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Labour and Poverty: Empirical Relationship Using House Data from South Nigeria

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Abstract

In Nigeria, most farming activities rely on family labor. However, rural-urban drift and the movement of young people away from agriculture are making labor increasingly pause. Thus, labor has become a major constraint to expanding the scope of production by small-scale resource poor farmers. This paper provides an empirical relationship between labor and poverty using data from households. Through a multi stage sampling procedure, 150 farming households were selected using questionnaire. Results of Foster, Greer and Thorbecke decomposition show that poverty incidence, depth and severity increase with increase in labor employed in farm operations implying that poverty is directly related to labor. Finding further reveals that the difference in poverty incidence of one of the sub-group (1–50 Vs 50–100) pair is statistically significant at ($P< 0.05$). Results suggest that the mandays of labor employed significantly affect the poverty incidence of farm households.

Keywords:
Labour, Poverty, Household, Nigeria.

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INTRODUCTION

Nigeria's agricultural production is highly labor intensive. Over 90% of all tasks in non–mechanized production systems depend on human labor, and for mechanized production systems depend on human labor, and for mechanized production systems, between 50 and 60% of the tasks depend on human labor (Olayide, 1981; Shaib *et al.,* 1997). According to Olayeni (1980) and Sharb *et al.,* (1997), family labor constitutes over 76% of farm labor. Generally, males are responsible for land clearing, ridging and weeding, while women undertake the processing and marketing of farm produce and they may also help in weeding, harvesting, bird scaring and the tending of cattle, sheep and goats. Hired labor has become important in farm operations especially during the peak periods of the various farming activities.

The rapid rural-urban migration of the youths and the resultant dwindling of an active farm labor force has become a major constraint to expanding agricultural production (Shaib *et al.,* 1997). Historically, the movement of labor away from agriculture as a result of rural-urban drift was relatively gradual between 1960 and 1970. During this period, young school leavers went into public and industrial sector employment, which was concentrated in the urban centers. In the 1970s, the deployment of earnings from petroleum export in urban construction industries created employment for unskilled labor. The resulting massive rural–urban migration depleted rural areas of farm labor. In the 1980s and 1990s when there were reverses in petroleum and construction activities, urban employment dropped. While some of the migrants returned to rural areas, many of them did not, and as a result labor shortages in the village have remained endemic. Consequently, farming sector wage rates have been on the increase, rising from a mere N0.45 per man-day in the 1970–1975 period to nearly N65.00 per man-day in the 1991–1994 period, making hired labor increasingly unaffordable to the small-scale farmer. More recently, these wage rates have increased astronomically between N1, 500 – N2, 500 per manday depending on the location and size of the plot.

Farm labor productivity has become increasingly low because farm households largely comprised fairly old people and very young children coupled with crude implements which impedes their ability to raise yield and income with subsequent reduction in poverty. According to Borlang and Dowswell (2010), no nation has been able to substantially reduce poverty and bring about economic growth and development without first markedly increasing the productivity of its agricultural and food systems. Like in many developing countries, poverty in Nigeria is essentially a rural phenomenon as most of the impoverished people live in the rural areas, where they derive their livelihood from farming (Etim and Ukoha, 2010). Investing in agriculture is a key to reducing poverty and hunger in developing countries and is essential element in addressing the current food price crises (Fan & Rosegrant, 2008; Etim & Ukoha, 2010). But agricultural production in the Akwa Ibom State is highly labor intensive as majority of the farming activities rely both on family and hired labor. Most of poverty studies are linked to agriculture (Canagarajah *et al.,* 1995; FOS, 1999; Khan

Table 1: Mean Household Expenditure (Adult Equivalent)

Item	Amount (₦) per month	Percentage Expenditure
Energy	1677.34	20.30
Clothing	1201.30	14.54
Health care/ Medication	1134.34	13.73
Education	2107.00	25.50
Food	2144.11	25.93
Total	8264.09	100.00

Mean 1652.82
2/3 1,101.88 (Poverty line)

Table 2: Labour Employed in all farm Enterprises

Family Labour (Mandays)	Frequency	Percentage
1 - 50	52	34.67
51 - 100	78	52
101 - 150	20	13.33
Total	150	

Table 3: Comparison of Poverty by Labour

Labour Employed (Mandays)	P0	P1	P2	Contribution to		
				P0	P1	P2
1–50	0.38	0.25	0.24	0.17	0.31	0.34
	(1.00)	(-0.25)	(-0.27)			
50–100	0.46	0.42	0.43	0.57	0.56	0.55
	(-0.20)	(-0.04)	(-0.08)			
100–150	0.66	0.71	0.84	0.26	0.13	0.11
	(2.11)**	(2.45)**	(2.57)**			
All	0.57	0.48	0.44	1.00	1.00	1.00

Figures in parentheses are t – values of Pα. ** Significant at 5%.

2001; Okunmadewa, 2001). This implies that a large proportion of the rural poor are engaged in one form of farming or the other. According to Mijindadi (1995), over 90% of the foods consumed in Nigeria are produced by these farm households. This study investigates the empirical relationship between family labor and poverty using data from farming households.

The concept of poverty dates back to 1899, when one of the earliest and most famous studies of poverty was conducted by Seebohm Rowntree in York. He used a concept of subsistence poverty and drew a poverty line in terms of a minimum weekly of sum of money, which was necessary to enable families secure the necessaries of a healthy life. According to Okunmadewa (2001), poverty is more easily recognized than defined. Hence, a universally acceptable definition of the term has remained elusive. Poverty is defined as total poverty as the expectation overtime of the poverty measured at each point in time. Poverty can be chronic (structural) or transitory, depending on how long poverty is expressed by an individual or a community. Chronic poverty is long term, persistent, the causes of which are largely structural and endemic, while transitory poverty is temporary, transient and short term in nature. Transitory poverty is defined as total poverty minus chronics poverty. Since the nineteenth century when rigorous studies in poverty began researchers have tried to establish fixed yardsticks against, which to measure poverty ideally, such a yardstick would be applicable to all societies and should establish a fixed level, usually known as the poverty line below; which poverty begins and above which it ends. A traditional measure of poverty stipulates that the number of people living on less than US$I per day. Although this traditional measure of poverty is commonly used, many in the development community have supported measures such as Millennium Development Goals (MDGs) that use a complex set of conditions as yardsticks in assessing the entire living situation of poor people (Rosegrant *et al*., 2005). Absolute poverty is a situation of lack of access to resources required to obtain the minimum necessities required to maintain physical efficiency. Relative poverty, on the other hand, is the inability to attain a given minimum contemporary standard of living. Poverty can also be subjective. This refers to whether or not individuals or groups feel they are poor. Subjective poverty is closely related to relative poverty since those who are defined as poor in terms of standard of the day will probably see and feel themselves to be poor. The concept of subjective poverty is important since to degree, people act in terms of the way they perceive and define themselves. Poverty line is the threshold income below, which one is considered to be poor (Kakwani, 1993). It is the value of income or consumption expenditure necessary for a minimum standard of nutrition and other necessities. According to

Thorbecke (2004) there are currently two main methods of setting the poverty live i.e. Cost of Basic Needs (CBN) and the Food–Energy-Intake (FEI) methods.

The literature on aggregate measures of poverty and wellbeing is quite enormous. Many indices have been designed and developed to measure poverty and well-being. These comprise Sen index (1979); Foster-Greer-Thorbecke (FGT) poverty Index (1984); UNDP (1990), Integrated Poverty Index (IPI), Basic needs on balanced diet index, the Physical Quality of Life (PQLI) (Morris, 1994), Relative Welfare Index (IFAD, 1993), Index of Social Progress (Estes' 1984); Index of "Quality of Life" in nations (Slottje's 1991); Index of Quality of Life in metropolitan areas (Lui's 1977) This study however employs the Foster, Greer, Thorbecke weighted poverty measure for quantitative poverty assessment. This class of additively decomposable poverty measure is based on income/expenditure approach.

MATERIALS AND METHODS

Study area, sampling and data collection:
The study was conducted in Akwa Ibom State, Nigeria. The state is located at latitude 4º33' and 5º53' North and longitude 7º25' and 8º25' East and occupies a total land area of 7,246 km^2. With an estimated population of about 3.9 million (NPC 2006), the state is bounded to the North by Abia State, to the East by Cross River State, to the West by Rivers State and to the South by the Atlantic Ocean. Administratively, the state is divided into 31 Local Government Areas and has 6 Agricultural Development Project (ADP) Zones viz: Oron, Abak, Ikot Ekpene, Etinan, Eket and Uyo.

The study area is in the rainforest zone and has two distinct seasons viz: the rainy and the short dry season. The annual precipitation ranges from 2000-3000 mm per annum. Most of the inhabitants of rural communities in the study area are farmers and the crops commonly cultivated include cassava, oil palm, yam, cocoyam, flitted pumpkin, okra, water-leaf, bitter-leaf, etc. In addition, some micro livestock are usually raised at backyards of most homesteads.

Primary data were used for this study. Farm-level intensive itinerary survey provided the basic cross-sectional data from 150 rural farming households in the study area. Data were collected from farm households using well structured questionnaire. Primary data included data on household income and expenditure, socio-economic characteristics of households and their heads, farm specific variables.

Multistage sampling technique was used for selecting the representative farm households that were used for this study. The first stage was the random selection of 3 out of the 6 Agricultural Development Project Zones in Akwa Ibom State. The second stage sampling was the random selection of 5 villages per ADP zone to make a total of 15 villages. Furthermore, a total of 10 households were randomly selected to make a total of 150 farming households.

Analytical techniques

The Foster, Greer and Thorbecke (FGT) weighted poverty index was used for the quantitative poverty assessment (Foster *et al*., 1984). The reason for this choice is due to its decomposability of the overall population into sub-groups which allows for comparison. United Nations UN (2001) noted that the most important purpose of a poverty measure is to enable poverty comparisons.

The FGT measure for the subgroup $_i$th P α_i is given as:

$$P_{\alpha i} = n^{-1} \sum_{j=1}^{qi} \left[\frac{z - Yji}{z, Qmax} \right] \alpha$$

Where $P_{\alpha i}$ is the weighted poverty index for the ith subgroup; n_i is the total number of households in the ith subgroup households in poverty; Y_{ji} is the per adult equivalent expenditure of household j in sub-group $_{ij}$, z is the poverty line and α is the degree of concern.

When α is equal to zero, it implies no concern and the equation gives the head count ratio for the incidence of poverty (the proportion of the farming households that are poor).

The poverty line used for this study is defined as the two-thirds of mean household expenditure

adult equivalent. Adult equivalents were generated following Nathan and Lawrence (2005) as follows:

AE = 1 + 0.7 (N1 – 1) + 0.5 N2

Where AE = Adult Equivalent

N1 = Number of adults aged 15 and above

N2 = Number children aged less than 15

That is

$$P_{\alpha i} = ni^{-1} \quad qi \sum_{j=1}^{z,0max} \left[\frac{z - Yji}{} \right] = qi/ni$$

When α is equal to 1, it shows uniform concern and equation becomes

$$P_{1i} = ni^{-1} \quad qi \sum_{j=1}^{z,0max} \left(\frac{z - Yji}{} \right)^{1}$$

This measures the depth of poverty (the proportion of expenditure shortfall from the poverty line) according to Hall and Patrinos (2005), it is otherwise called the poverty gap-the average difference between the income of the poor and the poverty line.

When α is equal to 2, distinction is made between the poor and the poorest (Foster *et al.,* 1984, Assadzadeh and Paul, 2003). The equation become

$$P_{2i} = ni^{-1} \quad qi \sum_{j=1}^{z,0max} \left(\frac{z - Yji}{} \right)^{2}$$

The equation gives a distribution sensitive FGT index called the severity of poverty. It tells us the extent of the distribution of expenditure among the poor.

The FGT measure for the whole group or population was obtained using:

$$P_{\alpha} = \sum_{i=1}^{m} \frac{P\alpha_1 n_1}{n}$$

Where P α is the weighted poverty index for the whole group, m is the number of subgroups while n and ni are the total number of households in the whole group and the $_i$th sub-group respectively.

The contribution (C_i) of each sub-group's weighted poverty measure to the whole group's weighted poverty measure was determined using;

$$Ci = \frac{n_i P \alpha_i}{n P\alpha}$$

The test of significance of $P\alpha_i$ (subgroup poverty measure) relative to the pα (whole group poverty measure) was given according to Kakwani (1993) by:

$$t = \frac{P\alpha_i - P_{\alpha}}{SE\,(P_{\alpha i})}$$

The above was used to test if significant difference exist between the Pα measures of a subgroup i with another j.

The weighted poverty measures (Pα) and their corresponding standard errors were calculated using the Microsoft Excel Package.

RESULTS AND DISCUSSION

The first step in the analysis of poverty is the determination of the poverty line. As stated in the methodology, the mean household expenditure adult equivalent was used to determine this threshold. Table I shows the average amount expended on basic consumption items of the households. The mean per adult equivalent household expenditure is ₦1, 652.82 and the poverty line is ₦1, 101.88.

The use of family labor is common in the study area. Findings however reveals that majority of the households (52%) have 50–100 mandays of family labor while 34.67% of the farm households employ less than 50 mandays of family labor.

Farm households with more than 100 mandays of family labor are 13.33%. Findings imply that majority (65.53%) of the households employ greater mandays of family labor suggesting that households had many members/dependants.

Labour Employed

Poverty was profiled among farm households using three labor sub-groups. Table reveals that 38, 46 and 66 percent of households with

Table 4: Poverty by Labour Employed (Mandays)

Labour Employed (Mandays)	P0	P1	P2
1–50 vs 50–100	-2.00**	-0.81	-0.79
1–50 vs 100–150	-0.88	-0.75	-0.81
50–100 vs 100-150	-0.33	-0.67	-0.82

** Significant at 5%.

labor less than 50, 50–100 and above 100 mandays respectively are poor. Their respective contributions to the whole group's poverty incidence are 17, 57 and 26 percent. Poverty incidence is significant (P<0.05) in households with more than 100 mandays of labor relative to that of the whole group. Poverty depth and severity follow similar pattern like the incidence of poverty.

Table 4 shows that the differences in poverty incidence in one of the three possible pairs (1-50 vs 50–100) mandays) is statistically significant (P<0.05). This means that the mandays of labor employed significantly affect the poverty incidence of farm households.

The level of poverty increases as the mandays of labor employed increases. This may be attributed to the fact that increase in household size which is caused by more younger household members, raises the dependency ratio and subsequently raises the poverty level. Thus, farm households with greater mandays of family labor have the propensity to be poorer than the households with smaller mandays of labor.

CONCLUSION

The incidence of poverty among farming households was 0.57 whereas the 0.48 constituted the proportion of expenditure shortfall from poverty line and 0.44 comprised the poorest of the poor. Results of FGT decomposition show that the level of poverty increases as mandays of labor employed increases. The analysis reveals that an increase in labor increases the probability of poverty. This is true because increased family labor results from larger household sizes and dependency ratios which tend to raise the level of poverty.

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