Analysis of Incidence, Depth and Severity of Poverty Status among Livestock Farmers in Southwestern Nigerian

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Target Audience: Livestock farmers, scientists and policy makers

Abstract

This paper relies on a study that attempts to analyze the incidence, depth and severity of poverty among livestock farmers in Southwestern Nigeria. The data for the study was collected in the Sought Western area of Nigeria. The sampling method employed for the study was multistage sampling procedure. Three towns were re randomly selected for the study. They are Oyo metropolis, Abeokuta metropolis and Ondo metropolis. Tow hundred and seventy livestock farmers were randomly sampled for the southwestern Nigeria with 90 livestock producers sampled from each metropolis. The main analytical tool used for the study is the FGT weighted poverty index. The headcount ratio revealed that non-ruminant farmers have more of its population below the poverty line when ruminant and non-ruminant farmers should be raised by 23 percent and 33 percent respectively while the income of the core-poor ruminant and non-ruminant farmers should be raised by 17 percent and 22 percent respectively in order to exit poverty. Results also revel that poverty is more severe among non-ruminant livestock farmers than their ruminant livestock producer's counterpart. The study therefore concludes that ruminant livestock farmers are better off in terms of welfare than their no-ruminant livestock counterparts.

Keywords: Poverty status, Livestock farmers, Southwestern Nigeria

Description of Problem

Poverty is a phenomenon that has generated a lot of interest in recent times as various views have been raised about it. (1,2,3,and 4). However, it is generally agreed that poverty is a situation whereby one cannot generate sufficient income required for life sustenance. (5,6 and 7). In specific terms, poverty has been defined using various indices. According to (2) poverty was classified into "absolute" poverty, where in some goods and services essential to a family or an individual welfare cannot be possessed due to lack of economic wherewithal. "Relative" poverty on the other hand is a situation whereby income earned by a person is significantly less than the average income of the population. The World Bank (8) refers to the people in the latter group as

earning per capita income below one-third of the mean per capita income of the population.

Poverty can also be described as being "chronic" or "transitory". While chronic poverty is a long term and persistent inability to meet basic needs, transitory poverty is a temporary or short-term condition that a normally self-sufficient individual are thrown into in times of crises (9). Various theories such as the "power theory and the "individual attributes" theory had explained poverty(10). The power theory posits that the power in the society determines the extent and distribution of poverty among the population, whereby the ruling class establishes and legitimizes exploitative property system over the subject class. The individual attributes theory argues that an individual's location in the

society hierarchy of income and wealth is presumed to be largely due to motivation and abilities. These two theories seem immediately applicable to the Nigerian case (3). The working definition of this study will incorporate mainly the widely acceptable concept of relative poverty, which exists when a person or household's provision of good and services is lower than that of other persons or households. In general, relative poverty is the inability to attain a given minimum contemporary standard of living and identifies those individuals that are poorest within the overall pattern of income distribution within a given society (11).

As earlier highlighted, poverty is associated with the idea of inequality from the moral standpoint. Poverty has been established by past studies (8 and 12) as being more prevalent in rural areas. These areas houses most of producers of livestock and crops. However, the main focus of this study will be on the livestock producers. Livestock producers are mainly involved in the production of ruminants and non-ruminants animals. Ruminant livestock are those domesticated animals with four stomach compartments. These include cattle, goat and sheep. The non-ruminant livestock otherwise known as mongastic animals are those with single stomach chamber. They include poultry and pig among others. Apart from their primary use as sources of protein, livestock are also very useful in the production of some materials, which are domestically useful as well as valuable export for the Nigerian economy. The livestock sub-sector as at 1997 contributed about 12.6 percent of total Gross Domestic Product (GDP) as against the 80.0 percent figure for crop during the same period.

Evidences abound that most discussions and considerations on poverty in Nigeria are linked to agriculture (13,8,14 and 15). According to Federal office of Statistics (16), it has been revealed that poverty incidence is higher for farming households than for non-farming households in 1980, 1985, 1992 and 1996 as shown in Table 1.

Table 1: Poverty Incidence in Nigeria

| Year | Poverty incidence | |
	Farming households	Non-farming households
1980	32.1	16.3
1985	43.1	37.2
1992	38.7	36.0
1996	72.3	59.2

Source 16

The very high percentage of farming households that are poor in Nigeria has led to the springing up of many research efforts aimed at understanding the poverty situation of the farmers. But virtually all these efforts have been concentrated on the food crop farmers and on general agriculture. Hence, most of the studies on poverty in Nigeria today centres on crop and agriculture as a whole. However, given the contribution of the livestock sub-sector to man and the Nigerian economy, a poverty study that centres on the livestock sub-sectores will not be out of place. Arising from the foregoing, this study attempts to assess the incidence, severity and depth of poverty among different livestock producers in the southwestern part of Nigeria. Information soured from this study will go a long way in supplying baseline information on the poverty profile of livestock farmers.

Materials and Methods

Study Area

The southwestern part of Nigeria is made up of six states namely Oyo, Ondo, Ogun and Ekiti States. Others are Osun and Lagos States. The southwestern area of Nigeria experiences annual rainfall of about 1530mm and average median temperature of 200C with humidity of abut 50-60percent. This area has a climate that follows that usual tropic pattarn, with the rainy season starting from about March to November, then followed by the dry season. Humidity in this locality is high. It is approximately above 80 percent (metrological weather report). As a result, of the suitable weather and climate, agricultural production is modest.

Sampling Procedure, Sample Size and Data Collection Method

The data needed for this study were collected in the southwestern area of Nigeria. The units of sampling were the livestock farmers. The sampling method employed for this study was the multistage sampling procedure. In the first stage three states were randomly selected (Oyo, Ogun and Ondo State).

In the second stage, three metropolises were randomly chosen from each state (Oyo metropolis, Abeokuta metropolis and Ondo metropolis). The third stage involved the random selection of 90 livestock producers (made up of 45 ruminant and non-ruminant producers) from the list of livestock producers of each state. In all, a total of 270 livestock farmers were sampled for the study.

Analystical Technique

The main analytical technique used for this study is the Foster, Greer and Thorbecke (FGT) weighted poverty index (17) as shown below.

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

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

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

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

where

n = number of households in a group
q = the number of poor households
z = poverty line
y = the per capita expenditure (PCE) of the ith household; and,
α = degree of poverty aversion

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

$$P_{\alpha} = \frac{1}{n} \sum_{t=1}^{m} P_{\alpha i} = n_i / n$$

Where P_{α} is the weighted poverty index for the whole group, m is the number of sub groups while n and ni are the total number of households in the whole group and the ith subgroup respectively.

The poverty line was obtained using the two-thirds and one-thirds of the mean per capita household expenditure.

Results and Discussion

The main objective of this study is to asscess the incidence (head count), depth and severity of poverty among the different livestock producers in the southwestern area of Nigeria. Based on the data obtained from the respondents, the per capita expenditure (MPCHHE) and poverty line (moderately poor and core poor) were estimated. The mean per capita expnditure (MPCHHE) was used to calculate the head count index, depth and severity of moderately poor and core poor ruminant and non-ruminant farmers.

From the mean per capita household expenditure, two base lines were set relative to the standard of living in the study area among the ruminant and non-ruminant livestock farmers. They are the moderate and core poverty lines. The moderate poverty lines are equivalent to two-thirds of the mean per capita household expenditure. This enable us to determine the livestock farmers that fall into the moderately poor group, while the core poverty line is equivalent to one-thirds of the means per capita household expenditure. The poverty line can be described as the value of income (expenditure) per person that is needed to consume food and other items for a healthy living. The formulae or per capita expenditure and mean capita household expenditure are as follows:

Per capita expenditure =

$$\frac{\text{Total household monthly expenditure}}{\text{Household size}}$$

Means per capita household expenditure =

$$\frac{\text{Total per capita expenditure for all households}}{\text{Total number of households}}$$

Arising from the foregoing, the poverty line (moderate and core poor) for non-ruminant and ruminant in the three states of southwestern Nigeria was estimated. The estimated poverty lines of ruminant and non-ruminant farmers by states are presented in Table 2.

Table 2: Estimated Poverty Lines by Metropolis of Ruminant and Non-ruminant Farmers

Location	Classification livestock	MPCHHE (N)	Poverty line Index (N) moderately Poor	core poor
Oyo metropolis	Ruminant Farmers	3113.00	2075.30	1037.60
	Non-Ruminant Farmers	10672.60	7115.10	3557.50
Abeokuta Metropolis	Ruminant Farmers	2539.40	1692.90	846.50
	Non-Ruminant farmers	7351.80	4901.00	2100.00
Ondo metropolis	Ruminant Farmers	4882.10	3254.70	1627.40
	Non-Ruminant farmer	7351.80	4901.00	2450.60
All	Ruminant Farmers	3511.50	2340.97	1170.50
	Non-Ruminant Farmers	8116.13	5410.70	2702.70
Average	All Livestock farmers	5813.82	3875.84	1936.60

Source: Field Survey, 2002

Table 2 highlights the estimated poverty lines by states of ruminant and non-ruminant farmers. The poverty line is the value of income (expenditure) that is needed to consume food and other items for a healthy living, Results from table reveal the poverty line of moderately poor ruminant and non-ruminant farmers in southwestern Nigeria was estimated to be 2340.00 and 5410.70 naira respectively.

Table 3: Headcount Index of Ruminant and Non-ruminant Farmers by State

Location	Classification of livestock farmer	Headcount Index(%)	
		Moderate poor	core poor
Oyo Metropolis	Ruminant Farmers	10	2
	Non-Ruminant Farmers	51	24
	All livestock farmers	31	13
Abeokuta metropolis	Ruminant Farmers	38	4
	Non-Ruminant Farmers	44	29
	All livestock farmers	41	17
Ondo Metropolis	Ruminant Farmers	23	6
	Non-Ruminant Farmers	38	14
	All livestock farmers	31	10
All	Ruminant Farmers	24	4
	Non-Ruminant Farmers	441	22
	All livestock farmers	35	13

Source: Field Survey, 2002

The headcount ratio or index is also referred to as the poverty incidence. It is defined as the fraction of the population that is poor. The poverty incidence of ruminants and non-ruminant farmers is presented in Table 3.

A cursory look at the table revealed that non-ruminant farmers have more of its population below the poverty line when compared with its ruminant farmers counterpart. A clear manifestation of the fact that non-ruminant farmers are worse off, as poverty incidence, is the fact that fewer fractions of the ruminant farmers population under the core poor classification lie below the poverty line. The implication of this finding is that more of the non-ruminant farmers population lies below poverty line unlike the ruminant counterparts.

When poverty incidence is compared across locations, it can be seen that Abeokuta Metropolis has the highest percentage of livestock farmers that are moderately and core poor. Oyo and Ondo Metropolis follow this in that order respectively.

Poverty depth is defined as the average gap or distance between the income of the average poor and the poverty line. More specifically it is the extent to which income of the poor lie below the poverty line. Results presented in Table 4 reveals that the income of the moderately poor ruminant and non-ruminant farmers in the southwestern Nigeria must be raised by 23 percent and 33 percent respectively, while the income of core-poor ruminant and non-ruminant farmers must be

Table 4: Depth of Poverty Among Ruminant and Non-ruminant Livestock Farmers by Metropolis

Location	Classification livestock farmer	Depth of Poverty (%)	
		Moderate poor	core poor
Oyo Metropolis	Ruminant Farmers	31	20
	Non-Ruminant Farmers	44	24
	All livestock farmers	38	22
Abeokuta metropolis	Ruminant Farmers	5	3
	Non-Ruminant Farmers	24	7
	All livestock farmers	15	10
Ondo metropolis	Ruminant Farmers	32	27
	Non-Ruminant Farmers	37	26
	All livestock farmers	35	27
All	Ruminant Farmers	23	7
	Non-Ruminant Farmers	33	22
	Average	28	20

Source: Field Survey, 2002

raised by 17 percent and 22 percent respectively. The analysis of poverty depth of livestock farmers seems to buttress the findings of the headcount index results that has revealed clearly that non-ruminant livestock farmers are worse off in terms of ability to meet their family needs.

Despite that the percentage of livestock farmers in Abeokuta metropolis that are moderately and core poor are highest, they however have the least poverty depth. The poverty depth of livestock farmers in Ondo and Oyo follow this in that order respectively.

Table 5: Poverty Severity Index of Ruminant and Non-ruminant Farmers by metropolis

Location	Classification of livestock farmer	Poverty severity index (%)	
		Moderate poor	Core poor
Oyo metropolis	Ruminant Farmers	25	11
	Non-Ruminant Farmers	16	13
	All livestock farmers	21	12
Abeokuta Metropolis	Ruminant Farmers	10	4
	Non-Ruminant Farmers	20	10
	All livestock farmers	15	7
Ondo metropolis	Ruminant Farmers	10	12
	Non-Ruminant Farmers	14	14
	All livestock farmers	12	13
All	Ruminant Farmers	15	9
	Non-Ruminant Farmers	17	12
	Average	16	11

Source: Field Survey, 2002

The result on severity of poverty among livestock farmers is highlighted in Table 5. The table show the extent of inequality in income distribution among the poor. Table 5 shows that poverty is more severe among non-ruminant livestock farmers than their ruminant livestock producer's counterpart. Specifically, about 15 percent and 17 percent of moderately poor ruminant and non-ruminant farmers are severly poor, while 9 percent and 12 percent of the core poor ruminant and non-ruminant farmers are severely poor. The poverty severity analysis has further confirmed earlier findings of the paper that submits that non-ruminant livestock farmers are worse of in terms of ability in meeting their family needs. Across the metropolis, livestock farmers in Oyo have the highest poverty, followed by those in Abeokuta and Ondo Metropolis in that order.

Conclusion and Applications

This paper concludes that ruminant farmers are better off in terms of their ability in meeting their family needs. The study arrived at this conclusion given the results of headcount, depth of poverty and poverty severity indices. However, it is suggested that further analysis of the poverty indices by socio-economic/demographic features of the two classes of livestock farmers should be carried out. This would allow for some recommendations in terms increasing access of farmers to credit, issue of family size planning to reduce high dependency ratio and land tenure reforms. It would also allow for proper isolation of factors (such as size of farm, educational status of farmer, use of improved technology) that might influence the poverty status of the two classes of livestock farmers since the non-ruminant farmers are worse off in terms of welfare. A study using the poverty indices by socio-economic features of farmers analysis will help in identifying factors accounting for their present state of livelihood. However this study had empirircally showed that ruminant livestock farmers are better off in terms of welfare than their non -ruminant livestock counterparts.

References

1. Aboyade, O. (1975): "On the need for an Operation Specification of Poverty on the Nigerian Economy. In Poverty in Nigeria. Proceedings of 1975 Annual Conference of the Nigeria Economic Society (NES) Ibadan pp. 25-35.

2. Schiller B.R. (1980): The Economics of Poverty and Discrimination. Prentice Hall International Inc. Englewood Clift.

3. Repnik, Hans-Peter (1994): Poverty Relief and Social Integration as Tasks of International Cooperatio 1. Conceptual Considerations of the Federal Republic of Germany. In for Democracy and Social Justice Josef tasting (ED),P;. 38-45.

4. World Bank (1995): World Development Report 1995 Oxford University Press New York

5. Wildananpatinirana, A.S. (1993): "Poverty in irrigated Settlements" should it deserve Emphatic Attention in Future Irrigation Development Work, London, U.K. Overseas Development Institution ODI Irrigation Management Network Paper No. 27 pp.35.

6. Ravallion M. and Bidan O. (1994): Measuring Changes in Poverty. A methodological Case Study of Indonesia during Adjustment Period. The World Bank Economic Review. Vol 2, No. 5

7. Adegbite D.A and Ayinde I.A (1998): Family Economic Advancement Programme. A Strategy Towards Rural Poverty Alleviation and Sustainable Food Security in Nigeria Paper Presented at the Nigerian Association of Agric Economist Held at Obafemi Awolowo University Ife, Nigeria April 15-18.

8. World Bank (1996): Nigeria Poverty in the Midst of Plenty. The Challenges of Growth with inclusion Report No. 14733 – UNL

9. Abdulahi M.V. (1992):The Design and Management of Poverty Allevation Projects in Africa. Economic Development Institute of the World Bank Washington DC.

10. Akeredolu-Ale E.O. (1975): Review of Poverty Theories "In Poverty in Nigeria" Proceedings of 1975 Annual Conference of

the Nigerian Economic Society (NES) Ibadan pp.1-5.

11. D'Silva,, E and U. Bysouh (1992):Poverty Allevaiton throguht Agricultureal Projects Economic Development Institute Policy Seminar Report No 130.

12. Federal Office of Statistics (1999a): Poverty Profile for Nigeria 1980 – 1996. Federal Office of Statistics, Abuja, Nigeria.

13. Canagarajah, S: J. Ngwafon and S. Thomas (1995): Evolution of Poverty and Welfare in Nigeria (1985-1992). PHRD West Central Africa department. World Bank Washington DC.

14. Okunmadewa, F(1997): Poverty Alleviation in Nigeria. The International Dimension. Selected Papers from the Nigeria Economic Society's Annual Conference.

15. Omonona, B.T. (2001): Poverty and its Correlates among Rural Farming Households in Kogi State, Nigeria. Unpublished PhD Thesis, Department of Agricultural Economics, University of Ibadan, Ibadan.

16. Federal Office of Statistics (1999b): Poverty and Agricultural Sector in Nigeria: Poverty Incidence of farmers by Region. Federal Office of Statistics, Abuja, Nigeria.

17. Forster, J:J. Greer and E. Thorbecke(1984): A Class of Decomposable Poverty Measures. Econometrica Vol.52 pp 761-766.