CAN FISCAL POLICY REDUCE ECONOMIC INEQUALITY IN NIGERIA?

BY
ONYEKACHI ONIKE

Submitted to
Central European University Private University
Department of Economics and Business

In partial fulfillment of the requirement for the degree of Master of Arts in Economic policy in Global Markets

Supervisor : Professor Romhanyi Balazs

Vienna, Austria
2022

Abstract

In 2020, Nigeria was named the poverty capital of the world, with 80 million people reported to live in extreme poverty. At the other end of the scale, five of Nigeria's wealthiest men have a combined net worth of about $30 billion. The level of poverty and inequality is high. There is the need to tackle this rising inequality through fiscal policy.

The paper puts forward the hypothesis, asking, Can fiscal policy (education and health) effect inequality and poverty in Nigeria? To answer this question the study analyses data (Gini coefficient, poverty rate, taxation, health, and education spending) from Nigeria, Ghana and Senegal, using two regression models.

The result indicates that there is a negative correlation between inequality / poverty and health and education expenditure. However, the correlation is weak. The study also finds that increasing health expenditure is important to reduce inequality. There is the need to address education spending to the rural poor, to maximize its impact on inequality.

The paper recommends that the government increases progressive spending, reforms the tax system and balance revenue and expenditure at local government level.

Table of Contents

Abbreviations

CBN	-	Central Bank of Nigeria
CEQ	-	Commitment to Equity
CIT	-	Corporate Income Tax
CRI	-	Commitment to Reducing Inequality
DFI	-	Development Finance International
FIRS	-	Federal Inland Revenue Service
ICTD	-	International Centre for Tax and Development
NBS	-	Nigerian Bureau of Statistics
OWID	-	Our World in Data
PPP	-	Purchasing Power Parity
WBG	-	World Bank Group
WDI	-	World Development Indicators
WIID	-	World Income Inequality Database
SSA	-	Sub-Saharan Africa
VAT	-	Value Added Tax

List of Figures

List of Tables

CHAPTER 1: INTRODUCTION

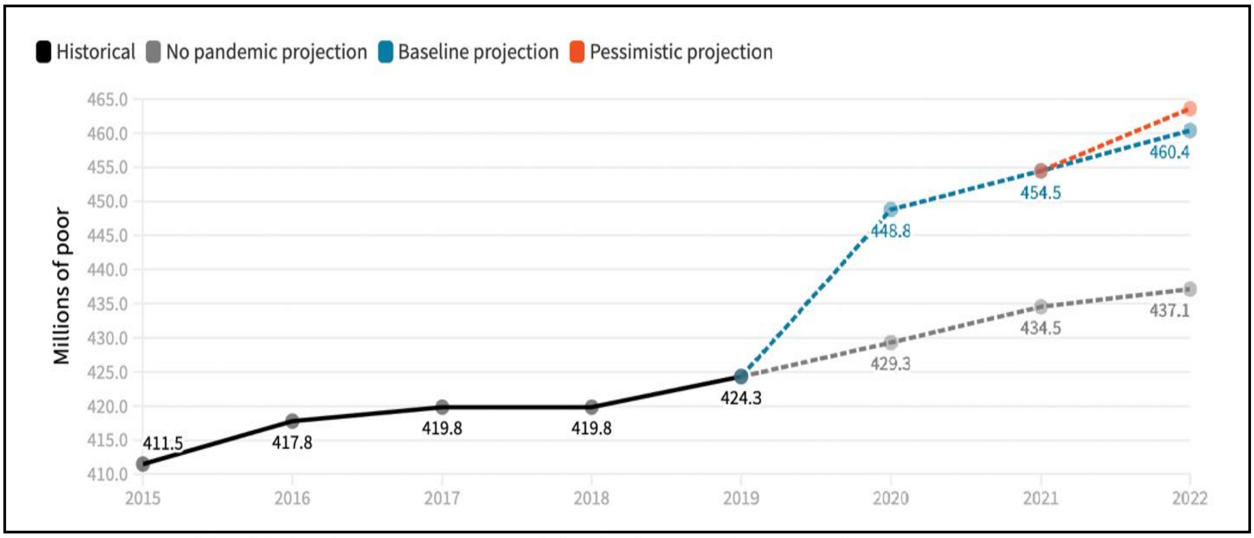
1.1 Motivation for the thesis

The rate of poverty has been on the rise in Nigeria. The World Bank categorizes Nigeria as a lower middle-income country, with a Gross National Income per capita (PPP) of $5000 as at 2020 (World Population Review, 2022). It was overtaken by India as the poverty capital of the world in 2022, with 80million people (representing about 39% of its 214million population) reported to live in extreme poverty. Its target escape rate is set at 0.3 people per second (World Poverty Clock, 2022).

Despite these bleak statistics, the situation does not seem to be getting any better. There are predictions of further dip in the levels of extreme poverty, especially with the unfolding impacts of the COVID-19 pandemic. This has brought about disruptions in global supply chains, distorted price levels of goods and services as well as negatively impacted on government revenue. Nigeria is not isolated from this. The World Bank has projected that with the "COVID-19 crisis, growing inflationary pressures, and the Ukraine conflict will lead to an additional 75 million to 95 million people in poverty this year, compared to pre-pandemic projections" (Pandemic, Prices and Poverty, 2022).

The figure below illustrates the nowcast of extreme poverty in sub-Saharan Africa from 2015 - 2022.

Figure 1: Nowcasting of Extreme Poverty in Sub-Saharan Africa (2015 - 2022)



Source: Lakner et al (2022) (updated), Poverty & Inequality Platform (PIP), Macro and Poverty Outlook.

Now if we shift our gaze briefly away from extreme poverty in Nigeria, to the other end, we see a different picture. Five of Nigeria's wealthiest men, including Africa's richest man, Aliko Dangote have a combined net worth of about $30 billion - which is more than the 2017 budget of Nigeria (Closing Africa's Wealth Gap un.org, 2017).

Furthermore, in 2019, studies carried out by the Oxfam and Development Finance International revealed that West African governments were the least committed to reducing inequality in the African continent and in 2021, the Commitment to Reducing Inequality Index (CRII) showed that "the average West African citizen still lives under a government least committed to fighting inequality in Africa" (The West African Inequality Crisis, 2021). Therefore, it is imperative that the Nigerian government which is the economic powerhouse of the West African sub-region should explore more options in seeking to address the rising inequality in Nigeria. There are several options available to achieve this, and they include boosting public spending, making tax systems more effective, tackling unemployment. This paper seeks to focus on the efficacy of fiscal policy as a tool to tackling economic inequality in Nigeria.

1.2 Research Question and Hypothesis

This paper seeks to investigate the effect of fiscal policy on economic inequality in Nigeria. It seeks to highlight on the level of economic inequality in Nigeria, using published data (Gini-coefficient and poverty rate) and analyses how fiscal policy effects economic inequality and poverty in Nigeria. It uses two regression models to analyze this.

To get a broader picture, the thesis will also ask how effective fiscal policy in Nigeria currently is? The dept of analysis on inequality focuses on income inequality. Opportunity and wealth inequality will not be analyzed, although they are key area of interest, because of the paucity of data.

Hypothesis:

i. H_0: Health and Education expenditure does not affect the Gini coefficient

   H_A: Health and Education expenditure affects the Gini coefficient

ii. H_0: Health and Education expenditure does not affect the Poverty rate

   H_A: Health and Education expenditure affects the Poverty rate

   *H_0 - Null Hypothesis.   *H_A- Alternate Hypothesis

1.3 Scope And Significance of Study

It is important to take a good historical view of fiscal policies and fiscal expenditure by the government, to get a better analysis of how it has evolved over time, and how it has influenced the inequality in Nigeria. Irrespective of this importance, the paper analyses data from 2000 - 2019. This is due to paucity of data on fiscal expenditure by sector, especially at the sub-national level.

The paper covers Nigeria in its entirety. It also makes references to Sub-Saharan Africa (Ghana and Senegal), developing (China) and developed countries, for the purpose of comparison. This is to put the analysis in context, to give the reader a better understanding of the scenario.

The overall aim of this study is to identify how useful fiscal policy is in the Nigerian context, in tackling income inequality. Although, previous studies have pointed out that fiscal policies in developing countries are not as effective as in developed countries and therefore are not good economic tools for income redistribution. For example, the IMF highlights that “low levels of both taxes and social spending limit the redistributive impact of fiscal policy in developing economies” (IMF Policy Paper, 2014). Fiscal policy remains one of the most important tools at the disposal of the Nigerian government to affect income redistribution.

The main limitations faced in this paper is the paucity of data, particularly sub-national historical data on fiscal expenditure of state governments on key areas of the economy like education and health, as these sectors data form the key variables used for the analysis.

Definition Of Key Terms

- Fiscal Incidence - It represents the overall effect that taxation and expenditure policies (when considered together) of government have on the real economic income of people. The study of this effect is referred to as the Fiscal Incidence Analysis.
- Fiscal Policy - Fiscal policy is the use of government spending and taxation to influence the economy (Horton & El-Ganainy, 2020).
- Income - A household's disposable income over a particular period, usually one year.
- Income Inequality - The extent to which income is evenly distributed within a population (IMF, 2022)
- Gini Coefficient - One of the methods used in measuring inequality in a country. The limit varies between 0 - 1, with 0 signifying total equality and 1 total inequality.

Organization

The paper begins with an Introduction where I emphasize the motivations for the research which is the primary driver for the thesis. Followed by Chapter 2 which is a review of literature on fiscal policy and inequality in Nigeria, to highlight relevant outcomes from previous research. Chapter 3 comes immediately after with an overview of education, health spending and taxation as an effective tool for reducing inequality in Nigeria. Chapter 4 identifies the data for the research which will be generated from secondary sources like the Nigerian Bureau of Statistics, World Bank development indicators databank among others. The data gotten from these sources will form the basis and identifies the variables of interest and estimates a simple regression based on these variables. After the analysis, the paper shows the results of the regression and the interpretations. Lastly will be the Conclusion and policy recommendation presented in Chapter 5.

CHAPTER 2: REVIEW OF LITERATURE

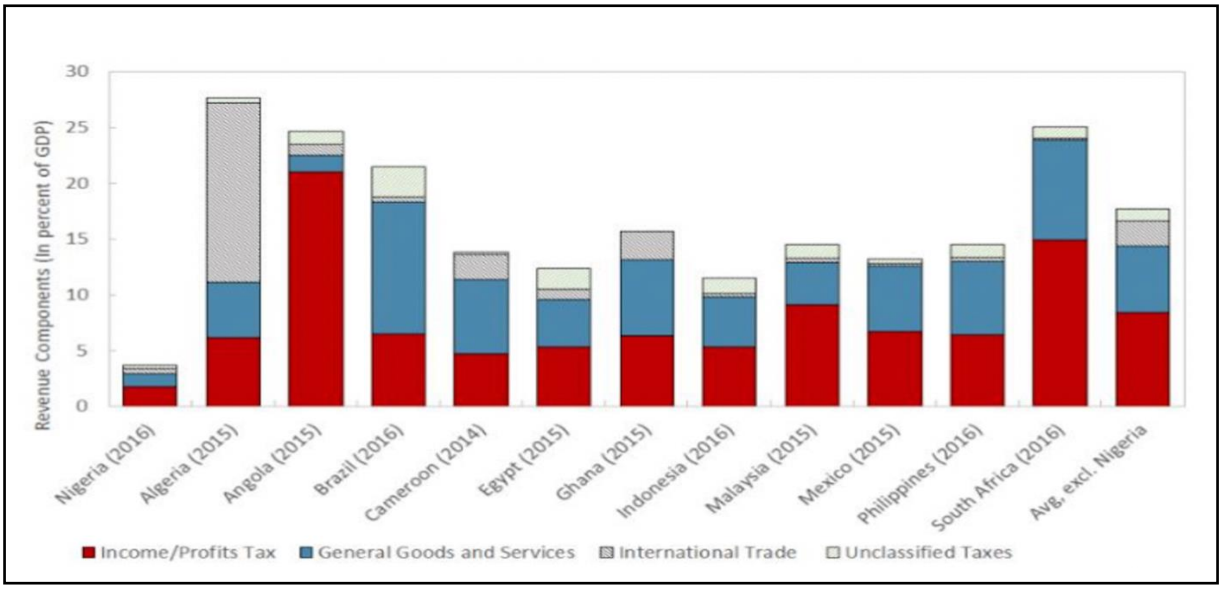
2.1 An Overview of Fiscal Policy in Nigeria

Fiscal policies are government measures to influence macroeconomic conditions using government spending and taxation policies. To address the issue of government spending, it is also important to address government revenue. This is simple, without revenue there can be no spending, ideally.

Revenue in Nigeria can be improved. Nigeria has the capacity to generate much more revenue than it currently is doing, if it harnesses the various options at its disposal, like a more effective tax system. It is important that Nigeria addresses its revenue challenges if it must increase its spending on key sectors of the economy to tackle inequality.

In comparison to its peers, Nigeria has one of the lowest revenue-to-GDP ratios (IMF Country Report, 2018).

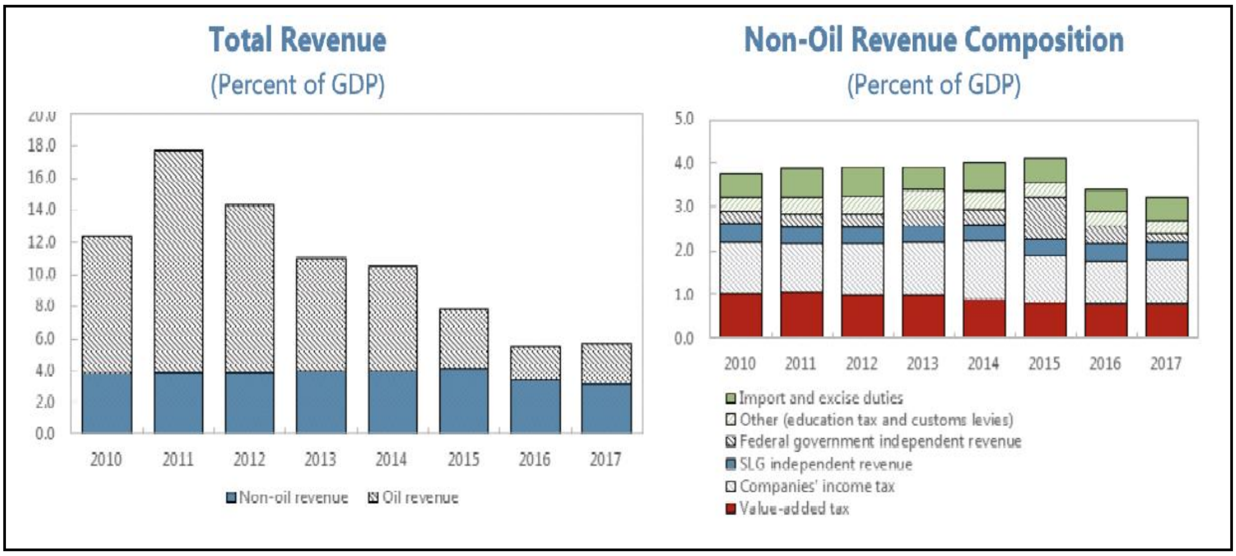
Figure 2: Nigeria & Competitors: Revenue Mix and Performance, 2016 or most recent year (Percentage of GDP)



Source: WEO, except for Egypt (GFS), Malaysia, Mexico (OECD)

The figure below (Figure 2) shows how government revenue falls from its peak at 17.8% of GDP in 2011 to 5% of GDP in 2017. The bulk of Nigeria's revenue comes from crude oil, and even with dwindling crude oil prices, that has led to a significant drop in total revenue, the non-crude oil revenue remains constant. This clearly shows a lack of will-power and initiative on the part of the Nigerian government to increase the share of non-oil revenue in its total revenue.

Figure 1: Revenue Trends and Composition



Source: IMF

2.2 History of Fiscal Policy in Nigeria

Since the 1980's, fiscal policy has been a major focus of the government. Several noteworthy incidences in the country's history have been critical to the debate on fiscal policy. Firstly, the oil boom of 1970 and the civil war that led to the a near shutdown of the industrial, education and other critical sectors of the economy, that greatly altered the socio-economic structure of the country. Furthermore, the militarization of the government, that saw successive military regimes supervise the collapse of political stability and triggered a stagnation of economic development (Odetola, 1978). Lastly, was the import substitution policy adopted by Nigeria at the time.

These events culminated to the public sector getting greatly involved in economic activities and the near collapse of the private sector. This period was characterized by pervasive unemployment, consistent fiscal deficits, negative economic growth and poverty (Obi, 2007).

Consequently, this led to the implementation of a host of socio-economic reforms over the years. They include the Structural Adjustment Plan of 1986, the Family Support Programme (FSP) & Family Economic Advancement Programme (FEAP), in there was also the Poverty Alleviation Programme (PAP) (Lamide and Igbokwe, 2021). These reforms were instituted to alleviate poverty and improve the economic well-being of Nigerians. However, despite these laudable reforms on paper, on ground, poverty was on the increase and there was no significant economic development.

Obi (2007) posits that these reforms were directed at the rural poor, although the poor in Nigeria are dominantly in the rural areas, they are not exclusively located there. This was identified as one of the challenges that could be responsible for the inability of these socio-economic policies to achieve its desired result.

There have been several Nigerian studies that have focused on economic development and poverty alleviation (review Aigbokhan, 1985, Obadan, 1998, Nigeria Poverty Assessment, 2022) through adequate fiscal policies. The general conclusion is that fiscal policies in Nigeria have not been effective in tackling poverty and inequality, the question now is currently, how is the fiscal policy landscape faring?

2.3 Current state of Fiscal Policy in Nigeria

Fiscal policy more than ever is needed as a viable too to reduce the inequality in Nigeria. The level of inequality in Nigeria has even been exacerbated by the COVID-19 crisis, that brought with it a disruption in supply chains, increase in unemployment, a reduction in oil revenue which is the main source of public revenue in Nigeria, a widening of the fiscal deficit and consequently, an increase in debt to make up of the deficit. Farayibi and Owuru (2016) are of the view that fiscal deficit is the root cause of every illness in the economy, it can ultimately lead to inefficient resource allocation and crowding out of private investment. However, if fiscal deficit is addressed through an increase in development related expenditure, then it can lead to a reduction in poverty and inequality.

Laudably, the Nigerian Social Investment Program (N-SIP) which was launched in 2016 to tackle poverty and hunger across the country is well suited - since it is a development related spending - to address this. The N-SIP comprises of a suit of programs (Investing in our people, 2018) :

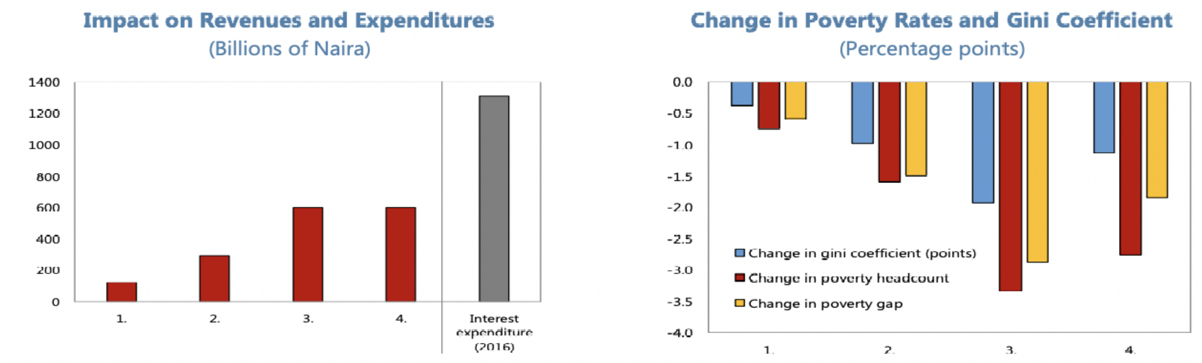
- Job creation and Youth Employment program (N-power) is an initiative targeted at youths between the ages of 18 - 35 years. It is designed to assist the youth (graduates and non-graduates) in acquiring relevant skill sets and develop themselves to cope with the dynamic challenges of today’s world. It transfers to student about Naira 30,000 ($72).
- Conditional Cash Transfer, an initiative under the national cash transfer program designed to get through to the poorest individuals and most vulnerable households in the society. It gives out Naira 5,000 monthly to selected individuals and households, that are captured on the National Social Register. It also extends to these select group an access to a community

facilitator who provides training on financial education, hygiene, healthcare, sanitation and nutrition.

- Government Enterprise, and Empowerment Program (GEEP) provides low interest micro-loans to businesses at the lowest part of the financial pyramid. This loans that range between Naira 10,000 - Naira 100,000 ($24 - $240) are targeted at petty traders, micro businesses, artisans, market women and farmers.
- Home Grown School Feeding Program(HGSF) aims to increase the primary school student's enrollment rate. It does this by providing a balanced meal every day to over 5million pupils. It also through this medium creates employment for the cooks, farmers and suppliers.

These suits of programs are appropriate to address extreme poverty and has spent over Naira 300 billion since inception (Investing in our people, 2018). It is commendable, because widening social safety nets could make a huge knock in the poverty and inequality reduction. However, according to the IMF Nigeria country report (2018), the reach of these programs have to be expanded. To reach 50 - 100% of the poor households in Nigeria will require about Naira 600 billion, double the amount expended between 2016 - 2018. If 100% of the poor households can be reached, then the poverty headcount and poverty gap will each decrease by over 3%. The table below highlights the impact from social transfer increases.

Figure 3: Impact from Social Transfer Increases



Note:

1. 20 percent of the poor get a transfer of N60,000 per year per household
2. 50 percent of the poor get a transfer of N60,000 per year per household
3. 100 percent of the poor get a transfer of N60,000 per year per household
4. Transfer budget implied by 3., transferred as universal income (lower transfers but to all households)

Source: IMF

2.4 Inequality in Nigeria

According to the Commitment to Reducing Inequality Index 2021, Nigeria is one of the least committed countries in the world to reducing inequality. The overall index score is based on three pillars, government social expenditure (factors in the quality of public services spending and its impact on inequality) , taxation policies (factors in Nigeria's ability to collect tax and its impact on inequality) and right of labor workers (this combines indicators on labor right policies, national minimum wage and gender rights). Nigeria ranks at number 157, coming just ahead of the least ranked country Sudan (158) (Inequality Index, 2021).

Interestingly, a handful of Nigerians are fantastically rich and ever so growing, while most of its citizens find it difficult to meet their basic need. To put this in context, the richest man in Nigeria earns "about 150,000 times more from his wealth than the poorest 10% of Nigerians spend on their basic consumption and it would cost $24bn a year to lift the 60% of Nigerians who live in extreme poverty above this line (of $1.90 a day). The wealth of the five richest Nigerians combined stands at $29.9bn"(Inequality Index, 2021)

To achieve its goal of eliminating extreme poverty by 2030, Nigeria needs address the rising inequality, which was further widened by the COVID19 pandemic.

The IMF Nigeria Country Report, 2018 highlights that income inequality and poverty rates are high in Nigeria, with poverty falling more slowly when compared to similar countries. The report hence states that to eradicate this, Nigeria needs additional financing. It also argues that while on the one hand, reforms like tax increment (particularly VAT and excise tax) reduce the income inequality, on the other hand, it increases the poverty gap. Therefore, to compensate for this give and take scenario, the government must implement social programs that cover the people in the lowest part of the financial pyramid.

The table below shows Nigeria's inequality ranking in West African sub-region

Table 1: West African Inequality Statistics, 2020

Country	Gini coefficient	Poorest 40% share of income	Richest 10% share of income	Palma ratio
Mali	0.326	20.1	25.7	1.28
Mauritania	0.330	20.1	25.7	1.28
Guinea	0.337	19.8	26.4	1.33
Niger	0.343	19.6	27.0	1.38
Liberia	0.353	18.8	27.1	1.44
Burkina Faso	0.353	20.0	29.6	1.48
Sierra Leone	0.357	19.6	29.4	1.50
The Gambia	0.359	19.0	28.7	1.51
Senegal	0.403	16.4	31.0	1.89
Côte d'Ivoire	0.415	15.9	31.9	2.01
Cabo Verde	0.422	15.4	32.3	2.10
Nigeria	0.430	15.1	32.7	2.17
Togo	0.431	14.5	31.6	2.18
Ghana	0.435	14.3	32.2	2.25
Benin	0.478	12.8	37.6	2.94
Guinea-Bissau	0.507	12.8	42.0	3.28

Source: UNDP Human Development Index 2020 Country Profiles Inequality section, available at http://hdr.undp.org/en/countries

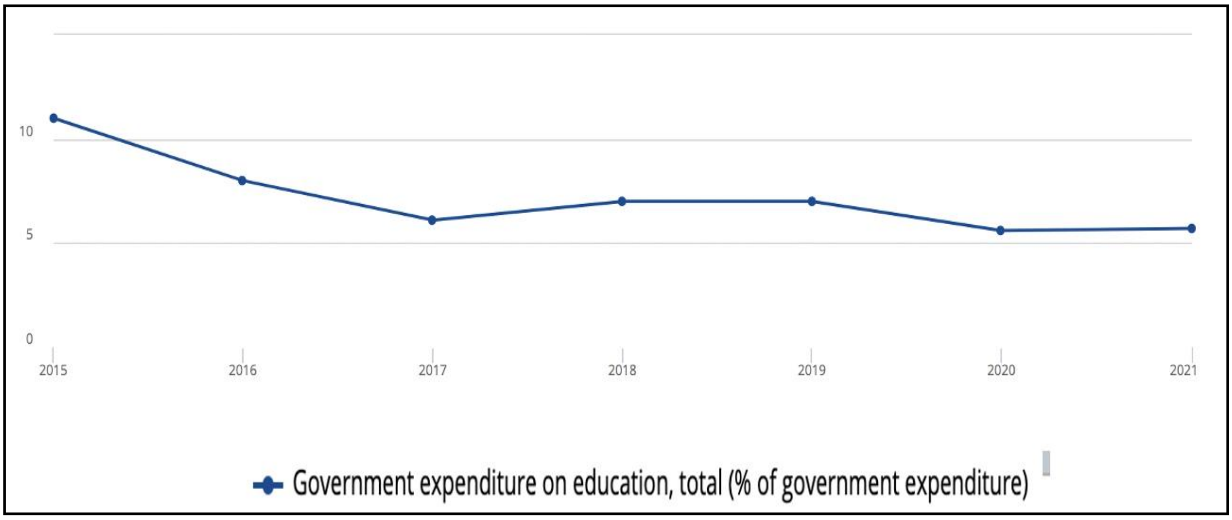
CHAPTER 3: EDUCATION, HEALTH AND TAXATION AS EFFECTIVE FISCAL POLICY TOOLS

3.1 Education

In the public service pillar category (the category of the Commitment to Reducing Inequality index that evaluates public spending and service on key sectors critical to reducing inequality), of the CRI index, one of the three pillars identified as critical to reducing inequality, is education. It ranks Nigeria's education system within the lowest rank within Africa and globally. Nigeria spends a meagre 7% (2019) of its budget on education, compared to Ghana that spends 17% (2019) (WDI, 2022). It is characterized by having the highest number of out-of-school children in the world, only 15% of the poorest households complete secondary school when compared to 90% of the richest households. This makes Nigeria one of the most unequal countries in the world in terms of education inequality.

The figure below indicates government expenditure on education as a percentage of total government expenditure, from 2015 to 2021. This average expenditure is far below the UNESCO recommended benchmark of 26%, as the amount of the expenditure that should go into the education sector for a developing country to stabilize education (Odigie & Owan, 2019).

Figure 4: Government Expenditure on Education, Nigeria, 2015 - 2021



Source: World Development Indicators

Onuma (2016) examined the impact of financial allocation to educational performance of students and found that there is a significant relationship between the amount of government expenditure on education and students' performance. Sterling student performance in turn adds value to society and this will positively influence the fight against inequality in the Nigerian society.

3.2 Health

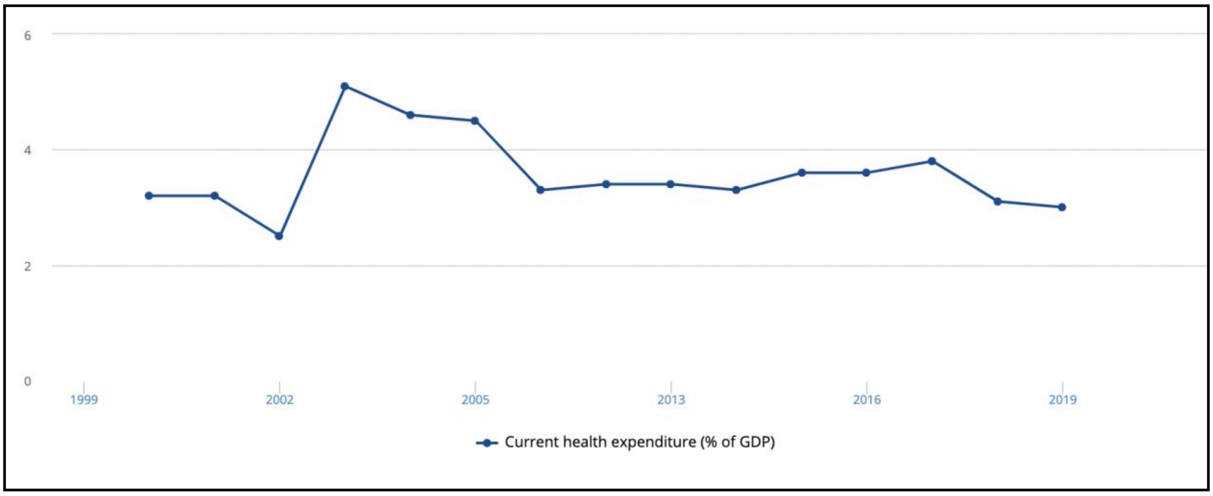
The Oxfam and Development Finance International's inequality index analyses Nigeria's health sector expenditure, as a useful tool to tackling inequality. The data shows that expenditure on health care is too low. The government recommended spending of at least 15% of it budgetary allocation on the health sector, was well below its target. This was worsened by the COVID-19 pandemic, which saw health expenditure fall to below 5% (The World Bank, WDI puts this figure at 3.026% of GDP). This extremely low funding robs the poorest

Nigerians of basic access to health care services, cannot build new healthcare facilities, buy new equipment nor can it sustain existing facilities, neither can it train and retain highly skilled healthcare workers. More than 40% of Nigerians cannot access basic healthcare. Leaving 1 in 10 Nigerians spending over 10% of their income on getting basic healthcare services (Commitment to Reducing Inequality Index, 2021). Thereby pushing about 1.95% of Nigeria's population below the $1.90/day poverty line in 2018 (WBG World Development Indicator, 2022).

Healthcare is very crucial to reducing inequality, if large out-of-pocket expenditure instead of government is covering healthcare, this can increase inequality, especially with 39.2% of the population living below $1.90/day (WBG WDI, 2022).

The figure below shows the health expenditure of Nigeria, from 2000 - 2019.

Figure 5: Current Health Expenditure, Nigeria, 2000 - 2019



Source: World Development Indicators

3.3 Taxation

Government has an assortment of taxes that it can use to generate revenue. While this revenue is important to implement some of the government's fiscal policies on expenditure, it can also have an adverse effect on the income of Nigerians. Based on the type of tax and its components, its burden will be felt by individuals from different income classes. Therefore, it is an important tool to tackle inequality. The primary tax revenue streams in Nigeria include the Value Added Tax (VAT), Excise Duty, Personal Income Tax(PIT), Corporate Income Tax (CIT), Trade Tax (Import and Export Duty).

Nigeria comes in at 127, at the lowest third in the world, in terms of its effective utilization of tax as a means of reducing inequality, according to the Commitment to Reducing Inequality Index (2021). On paper, Nigeria has laudable tax policies, especially on progressive tax systems. Its corporate income tax rate ranks slightly above the west African sub-regional average of 27%, with a CIT rate of 30%. The personal income tax rate for the uppermost income bracket is low, and the value added tax rate is low too (CRI Index, 2021). However, and rather commendable, the government gave small businesses and low-income earners temporal tax relief to cushion the effect of COVID-19 on individuals and households (CRI, 2021). This is commendable because it will reduce expenses for the poor and invariable contribute to reducing inequality.

The current tax system in place in Nigeria, has a minimal effect on economic growth. Taxation in Nigeria is not sufficient to cause economic growth, and that fiscal policy on a broader scale has not achieved its aim in Nigeria (Alhaji, 2019).

Certainly, taxation in Nigeria is complex (Meagher, 2016). Nigeria is Africa's largest and most complex informal economies. The majority of Nigeria's non-agricultural workforce operates in the informal sector. The informal sector is precisely the sector that should benefit from novel and ingenious tax policies to be able to adequately address inequality at the lowest social level of society. The challenge with taxation of the informal sector in Nigeria is that it is done mostly at the state or local level, it is poorly structured and tax revenue is unaccounted for. Also, consumption taxes have not been able to reduce the tax burden on the poor in society, leading to multiple taxes on this class of individuals, who should benefit from reduced taxes, thereby freeing up more of their income, to ultimately reduce inequality.

Tax revenue in Nigeria needs to be reviewed, tax structures need to remodel to support a more favorable tax to the poorest in the society, while also being able to increase the tax revenue to support implementation of pro-income equality fiscal policy.

The figures below show the tax revenue in Nigeria.

Figure 6: Taxes of Income of Individuals & Corporations, Nigeria, 1992 - 2020

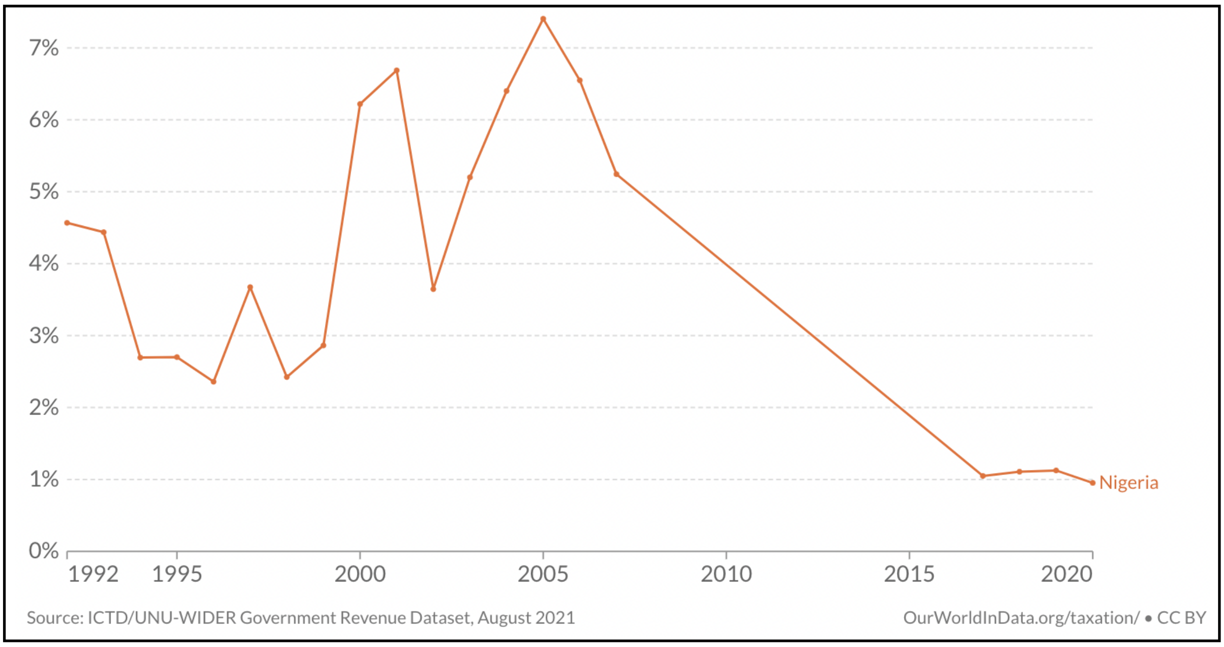
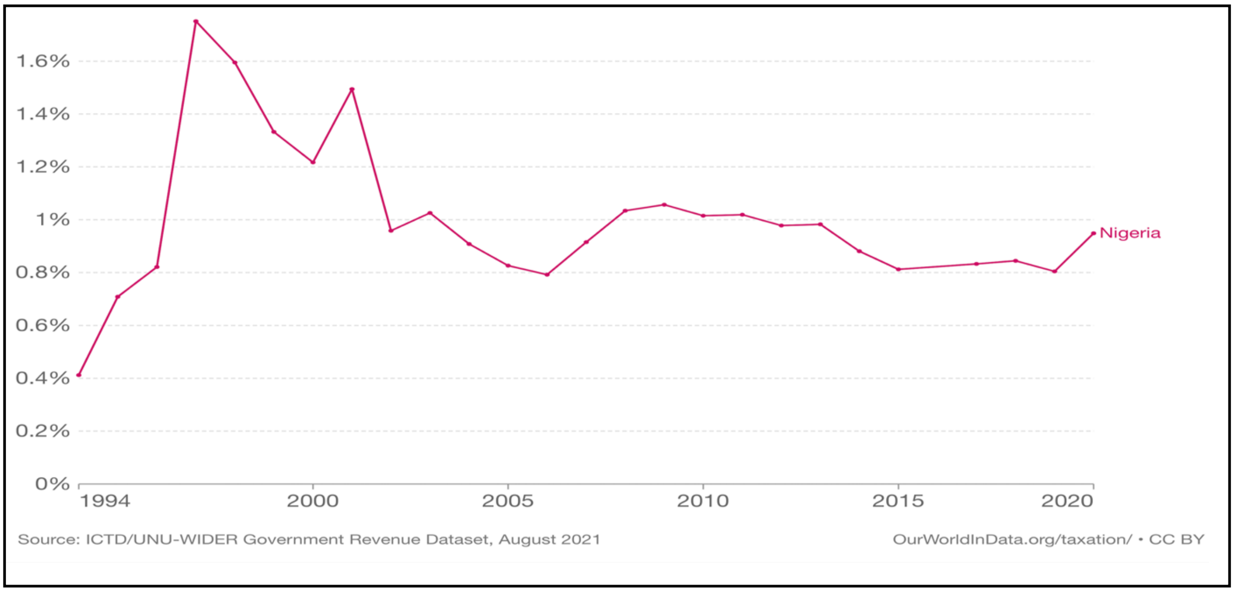


Figure 7: Taxes on goods and services, 1994 - 2020



CHAPTER 4: EMPIRICAL ANALYSIS AND FINDINGS

4.1 Data and Model Specification

The time of this study is from 2000 - 2019. The year 2020 and 2021 are deliberately excluded from this analysis because the COVID19 period came with outliers that will affect the results of the analysis. I estimated two models, the first model was used the poverty rate as the dependent variable, indicating the percentage of Nigerians living below the poverty line of less than $1.90 a day also as a measure of the level of poverty. The second model uses the Gini coefficient as a measure of the level of inequality in Nigeria, this is the dependent variable. This national poverty line was chosen instead of the higher value poverty lines of $3.20 and $5.50 per day, as this ($1.90 / day) captures more those who live at the lowest poverty level. These models are used to measure the effect of fiscal policy on inequality and poverty. This is in line with existing literature (Jochimsen and Maina, 2019; De La Fuente et. al, 2017).

The independent variables are the consumption taxes and the income and trade tax measured as a percent of GDP and in dollar per capita terms.

To enrich the analysis, data from Ghana and Senegal (also within the West-African subregion and members of the ECOWAS) was included in the analysis. Data from Nigeria was sparse and thus reduced the significance of the results, hence similar data was used from both countries to increase the data points and make for a more meaningful analysis and results. Although, the two West African neighboring countries have their own bespoke fiscal policies, they operate within the same region and are guided by same economic laws of the ECOWAS sub region. After Nigeria and Cote d'Ivoire, they are also the two largest economies in the sub-region. They both have a combined GDP of $93 billion and population of 47 million people

(ECOWAS, 2022). Hence the justification for choosing them. Their respective data was gotten from the World Development Indicator (WDI), World Bank and Our World in Data (OWID).

Table 2 : Measurement of Variables

Variable	**Indicator**	**Measurement**	**Data**
Gini Coefficient	Level of Inequality - Dispersion of net income across the entire income distribution	Expressed in Percentage. The limit varies between 0 - 1, with 0 signifying total equality and 1 total inequality.	- World Development Indicator (World Bank Group) - World Income Inequality Database - Nigerian Bureau of Statistics
Poverty Line ($1.90)	Level of Poverty - Threshold under which an individual is living in poverty	Percentage - Share of population living below the $1.90 poverty line	- World Development Indicator (World Bank Group)
Consumption Tax	The tax individuals pay when they spend money, comprises taxes on goods and services, both local and imported	Percentage - Taxes on goods and services as a percentage of GDP	- ICTD - OWID
Income & Corporate Tax	Tax imposed on individuals and businesses. Comprises taxes on income, profits and capital gains.	Percentage - Taxes on income, profit and capital gains as a percentage of GDP	- ICTD - OWID - FIRS

Expenditure - Healthcare	Total federal government expenditure on healthcare	Percentage - Current health expenditure as a percentage of GDP	- World Development Indicator (World Bank Group)
Expenditure - Education	Total federal government expenditure on education including primary, secondary and tertiary institutions	Percentage - Government expenditure as a percentage of total government expenditure	- CBN Statistics - World Development Indicator (World Bank Group)

The equation below represents the first and second model respectively:

$$\textbf{1.}\ \ PovertyRate = \beta_0 + \beta_d Poverty + \beta_f HealthDol + \beta_g EduDol + \beta_h Z + Error\ Term$$

$$Z = (IT, CT)$$

$$\textbf{2.}\ \ Gini = \beta_0 + \beta_d Gini_{-1} + \beta_f HealthDol + \beta_g EduDol + Error\ Term$$

Table 3: Variables

1. Gini = Gini Coefficient	2. CT = Consumption Tax (VAT + Excise Duty)
3. IncomeTrad = Income & Trade Tax	4. EducDol = Expenditure on Education in ($)

5. HealthDol = Expenditure on Health in ($)	6. PovertyRate = Population living on < $1.90/day
7. Z = Control	8. Dummy = Ghana & Senegal

Table 4 : Summary Statistics of Key Indicators (Nigeria, Ghana & Senegal)

Variable	Obs	Mean	Std. dev.	Min	Max
Gini	20	.419925	.0133727	.4007	.4352
Health	20	1.31e+09	9.02e+08	1.39e+08	2.90e+09
Education	20	7.57e+09	5.01e+09	7.31e+08	1.55e+10
IncomeTax	20	1.48e+09	1.27e+09	1.12e+08	4.37e+09
Consumptio~x	20	1.66e+09	1.26e+09	1.61e+08	3.83e+09
PovertyRate	20	.191092	.0746724	.1070145	.3228581

Variable	Obs	Mean	Std. dev.	Min	Max
Gini	20	.43873	.0505471	.351	.506
Health	20	1.09e+10	5.06e+09	2.22e+09	1.83e+10
Education	20	2.34e+10	1.53e+10	5.18e+09	5.43e+10
IncomeTax	20	7.38e+09	3.73e+09	3.48e+09	1.55e+10
Consumptio~x	20	2.88e+10	1.40e+10	8.45e+09	5.00e+10
PovertyRate	20	.5144724	.0858356	.3919825	.6657808

Variable	Obs	Mean	Std. dev.	Min	Max
Gini	20	.40119	.0096491	.378	.4143
Health	20	3.17e+09	1.36e+09	1.02e+09	4.98e+09
Education	20	6.16e+09	2.42e+09	2.13e+09	9.80e+09
IncomeTax	20	5.98e+08	2.92e+08	1.76e+08	1.11e+09
Consumptio~x	20	1.25e+09	4.86e+08	4.34e+08	2.13e+09
PovertyRate	20	.3851673	.0647617	.2749891	.5100576

Hypothesis:

iii. H_0: Health and Education expenditure does not affect the Gini coefficient

H_A: Health and Education expenditure affects the Gini coefficient

iv. H_0: Health and Education expenditure does not affect the Poverty rate

H_A: Health and Education expenditure affects the Poverty rate

*H_0 - Null Hypothesis. *H_A- Alternate Hypothesis

4.2 Results

Bi-Variate Correlation

To be certain that these variables are relevant, the study analyses the bi-variate correlation of the explanatory variables Health and Education expenditure, as a percentage of GDP.

Table 5 : Bi-Variate Correlation

	Gini	**HealthGDP**	**EducGDP**
Gini	1.0000		
HealthGDP	-0.4283	1.0000	
EducGDP	-0.0910	-0.1586	1.0000

	Poverty	**HealthGDP**	**EducGDP**
Poverty	1.0000		
HealthGDP	-0.0776	1.0000	
EducGDP	-0.3773	-0.1586	1.0000

The matrix shows a tripartite relationship, consistent with the Pearson's R measure, which indicates -1(perfectly negative relationship), 0 (no relationship) and 1(perfectly positive relationship). The results show that there is a negative relationship (although small) between

Gini, health and education, and Poverty, health, and education. More closely, Gini is negatively associated with health and education, at (-0.4283) and (-0.0910) respectively. So also, is Poverty negatively associated with health and education, at (-0.0776) and (-0.3773) respectively. This implies that with an increase in expenditure on health and education, the Gini and poverty rate reduces.

Poverty Rate, Health Expenditure and Education

Table 6: Estimated Regression Model (Model 1)

Poverty	**Coefficient**	**Std. err.**	**t**	**P > |t|**
HealthDol	-2.78e-11	6.58e-12	-4.21	0.000
EducDol	-3.36e-12	1.56e-12	-2.15	0.036
ITTaxDol	4.50e-12	3.01e-12	1.50	0.140
ConsTaxDol	7.75e-12	2.05e-12	3.78	0.000
Dummy1Gh	-.4068135	.035073	-11.60	0.000
Dummy2Sen	-.1587632	.0378223	-4.20	0.000
_cons	.6403229	.0337182	18.99	0.000

R-squared	0.9179	Adj R-squared	0.9086
Number of Obs.	60	F(6, 53)	98.72

The model shows an 91% variance as depicted by the R-squared value. This indicates the proportion of variance in the Poverty Rate that can be explained by the education and health expenditure. It shows that there is a high level of correlation, and that the data is a good fit for the regression model.

The p-value indicates the strength of evidence to support the null hypothesis. The resulting p-value of zero indicates that the null hypothesis is rejected, and the variables are statistically significant. The assumptions under the null hypothesis that government spending on education and health can affect the Poverty rate is true.

The education expenditure and health expenditure are both significant, the coefficients also show a negative relationship (this corroborates the findings of the Bi-Variate Correlation, Table 5). However, the negative correlations are not as strong. This implies a decrease of 2% in the Poverty rate in relation to an increase in education expenditure, as well as a decrease of 3% in relation to health expenditure. This point is buttressed by Martinez-Vazquez et. al, (2012), the paper highlights that “properly targeted public expenditure in social and human capital formation, like education and health, has the potential to affect income distribution positively”. This demonstrates that with increase in government expenditure on education and health, the level of poverty will reduce.

Table 7: Estimated Regression Model (Model 2)

Gini	**Coefficient**	**Std. err.**	**t**	**P > |t|**
HealthDol	-1.33e-11	2.57e-12	-5.18	0.000
EducDol	3.91e-12	8.39e-13	4.66	0.000
Dummy1Gh	-.0851584	.0161454	-5.27	0.000
Dummy2Sen	-.0736175	.0123268	-5.97	0.000

_cons	.4929976	.0145602	33.86	0.000

R-squared	0.4679	Adj R-squared	0.4292
Number of Obs.	60	F(4, 55)	12.09

The model shows an 47% variance as depicted by the R-squared value. This indicates the proportion of variance in the Gini coefficient that can be explained by the education and health expenditure. It shows that there is a low level of correlation, and that the data is less than a good fit for the regression model. This may be attributed to the sparsity of original data for the Gini coefficient.

The p-value indicates the strength of evidence to support the null hypothesis. The resulting p-value of zero indicates that the null hypothesis is rejected, and the variables are statistically significant. The assumptions under the null hypothesis that government spending on education and health can affect the Gini coefficient is true.

The education expenditure and health expenditure are both significant, the coefficient of Health shows a negative relationship implying that with an increase in health spending, there will be a consequent reduction in the Gini coefficient. However, there is a positive correlation with the education spending. This may suggest that government needs to channel education expenditure to address target groups of society. This point is exposed by Aspe & Sigmund (1984), who noted that government expenditure that seem to redistribute income may not necessarily be redistributive and may worsen inequality, this is a result of the challenges faced in targeting policies at the poor. Martinez-Vazquez et. al, (2012) further buttresses this point, stating that "it is difficult to target the poor with regular health and education spending, as among other reasons many of these programs are enacted in urban areas thereby hardly benefitting the rural poor”.

This demonstrates that with increase in government spending on health, the level of inequality will reduce.

CHAPTER 5: SUMMARY AND POLICY RECOMMENDATION

The study was designed to identify the impact of fiscal policy on inequality in Nigeria, to identify how useful a tool fiscal policy can be to tackle the rising economic inequality in Nigeria. The primary motivations of the study were to proffer solutions in the form of policy recommendations to the government and other secondary stakeholders having evaluated fiscal policy and economic inequality.

To carry out an effective evaluation of the current fiscal policies, the study took a detailed look at the history of fiscal policies in Nigeria, with specific emphasis on tax and government spending (education and health). Then the study went further to study inequality in Nigeria. How the interaction of fiscal policies can be used to address inequality in the country.

The study found that education and health spending are useful tools to reduce poverty in Nigeria, while health spending is a useful tool to reducing inequality. However, education spending needs to be better targeted and effectively spent, to be able to reduce inequality.

To address the challenges that the country faces in reducing inequality, the paper recommends policy options for Nigeria, based on evidence from China. China declared victory in its fight to eliminate extreme poverty in 2020 (BBC, 2021).

Lessons from China

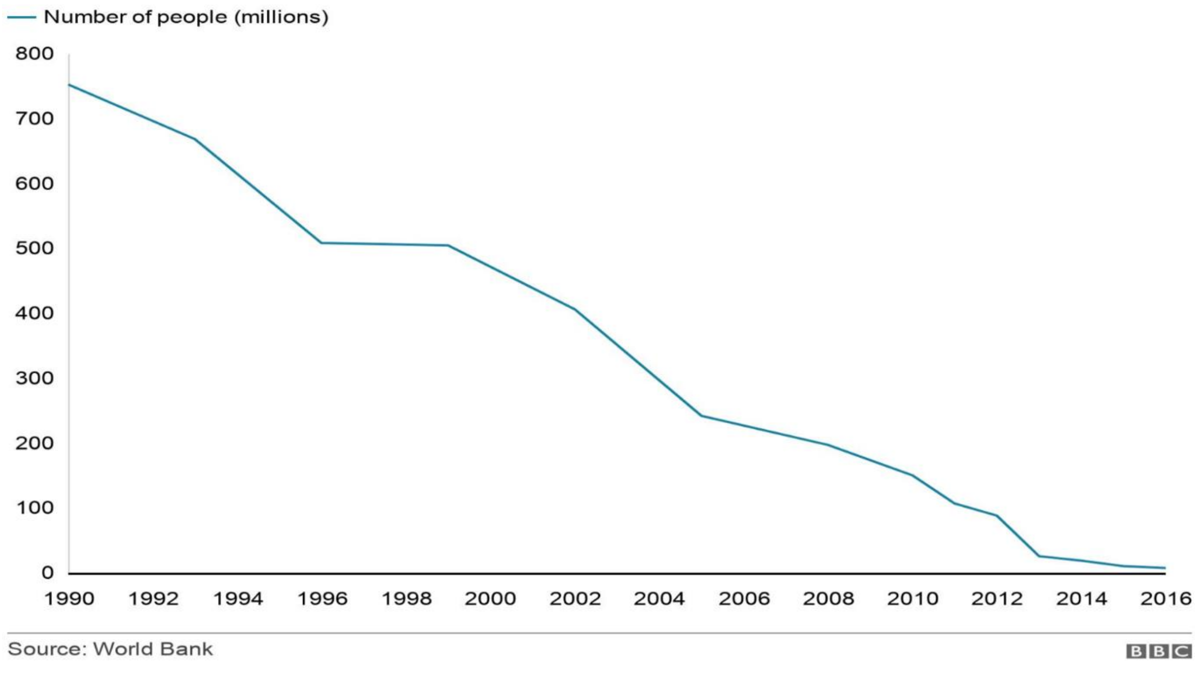
China's inequality increased over the years and peaked at 0.47 in 2012 from 0.32 in 1991. The government identified the negative implications of rising income inequality on the economy and society at large. China set-out to reduce inequality in 1978 by implementing far reaching economic reforms. The result of these reforms are today evident, China reduced the number of people living under $1/day, from 800 million people in 1990 to less than 10million people in 2016 (as depicted in Figure 8, below). Lustig & Wang (2020) corroborates this stating that "China's fiscal system reduces poverty for the poorest of the poor". Although the COVID19 pandemic tainted these gains and increased inequality, what China did is commendable, and Nigeria can learn from it.

Some of the policies China put in place (Asian Development Bank, 2013) that I strongly recommend Nigeria to consider, include:

- Reforming the tax system, by enacting tax policies that broaden the tax revenue base and positively impacts the environment. An example is the Green Tax.
- "Address the mismatch of revenue and expenditure at the local government level"
- Increase progressive spending.

Figure 8 : How Extreme Poverty Fell in China

Living on less than $1 a day



To achieve its goal of eliminating extreme poverty by 2030, the country needs to increase its spending on healthcare, education and social policies for the citizens who are in the lowest part of the financial pyramid. Nigeria also needs to improve its tax system, by ensuring that the most effective and bespoke tax system is used. This is important because simply adopting a tax policy that proved to be effective in another country, may be counterproductive for Nigeria owing to its peculiarities. Also, Nigeria needs to improve on the rights of its citizens, especially gender equality rights, labor laws for women and minimum wage. Above all, Nigeria needs to ensure that appropriations and spending in these key areas, are monitored, to ensure effective utilization.

I must conclude by saying that it is not enough to adopt laudable policies from countries. Nigeria must create bespoke policies that are well suited to its economic, regional, and political climate, to tackle inequality and poverty.

BIBLIOGRAPHY

Alhaji, Aliyu Ahmed. 2019 Nigerian Economy and Fiscal Policy: Face-Value Assessment. 1st ed. Lap Lambert Academic Publishing. https://www.perlego.com/book/3437390/nigerian-economy-and-fiscal-policy-facevalue-assessment-pdf

Adewumi, Samuel B, Chinedu J Ogbodo, Yakubu A Aca, and Ngozi B Enebe. n.d. “Fiscal Policy and Income Inequality: A Growing Concern for Less Developed Countries,” 9.

Aspe Armella, Pedro, and Paul E. Sigmund. 1984. The Political economy of income distribution in Mexico. New York: Holmes & Meier Publishers

BBC News. 2021 “China’s Xi Declares Victory in Ending Extreme Poverty,” February 25, 2021, sec. China. https://www.bbc.com/news/world-asia-china-56194622.

“Has China Lifted 100 Million People out of Poverty?,” February 28, 2021, Reality Check. https://www.bbc.com/news/56213271.

Benicio, Dalmacio F, William Seitz, Jon Jellema, and Maya Goldman. n.d. “The Effects Of Fiscal Policy On Poverty And Inequality In Tajikistan,”

Bhatti, Arshad Ali, Zakia Batool, and Hasnain A. Naqvi. 2015. “Fiscal Policy and Its Role in Reducing Income Inequality: A CGE Analysis for Pakistan.” The Pakistan Development Review 54 (4I-II): 843–64. https://doi.org/10.30541/v54i4I-IIpp.843-864.

“Closing Africa’s Wealth Gap.” 2017. Africa Renewal. December 18, 2017. https://www.un.org/africarenewal/magazine/december-2017-march-2018/closing-africa%E2%80%99s-wealth-gap.

Cuevas, P. Facundo, Leonardo Lucchetti, and Metin Nebiler. 2020. What Are the Poverty and Inequality Impacts of Fiscal Policy in Turkey? World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-9300.

De La Fuente, Alejandro, Manuel Rosales, and Jon Jellema. 2017a. The Impact of Fiscal Policy on Inequality and Poverty in Zambia. World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-8246.

“ECOWAS - Economic Community of West African States 2022.” Countryeconomy.Com.https://countryeconomy.com/countries/groups/economic-community-west-african-states.

Esteban Ortiz-Ospina and Max Roser (2016) - "Taxation". Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/taxation'

Farayibi, Adesoji Oladapo, and Joel Ede Owuru. 2016a. “Linkage between Fiscal Policy and Poverty Reduction in Nigeria.” SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2856545.

"Finance & Development." n.d. Finance & Development | F&D. Accessed May 28, 2022. https://www.imf.org/external/pubs/ft/fandd/basics/fiscpol.htm.

"Fiscal Policy and Income Distribution in China." n.d. Center for Global Development | Ideas to Action. Accessed June 6, 2022. https://www.cgdev.org/blog/fiscal-policy-and-income-distribution-china.

"GDP (Current US$) - Nigeria | Data." https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2020&locations=NG&start=2008.

https://plus.google.com/+UNESCO. 2021. "UNESCO Member States Unite to Increase Investment in Education." UNESCO. November 10, 2021. https://en.unesco.org/news/unesco-member-states-unite-increase-investment-education.

"Income Tax Definition." https://www.investopedia.com/terms/i/incometax.asp.

"Inequality Index." https://www.inequalityindex.org/#/countryProfiles.

International Monetary Fund. 2014. "Fiscal Policy and Income Inequality." Policy Papers 14 (July). https://doi.org/10.5089/9781498343671.007.

"Introduction to Inequality" https://www.imf.org/en/Topics/Inequality/introduction-to-inequality.

Jochimsen, Beate, and Anne Wanyagathi Maina "Consumption taxes, income distribution and poverty: Evidence from Kenya". 2019. FiFo Discussion Papers "Finanzwissenschaftliches Forschungsinstitut an Der Universität Zu Köln,"

Lara Ibarra, Gabriel, Nistha Sinha, Rana Fayez, and Jon Jellema. 2019. Impact of Fiscal Policy on Inequality and Poverty in the Arab Republic of Egypt. World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-8824.

Lustig, Nora, ed. 2018a. Commitment to Equity Handbook: Estimating the Impact of Fiscal Policy on Inequality and Poverty. Washington, D.C: Brookings Institution Press.

"Measuring the Distributional Impact of Taxation and Public Spending: The Practice of Fiscal Incidence Analysis." In Oxford Research Encyclopedia of Economics and Finance, by Nora Lustig. Oxford University Press. https://doi.org/10.1093/acrefore/9780190625979.013.363.

Martin, Matthew, Jo Walker, Kwesi W. Obeng, and Christian Hallum. 2021. "The West Africa Inequality Crisis: Fighting Austerity and the Pandemic." Development Finance International, Oxfam. https://doi.org/10.21201/2021.8045.

Martínez-Vazquez, Jorge, Violeta Vulovic, and Blanca Moreno Dodson. "The Impact of Tax and Expenditure Policies on Income Disttribution: Evidence from a Large Panel of Countries." Hacienda Pública Española 200 (2012): 6 Oct. 2014

Meagher, Kate. 2018. "Taxing Times: Taxation, Divided Societies and the Informal Economy in Northern Nigeria." The Journal of Development Studies 54 (1): 1–17. https://doi.org/10.1080/00220388.2016.1262026.

"Nigeria - General Government Expenditure 2020." n.d. Countryeconomy.Com. Accessed June 6, 2022. https://countryeconomy.com/government/expenditure/nigeria.

"Nigeria Poverty Assessment", World Bank Group, March 2022. https://www.worldbank.org/en/news/press-release/2022/03/21/afw-deep-structural-reforms-guided-by-evidence-are-urgently-needed-to-lift-millions-of-nigerians-out-of poverty

Obi, Benneth O. "Fiscal Policy And Poverty Alleviation: Some Policy Options For Nigeria"

Ogbodo, Chinedu & Adewumi, Samuel & Aca, Yakubu. (2018). Fiscal Policy and Income Inequality: A Growing Concern for Less Developed Countries. 2. 2454-6186.

"Official Exchange Rate (LCU per US$, Period Average) - Nigeria | Data." https://data.worldbank.org/indicator/PA.NUS.FCRF?end=2020&locations=NG&start=2008.

Oyedele, Kazeem, and Philomena Ify. 2021. "Social Investment Programmes in Nigeria: Impact and Challenges" 11 (1): 11.

"Pandemic, Prices, and Poverty." https://blogs.worldbank.org/opendata/pandemic-prices-and-poverty.

"Personal Income Tax Has Untapped Potential in Poorer Countries." https://www.proshareng.com/news/World-Bank-IMF-and-Dev-Agencies/Personal-Income-Tax-Has-Untapped-Potential-in-Poorer-Countries/62110.

"Poorest Countries in the World 2022." https://worldpopulationreview.com/country-rankings/poorest-countries-in-the-world.

"Reducing Inequality in the People's Republic of China through Fiscal Reform | Asian Development Bank." https://www.adb.org/publications/reducing-inequality-peoples-republic-china-through-fiscal-reform.

"Tax Statistics/Report – FIRS." https://www.firs.gov.ng/tax-statistics-report/.

"Trends in Income Inequality and Its Impact on Economic Growth." 2014. OECD Social, Employment and Migration Working Papers 163. Vol. 163. OECD Social, Employment and Migration Working Papers. https://doi.org/10.1787/5jxrjncwxv6j-en.

"UNDP-Narrative." https://parsons.nyc/undp-inequality/work/riley-hoonan/index.html.

"UNU-WIDER : World Income Inequality Database - WIID." 2021. UNU-WIDER. May 31, 2021. https://www.wider.unu.edu/database/world-income-inequality-database-wiid.

"Who Says the Poor Do Not Pay Tax in Nigeria?" 2021. Businessday NG (blog). December 23, 2021. https://businessday.ng/columnist/article/who-says-the-poor-do-not-pay-tax-in-nigeria/.

"World Poverty Clock." https://worldpoverty.io.