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Assessment of income inequality among farming households in EGBA division, Ogun state, Nigeria

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Abstract
This study attempts analysis of Income Inequality among Rural and Urban Households in Egba Division of Ogun State, Nigeria: The two Local Government Areas were purposively selected namely: Abeokuta South Local Government Area and Obafemi Owode Local Government Area Representing rural and urban households respectively. This study identifies the various income generating activities in both areas to determine the source of income inequality among these rural and urban households. A total number of 104 respondents were assessed, 50 from rural and 54 from urban. The socio-economic characteristics of both households contribution of each income source to the house income, level of income inequality within each household area and between the both household as well as the contribution of each source overall source income inequality in both area were analyzed The socio-economic characteristics of both households were determined using simple percentage method while the contribution of each income source to household income was determined using simple technique method. The Lorenz Curve and Gini coefficient were used to determine the level of income inequality among both areas while the assessment of the contribution of each income source to the income inequality was done using correlation analysis and decomposition based on co-efficient of variation. From findings individual start work earning money income early in rural area and they continue to work even they have passed retirement age of 65 years. Urban dwellers have higher education qualification than rural counterpart and such a higher percentage of rural dweller are self employed while a higher of urban dweller have paid employment that is white collar job. On the overall, urban dweller earn higher than rural dweller, with crop production, non- farming activities and transfer payment affect overall house household income in both areas. However, crop production is the major source of household income in the rural area while non-farming activities contribute majorly to household income in the urban.

Keywords: inequality, income, urban, rural, Lorenz curve

Introduction
The pattern of income distribution has been a great source of concern to economics scholars for a long time. The high level of income inequality exists in many nations can be better explained by the widening of poverty, and general economic problems in the low income countries of the world. The World Bank classified countries of the world into three different categories which are: (a) Low income countries (b) Middle/Medium income countries (c) High income countries
Aigbokhan (2000) [4] in his report stated that Low income 1f 5% contain approximately 62% of the world's population and earn only 6% of the world's income, medium income countries or middle income countries contain 15% of the world's population and earn 17% of its income while high income countries contain 25% of the world's population and earn 77% of its income. This Implies that a higher level of income inequality exists in the developing countries than in the developed countries. Both developed and developing countries has urban and rural areas as differences in income received in the developed and developing countries so also in urban and rural areas, and there are various sources of income in both rural and urban household such as non-farm, agricultural, transfer, livestock and rental income sources. (Adams and Jane, 1995) [2]. The account states that Nigeria has fast economic growth that seriously widened the income disparity between 1965 and1974 (Ipinnaiye 2001) [10]. Even though the past policy intervention to make remedy to the abnormality, the problem of income inequality has increased poverty depth in some of the level of income inequality during the Structural Adjustment Program (SAP) before and after policy implementation. This analysis showed that the income inequality before and after implementation is worsened.
Therefore, in Nigeria a common model proposed has explained this secular trend based on inter-sectorial income differentials and change in the income of both rural and urban farming household resulting from the growth and development processes. In Nigeria, there exists a large gap between the income received by the rural and urban income dwellers (Ipinnaiye, 2001) [10]. Before the oil boom in 1970's the economy of this nation was sustained by farmers, which means that agriculture was the main source of income in Nigeria. Industrialization which made a lot of white collar and private establishment's job available to the urban dwellers came to being as the oil appearance. The urban farmers being to shift s to paid job or what is called white collar job to the extent that agricultural practice is almost coming to the extent in the urban areas, while it remain major and predominant occupation and source of income to the rural dweller. In

buttressed of this white collar jobs, the urban dweller have access to basic infrastructure, good roads, good electricity, portable water and health services than their rural counterparts and due to their jobs and access to infrastructures in the urban areas. The urban households tend to have a higher income than the rural households. A number of studies have been carried out and these showed that most rural communities are agrarian as compared to urban communities (which engage mostly n paid employment), thus earn less than urban communities. The challenges then arise as to how high level of income inequality can reduce. A high level of income inequality results into political unrest and instability. Almost of these studies showed that a higher level of income inequality exists in Nigeria were showed by the higher Gini-coefficients that were got in their results; and the higher the Gini-coefficients, the higher the level of income inequality. Addison & Cornia 2001[3], Amand and Kinbus 1993; Okojie, et. al., 2001 [11]; Aboyade (1994) [1]; Odedele (2000); Ipinnaye (2001), Adebayo (2002). Could it be as a result of the higher literacy level of urban dwellers or what could be the preference? Etukodo (2000) in his study on farming household of Ika village of Cross-Rivers state as a rural and Lagos State as a rural Ika than the urban Lagos. Why? Is it because the urban people inverting time and money to acquire skills? Maybe industrial advantage of the urban over the agrarian environment of the rural? What are the social and economic implications of this inequality on people, communities in general? It is very pertinent to study income inequality in order to reduce the dimension of poverty until proper attention and carefully study is carried out, the above equation cannot be solved, since income inequality is closely related to poverty.(Bourguignon and Christian (1990) [8]. A study that can emphasize the significance of this issue can five a country an insight to the incidence of poverty among her citizens and how it can be alleviated. An attempt to address this issue informs the objective of this study.

Objectives of the Study

The general objective of the study is to determine the sources of income inequality among some rural and urban households in Egba Division Ogun-State, Nigeria.

The specific objectives are to:

1. determine the contribution of each income source to household income in the rural and urban areas.
2. determine the level of income inequality among the rural and urban households, and
3. examine the effects of some socio-economic characteristics of households on per capital income (measure of welfare).

Research Hypothesis

The hypothesis is expressed in the null form and were tested using t-test Ho

There is no significant difference between the income received from different sources in the urban and the rural areas.

Research Methodology

Study Area and Methods of Data Collection

The study area is Egba Division in Ogun State, a State in the South Western Nigeria. The primary data for the study were obtained from a primary source interview was carried out using questionnaire with one hundred and twenty households in the selected Local Government Areas i.e. Obafemi Owode and Abeokuta South Local Government Areas. The questionnaire was designed in such a way that would give information on the income education level, employment, credit facilities etc. of the respondents. Since it was a personal interview the questionnaire were translated to Yoruba for the benefit of the rural households that were not literate.

Sampling Techniques

The study used multistage sampling technique in collecting data to be used. The study was carried out in Egba Division of Ogun State. In the first stage, only two Local Government Areas are selected which are Obafemi Owode and Abeokuta South Local Government Areas. In the second stage, from each local government two political wards were selected making four wards and from four wards, three communities were selected to make twelve communities and ten families from each community making one hundred and twenty families in all. The 120 questionnaires were administered equally between the Obafemi Owode and Abeokuta South Local Government Areas, making sixty questionnaires for each of the Local Government Area. Out of the one hundred and twenty questionnaires, only one hundred and four questionnaires were filled and returned. The remaining sixteen were excluded either because they were not returned or because of incorrect, and incomplete data. Thus, this study is based on data obtained from one hundred and four households in the local government areas.

Methods of Data Analysis

The data collected were analyzed using the descriptive statistics such as frequency, table and simple percentages; While, inferential statistics such as Lorenz Curve and Correlation were used. The descriptive statistics was used to describe the socio-economic characteristics of rural and urban household and the contribution of each income source to household income in both rural and urban area. Determination of the level of income inequality among rural and urban households, the Lorenz curve was used to graphically represent the level cumulative percentage of income over the cumulative percentage of household population.

Lorenz curve

The Lorenz curve was used to measure income inequality graphically. It is a graph that plots the cumulative percentages of income against the cumulative percentage of household population. The 45^0 line represents a perfectly equal inequality. This was done using the ratio of area enclosed between 45^0 lines. The farther away the Lorenz curve is from the 45^0line to greater the income inequality.

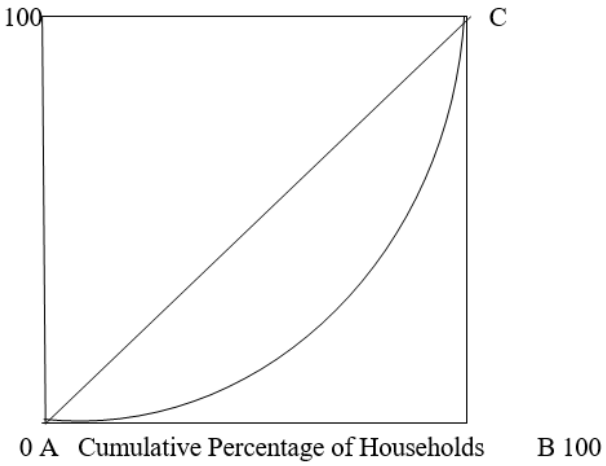

Fig 1

Diagram showing Lorenz curve

Decomposition Based on coefficient of variation

The Decomposition based on coefficient of variation can be explained thus

$$\sum w_1 g_1 = 1$$

$$\frac{w1}{\mu} = \mu_1$$

$$G = \frac{\delta 1/}{}$$

W_1C_1 =the factor inequality weight of the ith source in overall income inequality.

μ_1 = means of income from the ith sources.

μ = means of total income from all source.

G = relative concentration coefficient between the ith sources and the total income

An income source could be defined as income inequality increasing or decreasing on the basis of whether C_1 is greater or less than one

Correlation Analysis

Correlation analysis was used to find out degree to which variables are associated, that is, the extent to which they move together. This was used to determine the relationship that exists between each income and total income. To establish or determine this relationship, a correlation coefficient must be obtained. Where a positive correlation exist between two variables it implies that they move in the same direction i.e. they tend to increase or decrease together while a negative correlation implies a negative relationship between two variable meaning that an increase in one would lead to a decrease in the other. Zero correlation implies that there is on relationship between the variables.

$$r = \frac{N\Sigma XY = \Sigma X \Sigma Y}{\sqrt{[N\Sigma X^2 - (\Sigma XY)^2]\,[N\Sigma Y^2 - (\Sigma XY)}}$$

Where

r = Correlation

Σ = Summation

N = No of Respondent

X = Independent Variables

Y = Dependent Variable

Results and Discussion

Table1: Socio-Economic Characteristics of the Respondents

AGE GROUP	URBAN		RURAL	
	Frequency	% of Total	Frequency	% of Total
Age (years)				
Below 25	6	11	4	8
25 - <35	19	35.2	20	40
35 - <45	16	29.6	10	20
45 - <55	9	16.7	9	18
55 -<65	3	5.6	4	8
Above 65	1	1.9	3	6
Total	54	100	50	100
Educational Level				
None	2	3.7	6	12
Primary	2	3.7	33	66
Secondary	6	11.1	7	14
Tertiary	44	81.5	4	8
Total	54	100	50	100
Level of Employment				
Self employment	14	25.9	36	72
Paid employment	29	53.7	5	10
Unemployment	8	14.8	5	10
Retirement	3	5.6	4	8

Total	54	100	50	100
Source of Income				
Crop income	8999200	13.2	23850300	52.8
Livestock income	6950100	10.2	905800	10.8
Non-farm income	31920900	46.8	139077	30.8
Rental income	9460500	13.8	1570300	3.4
Transfer income	10935000	16	866100	2
Total income	68265700	100	45100200	100

Source: Field Survey, 2018

The Socio-Economic Characteristics of the Respondents

The data used were collected from 50 rural households and 54 urban households. The socio-economic characteristics to be described were include the ages of respondents, size of household, education status and distribution based on category of employment. The results in Table 1 showed that in the rural area, 86% of the respondents fall between age 25 and 55 years. This age group constitutes the bulk of income earners, which are the working class and the independent fraction of the population. Respondents less than 25 years of age formed 8% of the population which means that there are few household heads under the age of 25, while 6% of the population is above 65 years of age. However in the urban area, only 11% of the respondents were below 25 years, while 1.9% was above 65 years, which is the retirement age. Thus, it can be inferred that individuals state working and earning income earlier in the rural areas than the in the urban, and they continue to work even when they are past retirement age, i.e. 65 years. Data in Table 1 revealed the rural area, the majority of the respondents had just primary education, with the percentage being 66% while a least percentage 8%had tertiary education. In the urban area, tertiary education has the highest percentage being 81.5%. This implies that the education level in the urban is very much higher than in the rural. The findings showed that

72% of the population is self-employment with only 10% of them having paid employment and 8%account for the fraction of pensioners that returned to the rural area for rest. In the urban area, the results showed that 53.7% of the total respondents were doing paid employment in contrast to 10% of the rural people, while only 25.9% are engaged in self employed jobs. The high disparity between the numbers of people doing paid job in the urban area and rural area is caused by the fact that urban people usually have a higher level of education than the rural people, therefore giving them the opportunity to be employed by the government or private companies. This is not the case in the rural area because their low literacy level, which makes it very difficult for them to get white-collar jobs. From the table it can be deducted that crop production, non-farm activities and transfer payment has significant effect on overall household income with both crop production and non-farm activities being highly significant percentage, while transfer payment is significant percentage at 18%, whereas livestock production and assets rental have no significant effect or contribution to household income. Also, considering the percentage contribution of each income source to household income, crop production contribution the highest quarter to household income in the rural areas, while non-farm activities is the major contribution to household income in the urban area

4.3 Level of Income Inequality

Table 2: Rural Income Source

Income source	Frequency of household	%of total	Mean income	% of total
Crop Production	21	42	23850300	52.8
Livestock Production	6	12	4905800	10.8
Non-Farm Activities	17	34	13907700	30.8
Transfer Payment	2	4	866100	2
Asset Rentals	4	8	1570300	3.4
Total	50	100	45100200	100

***Source*:** Field Survey, 2018

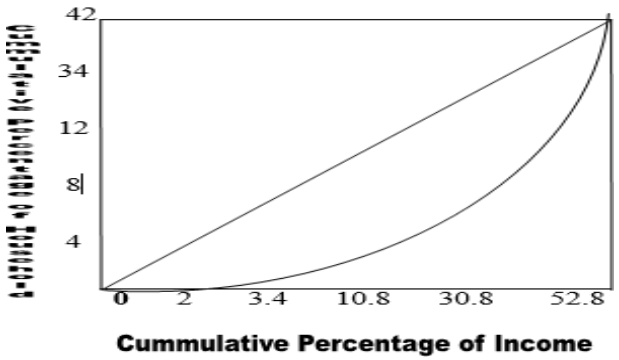

Fig 2: Lorenz Curve showing Income Distribution of Rural Household

As shown in Table 2, income generated from the crop production was very high in percentage of 52.8% with mean income of N23,850,300. This implies that the dominant source of income for rural dwelling are obtained from crop production consequently serves as a mean of likelihood and survival. Likewise, the graph of Lorenz curve also supports the distribution of income among the rural households which is evenly distribution among them (See Graph 1 for clarity). The range of income differs from household to the other; though with little difference.

Table 3: Urban Income Source

Income Source	Frequency of household	% in Total Number of Household	Mean income	% in Total Income
Crop Production	5	9.3	8999200	13.2
Livestock Production	4	7.4	6950100	10.2
Non-Farm Activities	26	48.2	3920900	46.8
Transfer Payment	12	22.2	10935000	16
Asset Rentals	7	13	9460500	13.8
Total	54	100	40265700	100

***Source*:** Field Survey, 2018

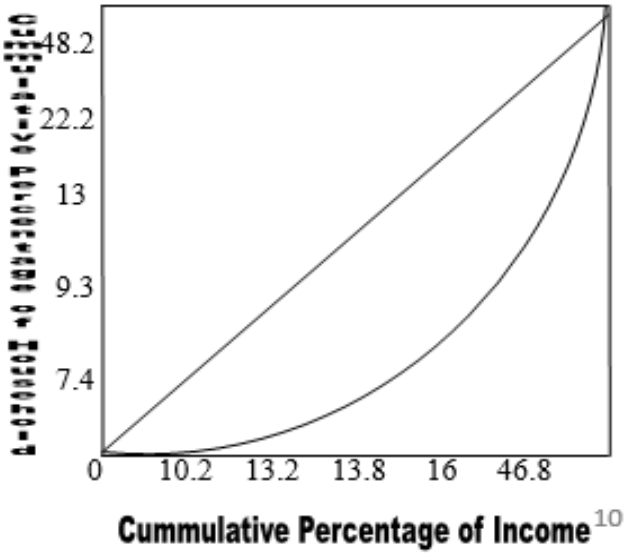

Fig 3: Lorenz Curve showing Income Distribution of Urban Households

Data in Table 3, revealed that the major sources of income for urban dwellers are transfer payment i.e payment received from white collar jobs which 46.8% of the total income percentage with mean income of N10,935,000 and very close the civil servant income, is the Asset rentals income which 13.8% of total income percentage with a mean income of N9,460,500. This implies that most the urban dwellers income are obtained from non-farm activities and job. Likewise, Graph 2 indicated that Lorenz Curve for their range of income distribution with wide difference in class of distribution and it affects their standard of living. On the graph in graph 1 and 2 the 45% represents a perfectly equal income distribution wile the below curve, which is the Lorenz curve, show the degree of inequality. The far away the Lorenz curve is from the 45% line, the greater the income inequality. As such, it can be inferred from the graph that there exists income inequality in both rural and urban households due to the relationship of the Lorenz curve to the 45% line. However, considering the graphs on Fig. 2 the line of income inequality in the rural and urban areas can be estimated.

Contribution of each Income Source to Overall Income Inequality

Table 4: Decomposition of Income Inequality among Sample Household based on Coefficient Variation.

Covariance Matrix						
Income Source	**Crop Production**	**Livestock Production**	**Non-Farm activities**	**Transfer Payment**	**Asset Rentals**	**All service**
	Croplin	Lstocinc	Nfaminc	Transic		
Crop production	3,861,410,567.70					
Livestock Production	109,505,376.34	250,301,075.27				
Non – Farm Activities	(4,229,303,584.23)	(652,588,172.04)	72,158,878,463,08			

Transfer Payment	(203,571,154.30)	114,408,602.15	(674,058,136.20)	2,569,048,363.74)		
Asset Rentals	450,190,773.50	(35,483,870.79)	3,476,830,107.53	108,206,729.10	1,691,571,279.92	
Total Income	(11,768,030.99)	212,856,989.25	70,080758,678.14	2,004,032,394.50	5,691,315,019,.08	77,551,481,071.48

Table 5: Income Inequality among Sample Household based on Coefficient Variation

Covariance Matrix						
Income Source	**Crop Production**	**Livestock Production**	**Non-Farm Activities**	**Transfer Payment**	**Asset Rentals**	**All service**
Mean income (p)	27,473.12	5,000.00	166,466.67	14,752.69	7,069.77	220,769.25
Income sare (wi)	0.124443	0.022648	0.73940	0.066	0.032146	1.000000
Contr. To Inc Varaince	1,924,821,268.35	18,722,043.01	71,1191818,570.61	3,691,443,149.50	3,691,443,149.50	79,086,244,410.59
Inc Variance Share	0.024338	0.000237	0.899268	0.046676	0.043,6676	1.0000000
Rel. Conc Coegg. (ci)	-0.000133	-0.000505	1.117407	0.71514	0.71514	1.000000
Factor Ineq. Weight	-0.00017	-0.00011	0.842457	0.023194	0.023194	1.000000

From Table 4.3, non-farm activities is a factor with inequality increases, being the one with the highest positive weight on inequality with a value of approximately 0.8425, while livestock Production source is the least contributor to inequality having the greatest negative value considering the rural and urban areas in a compressed/single state in both cases.

Table 6: Income Inequality among Sample Household

Covariance Matrix						
Income Source	**Crop Production**	**Livestock Production**	**Non-Farm Activities**	**Transfer Payment**	**Asset Rentals**	**All service**
	Croplin	Lstocinc	Nfaminc	Transic	Rentalin	Totinc
Crop production	1.0000					
Livestock Production	0.1114	1.0000				
Non – Farm Activities	0.2534	-0.1533	1.0000			
Transfer Payment	0.0635	-0.1402	1.0000	1.0000		
Asset Rentals	0.1761	0.0545	0.3147	0.0510	1.0000	
Total Income	-0.0007	-0.0483	0.9368	0.1396	0.4969	1.0000

Based on Income Determinants

It should be noted that the result from this kind of study is dependent on the sampling techniques and study area.

As shown Table 4.1, 4.2 and 4.3, the Pearson Correlation Matrix, this is the test of association between the variables or factors affecting the rural and urban household total incomes with their amount. The relationship between the factors responsible for income inequality was also tested and found to be mostly positive and statistically significant. This implies that there is reality of income inequality or unevenly distributed among the sampled rural and urban households.

Conclusion

This study on income inequality has been able to analyze the level or degree of income inequality in the urban areas and rural area. It has been able to compare rural and urban inequality, contribution of each source to rural and urban household incomes and to the overall income inequality, and effect of socio-economic characteristic or income earned. The study also observed whether a particular source was income inequality increasing or decreasing.:

Generally, Crop production, non-farm activities and transfer payment were found to have significant effect on overall household incomes, while livestock production and asset rental contributes least to overall household income. Urban dwellers/ households rend to earn higher income or more income than rural dwellers. This is because urban income is found to be determined by age, education and access to social amenities and infrastructures. A high level of income inequality was established for both the rural and urban areas. Agricultural and livestock incomes were found to contribute differently to overall income inequality in both rural and urban areas. For both the rural and urban areas non-farm income inequality contributes the most to the total income inequality with a positive simple correlation of 0.937. Non-farm income increases income inequality in both rural and urban areas. Thus, additional increments of non-farm income will increase income inequality. Urban income inequality was found to be the higher than the rural income inequality, which means that urban-urban income inequality is higher than rural-rural income inequality. In the urban areas livestock production contributes the least to urban household income while rental income contributes the least to rural household income and non-farm income contributes the highest to urban household income and crop income contributes higher to rural household income. Crop income and livestock income are found to be inequality decreasing in both the rural and urban areas. The type of income inequality that was found in the study area is the better inequality, which is due to less income poverty within the distribution in the study area.

Recommendations

The following recommendations are made

1. Since the result shows that the income from agricultural activities are very low compared to non-farm activities. It's therefore imperative that more efforts should be concentrated on developing the agricultural and livestock sectors so more income would be derived from the sector.
2. Education and access to infrastructure are some of the determinants of rural income; the government should improve the quality of education by employing more teachers and providing the faculties needed to make education interesting.
3. Education should also be made affordable, especially to those in the rural areas, so as to encourage parents to enroll their children and wards in schools. More school should be built and those schools, which are dilapidated, should be renovated.
4. Also social infrastructure should be provided for the people in the rural dwellers to make their lived easier
5. Government should embark on the course that would make the rich pay more tax than the poor thereby reducing the money available for the rich to spend and reduce the tax paid by the poor so as to increase the purchasing power of the poor. i.e. using proportional taxation the "more you earn you pay" system. The revenue obtained from this can be used in developing the sectors of the economy such as agriculture and livestock. It can also be used to provide basic social amenities such as, electricity, good road for rural and other facility for the people living in rural areas. The revenue generated can also be used to procure improved seeds, fertilizer, herbicides, farm machines and other farm inputs needed for large-scale agriculture. These inputs can be given to the farmers at subsidized rates in order to improve agricultural production in the country. Land should be made easily available, at affordable rate, to all those interested in agricultural production.

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