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Poverty Reduction among Farmers in Nigeria: The Role of the National Directorate of Employment

[1]K.C. Obike, [1]O.O. Ukoha and [2]C.U. Nwajiuba
[1]Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, P.M.B. 7267, Umuahia, Abia State, Nigeria
[2]Department of Agricultural Economics, Imo State University, P.M.B. 2000, Owerri, Imo State, Nigeria

Abstract: The study investigated the role of the National Directorate of Employment (NDE) in poverty reduction in Nigeria, using Abia State as a case study. Structured questionnaire was used to obtain information from 120 respondents, comprising 60 beneficiaries and 60 non-beneficiaries of the NDE services in the study area. Simple random sampling was adopted. The list of names of beneficiaries of NDE in Abia State and the list of names of farmers who registered with the Agricultural Development Programme (ADP) were the sampling frames for selecting the beneficiaries and non-beneficiaries of NDE services, respectively. The data collected were analyzed by the use of the Foster, Greer and Thobecke (F-G-T) measure of poverty and multiple regression analysis. The result of data analysis shows that credit, farming experience, children education and farm income were significant determinants of poverty for beneficiaries of NDE, while household size, farm income and children education were significant determinants of poverty for non- beneficiaries of NDE services

Key words: Poverty reduction, national directorate, amplement, ADP

INTRODUCTION

Poverty is one of the most difficult challenges facing countries in the developing world. Evidence in Nigeria shows that poverty has been on the increase. For example the number of Nigerians living in poverty increased from 27% in 1980 to 46% in 1985; it declined slightly to 42% in 1992 and increased sharply to 67% in 1996. By 1999, estimates had it that more than 70% of Nigerians lived in poverty (FOS, 1999). The severity of poverty in Nigeria has been worsened with the deteriorating performance of the economy (CBN, 2002). Against this background, the Federal government of Nigeria has vigorously pursued poverty alleviation through the establishment of many schemes and programmes, one of which is the National Directorate of Employment (NDE) established in 1984. Thus, this study examined the impact of the National Directorate of Employment (NDE) in poverty reduction among farmers in Nigeria. The act establishing NDE in 1984 gave her the mandate to provide the following services to farmers: Farmland, farm inputs (fertilizer, farm tools, seedlings and pesticides), organizing and training farmers in modern farm practices, provision of extension services and finally the provision of credit (NDE, 1992).

Despite the existence of abundant literature on poverty, the definition of poverty still remains controversial (Lipton and Gaas, 1996). However, Streeten (1979) defined poverty in very broad terms as being unable to meet "basic needs". Basic needs refer to the physical (food, health care, education, shelter etc) and non- physical requirements of a "meaningful life". Understanding how to alleviate poverty is a central concern of developing economies. Bruno *et al.* (1995) indicated that there is ample evidence that policies designed to foster economic growth significantly reduce poverty, but policies aimed specifically at alleviating poverty are also important. Besley (1997) identified credit and human capital as factors which significantly reduce poverty. Poverty in Nigeria is linked to the problem of employment in its income version and output growth is conceptualized in terms of the productivity of the employed work force (FOS, 1999).

The objectives of this study are to determine the role of the NDE in poverty reduction among farmers in Nigeria, identify factors influencing poverty among farmers and recommend policies for reducing poverty among farmers.

Theoretical framework: Suppose income x of an individual is a random variable with the distribution

Corresponding Author: Obasi Oji Ukoha, Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, P.M.B. 7267, Umuahia, Abia State, Nigeria

function F (x). Let Z denote the poverty line-the threshold income below which one is considered to be poor. Then F (Z) is the proportion of individuals (or families) below the poverty line. This measure widely used as a poverty measure, is called the head count ratio. The head count is a crude poverty index because it does not take account of the income gap among the poor. Such a measure is called the poverty ratio and can be written as:

$$G = \int_0^Z g(x)f(x)dx = \left[\frac{f(z)}{Z}\right] z - \mu^* \qquad (1)$$

Where g (x) = (z-x)/z, f (x) is the density function and U* is the mean income of the poor. The measure G will provide adequate information about the intensity of poverty if all the poor are assumed to have exactly the same income, which is less than the poverty line. But because income is unequally distributed among the poor, G cannot be an adequate measure of the intensity of poverty. More inequality of income among the poor with the mean remaining unchanged should imply greater hardship for the extremely poor in a society. Therefore, the degree of poverty should be higher than that indicated by the measure G. To make G sensitive to the income inequality among the poor, Sen (1973) proposed the following poverty measure:

$$S = \frac{F(Z)\,Z - \mu^*\,(1-G^*)}{Z}$$

Where μ^* is the mean income of the poor and G* is the Gini index of the income distribution among the poor. He arrived at this measure on the basis of weighting and showed that it captures some of the relative deprivation aspect of poverty.

Suppose that the population is divided into mutually exclusive groups according to certain socio-economic and demographic group an individual belongs to. Let f_i (x) be the density function of the ith group. Furthermore, suppose that because of certain government policies, the density function of the ith group changes from f_i (x) to f_i^*(x) and the distributions of the remaining (m-1) groups, $P_i^* > P_i$. Intuitively, one would expect the poverty in the entire population to then increase. For this to happen to an indicator, it must rise (fall) for the entire population. If it rises (falls) for any one group and remains unchanged for all other groups then Sen's poverty measure violates this requirement. A class of additively separable poverty measure is given by:

$$P = \int_0 0(z,x)f(x)dx \qquad (2)$$

Where 0 (z, x) is a function of the poverty line z and income x. P is equal to the head count of poverty.

The probability density function of the entire population may be written as:

$$F(x) = \sum_{i=1}^{m} f\lambda_i f_i(x) \qquad (3)$$

Where fi (x) is the probability function f (x) of the ith subgroup, which has the λ_i proportion of individuals such that

$$\sum_{i=1}^{m} \lambda_i = 1$$

In other words, all the subgroups are mutually exclusive. Multiplying both sides of Eq. 3 by 0 (z, x) and integrating, we obtain

$$P = \sum_{i=1}^{m} \lambda_i P_i \; ; \qquad (4)$$

Where p_i is the poverty measure for the ith subgroup. It implies that total poverty is a weighted average of poverty levels of the subgroups, with the weights proportional to their share in the population. Poverty measure that satisfies Eq. 4 is called "additively decomposable" (Foster *et al*., 1984).

The additive decomposable poverty measures are useful because they allow the assessment of the effects of changes in subgroup poverty on total poverty. If the population is disaggregated according to some socio-economic and demographic characteristics, it is of interest to know how much subgroups contribute to total poverty. Sen's poverty measure is inadequate for analyzing such issues because it is not additively decomposable. Foster *et al*. (1984) proposed a class of poverty measures that are additively decomposable. The F-G-T poverty measure (Foster *et al*., 1984) is given as:

$$P = i/n\sum(1 - yi/PL)^{\alpha}$$

This can also be written as: $P_i = (I\text{-}Y\ i/PL)^{\alpha}$

Where P_i = poverty for the ith individual, Yi = Household income below poverty line, PL= Poverty Line, α = Varying parameter(i.e. from 0-1 and 1-2) provides estimates of the intensity and severity of poverty. For this study,

α = 2 and the poverty line is given by:

$$PL = \frac{1/2(\Sigma HI)}{n}$$

Where PL = Poverty Line
$\sum$HI = Summation of household income
n = Number of households studied.

Review of empirical studies: Sen (1973) viewed poverty as a function of education, health, life expectancy, child mortality, levels of expenditure and consumption. Poverty incidence by educational level of farmers tended to show a consistent pattern over the years. Christen *et al.* (1995) identified credit, financial services and assets as factors which increase investment and reduce poverty. The study by Grootaert and Kanbur (1995) shows that causes of poverty are linked to the status of the labour market, the household size, sex and education. Dollar and Kraay (2000) found that the average income of the poor increased at the same rate as average income overall and that growth was thus good for the poor. Moser and Ichida (2001) showed that in African countries there is a significant link between economic growth and improvements in non-monetary poverty indicators.

MATERIALS AND METHODS

The study area, Abia State, lies within latitude 4-49°N and longitude 5.6-62°E (NRCRI, 2003). Abia State was chosen for the study, because agricultural activities are a major occupation of the inhabitants of the state. The state is endowed with land suitable for growth of various tropical crops and rearing of various types of livestock. The major crops cultivated in the state are maize, rice, wheat, surghum, beans, yam, cassava, oil palm, cocoa, groundnuts, rubber and cotton. Major animals reared include poultry, goats, sheep, cattle and pigs. In this study we focused on crop farmers. The sampling frame was composed of a list of farmers who have benefited from NDE agricultural services and another list made up of farmers who have not benefited. Sixty farmers who benefited from the NDE were selected by simple random sampling from the list of beneficiaries of NDE agricultural services in the state. Another sixty farmers who did not benefit from NDE services were also selected by simple random sampling from registered farmers in Abia State agricultural development programme. The instrument of data collection was a structured questionnaire. The farmers were administered one set of questionnaire, while another set was administered on the NDE directorate. Frequencies, percentages, means, Foster, Greer and Thorbecke (F-G-T) poverty measure and multiple regression were used in data analysis.

To identify the impact of NDE in alleviating poverty among farmers in the study area, we first estimated the poverty line. This was followed by the estimation of the F-G-T poverty measure (where $\alpha = 2$) for farmers who have benefited from NDE, while poverty measure for non-beneficiaries serves as control. Then we regressed the poverty levels of the farmers on the variables which capture the NDE services and other relevant variables.

The implicit form of the poverty function is given as;

$$P_i = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8,) \quad (5)$$

Where, P_i = Poverty level of the ith farmer,

X_1 = Labour employed in all farm enterprises (Man days)
X_2 = Household size (number of persons in the household)
X_3 = Value of variable inputs supplied by NDE (N), (i.e., fertilizers, pesticides, seeds, seedlings and cultivars).
X_4 = Farm land provided by NDE as a percentage of total farm land,
X_5 = Amount spent on children education yearly (N)
X_6 = Annual farm income (N)
X_7 = Farming experience (years)
X_8, = Credit received from NDE (N).

A regression which served as a control was run using data from non-beneficiaries of NDE agricultural services. The variables were the same as in Eq. 5 except that X_3 (variable inputs) and X_4 (farm land) were procured by the farmers themselves. In this regression X_4 represents farm size.

RESULTS AND DISCUSSION

Table 1 shows the comparism of the input levels of beneficiaries and non-beneficiaries of NDE services, while Table 2 shows the average level of inputs used by the farmers provided by NDE. The NDE beneficiaries used more fertilizer than non-beneficiaries with an average input level of 132.5 kg ha^{-1} per farmer, while that of non-beneficiaries was 100 kg ha^{-1}. Furthermore, average farm land of NDE beneficiaries was 1.68 ha compared with 1.45 ha for non-beneficiaries. The value of improved seedlings used by NDE beneficiaries was on the average ₦6,733.3 ha^{-1} whereas the non-beneficiaries used improved seeds valued ₦4,250 ha^{-1}. NDE beneficiaries also enjoyed better credit of ₦7,516 per farmer than the non-beneficiaries, who received ₦2,550 on the average.

Table 1: Average input levels of the beneficiaries and non-beneficiaries of NDE services

Inputs	NDE beneficiaries	Non-beneficiaries
Fertilizer (kg ha^{-1})	132.5	100
Land (ha)	1.68	1.45
Improved seedlings (₦ ha^{-1})	6,733.3	4,250
Credit (₦)	7516	2550
Pesticides(₦ ha^{-1})	13,000	7,250

Source: NDE farm household survey, 2003/2004

Table 2: Level of intervention by NDE (Inputs provided by NDE to farmers (Average per farmer)

NDE Inputs	Average input level
Fertilizer (kg ha^{-1})	98.5
Land (ha)	0.453
Improved seedlings (₦ ha^{-1})	4,985.3
Credit (₦)	6,775
Pesticides (₦ ha^{-1})	8,565

Source: NDE farm household survey, 2003/2004

Table 3: Determinants of poverty among farmers in Abia state

Variable	Non-beneficiaries of NDE services	NDE beneficiaries
Constant	2.072***	2.555***
	(4.785)	(6.835)
Labour (X_1)	-1.185E-02	3.667E-02
	(-1.167)	(1.410)
Household size (X_2)	-4.695E-02*	3.194-02
	(-1.746)	(1.271)
Farm inputs (X_3)	-4.695E-02	-2.623E-02
	(-1.247)	(-0.685)
Land (X_4)	1.057E-02	2.415E-02
	(0.784)	(1.200)
Children education (X_5)	-6.126E-02***	-7.627E-02***
	(-4.047)	(-4.144)
Farm income (X_6)	-0.116**	-0.248 ***
	(-2.524)	(-7.948)
Farming experience (X_7)	-2.441E-02	-8.517E-02**
	(-0.711)	(2.728)
Credit (X_8)	1.919E-02	6.215E-02***
	(1.313)	(3.655)
R^2	0.611	0.858
Adjusted R^2	0.505	0.820
F- Cal	5.782***	22.223***

Note: ***, ** and * mean significant at = 1, 5 and 10% levels, respectively. Figures in parenthesis are t- ratios

Similarly the NDE beneficiaries on the average used pesticides worth ₦13,000 ha^{-1} while non-beneficiaries used pesticides worth ₦7,250 on the average. These results show that the NDE beneficiaries enjoyed better agricultural packages, than the non-beneficiaries.

Table 3 presents the regression results of the determinants of poverty among the farmers in Abia State. It reveals that annual farm income is a crucial factor in alleviating poverty among the NDE beneficiaries and non-beneficiaries. Furthermore, farming experience and credit were significant factors affecting poverty among NDE beneficiaries at the 5% level. The result shows that credit is positively related to poverty, contrary to a *priori* expectation. A possible reason for this is that the very poor farmers have less equity capital and assets and therefore require more credit. However, credit and farming experience were not significant in the poverty equation for non-beneficiaries of NDE services.

RECOMMENDATIONS AND CONCLUSION

Based on the findings of this study the following recommendations have been put forward to improve the role of NDE in poverty reduction among farmers in Nigeria:

- The coefficient of variable farm inputs provided by the NDE to farmers, namely fertilizers, pesticides, improved seedlings, seeds and cultivars was not statistically significant, implying that the inputs were underutilized. The NDE should increase the quantities of the inputs provided to farmers.
- The NDE credit to farmers should be reviewed upwards and closely monitored by the NDE to ensure that it is used for the purpose it is meant for.
- The study revealed that farming experience had a significant effect on poverty reduction among the beneficiaries of NDE agricultural services. Therefore, engagement of experienced farmers in NDE agricultural support programme is recommended.
- The study also shows that farm income is significant for poverty reduction. As such policies that boost income should be put in place by government and the farmers encouraged to adopt the measures.
- The NDE should incorporate policies that will support farmers' children education, because such measures will reduce poverty among farmers.

The NDE plays a vital role in poverty reduction among farmers in Abia State, Nigeria. However, the effectiveness of the NDE in poverty reduction among farmers can be improved if the above recommendations are implemented. This calls for specific roles by the NDE and the government as recommended above. Increased financial empowerment of NDE by the government will no doubt make it more effective in reducing poverty among farmers in Nigeria.

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