a factor that may wreak havoc on social cohesiveness and intensify conflict. Adegoke (2013) stated that income disparity is the dividing line between the affluent and the poor. Neves et al. (2016) defined income inequality as a state of unequal distribution of income and assets in a population.). Inequality is the state of not being equal especially in rights, opportunities and status. International Monetary Fund (2014) divided economic inequality into four. First, is the inequality of outcome (interpersonal distribution of income). Second, is the inequality of wealth (distribution of wealth across individuals or households). Third, is the lifetime inequality (distribution of incomes or earnings for an individual over his or her lifetime). Fourth, is the inequality of opportunity (the relationship between income inequality and social mobility i.e. the mobility between income groups across generations). Economic inequality results into two views: inequality of outcomes and inequality of opportunities; Inequality of outcomes takes an ex-post or achievement oriented perspective which refers to the material dimensions of well being resulting to circumstances beyond one's control such as gender, ethnicity, family background, and so on. On the other hand, inequality of opportunities is an ex-ante or potential achievement perspectives focusing on the circumstances beyond one's control that affect one's potential outcomes. OECD (2012) report stated 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 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 perfectly equal distribution. The Gini is given by the area between the Lorenz curve and the 450 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 labour-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. Igbuzor (2017) explores the drivers of inequality in Nigeria. He further stated that the main drivers of poverty and inequality are: retrogressive taxation, inadequate budgeting system and allocation, insufficient resource management and policy implementation, elite capture, cronyism and favoritism, and prohibitive cost of governance. Ilaboya and Ohonba (2013) opine that inequality of income can be reduced through a range of

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. Inequality is a concept very much at the heart of social justice theorists. However, it is prone to confusion in public debate as it tends to mean different things to different people. Some distinctions are common though.

Gini Coefficient

The Gini coefficient is a measure used to express the level of inequality within a distribution, such as income or wealth, across a population. It is calculated based on the Lorenz curve, which plots the proportion of the total income of the population (y-axis) that is cumulatively earned by the bottom x% of the population. Economic Policy Institute (2022) stated that Gini coefficient is a single number summary of the degree of inequality within a country, with zero representing perfect equality and one representing perfect inequality. Piketty (2014) reported that Gini coefficient is the measure of income distribution within a population, where a Gini coefficient of zero expresses perfect equality and a Gini coefficient of one maximal inequality. 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.

Empirical Review

Muduli et al. (2022) examined the relationship between tax structure and income inequality in India. The study adopt the used of Fully Modified OLS and dynamic OLS techniques for the baseline analysis. Tax structure was proxied by marginal tax rate, corporate income tax, excise duty tax, custom duty tax while income inequality was proxied by gini coefficient The study findings show that the marginal tax rate, reduce income inequality whereas custom duty significant increase income inequality, personal income tax, corporate income tax, excise duty has no significant association with income inequality.

Oboh and Eromonsele (2018) examined taxation and income inequality in Nigeria for the period 1980- 2014. This study used secondary sources of data obtained from National Bureau of Statistics, Central Bank statistical bulletin and Federal Inland Revenue Service. Expost facto research design was employed while the paper analyzed data using Normality; Heteroskedasticity test; Auto/serial correlation; Model misspecification; cointegration and Error Correction Model. 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. Hence, direct tax widens the gap between the rich and the poor in Nigeria. Their study therefore concluded that indirect taxes reduce income inequality more in Nigeria.

Appah and Iweias (2023) examined taxes and income inequality in Nigeria. The study adopt the used of expost facto and correlational research design, the study adopt univariate, bivariate

and multivariate analysis. Taxes was proxied by company income tax, personal income tax, petroleum profit tax, capital gains tax, value added tax, custom and excise duty while income inequality was poxied by gini coefficient. The study concludes that taxes such as income tax, personal income tax, petroleum profit tax, capital gains tax, value added tax, custom and excise duty influence the level of inequality in Nigeria.

Research Methodology

This study adopts ex-post facto research design. The term "ex post facto" is Latin for "from after the fact," highlighting that this research approach is utilized to investigate the causes or effects of an existing condition or phenomenon after it has already happened. Secondary data were obtained from the Central Bank of Nigeria statistical bulletin and National Bureau of Statistic and the Federal Inland Revenue Service Reports from 1980-2022. The data obtained for this analysis has already occurred. The study adopts descriptive statistics for univariate analysis while ordinary least square regression were used to analyze the formulated hypotheses of the study with the aid of Eview 10 econometric statistical software

Model Specification

The framework shows that income inequality is a function of taxes and as such, the following model was specified for the study. The independent variable is taxes proxied by companies income tax, petroleum profit tax and value added tax while income inequality is the dependent variable proxied by gini coefficient.

The Functional Relationship between Independent and Dependent Variable of the study is shown below;

Function:

INE= f(TAX) ……. (3.1)

INE = $\alpha_0 - \alpha_1 TAX + \varepsilon_{it}$ …….. (3.2)

Functional Relationship

GCT= f(CIT, PPT, VAT) …….. (3.3)

$GCT_{it} = \beta_0 + \beta_1 CIT_{it} + \beta_2 PPT + \beta_3 VAT_{it} + \varepsilon_{it}$ …….. (3.4)

Where

TAX = Taxes
INE = Income Inequity
CIT = Companies Income Tax
CGT = Capital Gains Tax
VAT = Value Added Tax
GCT = Gini Coefficient
$it_1 - it_4$ = Slope
$\beta_1 - \beta_4$ = Regression Coefficient
α = Regression Constant
ε_{it} = Error Term

Data Analysis and Presentation

Data collected for the study were analyzed through bivariate analysis. The data were analysis based on the proxies of the study such as companies income tax, capital gains tax, value added tax, gini coefficient, and after analysis the result of data were presented.

Table 4.1: Regression Result for Companies Income Tax and Gini Coefficient

Dependent Variable: GCT
Method: Least Squares
Date: 09/23/23 Time: 13:46
Sample: 1980 2022
Included observations: 43

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	42.91863	0.915533	46.87828	0.0000
CIT	5.818507	6.019107	0.966519	0.0395

R-squared	0.822277	Mean dependent var	43.18698
Adjusted R-squared	0.701570	S.D. dependent var	5.716347
S.E. of regression	5.720833	Akaike info criterion	6.371501
Sum squared resid	1341.845	Schwarz criterion	6.453417
Log likelihood	134.9873	Hannan-Quinn criter.	6.401709
F-statistic	0.934159	Durbin-Watson stat	2.008227
Prob(F-statistic)	0.039451		

Table 4.1 illustrates regression result of the effect of companies income tax on gini coefficient in Nigeria. The coefficient for companies income tax is 5.818507. This means for every one unit increase in companies income tax, the Gini Coefficient is expected to increase by approximately 5.82 units, holding all other variables constant. The probability value associated with companies income tax is 0.0395. Given our significance level benchmark of 0.05, the p-value is less than 0.05. This suggests that the effect of companies income tax on the Gini Coefficient is statistically significant. The R-squared value is 0.822277. This indicates that approximately 82.23% of the variability in the Gini Coefficient can be explained by the model (and particularly by the companies income tax). This is a high value, suggesting a good fit. Adjusted for the number of predictors in the model, the R-squared value is 0.701570 or 70.16%. This metric compensates for the addition of predictors and is often a more accurate representation of the fit. The F-statistic measures the overall significance of the model. It is 0.934159, and its associated probability is 0.039451. Given our benchmark of 0.05, this p-value is less than 0.05, which indicates that the model is statistically significant. The Durbin-Watson statistic is 2.008227. This test is used to detect the presence of autocorrelation in the residuals of a regression analysis. Values close to 2 suggest no autocorrelation. Thus, our value indicates that there is no autocorrelation in the model. Given the probability value of companies income tax and gini coefficient of 0.0395 which is less than 0.05 significance level, we reject the null hypotheses and conclude that companies income tax has a positive and significant effect on gini coefficient in Nigeria.

Table 4.2: Regression Result for Capital gains tax and Gini Coefficient

Dependent Variable: GCT
Method: Least Squares
Date: 09/23/23 Time: 13:50
Sample: 1980 2022
Included observations: 43

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	43.00947	1.018059	42.24654	0.0000
CGT	0.019508	0.056070	0.347924	0.7297

R-squared	0.892944	Mean dependent var	43.18698
Adjusted R-squared	0.821375	S.D. dependent var	5.716347
S.E. of regression	5.777116	Akaike info criterion	6.391082
Sum squared resid	1368.378	Schwarz criterion	6.472998
Log likelihood	135.4083	Hannan-Quinn criter.	6.421290
F-statistic	0.121051	Durbin-Watson stat	2.007878
Prob(F-statistic)	0.029677		

Table 4.2 demonstrates regression result of the effect of capital gains tax on gini coefficient in Nigeria. The coefficient for capital gains tax is 0.019508. This means that for a one-unit increase in capital gains tax, the gini coefficient in Nigeria is expected to increase by approximately 0.0195 units, holding other factors constant. The p-value associated with capital gains tax is 0.7297. Using the 0.05 significance benchmark, this p-value is significantly above the threshold. This indicates that the effect of capital gains tax on the Gini Coefficient in Nigeria is not statistically significant at the 0.05 level. The R-squared value is 0.892944, meaning that about 89.29% of the variation in the Gini Coefficient can be explained by the model. However, given the high p-value for capital gains tax, other variables not included in this model might be significantly influencing gini coefficient. The adjusted R-squared value is 0.821375, suggesting that about 82.14% of the variability in gini coefficient is explained by the model when accounting for the number of predictors. The F-statistic is 0.121051, and the associated probability is 0.029677. This indicates that the model as a whole is significance. The Durbin-Watson statistic is 2.007878, which is close to 2. This implies that there is no autocorrelation in the residuals. Given the probability value of capital gains tax and gini coefficient of 0.7297 which is greater than 0.05 significance level, we accept the null hypotheses and conclude that capital gains tax has a positive and insignificant effect on gini coefficient in Nigeria.

Table 4.3: Regression Result for Value Added Tax and Gini Coefficient

Dependent Variable: GCT
Method: Least Squares
Date: 09/23/23 Time: 13:53
Sample: 1980 2022
Included observations: 43

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	44.37417	1.013827	43.76896	0.0000
VAT	0.003024	0.001450	2.085525	0.0433

R-squared	0.995909	Mean dependent var	43.18698
Adjusted R-squared	0.873858	S.D. dependent var	5.716347
S.E. of regression	5.501199	Akaike info criterion	6.293204
Sum squared resid	1240.791	Schwarz criterion	6.375121
Log likelihood	133.3039	Hannan-Quinn criter.	6.323413
F-statistic	4.349416	Durbin-Watson stat	2.000418
Prob(F-statistic)	0.043287		

Table 4.3 reveals regression result of the effect of value added tax on gini coefficient in Nigeria. The coefficient for value added tax is 0.003024. This suggests that with a one unit increase in value added tax, the Gini coefficient in Nigeria is predicted to increase by 0.003024 units, holding all other variables constant. The p-value associated with value added tax is 0.0433. Considering the 0.05 significance level, this p-value is below the benchmark, indicating that the effect of value added tax on the Gini coefficient in Nigeria is statistically significant. The R-squared value is 0.995909, which means that approximately 99.59% of the variability in the Gini Coefficient can be explained by the model. The adjusted R-squared is 0.873858, suggesting that about 87.39% of the variation in the Gini Coefficient is explained by the model, after adjusting for the number of predictors. The F-statistic value is 4.349416 with an associated probability of 0.043287. This indicates that the model as a whole is statistically significant at the 0.05 level. The Durbin-Watson statistic is 2.000418, which is near the value of 2. This suggests that there is no autocorrelation in the residuals. Given the probability value of value added tax and gini coefficient of 0.0433 which is less than 0.05 significances level, we reject the null hypotheses and conclude that value added tax has a positive and significant effect on gini coefficient in Nigeria.

Diagnostic Test

Diagnostic tests encompass a suite of statistical evaluations used to validate the assumptions and veracity of a statistical model. Specifically, for the Ordinary Least Squares regression, a widely adopted method in econometrics and statistical evaluations, it's paramount to carry out these diagnostic assessments to affirm the model's accuracy and dependability. The research undertook several key diagnostic tests tailored for ordinary least square analysis, and the outcomes adhered to the accepted benchmarks. Specifically: The research employed both the Breusch-Pagan tests to inspect homoscedasticity and heteroscedasticity. The objective was to confirm the consistency of residual variances across the data points. Heteroscedasticity, if present, might render parameter estimates less efficient, albeit still unbiased. Autocorrelation in the residuals was probed using the Durbin-Watson test, ensuring no correlations existed in sequential errors, which could skew results. The study addressed the issue of multicollinearity through the Variance Inflation Factor. This test is crucial for identifying excessive intercorrelations among predictors. Although multicollinearity doesn't compromise the unbiasedness or consistency of ordinary least square estimates, it can render them inefficient and obscure the distinct impacts of individual predictors. To verify the approximate normal distribution of residuals, the Jarque-Bera test and probability assessments were utilized.

Ramsey RESET test was employed to ascertain if there's a need to consider non linear combinations of predictors for enhanced explanatory power. In essence, this comprehensive diagnostic approach ensures the robustness and reliability of the regression results.

Table 4.4: Regression for Variance Inflation Factor

Variance Inflation Factors
Date: 09/23/23 Time: 14:00
Sample: 1980 2022
Included observations: 43

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	1.534901	1.590812	NA
CIT	4.759813	1.143246	1.038105
CGT	0.004885	1.669064	1.249916
VAT	3.704506	1.876734	1.285053

The variance inflation factor is a measure that helps detect the severity of multicollinearity in a regression analysis. Multicollinearity refers to a situation in which two or more explanatory variables in a regression model are highly linearly related. A variance inflation factor of 1 indicates no multicollinearity. A variance inflation factor between 1 and 5 is generally considered moderate. A variance inflation factor greater than five suggests high multicollinearity. Companies income tax Uncentered variance inflation factor is 1.143246; Centered variance inflation factor is 1.038105 Both the uncentered and centered variance inflation factor values for companies income tax are close to 1, suggesting that companies income tax does not have multicollinearity issues with the other variables in the model. Capital Gains Tax Uncentered variance inflation factor is 1.669064; Centered variance inflation factor value is 1.249916 while the uncentered variance inflation factor value is slightly higher, the centered variance inflation factor is still well below 5, indicating no multicollinearity for capital gains tax. Value added tax Uncentered variance inflation factor is 1.876734; Centered variance inflation factor value is 1.285053 for value added tax, both the uncentered and centered variance inflation factor values are below the high multicollinearity threshold. There is no multicollinearity based on the uncentered value and the centered variance inflation factor. The centered and uncentered variance inflation factor values are below their accepted threshold. Thus, there is no multicollinearity in the model.

Table 4.5: Regression for Correlogram Q-Test for AutoCorrelation

Date: 09/23/23 Time: 14:01
Sample: 1980 2022
Included observations: 43

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |****** |	. |****** |	1	0.841	0.841	3.2616	0.510
. |***** |	. |*. |	2	0.735	0.092	5.8092	0.184

. |**** |	.*| . |	3	0.604	0.118	7.5767	0.893
. |**** |	. | . |	4	0.502	0.702	8.8286	0.464
. |** |	**| . |	5	0.352	0.211	9.4591	0.693
. |** |	. | . |	6	0.233	0.145	9.7441	0.256
. | . |	**| . |	7	0.070	0.220	9.7707	0.986
. | . |	. | . |	8	0.733	0.415	9.7766	0.432
.*| . |	. | . |	9	0.142	0.055	9.8909	0.618
**| . |	.*| . |	10	0.239	0.122	1.0626	0.775
**| . |	. | . |	11	0.332	0.958	1.0894	0.293
***| . |	.*| . |	12	0.395	0.073	1.1865	0.324
***| . |	. |*. |	13	0.407	0.115	1.2934	0.798
***| . |	**| . |	14	0.453	0.215	1.4301	0.460
***| . |	. | . |	15	0.447	0.463	1.5681	0.807
***| . |	. | . |	16	0.443	0.855	1.7089	0.120
***| . |	. |*. |	17	0.379	0.094	1.8156	0.406
***| . |	.*| . |	18	0.362	0.145	1.9171	0.202
**| . |	. | . |	19	0.293	0.124	1.9863	0.983
**| . |	. | . |	20	0.239	0.063	2.0345	0.648

A correlogram (or an autocorrelation plot) is a graph of the autocorrelation of a time series with itself for successive time lags. It helps to understand the correlation of the series with its own past values, known as autocorrelation. The Q-Stat provides a test statistic for the null hypothesis that the first "k" autocorrelations are all zero (no autocorrelation). Decision Rule: At the 0.05 significance level: If the probability value (Prob) is less than 0.05, we reject the null hypothesis and conclude that there's significant autocorrelation at that lag. If the probability value (Prob) is greater than or equal to 0.05, we fail to reject the null hypothesis, suggesting that there's no autocorrelation at that lag. Based on our result, the probabilities for each lag are all greater than 0.05, which means we fail to reject the null hypothesis for all lags from 1 to 20. Therefore, there is no autocorrelation at any of these lags. The data is free from autocorrelation problems for the tested lags.

Table 4.7: Regression for Ramsey RESET Test

Ramsey RESET Test
Equation: UNTITLED
Specification:GCT C CIT CGT VAT
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	7.728705	38	0.9794
F-statistic	5.964309	(1, 38)	0.8432
Likelihood ratio	6.743209	1	0.7931

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	2.547607	1	2.549807

Restricted SSR	1618.059	39	41.48869
Unrestricted SSR	1618.059	38	42.58049

LR test summary:

	Value
Restricted LogL	139.0117
Unrestricted LogL	139.0117

Unrestricted Test Equation:
Dependent Variable: PRT
Method: Least Squares
Date: 09/23/23 Time: 14:04
Sample: 1980 2022
Included observations: 43

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	52.32484	113.3326	0.461693	0.6469
CIT	4.969807	2.749806	0.181268	0.8571
CGT	0.015062	0.100600	0.149724	0.8818
VAT	0.007339	0.036528	0.200917	0.8418
FITTED^2	3.217606	0.041598	7.723205	0.8939

R-squared	0.727015	Mean dependent var	55.10372
Adjusted R-squared	0.656174	S.D. dependent var	7.566061
S.E. of regression	6.525373	Akaike info criterion	6.698218
Sum squared resid	1618.059	Schwarz criterion	6.903008
Log likelihood	139.0117	Hannan-Quinn criter.	6.773738
F-statistic	4.616213	Durbin-Watson stat	2.005982
Prob(F-statistic)	0.003893		

The Ramsey RESET (Regression Equation Specification Error Test) is a general specification test for linear regression models. It tests for the omission of important explanatory variables (misspecification) in a regression model. If a model is correctly specified, it should not be possible to improve its explanatory power by adding powers (e.g., squared, cubed terms) of the predicted values. t-statistic: Measures if the coefficient of the squared fitted values is significantly different from zero. F-statistic: Tests the joint significance of the omitted variables. Likelihood ratio: Compares the likelihood of the restricted model to that of the unrestricted model. Probability Values: Associated with the test statistics; they test the null hypothesis that the model has no omitted variables or is correctly specified. The t-statistic for the squared fitted values is 7.728705, with a probability of 0.9794. This high p-value suggests that the squared fitted values are not significant at conventional levels. The F-statistic is 5.964309 with a probability of 0.8432. Again, this high p-value suggests that the model does not suffer from specification error concerning the variables considered in the test. The Likelihood ratio is 6.743209 with a probability of 0.7931. This also does not indicate a misspecification at the conventional significance levels. The Ramsey RESET Test results

suggest that there is no evidence of model misspecification, at least concerning the inclusion of squared fitted values. The high p-values associated with the test statistics indicate that we fail to reject the null hypothesis of the model being correctly specified. Therefore, based on this test, the original model seems adequate and does not omit important explanatory variables.

Table 4.8: Regression for Breusch-Pagan-Godfrey: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.001971	Prob. F(3,39)	0.2720
Obs*R-squared	8.066804	Prob. Chi-Square(3)	0.6647
Scaled explained SS	6.419119	Prob. Chi-Square(3)	0.7929

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 09/23/23 Time: 14:03
Sample: 1980 2022
Included observations: 43

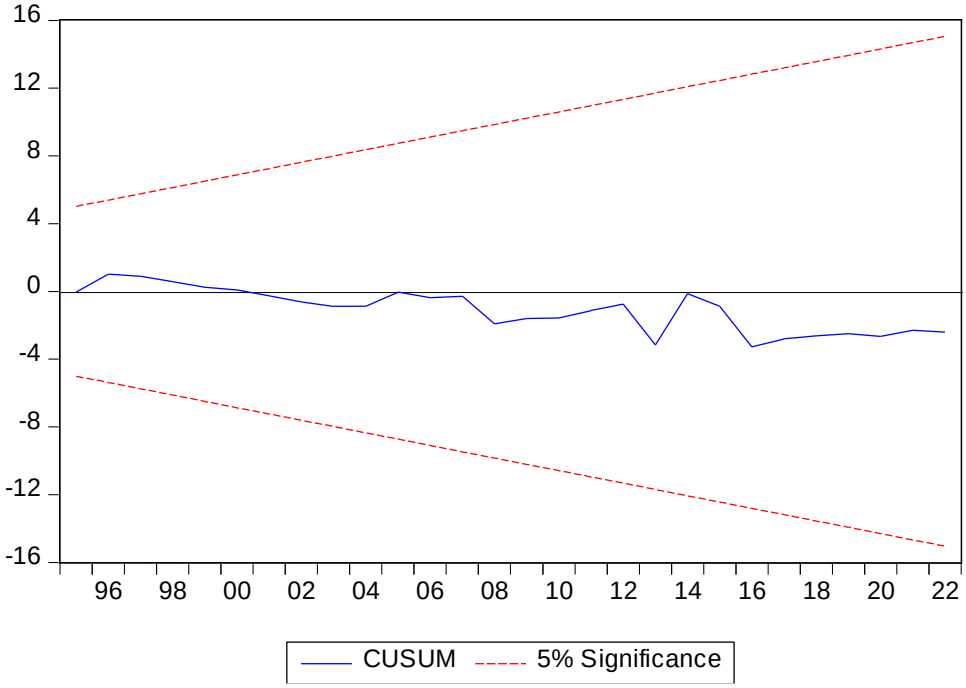
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	53.91419	9.527825	5.658605	0.0000
CIT	4.806506	5.309806	0.906229	0.3704
CGT	0.075232	0.537496	0.139967	0.8894
VAT	0.034085	0.014802	2.302755	0.0267

R-squared	0.887600	Mean dependent var	37.62927
Adjusted R-squared	0.725108	S.D. dependent var	52.95918
S.E. of regression	49.53572	Akaike info criterion	10.73167
Sum squared resid	95697.72	Schwarz criterion	10.89551
Log likelihood	226.7310	Hannan-Quinn criter.	10.79209
F-statistic	3.001971	Durbin-Watson stat	1.908189
Prob(F-statistic)	0.041984		

The Breusch-Pagan-Godfrey test is a test for heteroskedasticity (non-constant variance) in the residuals of a regression model. In simple terms, it checks if the variance of the residuals is consistent across all levels of the independent variables. F-statistic assesses the joint significance of the coefficients in the regression of the squared residuals on the independent variables. Obs*R-squared: This is another test statistic, based on the R-squared from the regression of squared residuals. It follows a Chi-Square distribution. Scaled explained SS: This is a scaled version of the sum of squared residuals. Probability Values: Used to test the null hypothesis that there's no heteroskedasticity. The F-statistic is 3.001971, with a probability of 0.2720. Typically, a p-value below 0.05 would indicate rejection of the null hypothesis of homoskedasticity (constant variance) in favor of heteroskedasticity. In this case, the p-value is above 0.05, suggesting that we can't reject the null hypothesis based on the F-statistic. The Obs*R-squared value is 8.066804, with an associated probability of 0.6647. This p-value is

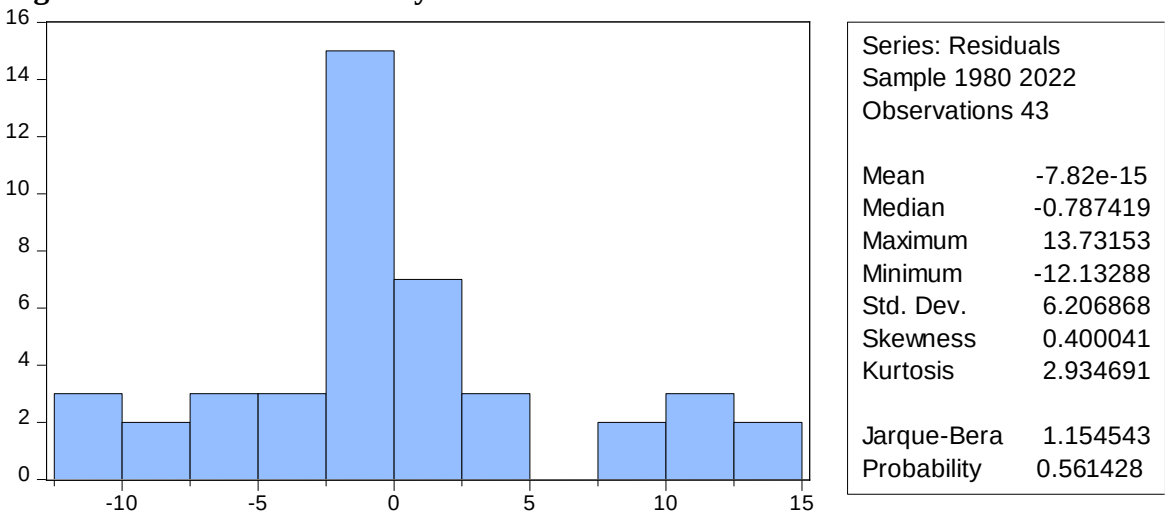
above the 0.05 threshold, which again suggests that we fail to reject the null hypothesis of no heteroskedasticity. The Scaled explained SS value is 6.419119 with a probability of 0.7929. This further suggests that there is no evidence of heteroskedasticity since the p-value is much greater than 0.05. Based on the Breusch-Pagan-Godfrey test, there's no strong evidence of heteroskedasticity in the residuals of the regression model. All the associated probability values from the test statistics are well above the conventional 0.05 threshold, indicating that the residuals have constant variance across all levels of the independent variables, and we don't reject the null hypothesis of homoskedasticity.

Figure 4.1: Recursive Estimates Cusum Test Graph



The Recursive CUSUM (Cumulative Sum) test graph is a tool used to check the stability of parameters in a regression model over time. Specifically, it's used to detect any structural breaks in a time series dataset. The blue line represents the CUSUM of recursive residuals. These residuals are calculated by running a regression model on an expanding window of data, adding one observation at a time, and then calculating the residuals for each expansion. The boundary limits (often displayed as two red lines flanking either side of the blue line) represent the threshold at which the CUSUM test would indicate a structural break. If the blue line goes outside these boundaries, it suggests that the stability of the regression coefficients has changed, indicating potential structural breaks in the dataset. If the blue line (CUSUM of recursive residuals) remains within the boundary limits throughout the sample period, it suggests that the model's parameters are stable over time. There is no evidence of structural breaks or instability in the coefficients of the regression model. Given that the blue line is within the boundary limit, the decision is that the regression model's parameters are stable. There is no evidence of structural breaks in the dataset for the period under review.

Figure 4.2: Residual Normality Test



The residual normality test is a diagnostic tool used in regression analysis to check whether the residuals (or error terms) from a regression model are normally distributed. This assumption of normality in the errors is one of the critical assumptions in ordinary least squares (OLS) regression. If the residuals are not normally distributed, it may invalidate statistical inferences made based on the regression results, such as hypothesis tests and confidence intervals. The Jarque-Bera test is a goodness-of-fit test of whether sample data have the skewness and kurtosis matching a normal distribution. The test is applied to the residuals of a regression model. Skewness value is 0.400041 (It measures the asymmetry of the distribution. A value of 0 indicates perfect symmetry.) Kurtosis value is 2.934691 (It measures the "tailedness" of the distribution. A value of 3 corresponds to the kurtosis of a normal distribution. Values greater than 3 indicate leptokurtic distributions, which have heavier tails, and values less than 3 suggest platykurtic distributions, which have lighter tails.) Jarque-Bera value is 1.154543 (It's a statistic that measures the difference of the skewness and kurtosis of the series with those from the normal distribution. A large Jarque-Bera statistic indicates that the data are not normally distributed.) Probability value is 0.561428 (The p-value associated with the Jarque-Bera statistic.) The Skewness of 0.400041 indicates a slightly right-skewed distribution, though it's relatively close to 0. This means that the distribution of the residuals is slightly skewed to the right, but not by a substantial amount. The Kurtosis value of 2.934691 is slightly less than 3, suggesting the distribution is somewhat platykurtic, meaning it has slightly lighter tails than the normal distribution. The Jarque-Bera value is 1.154543. A small Jarque-Bera statistic suggests that the data is consistent with the normal distribution. The Probability value associated with the Jarque-Bera statistic is 0.561428. Typically, a p-value less than 0.05 is considered evidence against the null hypothesis. In this case, the null hypothesis is that the data is normally distributed. Given the p-value of 0.561428, which is much greater than 0.05. The data series is normally distributed.

Conclusion and Recommendations

This study investigates the effect of taxes on income inequality in Nigeria, taxes were proxied by companies income tax, capital gains tax, and value added tax while income inequality was measured by Gini coefficient. Companies income tax and capital gains tax play significant roles in influencing income inequality. Value added tax has significant impact on income inequality.

This is due to the regressive nature of value added tax, which places a greater relative burden on lower income households compared to wealthier ones. The study concludes that taxes reduced income inequality in Nigeria. Companies income tax has a positive and significant effect on gini coefficient in Nigeria. Capital gains tax has a positive and insignificant effect on gini coefficient in Nigeria. Value added tax has a positive and significant effect on gini coefficient in Nigeria. The following recommendations are made: Given that government spending can moderate the relationship between taxes and income inequality, it's crucial for government expenditures to be transparent and well-directed. Ensuring that government spending is channeled towards projects that benefit the broader population will mitigate the adverse effects of income inequality. Direct interventions, such as conditional cash transfers and skill acquisition programs, will be effective in reducing the poverty rate. Such programs should be well-targeted and should aim at uplifting the most vulnerable segments of society. The revenues collected from companies' income tax, capital gains tax, and value added tax should be channeled into sectors and projects that promote inclusive growth. This includes investing in infrastructure, healthcare, and education in regions that are lagging behind. Ensuring that government expenditure is efficient and avoids wastage is crucial. Fiscal responsibility will ensure that the moderating effects of government spending are maximized. Encourage companies, especially large corporations, to undertake corporate social responsibility projects that directly benefit the community. These could range from educational scholarships, healthcare initiatives, to community infrastructure projects. A significant portion of Nigeria's population resides in rural areas. Directing tax revenues towards rural development, including infrastructure, agriculture, and healthcare, will address regional income disparities. Set up independent bodies or commissions to monitor and evaluate the impact of tax policies on income inequality. These bodies will provide feedback, ensuring that policies remain aligned with their intended objectives. Strengthen social safety nets to protect the most vulnerable. These will include unemployment benefits, health insurance schemes, and old-age pensions. Government should use part of the tax revenue to provide low interest loans, grants, or training programs for small and medium scale enterprise. Small and medium scale enterprise is crucial for job creation, and supporting them will lead to increased employment opportunities, especially in local communities.

References

Abomaye-Nimenibo, W. A.S., Eyo, M. J., & Friday, H. C. (2018). An empirical analysis of tax revenue and economic growth in Nigeria from 1980 – 2015. *Global Journal of Human Social Science, 18*(3), 7 – 40.

Action Aid (2013). *Tax justice: The domestic perspective*. Retrieved from http:// www.actionaid.org.uk.

Adegoke, Y. O. (2013). Disparity in income distribution in Nigeria: A Lorenz curve and Gini index approach. *Universities Journal of Management Social Science, 3*(2), 16-28.

Ajie, H. A., Akekere, J., & Ewubare, D. B. (2014). *Praxis of public sector economics & Finance.* Pearl publishers.

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*(3), 62 - 87.

Aladejana, S. A., Alabi, J. A., & Bolaji, S. A. (2019). Economic growth, inequality and poverty in Nigeria, 1980-2016. *International Journal, 5*(3), 53-65

Alstadaeter, A., Johannesen, N., & Zucman, G. (2018). Tax evasion and inequality. *American Economic Review, 108*(6), 1319-1334.

Anyaduba, J. O., & Otubugbu, P. O. (2019). Taxation and income inequality in Nigeria. *Accounting & Finance Research, 8*(3), 118 – 135.

Apere, T.O., & Durojaiye, O.J. (2016). Impact of value added tax on government revenue and economic growth in Nigeria. *International Journal of Management and Applied Science, 2*(7), 92–97.

Appah, E., & Iweias, S.S. (2023). Taxes and income inequality in Nigeria: 1980 – 2020. *African Journal of Economics and Sustainable Development 6*(1), 100-128. DOI: 10.52589/AJESDKKNB1WP3.

Appah, E., & Iweias, S.S. (2023). Taxes and income inequality in Nigeria: 1980 – 2020. *African Journal of Economics and Sustainable Development 6*(1), 100-128. DOI: 10.52589/AJESDKKNB1WP3.

Appergis, N. (2015). Does renewable production affect income inequality? Evidence from an international panel of countries. *Applied Economics Letters, 2*(3), 23-44.

Atkinson, A. B. (2014). After Piketty?, *The British Journal of Sociology*, *65*(4), 18 – 35.

Babatunde, A., Ibukun, O., & Oyeyemi, G. (2017). Taxation revenue and economic growth in Africa. *Journal of Accounting and Taxation, 9*(2), 11-22

Bakare, A.S. (2011). Theoretical analysis of capital formation and growth in Nigeria. *Far East Journal of Psychology and Business, 3*(1), 1-15.

Bhartia, H. L. (2009). *Public finance, (14th Edition).* New Delhi: Vikas Publishing House PV.

Bird, R. M., & Zolt, E. M. (2014). Redistribution via taxation: The limiting role of the personal income tax in developing countries. *Journal of Economics and Finance, 15*(2), 625-683.

Cano, L. (2017). Personal income tax & income inequality in Ecuador between 2007 and 2011. *CEPAL Review, 123*(2), 56 – 75

Chellian, R. J. (2010). Task force recommendation on direct taxes. *Economic and Political Weekly, 37*(50), 49-80

Chigbu, E. E., Akujuobi, L. E., & Appah, E. (2012). An empirical study on the causality between economic growth and taxation in Nigeria. *Current Research Journal of Economic Theory, 4*(2), 29-38

Davis, C., Davis, K., Gardner, M., Heim, R., & Wiehe, M. (2019). *Who pays? A distributional analysis of the tax systems in all 50 States.* Institute on Taxation and Economic Policy.

Economic Policy Institute (2022). *The productivity pay gap.* Retrieved from https://www.epi.org/productivity-pay-gap/.

Embuka, A. (2014). *The capital gains tax: An untapped revenue goldmine.* Retrieved from www.peoplesdailyng.com on 14th March, 2020.

European Commission (2023). *European Social Policy Network* Thematic Report on Inequality.

Goni, E., Lopéz, J., & Servén, L. (2011). Fiscal redistribution and income inequality in Latin America. *World Development*, *39*(9), 1558–69.

Gopar, L., Iosifidi, M., & Mylonidis, N. (2016) Relative effective taxation and income inequality: Evidence from OECD countries. *Journal of European Social Policy, 27*(1), 57–76

Hanni, M., R. Martner F., & Podestá, A. (2015). The redistributive potential of taxation in Latin America. *Commission Economics Para America Latina Review, 116*(7), 7–26.

Hanson, J. L (1961). *A textbook of economics, MacDonald and Evans Limited*, London. Uk

Hungerford, T. L. (2010). *The economic effects of capital gains taxation, congregational Research Service*, 7(5700).

Ibadin, P. K., & Oladipupo, A.O. (2015). Indirect taxes and economic growth in Nigeria. *Ekon. Misao I PraksaDbk. God*, *2*(1), 345-364

Igbuzor, O. (2017). *Opinion review on income inequality in Nigeria: Exploring the drivers*. http://www.THEWILLNigeria.com/news/ net

Ilaboya, O. J. & Ohonba, N. (2013). Direct versus indirect taxation and income inequality. *European Journal of Accounting Auditing and Finance Research, 1*(1), 1-15

International Labour Organization (2022). *Global Wage Report 2022: Wages and minimum* wages in a changing world.

International Monetary Fund (2014). *Fiscal policy and income inequality.* IMF Policy Paper. https://www.imf.org/external/np/pp/eng/2014/012314.pdf

International Monetary Fund (2017). *Fiscal monitor: Tackling inequality*. Retrieved from https://www.imf.org/en/Publications/FM/Issues/2017/10/05/fiscal-monitor-october-2017. ↩

International Monetary Fund (2021). Fis*cal monitor: Managing public resources in the digital age.* Retrieved from https://www.imf.org/en/Publications/FM. ↩

Investopedia (2016). *Capital gains tax*. Available at .http://www.investopedia.com/terms/c capital_gains_tax.asp

Iris, C., Martinez-Vazquez, J., & Vulovic, N. (2012). Government fiscal policy and redistribution in Asian countries. *Asian Development Bank, 2*(4), 1-55

Israel, I., & Ebimobowei, A. (2021). Corporate governance and tax avoidance of listed consumer and industrial goods companies in Nigeria. *IOSR Journal of Economics and Finance, 12*(2), 17-31

Kiabel, B. D. (2014). *Personal income tax in Nigeria*. Springfield Publishers Ltd, Nigeria.

Kiabel, B. D. (2016). Ethics in public accounting: The Nigerian experience. *Journal of Business Studies, 6*(1), 303-306.

Mallaye, D., Yogo, T. U., & Timba, G. T. (2015). *Oil rent and income inequality in developing economies: Are they friends or foes?* Etudes et Documents, no 02, CERDI.

Manukaji, I. J. (2018). Effect of tax structure on economic growth in Nigeria. *International Journal of Innovative Finance and Economic Research*, *6*(1), 1 – 11.

Martin, W. & Crookes, D. (2013). Oil shock vulnerabilities & impacts: Nigeria case study. Report submitted to UK Department for International Development ‘

Muduli, D. K., Rout, S. K., & Khan, N. A. (2022). Nexus between tax structure and income inequality in India. *Asian Development Policy Review*, *10*(2), 88-105

Nasira, M. G., Haruna, M. A. & Abdullahi, M. A. (2016). Evaluating the impact of value added tax on the economic growth of Nigeria. *Journal of Accounting and Taxation*, *8*(6), 59 – 65

National Tax Policy of Nigeria (2012). *Final draft from the federal ministry of finance*.

Neves, P. C., Afonso, O., & Silva, S. T. (2016). A meta-analytic reassessment of the effects of inequality on growth. *World Development*, *7*(8), 386–400.

Njogu, L. K. (2015). The effect of value added tax on economic growth in Kenya. *International Academic Journal of Economics and Finance*, *1*(5), 10-30.

Nneka, I. (2014). *The basics of capital gains tax*. Available at: http://www.vanguardngr.com/2014/03/basics-capital-gains-tax/

Nwidobie, B. E. (2021). Income inequality and tax evasion in Nigeria. *International Journal of Critical Accounting, 12*(3), 1-10.

Nyenke, P., & Amadi C. (2019). *Taxation & inequality in Nigeria: A case study.* [online] Available at: http://aercafrica.org/index.php/publications/view document/112- [Accessed 21 Dec. 2020

Obaratin, S., Akhor, S. O., & Oseghale, O. E. (2017). Taxation an effective tool for income inequality redistribution in Nigeria. *Mediterranean Journal of Social Sciences, 8*(4), 187-196

Oboh, T., & Eromonsele, P. E. (2018). Taxation & income inequality in Nigeria. *NG- Journal of Social Development, 7*(1), 63 – 72.

Oboh, T., & Eromonsele, P. E. (2018). Taxation & income inequality in Nigeria. *NG- Journal of Social Development, 7*(1), 63 – 72.

Organisation for Economic Co-operation and Development (2012). Income inequality and growth: The roles of taxes and transfers. OECD *Economics Department, Policy Notes, 9*(3), 1-12

Ogbeide, E. N. O. & Agu, D. O. (2015). Poverty and income inequality in Nigeria: any causality? *Asian Economic and Financial Review, 5*(3), 439-452

Ogbonna, G. N., & Appah, E. (2016). Effect of tax administration and revenue on economic growth in Nigeria. *Research Journal of Finance and Accounting, 7*(13), 49 - 58.

Ojong, C.M., Anthony, O., Arikpo, O.F. (2016). The impact of tax revenue on economic growth: Evidence from Nigeria. *IOSR Journal of Economic and Finance, 7*(1), 32-38

Okoli, M. N., Njoku, C. O., & Kaka, G. N. (2014). Taxation and economic growth in Nigeria; A Granger causality approach. *International Journal of Research in Management, Science & Technology, 2*(3), 64 - 80.

Okoye, E. I., & Gbegi, D. O. (2013). Effective value added tax: An imperative for wealth creation in Nigeria. *Global Journal of Management and Business Research, 13*(1), 231-143.

Okpe, I. I. (2010). *Personal income tax in Nigeria.* Enugu: Ochumba Printing and Publishing Company.

Ola, C. S. (1974). *Income-tax law and Practice in Nigeria,* Heinemann Educational books limited, Nigeria

Omesi, I. & Appah, E. (2021). Taxes and income inequality in Nigeria: Cointegration and error correction mechanisms evidence from 1980 – 2018. *International Journal of Innovations in Management and Accounting, 8*(2), 1-17.

Omesi, I., & Appah, E. (2020). Corporate tax planning and firm value of listed consumer goods companies in Nigeria. *Journal of Business and Management, 23*(2), 42-51.

Omotola, A. M., & Kabir, K. S. (2015). Assessing income inequality in North-Eastern Nigeria. *Journal of Poverty, investment and Development, 16*(1), 33-39.

Omotoso, M. O. (2010). *Principles of taxation.* (1st ed.) Ibadan: D first shepherd investment

Onwuchekwa, J. C., Camp, K., & Aruwa, A. S. (2014). Value added tax and economic growth in Nigeria. *European Journal of Accounting Auditing and Finance Research, 2*(8), 62 – 69

Oraka, A. O., Okegbe, T. O., & Ezejiofor, R. A. (2017). Effect of value added tax on the Nigerian economy. *European Journal of Academic Research 5*(2), 1-20

Organization for Economic Co-operation and Development (2020). *Taxing wages 2020*. OECD Publishing, Paris. https://doi.org/10.1787/047172cd-en. ↩

Organization for Economic Co-operation and Development (2021). *Income inequality (indicator).* doi: 10.1787/459aa7f1-en.

Ortiz, I., & Cummins, M. (2011). *Global inequality: Beyond the bottom billion–A rapid review of income distribution in 141 countries.* UNICEF social and economic policy working paper. http://www.networkideas.org/networkideas/pdfs/global_inequality

Otu, O. H., & Adejumo, T. O. (2013).The effects of tax revenue on economic growth in Nigeria. *International Journal of Humanities and Social Science Invention, 2*(6), 16-26

Piketty, T. (2014). Capital in the twenty-first century, *Harvard University Press, 5*(7), 118 – 135.

Saez, E. (2021). Using elasticities to derive optimal income tax rates. *The Review of Economic Studies, 68*(1), 205-229.

Saez, E., & Zucman, G. (2019). *The triumph of injustice: How the rich dodge taxes and How to make them pay.* W.W. Norton & Company.

Stoilova, D. (2017). Tax structure and economic growth: Evidence from the European Union. *Contaduría y Administration, 62*(3), 1041-1057.

U.S. Internal Revenue Service (2022). *Understanding taxes*. Retrieved from https://apps.irs.gov/app/understandingTaxes/. ↩

Umeora, C. E. (2013). The effects of value added tax on the economic growth of Nigeria. *Journal of Economics and Sustainable Development, 4*(6), 190 – 201

United Nations Development Program (2020). *Human development reports* - Gini coefficient. Retrieved from http://hdr.undp.org/en/content/gini-coefficient. ↩

Warren, N. (2022). The regressive nature of indirect taxes: Evidence and policy implications. *International Journal of Financial Studies, 10*(1), 1-19.

World Bank (2021). *GINI index (World Bank estimate).* World Development Indicators. Retrieved from https://databank.worldbank.org/reports.aspx?source=world-development-indicators.

World Bank (2022). *World development report 2022:* Inequality in a Rapidly Changing World.

World Bank (2018). *Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle*. World Bank, Washington, DC. https://doi.org/10.1596/978-1-4648-1330-6.

Zellner, A., & Ngoie, K. (2015). Evaluation of the effect of reduced personal and corporate tax rates on growth rates of the U.S economy, *Econometric Reviews, 34*(1), 56-81

Zucman, G. (2014). Taxing across Borders: Tracking personal wealth and corporate profits. *Journal of Economic Perspectives, 28*(4), 121-148.