Statistical Analysis of Income Poverty and Inequality in Nigeria

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ABSTRACT

The negative implications of rising poverty and inequality have awakened research concern in recent time due to the perceived correlation between both issues. This study was carried out with the aim of investigating the effect of the relationship between income poverty and inequality in Nigeria because few researchers have studied them together in past studies. The head count index was used to estimate the incidence of poverty while the Gini coefficient was used to estimate income inequality based on household data from a Living Standard Survey of households in Nigeria. The national estimates of the head count and Gini coefficient were 0.34 and 0.69. For the six geo-political zones, the estimates were North East (0.36, 0.81); North West (0.30, 0.76); South South (0.36, 0.66); South West (0.33, 0.63); North Central (0.24, 0.61) and South East (0.26, 0.57) respectively. The results indicated that poverty was highest in the North East (0.36) and lowest in the North Central (0.24). Also, income inequality was highest in the North East (0.81) and lowest in the South East (0.57). This study has revealed the positive correlation between poverty and inequality because results had shown that poverty was highest where inequality was also highest. Therefore to reduce poverty, efforts should be made to ensure reduction in income inequality.

Introduction

In Nigeria, the twin issues of poverty and inequitable income distribution show an irony. This is so because, despite the fact that the country is rich in land, human and natural resources, the people are still considered to be poor, because nearly 70 percent of Nigerians in 1999 were living in poverty. The prevalence of poverty has continued to be relatively high, revolving around 54 percent between 2005 and 2009 (Osahon and Osarobo, 2011).

Poverty reduction is certainly the objective of advancement policy in most countries. To assess the evolvement of poverty over time in several particular regions, the variations of poverty across various nations or the impact of different policies in the reduction of poverty, one must be first capable of measuring poverty. That is, any poverty index should be responsive to the number of people below the poverty line, to the limit of the income shortfall of the poor from the poverty line, as well as to the precise trend of the income distribution of the poor (Garcia-Lapresta, 2012).

Babatunde (2008) conceptualized poverty as the "lack of basic necessities". This is largely because most rural communities depend on agriculture, while urban communities often engage mostly in paid jobs. This lopsided development in income distribution has often times resulted in discontents, violence, corruption, hence, included in macroeconomic objectives, authorities always adds unbiased distribution of income a top priority (Osahon and Osarobo, 2011; Oyekale *et al*., 2014). The implication of this is that any study on income inequality will always be desirable to give insight on the incidence of poverty.

Although many authors have worked on poverty, few have studied both poverty and income inequality together. Therefore,

because of the linkage between income inequality and poverty, this study becomes imperative. Specifically, the study sought to determine the level of income inequality in all the states and the six geopolitical zones in Nigeria. Also, it sought to determine the poverty line as well as the incidence of poverty in all the states and the six geopolitical zones in Nigeria.

Data and Methods

Several different methods are used to compare income inequalities, many of which have been resulting from Lorenz curve which include Gini coefficient (Gini, 1997), coefficient of variation, Theil index, Atkinson and Nelson ratios among others, employed to express the degree of inequality or variability in income among the individuals of a specific population. However, the traditional Gini coefficient and its different types are generally the most typically applied measures of income inequality'' (Mulekar, 2014). A Gini coefficient ranges from zero (perfect equality) to one (perfect inequality). The Gini coefficient as used in this study is defined as

$$ G = \frac{2 \sum_{i=1}^{n} i y_i}{n \sum_{i=1}^{n} y_i} - \frac{n+1}{n} $$

for i = 1,2,3,…,n

Poverty measurement begins with the determination of the poverty line (poverty line = z = (2/3)*mean per capita household income). This is the income level that separates the poor from the rest of the population. After the poverty line is set, the incidence of poverty is determined using the ratio of the number of poor people in the population to the number of individuals in the population .This measure of the incidence of poverty is called the head count ratio and when it is expressed in percentage it is referred to as the head count index (proportion

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of person whose expenditure/income level is below the poverty line). The head count ratio is generally used to determine the level of poverty or incidence of poverty of a given population and is the most widely used of all poverty measure.

Two datasets were available for consideration for the analytical framework of this present study and for achieving the objectives of this study. These were 2004 National Living Standard Survey (NLSS) and the 2010 Harmonized Nigeria Living Standard Survey (HNLSS) datasets. A major limitation observed in the HNLSS dataset prevented the researcher from continuing with the use of the data .HNLSS 2010 lacked information on the different components of the surveyed households' incomes and household size. Since per capita income, the chosen proxy of poverty, cannot be reliably obtained without information on household size, recourse was made to NLSS 2004 dataset which had explicit information on different components of households' incomes as well as their household sizes. The sample design used in the NLSS dataset was a two stage stratified sampling. The dataset was first stratified into rural and urban sectors while the second stage was the stratification of the rural area based on the six geopolitical zones of Nigeria.

Results and Discussion

Table 3.1 shows the Gini coefficients and poverty incidences for the country as a whole and the six geopolitical zones of Nigeria. Table 3.2 shows the Gini coefficients and poverty incidences for all the thirty six states and the Federal Capital Territory.

Table 3.1. Gini Index and Poverty Incidence for Nigeria and the Six Geo political Zones

Location	Gini Coefficient	Poverty Incidence	Poverty Line	Remark/Gini
Nigeria	0.69	0.34	N4508	
North Central	0.61	0.24	3269	
North East	0.81	0.36	4107	Highest
North West	0.76	0.30	3348	
South South	0.66	0.36	5750	
South West	0.63	0.33	4474	
South East	0.57	0.26	3038	Lowest

These tables imply that, for the entire country, the Gini coefficient was 0.69 while the income poverty level was 0.34. The North East had the highest Gini coefficient of 0.81 as well as the highest income poverty level of 0.36. The South East had the lowest Gini coefficient of 0.57 while the income poverty level of 0.26 was the second lowest among the six geo political zones. Furthermore, Adamawa State had the highest Gini coefficient of 0.94 while Kwara State had the lowest value of 0.45.For income poverty; Bayelsa State had the highest value of 0.52 while Jigawa State had the lowest value of 0.06 for income poverty.

Table 3.2. Gini Index and Poverty Incidence for all the states in Nigeria

Location	Gini Coefficient	Poverty Incidence	Poverty Line	Remark/Gini
Abia	0.54	0.26	N3904	
Adamawa	0.94	0.65	N12158	Highest
Akwa Ibom	0.57	0.25	N3417	
Anambra	0.56	0.30	N3857	
Bauchi	0.57	0.15	N1865	
Bayelsa	0.73	0.52	N11347	
Benue	0.62	0.28	N3539	
Borno	0.53	0.26	N3238	
Cross River	0.68	0.33	N4867	
Delta	0.59	0.32	N5295	
Ebonyi	0.61	0.22	N2950	
Edo	0.55	0.30	N5115	
Ekiti	0.59	0.32	N2589	
Enugu	0.57	0.21	N2375	
Gombe	0.55	0.23	N3056	
Imo	0.56	0.28	N2559	
Jigawa	0.57	0.06	N1139	
Kaduna	0.62	0.18	N2877	
Kano	0.68	0.24	N3689	
Katsina	0.63	0.16	N2059	
Kebbi	0.66	0.18	N2877	
Kogi	0.46	0.17	N2112	
Kwara	0.45	0.25	N2126	Lowest
Lagos	0.60	0.28	N6166	
Nassarrawa	0.53	0.22	N3085	
Niger	0.50	0.15	N3458	
Ogun	0.60	0.43	N4994	
Ondo	0.52	0.24	N3162	
Osun	0.52	0.29	N4193	
Oyo	0.68	0.36	N6761	
Plateau	0.61	0.21	N2757	
Rivers	0.68	0.42	N9619	
Sokoto	0.67	0.24	N2157	
Taraba	0.76	0.47	N5029	
Yobe	0.50	0.13	N1509	
Zamfara	0.86	0.49	N5541	
FCT	0.74	0.32	N8769	

Conclusion

This study has corroborated the hypothesized relationship between income inequality and poverty based on methods that provided a clear understanding of the income distribution rather than mere speculations. The results clearly indicated that income inequality is high where poverty level is also high. Thus discrepancy in income distribution among Nigerians is indeed one of the possible causes of poverty in Nigeria.

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