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POVERTY AND INCOME INEQUALITY AMONG HOUSEHOLDS IN IBARAPA NORTH LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA

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ABSTRACT

The worsening conditions of poverty despite general increase in income (growth) of the total population necessitate this paper to see the exact relationship between poverty and income growth and redistribution. This study made use of data obtained from 150 households sampled randomly from Ibarapa Local Government Area situated in southwestern Oyo State. Findings reveal a high income inequality (0.8616) with the bottom 70 percent receiving just 4 percent of the total income in the study area. Poverty is higher among households that have male heads, large household size and have no formal education. An increase in the average income of the households has an equalizing impact on income distribution as the bottom 82 percent of the households earning just 4 percent of total income when average income becomes 100 percent of the poverty line will reduce to 68, 58 and 50 percent of the households when average income becomes 150 percent, 200 percent and 250 percent of the poverty line respectively.

Keywords: Inequality in Income Distribution, Poverty, Negative exponential function,

INTRODUCTION

The Nigerian poverty situation can be aptly described as ever increasing. According to FOS (1999) figures, with a poverty incidence of 0.281 in 1980, there was a jump to 0.463 in 1985 due principally to the worsening economic conditions especially the declining revenue from crude oil. The incidence of poverty fell to 0.427 in 1992 as a result of the economic measure, Structural Adjustment Programme (SAP), implemented in 1986. But not minding the shortfall in poverty incidence, the number of poor people increased from 1985 to 1992. The number of poor people rose from 34.7 million in 1985 to 39.2 million in 1992. By 1996, the incidence of poverty had risen to 0.656 with about 67.1 million poor people in Nigeria. Again, the poverty incidence dropped from 0.656 in 1996 to 0.544 in 2004. But the population of poor persons rose to 69.1 million in 2004, 2 million higher than 1996 figures (NBS, 2007)

The above poverty problem could be attributed among others, to the negative and unjust social conditions such as structural inequality, especially that of income. World Bank (1996) reveals that the extent of inequality in the distribution of income is very important in reducing poverty. A very high per capita income in the country does not completely guarantee adequate reduction in poverty rate. In their study of Nigeria, the World Bank (1996) observed that national poverty would have decreased by 13.5 percent as against 8.9 percent achieved only by growth had it been that income distribution did not worsen between 1985 and 1992. That is, the poverty incidence would have been 38 percent as against 42.7 percent. In the same vein, Hemmer (1994) reveals that the extent and depth of material poverty are determined to a considerable degree by interpersonal income distribution as the more unequal the income distribution is, the greater is the probability of material absolute poverty. World Bank (1996) further reveals that in 1985, the top 10 percent of the population had more than 35 percent of the income, rising to 45 percent in 1992. The lowest 10 percent, on the other hand, had only 10 percent of income in 1985 and only 2 percent of income in 1992. The preliminary results of the 1996/97 National Consumer Survey shows that there is large income inequality with the top 10 percent of the income bracket accounting for close to 60 percent of total consumption of goods and services.

The above justification makes the understanding of the nature and distribution of income to be pertinent to any analysis of poverty. This, therefore, shows the need to be more concerned with the distribution of income in order to achieve a faster reduction in poverty than what growth alone can achieve. This study shows the poverty profile by various characteristics of the households, the distribution of income and measures inequality among the households. Finally, the future size distribution of income was projected under hypothesized changes in the average income of the households as a percentage of the poverty line. In other words, the link between poverty and income inequality is operationalized by seeing what income distribution would be if the poverty line is increased or decreased. An increase or decrease in poverty line may mean an increase or decrease in the living standard of the households as more bundles of the basic needs can be acquired.

The rest of the paper is structured into three sections. Section 2 has the methodology while the results and discussions are contained in section 3. The last section is the conclusion and recommendations of the study.

METHODOLOGY

Data source and collection

This study made use of primary data collected from 150 households in Ibarapa North Local Government situated in the South Western part of Oyo State through structured questionnaire in the year 2000. The study utilized a two-stage sampling procedure. The first stage involved the purposive selection of three towns in the local government area in order to increase the likelihood of selecting households with varying levels of income. The second stage sampling

was done by randomly selecting 50 households per town after having listed the households in each town using the table of random numbers.

Analytical method

Different analytical tools were used to achieve the objectives of the study. These include: Descriptive statistics such as frequency distribution, mean, Gini coefficient and the FGT (1984) weighted poverty index; and negative exponential regression function. The frequency distribution was used to show the type of income distribution existing in the study area.

The Gini coefficient (G) is expressed as

$$G = 1 - \sum (X_{i+1} - X_i)(Y_{i+1} - Y_i)$$

Where X_i = cumulative proportion of recipient and Y_i = cumulative proportion of income

The FGT weighted poverty measures is expressed as

$$P_{ai}^1 = \frac{1}{n} \sum_{i=1}^q \left[\frac{(z-y)}{Z} \right]^\alpha$$

$$\text{when } \alpha = 0, P_0 = \frac{1}{n} \sum_{i=1}^q \left[\frac{(z-y)}{Z} \right]^0 = \frac{q}{n} \rightarrow \text{Poverty incidence or head count}$$

$$\alpha = 1, P_1 = \frac{1}{n} \sum_{i=1}^q \left[\frac{(z-y)}{Z} \right]^1 \rightarrow \text{Poverty gap or depth}$$

$$\alpha = 2, P_2 = \frac{1}{n} \sum_{i=1}^q \left[\frac{(z-y)}{Z} \right]^2 \rightarrow \text{Poverty severity}$$

Where Z is the poverty line, defined as the two-thirds mean per capita household monthly expenditure; q is the number of poor households while n is the total number of households; Y_i is the per capita expenditure of the ith household while α is the poverty aversion parameter. This takes on the values of 0,1 or 2 as shown above to mean poverty incidence, poverty depth/gap and poverty severity respectively.

The negative exponential function was used to estimate the future size distributions of income of the households. The function is stated below following Boxley (1971) and Ching (1973) as

$$y = ae^{-\beta x} E$$

Where y is the percentage of household remaining above certain income limits, x is the relative income size (lower limit of income size divided by average

income), e is irrational number equals to 2.71828, b is the regression coefficient, while a is the constant term, and E is the disturbance term. The above equation was used for the projection of the income size distribution after the parameters, α and β , were estimated. This was done by hypothetically increasing or decreasing the average income to get new relative income sizes which were substituted into the estimated equation to get net income distributions. This projection method is an alternative to the Markov method, through which income size distributions could be estimated, when detailed information on the changes in the income size, that can be used to derive the transitional probabilities, are not readily available (Boxley, 1971). Note, however, that a and b were estimated by minimizing $\sum E^2$ subject to the condition that $\alpha = 100/e^{\beta x}$

Where x_1 is the "relative size" corresponding to the lower limit of the smallest income class.

RESULTS AND DISCUSSION

Inequality in income distribution

Income is not equally distributed among the households in the study area. Table 1 shows that the majority (70 percent) of the households earn N2000 or less per capita per month while the remaining 30 percent of the households earn above N2000 per capita per month. A decomposition of this 30 percent shows that 17 percent earn between N2001 and N4000 per capita per month while 8 percent earn between N4001 and N6000 per capita per month. Those households earning per capita income of N6001 and over per month constitute 5 percent.

Table 1

Frequency Distribution of per Capita Monthly Income of Households

Income Group (N)	Frequency	Percentage	Cumulative proportion of Recipients	Cumulative proportion of Income
1-2000	105	70	0.70	0.04
2001-4000	26	17	0.87	0.16
4001-6000	12	8	0.95	0.36
6001-8000	4	3	0.98	0.64
8001-10000	3	2	1.00	1.0
Total	150	100		

Gini coefficient of income distribution is 0.8616

An analysis of what percentage of the population earns what percentage of income gives a clearer picture of the extent of inequality in the distribution of income. Table 1 further shows that the bottom 70 percent of the population in the

study area receive just 4 percent of the total income meaning that the top 30 percent of the population earn 97 percent of the income in the study area. In fact, the bottom 95 percent of the population had no more than 36 percent of the income which means that the top 5 percent of the population controls 64 percent of the income. The situation of income inequality is so worse that the top 1 percent of the population earns 24 percent of the total income in the study area. This lop-sided distribution in income accounted for the very high Gini coefficient of 0.8616 in the study area as shown in Table 1.

Poverty profile

The threshold, below which a household is said to be poor, was obtained using the expenditure pattern in deciles as shown in the Table 2 below.

Table 2
Per Capita Expenditure (N) by Deciles

Deciles	Per Capita Expenditure (N)
1	530.20
2	687.41
3	830.75
4	932.47
5	1075.81
6	1357.87
7	1669.21
8	1915.81
9	2842.12
10	3568.06
Total	15412.80
Mean	1541.28
2/3 Mean	1027.52

From Table 2, one observes that the per capita expenditure increases from the first expenditure decile (N530.2) to the tenth expenditure decile (N3568.06). The sum of the per capita expenditure of all the deciles gives N15412.80 with a mean per capita expenditure as N1541.28 from where a poverty line of N1027.52 was obtained (2/3 of the mean per capita household expenditure).

The poverty line of N1027.52 obtained in this study was standardized following Omonona (2001), by comparing it with the poverty line obtained by World Bank (1996) in their Nigerian poverty assessment using the Federal of Statistics (FOS) National Consumer

Survey Data. The World Bank (1996) obtained a poverty line of N395 per capita per annum at 1985 constant prices. With the aid of the composite consumer price index, the N395 was converted to current prices to obtain N13262.32 per capita per annum by multiplying the N395 by a raising factor of 33.5765. The monthly poverty line per capita of N1105.19 in 1999 current prices is comparable to the N1027.52 obtained in the poverty line for this study in 2000. Table 3 shows the poverty level of the households based on the demographic and human capital characteristics.

Table 3
Poverty profile by demographic and human capital variables

Demographic Variables		Poverty Incidence	Poverty Depth	Poverty Severity
Sex of Household Head	Male	0.46	0.20	0.10
	Female	0.40	0.09	0.05
Age of Household Head	<40	0.45	0.16	0.07
	>40	0.43	0.18	0.10
Marital Status of Household Head	Married	0.45	0.16	0.09
	Single	0.42	0.17	0.08
Household Size	1-5	0.30	0.08	0.03
	6-10	0.45	0.17	0.09
	>10	0.80	0.38	0.20
Human Capital Variable Educational level of Household Head	No formal Education	0.86	0.45	0.14
	Primary Education	0.56	0.23	0.13
	Secondary Education	0.35	0.13	0.06
	Tertiary Education	0.33	0.12	0.04

The table reveals that the percentage of poor households and the extent of poverty (measured by poverty depth and severity) are more among the male headed than the female headed ones. This may not be unconnected with the fact that male headed households are usually larger in terms of size because they are likely to be polygamous. The above situation is also true for the household size. Poverty incidence depth and severity are highest among households with above 10 members. This is followed by those households with 6-10 members and 1-5 members in that order. Large family size depresses the per capita expenditure of the household, thereby increasing their poverty level. As for the age of the household head, despite that households headed by those aged between 20 and 40 years have higher percentage in poverty than those above 40 years, they seem to have better welfare judging from lower values of poverty depth and severity.

This pattern described above is true for the marital status of household head. Not minding that the poverty incidence is higher among households headed by married persons than those headed by single persons, the depth and severity of poverty are lower.

As for the educational status of the household head, the analysis reveals that the incidence, depth and severity of poverty is highest among those households headed by persons without any formal education. This is followed, in that order, by households headed by persons with primary, secondary and tertiary education. This is not unconnected with the fact that the higher the educational attainment, the higher the chance of being employed in good and high paying jobs.

The poverty situations based on the demographic and human capital characteristics of the households are in consonance with the findings of Hemmer (1994), Rodriguez and Smith (1994), Coulombe and McKay (1996), Reardon and Taylor (1996), World Bank (1996), FOS (1999), Omonona (2001), Omonona et al. (2006), NBS (2007), Omonona et al (2008), and Udoh and Omonona (2008).

Future size distribution of income

The current distribution of household income is useful in predicting the probable future size distributions without pin-pointing any particular time or period when such distribution will take the place of the present one. It is hoped that at a time in the future, the per capita income would have changed to such a level that is a percentage of the poverty line. How the distribution of income would be at this time can, therefore, be approximately projected. The projected value of future size distribution of income shown in table 4 was done using the negative exponential function given as:

$$Ln y = ln 100.0481 - 0.8861x$$

$$(0.25)^{***} (0.02)^{***}$$

Where the asterisk denotes significance at 1 percent level.

Table 4 shows the actual distribution and the distributions when the average per capita monthly income of the households was 100 percent of the poverty line (N1027.52), 150 percent of the poverty line (N1541.38), 200 percent of the poverty line (N2058.04) and 250 percent of the poverty line (N2568.80). From the table, it is observed that when the average per capita monthly income becomes 100 percent of the poverty line, which represents a decrease in the actual average per capita monthly income, there is a worsening distribution in income (increased income inequality). But as the average per capita monthly income becomes 150, 200 and 250 percent of the poverty lines, there are improvements in the future size distribution of income as the number of households in the lowest income category decreases from 102 to 87 to 75 respectively.

Table 4

Present and potential size distribution of income

Income (N),	Actual Distribution,	Potential Distributions when Average Income becomes a Percentage of the Poverty Line			
		100%	150%	200%	250%
		(N1027.52)	(N1541.28)	(N2055.04)	(N2568.80)
1-2000	105	123	102	87	75
2001-4000	26	22	33	36	37
4001-6000	12	4	10	10	19
6001-8000	5	1	3	3	10
8001-10000	3	0	2	2	9

The above was better reflected by the cumulative frequency of recipients and income as shown in Table 5 below.

Table 5

Cumulative frequencies of income and recipients of present and potential size distribution of income

Income (N)	Cumulative Proportion of income	Cumulative proportion of recipients when average income becomes				
		Normal	100% of poverty	150% of poverty line	200% of poverty	250% of poverty
line	250% of poverty line					
1-2000	0.04	0.70	0.82	0.68	0.58	0.50
2001-4000	0.16	0.87	0.92	0.89	0.82	0.75
4001-6000	0.36	0.95	0.997	0.96	0.93	0.87
6001-8000	0.64	0.98	1.0	0.997	0.97	0.93
8001-10000	1.00	1.00	1.0	1.00	1.00	1.00

From table 5, it can be observed that except when the average per capita monthly income was assumed to be equal to 100 percent of the poverty line, there was a marked improvement in the distribution of income. While the bottom 82 percent of the household earns just 4 percent of total income when average income becomes 100 percent of the poverty line, the percentage of the household earning the 4 percent of total income decreased to the bottom 68, 58 and 50 percent when average income becomes 150 percent, 200 percent and 250 percent of the poverty line respectively. In other words, while less than the top 1 percent of the population earns 36 percent of the total income when the average income becomes 100 percent of the poverty line, the percentage of the people earning this same 36 percent of total income increased to the top 4, 7 and 13 percent as average income become 150, 200 and 250 percent of the poverty line.

In general, it is observed that an increase in the average income of the households has an equalizing impact on income distribution and thereby reducing poverty. This is because as the average income increases, there is an

increase in the purchasing power of households to acquire the basic needs required for meaningful life.

CONCLUSION

The study reveals that the level of inequality in income distribution is very high with the bottom 70 percent of the income recipient receiving exactly 4 percent of income. The top 2 percent of the income recipients earn 36 percent of the total income. In addition, the level of poverty increases with the household size and decreases with the increase in the level of educational attainment. Finally, an increase in the average income has an equalizing impact on income distribution and thereby reduces poverty.

- Based on the findings of the study, the following recommendations are made:
- Attempt to reduce the inequality in income distribution in the society should be pursued. This can be through the use of adequate and effective tax and subsidy measures. The very rich or affluent can be taxed for some of their consumption while the poor / the unemployed can be supported with social security.
- To substantially reduce the rate of poverty, there must be concerted effort to get every body educated. This is because the likelihood of getting a good job tends to increase with the level of educational attainment. It also increases the ability to adopt new practices that can lead to a rise in income.
- The reduction in the size of households through birth control measures is also essential in poverty reduction. This will enhance the per capita expenditure of households and hence increase welfare.
- Lastly, the average income of people when increased will enhance better income distribution. In order to achieve this, employment should be provided for the labour force so that unemployment can be reduced to a bearable minimum. Qualitative education and/or apprenticeship training of the population should be embarked upon in order to enhance the employment of the generality of the population.

In concluding this paper, we have been able to show how poverty and income distribution are related to the level of average income. And that for poverty to be reduced substantially efforts should be made to equalize the distribution of income in addition to growth in income.

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