Income sources, inequality and poverty among rural households in Ibadan, Oyo state, Nigeria

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Abstract: Some developing countries particularly in Southeast Asia have been able to catapult themselves into development using agriculture as a base. This has not been true of developing economies in sub-Saharan Africa which is evident in the widespread poverty and inequality. Thus, researchers have taken a paradigm shift by taking a holistic look at the rural economy vis-à-vis livelihood diversification. This paper is an effort in that direction. Primary data were collected from 120 households in rural parts of Ibadan using a multistage sampling procedure. Descriptive statistics was used to analyse the socio-economic variables while Gini source was used to decompose the income inequality in order to determine the contribution of each income source to overall income inequality. The results show that the share of agriculture in the total per capita household income (PCPHI) is 40.0% while non-farm self-employment (NFSE) and non-farm wage employment (NFWE) take 22.1% and 37.5% respectively. The results of source decomposition of the Gini coefficient reveal that agriculture contributes 41.6% to the overall income inequality; NFSE contributes 22.5% while NFWE contributes 36.4%. Agriculture and NFSE are also found to be inequality-increasing. There is therefore need to incorporate non-farm income sources into developmental efforts of the government by empowering the rural dwellers financially through their associations and ensuring equitable access to agricultural credit and other farm inputs.

Keywords: Gini coefficient, inequality, rural, sources of income

INTRODUCTION

Agriculture has always been considered as the mainstay of the rural economy in Nigeria. The subsistent farmers who toil hard on the fragile tropical soils are the backbone of this agriculture-based economy (IITA, 1993; Idachaba, 2000). However, a closer look at the situation reveals that rural dwellers, majority of who are farmers, derive livelihood from other income sources. Adams (2001) mentions that in the past, many researchers and policymakers have viewed the rural economy of developing countries as being synonymous with agriculture. According to this view, rural households receive most of their income from the production of food and export crops. In more recent years, this view has begun to change. There is now a growing recognition that rural households receive their income from a diverse portfolio of activities and that one of the most important of these activities is that connected with the rural non-farm sector. According to Awoyemi (2011), a key element in the history of the country’s rural development efforts is that agriculture has been viewed as a basis for rural development, an approach which has neglected the contributions of other sectors in improving the quality of life of rural dwellers, and subsequently hindered the scope for a multisectoral and integrated approach to rural development programming.

The 2001 Human Development Report of the UNDP argues that global income inequality has risen based on the following logic: income inequality within countries has increased, income inequality across countries has increased and that global income inequalities have increased. According to the report, there is a growing
inequality and global gap between the rich and the poor. The richest 50 individuals in the world have a combined income greater than that of the poorest 416 million. The 2.8 billion people living on less than $2 a day, which represents almost half of the world population, receive only 5% of global income, while 54% of global income goes to the richest 10% of the world’s population. A fifth (1.2 billion) lives on less than $1 a day (Todaro and Smith, 2003; Omonona, 2001).

There is a revelation that destitution persists even though human conditions have improved more in the past century than in the rest of history. But the distribution of these global gains is extraordinarily unequal. The average income in the richest 20 countries is 37 times the average in the poorest 20 – a gap that has doubled in the past 40 years - and the experience in different parts of the world has been very diverse. In East Asia, the number of people living on less than $1 a day fell from around 420 million to around 280 million between 1987 and 1998. Yet in Latin America, South Asia and sub-Saharan Africa, the numbers of poor people have been rising and in the countries of Europe and Central Asia in transition to market economies, the number of people living on less that $1 a day rose more than twenty-fold (World Bank, 2001).

Nigeria, just like other parts of the sub-Saharan Africa, has not been left out of the crisis of poverty and inequality. This has been shown in several researches conducted on the subject matter. Canagarajah et al., (1997) reported an increase in the Gini coefficient from 38.1% in 1985 to 44.9% in 1992. Also, Aigbokhan (1997) reported a Gini coefficient of 0.510 for rural households in his 1991 household survey of Western Nigeria. Similarly, a deepening inequality from 0.394 to 0.520 was reported for urban households between 1983/84 and 1991 and a deepening rural inequality from 0.389 to 0.510 for the same period. The World Bank (1996) estimation showed similar case of deepening inequality, the Gini coefficient rose from 0.387 in 1985 to 0.499 in 1992. Oyekale et al. (2006) observed that income inequality worsened between 1998 and 2004 in most of the states in Nigeria and this increased poverty incidence and depth. Gini inequality index for the total income was 0.5802, which shows that income inequality was high in Nigeria with the Gini inequality index of total income being higher in rural areas (0.5808) than urban areas (0.5278).

The picture painted above is that of Nigerians wallowing in poverty with the bulk of the consequences borne by the rural dwellers. It is worthy of note however that the government has not folded its arm in the effort at making sure that Nigerians are able to afford basic necessities of life. Several programmes and projects had been set up or implemented by successive regimes in order to address the various manifestations of poverty. These include River Basin Development Authorities (RBDA), Agricultural Development Programmes (ADP), Agricultural Credit Guarantee Scheme (ACGS), Operation Feed the Nation (OFN), Green Revolution, Directorate for Food, Roads and Rural Infrastructure (DFRRI), National Directorate of Employment (NDE), Peoples Bank of Nigeria (PBN) and Family Economic Advancement Programme (FEAP). In recent times, just like in the past, much has been expended on poverty alleviation. According to Ogwumike (2002), in November 1999, the government declared that ₦470 billion budgets for year 2000 was “to relieve poverty”. Also, before the National Assembly even passed the 2000 budget, the government got an approval to commit ₦10 billion to poverty alleviation programme. In the 2001 budget, the government increased the allocation to poverty alleviation programme by 150%. Omonona (2001) also pointed out that in the Poverty
Alleviation Programme (PAP) 2000 of the Federal Government, a total of 214,307 individuals, each paid a stipend of ₦3,500 monthly benefited all over the country. The adhoc nature of the PAP made the Federal government to introduce a new programme to replace it in January 2001.

However, in spite of these huge resources committed, one could see that the impact is so little that the masses are still not better off. The achievement has been in the area of growth with little or no achievement in the area of distribution. Akpobasah (2004) pointed out that income distribution in Nigeria is so highly skewed such that probably, less than 15% of the population actually benefit from the GDP (Gross Domestic Product) growth. Aigbokhan (2000) investigated the profile of poverty in Nigeria in the context of structural policy reforms introduced in 1986 and its reversal in 1994. He used National Consumer Survey data for 1985/86, 1992/93 and 1996/97 from the National Bureau of Statistics. As evident from his work, there was positive real growth throughout the study period but poverty, inequality and polarisation in distribution were evident. Experience in south Asia showed that growth alone is not sufficient to meet the needs of the poor. The region indicators are among the worst in the developing world, and in many parts of the region, the economic growth of the 1980s was not accompanied by concomitant improvements in living standards. Economic reforms had to be deliberately accompanied with the reallocation of public spending in favour of services that meet the needs of the poor. Growth alone does not guarantee reduction of poverty; it must be deliberately accompanied by equity (Okunmadewa, 1997). Structural inequalities, especially in income and input distributions are manifestations as well as strong causes of poverty. The higher the level of inequality, the less impact economic growth has in reducing poverty for any rate of economic growth (Awoyemi et al., 2004).

In line with this, this study intends to fulfil four objectives.

- identify the socio-economic characteristics of the respondents.
- measure the level of income inequality in the study area.
- decompose inequality by sources of income.
- determine the contribution of each income source to overall income inequality.

MATERIALS AND METHODS

Primary data was used in this study. The target population is rural households of Ibadan which consist of inhabitants of core-rural and peri-urban areas. The study area was grouped based on the population density and level of infrastructure. Multi-stage sampling procedure was employed in collecting data. One hundred and twenty (120) copies of questionnaire were administered in the study area using proportional random sampling. Descriptive statistics was used to analyse the socio-economic characteristics. The Gini coefficient was used as a measure of income inequality. Fambon et al. (2002), citing Morrisson (1986), gave the general formula for calculating the Gini coefficient for a distribution of income among n individuals as follows,

\[ G = \frac{1}{2n^2 \mu} \sum \sum |Y_i - Y_j| \]  

Where
\( Y = \) the average income (expenditure) of the whole population;
\( Y_i, Y_j = \) the income of individuals i and j.

Source decomposition of Gini

Adams (2001) employed source income Gini decomposition in his work on non-farm income, inequality and poverty in rural Egypt and Jordan. According to him, source decomposition of the
Gini coefficient can be developed following the notation of Stark et al., (1986),

\[ G = \sum_{k=1}^{K} R_k G_k S_k \]  

(2)

Where:

- \( S_k \) is the share of source k of income in total group income (i.e. \( S_k = \mu_k / \mu \)),
- \( G_k \) is the Gini coefficient measuring the inequality in the distribution of income component k within the group, and
- \( R_k \) is the Gini correlation of income from source k with total income, defined as:

\[ R_k = \frac{\text{cov}[Y_{ik}, F(Y_i)]}{\text{cov}[Y_{ik}, F(Y_i)']} \]  

(3)

Equation (3) shows that the effect of source k income on overall income inequality can be broken down into three components:

1. the share of income component k in total income (captured by the term \( S_k \));
2. the inequality within the sample of income from source k (as measured by \( G_k \));
3. the correlation between source k income and total income (as measured by \( R_k \)).

Using this decomposition, it is possible to identify how much of overall income inequality is due to a particular income source. Assuming that additional increments of an income source are distributed in the same manner as the original units, it is also possible to use this decomposition to ask whether an income source is inequality-increasing or inequality-decreasing on the basis of whether or not an enlarged share of that income source leads to an increase or decrease in overall income inequality. On the basis of equation (3):

\[ g_k = \frac{G_k}{G} \]  

(4)

Where \( g_k \) is the relative concentration coefficient of income source k in overall inequality.

From equation (4) it follows that income source k is inequality-increasing or inequality-decreasing according to whether \( g_k \) is greater than or less than unity.

**RESULTS AND DISCUSSION**

**Socioeconomic characteristics of respondents**

The descriptive statistics of the characteristics is presented in Table 1. The table shows that 90.8% of the respondents are males while the remaining are females. This shows that the male-headed households outnumber the female-headed households in the study area. Majority (88.3%) of the household heads are married while 7.5% are single, 1.7% are divorced, 1.7% are widowed and 0.8% are separated. Age of an individual dictates his availability as a member of the workforce. It is also used in literatures as a proxy for experience. From the table, 52.5% of the respondents are between the ages of 41 and 60, 26.7% are in the age bracket 21-40 years while 20.8% are over 60 years of age. The average age is 49 years. This shows that majority of the household heads in the study area are within the working age (active age). Also, there is a substantial percentage to replace the ageing workforce.

The table also reveals that 56% of the households have between 5 and 10 members, 29.0% have less than 5 members while the remaining 15.0% households have above 10 members. The average household size is 6 persons. Household size is an important factor in resource allocation as it measures level of dependency. Households with large family sizes are usually associated with low per capita income especially in resource-constrained economies. In other words, large family size is associated with poverty. Twenty-nine (29) respondents representing 24.2% had non-formal education while the remaining (91) totalling 75.8% had formal education. Results also shows that 54.2% of the household heads are engaged in agriculture, 25% are engaged in non-
farm self-employment (trading – 14.2%, artisanship – 10.8%) and 20.8% are in the non-farm wage employment category (government – 13.3%, private – 7.5%). This indicates that agriculture represents the main income source in the rural economy.

Social organisations are rallying points for individuals. It serves as an avenue to reach out to the populace and to pool resources together for the benefit of members. As shown in the table, 73.3% of the respondents are members of social organisations (co-operative societies, occupational social groups and farmers’ union) while 26.7% do not belong to any social organisation. From the table, 32.5% of the respondents have farmland of less than 0.05 hectares in size, 43.3% have land holding between 0.05 and 0.10 hectares while only 4.2% possess land above 0.10 hectares. Twenty percent (20%) of the household heads possess no land. The result shows that the farmers in the study area have small land holdings. Out of the one-hundred and twenty (120) respondents, forty-nine (49) farming households (which represents 40.8% of the respondents), do not secure agricultural credit. Furthermore, 2.5% received ₦5,000 or less, 11.7% received between ₦5,000 and ₦20,000 (the same percentage for between ₦50,000 and ₦100,000) while 14.1% secured between ₦20,000 and ₦50,000.

Table 1: Socioeconomic characteristics of household heads

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>109</td>
<td>90.8</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>9.2</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td>Married</td>
<td>106</td>
<td>88.3</td>
</tr>
<tr>
<td>Separated</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Divorced</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>Widowed</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 – 40</td>
<td>32</td>
<td>26.7</td>
</tr>
<tr>
<td>41 – 60</td>
<td>63</td>
<td>52.5</td>
</tr>
</tbody>
</table>

Table 2 presents summary of the size and source distributions of income. The distribution of income shows that the bottom 20% receives 2.8% while top 20% receives 58% of the total per capita income. A serious case of income inequality is glaring. This is also evident in the 0.5499 Gini coefficient value calculated with the original income data.

Based on source distribution of income, some deductions could also be made from the table. The nil value for agriculture at the lowest quintile indicates that none of the households in the study

2 This refers to the non-farming households
area falls within the lowest category of the income distribution (i.e. based on quintile). This means that poverty is not very chronic in the study area. This might be as a result of some level of infrastructural development in the rural areas. For example, some parts of the rural areas have access to electricity which is a catapult of economic activity. The table also shows that other income sources apart from agriculture exist at the highest quintile. This means that high level of income is associated with other income sources apart from agriculture. It implies that households in the study area get more income from trading, artisanship, private, government and transfer (though a minute percentage get income from transfers).

Table 3 shows that non-farm wage employment is a very important income source in the rural areas of Ibadan with its 37.5% contribution to the total per capita household income. It follows closely behind farming as an income source. In the same vein, the non-farm sector (with the two components self-employment and wage employment taken together) contributes 59.6%. This shows that non-farm business is taking a leading role in the rural areas. This is in line with the submission made by Adams (2001) in a study carried out to examine the impact of different sources of income- including non-farm income- on poverty and inequality in rural Egypt and Jordan.

Table 2: Sources of rural income ranked by quintile on the basis of total per capita

<table>
<thead>
<tr>
<th>Quintile</th>
<th>Average total per capita</th>
<th>Percentage share in total per capita income</th>
<th>Percent of total per capita income from</th>
<th>Agric</th>
<th>Trading</th>
<th>Artisanship</th>
<th>Private</th>
<th>Govt.</th>
<th>Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest</td>
<td>5,288.15</td>
<td>2.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Second</td>
<td>12,416.53</td>
<td>6.5</td>
<td>13.38</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Third</td>
<td>20,176.53</td>
<td>10.5</td>
<td>35.88</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fourth</td>
<td>42,746.14</td>
<td>22.2</td>
<td>40.15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Highest</td>
<td>111,900.91</td>
<td>58.0</td>
<td>45.53</td>
<td>22.49</td>
<td>15.61</td>
<td>44.4</td>
<td>20.17</td>
<td>0.74</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>38,505.65</td>
<td>100.0</td>
<td>40.0</td>
<td>13.0</td>
<td>9.1</td>
<td>22.49</td>
<td>11.7</td>
<td>0.74</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2007

Table 3: Summary of income data by income sources

<table>
<thead>
<tr>
<th>Source of income</th>
<th>Mean annual per capita household income (PCPHI) (₦)</th>
<th>Percentage of total per capita household income from source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>15,402.38 (20,686.19)</td>
<td>40.0 (40.0)</td>
</tr>
<tr>
<td>Non-farm self employment</td>
<td>Trading 5,034.24 (15,306.54)</td>
<td>8,528.65 (27,237.63)</td>
</tr>
<tr>
<td></td>
<td>Artisanship 3,494.42 (23,304.02)</td>
<td></td>
</tr>
<tr>
<td>Non-farm wage employment</td>
<td>Private 9,938.47 (46,610.33)</td>
<td>14,451.57 (47,679.26)</td>
</tr>
<tr>
<td></td>
<td>Government 4,513.10 (13,830.29)</td>
<td></td>
</tr>
<tr>
<td>Transfer</td>
<td>165.13 (1,394.44)</td>
<td>0.4 (0.4)</td>
</tr>
<tr>
<td>Total</td>
<td>38,505.65 (52,567.49)</td>
<td>38,505.65 (52,567.49)</td>
</tr>
</tbody>
</table>

Source: Field Survey 2007
Results of Gini decomposition

An overview of the results shows that transfer (0.9870) is the most unequally distributed while agriculture (0.6419) is the least unequally distributed, in other words, it is the most equally distributed. This stems from the nature of the transfer income source which is mostly for the aged whose children reside in the city. Also, the rural dwellers are mostly farmers at the same subsistence level of production. The average value of land holding (0.06ha) attests to this fact. Non-farm self-employment (NFSE) and non-farm wage employment (NFWE) are also highly unequal having Gini values of 0.8869 and 0.8991 respectively.

Table 4: Decomposition of overall rural income inequality

<table>
<thead>
<tr>
<th>Income source</th>
<th>Proportion of household receiving income source ($p_k$)</th>
<th>Share in total income ($s_k$)</th>
<th>Gini coefficient for income source ($g_k$)</th>
<th>Gini correlation with total income rankings ($r_k$)</th>
<th>Contribution of income source to overall income inequality ($G_k$)</th>
<th>Relative concentration of income source ($g_k = r_k G_k$)</th>
<th>Proportional contribution to overall income inequality ($S_k G_k R_k / G$)</th>
<th>Source elasticity of total inequality (Relative marginal effect) ($S_k G_k R_k / G - S_k G_k$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>0.7083</td>
<td>0.4000</td>
<td>0.6419</td>
<td>0.8912</td>
<td>0.2288</td>
<td>1.0401</td>
<td>0.4161</td>
<td>0.0161</td>
</tr>
<tr>
<td>Non-Farm Self Employment</td>
<td>0.2667</td>
<td>0.2215</td>
<td>0.8869</td>
<td>0.6290</td>
<td>0.1236</td>
<td>1.0143</td>
<td>0.2247</td>
<td>0.0032</td>
</tr>
<tr>
<td>Non-Farm Wage Employment</td>
<td>0.2917</td>
<td>0.3753</td>
<td>0.8991</td>
<td>0.5940</td>
<td>0.2004</td>
<td>0.9711</td>
<td>0.3644</td>
<td>-0.0109</td>
</tr>
<tr>
<td>Transfer</td>
<td>0.0167</td>
<td>0.0040</td>
<td>0.9870</td>
<td>0.5096</td>
<td>0.0020</td>
<td>0.9145</td>
<td>0.0037</td>
<td>-0.0003</td>
</tr>
</tbody>
</table>

Source: Author’s calculation

Agriculture has the largest percentage (proportional) contribution to overall income inequality (41.6%) and is highly correlated with total income (0.89). It is important to note that agriculture has maximum contribution to total income (40.0%). Agriculture is followed by non-farm wage employment (NFWE) which has 36.4% contribution to overall income inequality and Gini correlation of 0.59. Transfer has the least contribution.

On whether the income source is inequality-increasing or inequality-decreasing, agriculture (1.0401) and NFSE (1.0143) are inequality-increasing, judging from the values of the relative concentration coefficient and relative marginal effect ($g_k>1$, RME= +ve). These income sources are associated with rich households. There is an unequal access to agricultural credit (40.9% are not able to secure it) and inputs like fertilizer since land is available to the farming households, though in small holdings. Non-farm wage employment (NFWE) and transfer will reduce inequalities because the relative marginal effects are found to be negative with the value of relative concentration coefficient being less than unity ($g_k<1$, RME= -ve). This means that the two income sources are in favour of low income group.

These results show that agriculture is the mainstay of the rural economy when each of the sources is considered singly (it contributes 40% to total income). However the non-farm income sources constitute a better alternative since it contributes a total of 59.6% to the total PCPHI. Though NFWE (which consists of government and private employments) is inequality decreasing, the obvious case of the high unemployment rate might
not make it practical to say that government should take in more people into paid employment. However, rural dwellers can be trained so that they become employable by the rural private sector. Also an option can be taken in NFSE by providing funds, which should be equitably distributed through their associations (73.3% belong to social organisations) so that people can stand on their own and be relieved of the capital intensiveness of their businesses. Similarly, specific technical assistance can be rendered especially in the artisanship sub-sector. Finally, government should also ensure equitable access to agricultural credit and other farm inputs because agriculture is still very relevant to the rural economy.

REFERENCES


seminar held in Western Hall of the Oyo State House of Assembly Complex, Agodi Secretariat, Ibadan.


