2. Poverty in Nigeria: A Gendered Analysis

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Abstract

This paper presents a profile of gendered poverty in Nigeria for the period 1980–1996. It examines the determinants of gendered poverty and specific measures that can be taken to reduce it, using the 1996 National Consumer Survey dataset. The results show that by 1996, the proportion of the rural population living below the poverty line stood at 72%, up from 46% in 1992. All the indices of poverty (headcount, depth, and severity) show that poverty was more pronounced in female-headed households in 1980. However, this picture changed in 1985, when male-headed households demonstrated a higher incidence of poverty up until 1996 – the only exception being for the year 1992. Our empirical analysis shows that an increase in the female household head's age significantly reduces poverty, although this relationship is nonlinear, with further increases in age leading to less than proportionate decreases in rural poverty. Household size is positively and significantly related to poverty for both male- and female-headed households. Also, having primary, secondary, and post-secondary levels of education (in increasing order of magnitude) significantly decreases the level of poverty in both male- and female-headed households, but with greater magnitude for the latter. The analysis shows that the variable "no occupation" significantly reduces gendered poverty in Nigeria, though it increases poverty for male-headed households, while production and "other" occupations in particular appear to significantly increase poverty in female-headed households. Location is also a factor in explaining gendered poverty in Nigeria. Residence in the Central, South-east, and South-south zones of Nigeria has a statistically significant negative effect on the probability of being poor in male-headed households, while rural location statistically increases it. Contrariwise, the results with respect to the female-headed households show that location in the Central and South-west zones and in the rural areas increases the probability of being poor. Based on these results, we suggested a number of policy interventions necessary to reduce gendered poverty in Nigeria.

Key words: *Feminized poverty, gendered poverty, poverty profile, poverty headcount, poverty depth, poverty severity*

Résumé

Cet article présente un profil de la pauvreté sexospécifique au Nigeria pour la période 1980-1996. Il examine les déterminants de la pauvreté selon le genre et les mesures pouvant contribuer à sa réduction, en se fondant sur les données de l'enquête nationale auprès des consommateurs de 1996. Les résultats montrent

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qu'en 1996, le pourcentage de la population rurale vivant sous le seuil de pauvreté était de 72 %, contre 46 % en 1992. Tous les indices de la pauvreté (incidence dans la population, portée et gravité) révèlent qu'en 1980, elle était plus prononcée dans les ménages dirigés par une femme. Mais en 1985, la situation a changé, les ménages dirigés par des hommes affichant une plus grande incidence de pauvreté jusqu'en 1996, à la seule exception de l'année 1992. D'après notre analyse empirique, l'augmentation de l'âge des femmes chefs de ménage réduit considérablement la pauvreté, bien que cette relation soit non linéaire. En fait, au-delà d'un certain niveau, l'augmentation de l'âge entraîne une baisse moins proportionnelle de la pauvreté rurale. La taille des ménages est positivement et considérablement liée à la pauvreté des ménages, qu'ils soient dirigés par un homme ou par une femme. En plus, le fait d'avoir reçu une éducation primaire, secondaire ou post secondaire (dans un ordre croissant) réduit de beaucoup le niveau de pauvreté dans les familles ayant à leur tête un homme ou une femme, l'ordre de grandeur étant plus élevé dans ce dernier cas. L'analyse montre que la variable « aucune occupation » réduit énormément la pauvreté sexospécifique au Nigeria, bien qu'elle augmente plus dans les familles monoparentales dirigées par un homme ; alors que la production et d'« autres » occupations semblent particulièrement aggraver la pauvreté dans celles dirigées par une femme. Le lieu de résidence est également l'un des facteurs qui expliquent la pauvreté sexospécifique au Nigeria. Statistiquement, le fait de résider dans le centre, le sud-est et l'extrême sud du pays a un effet très négatif sur la probabilité pour un ménage dirigé par un homme d'être pauvre, tandis que la résidence en milieu rural accroît statistiquement cette probabilité. Au contraire, les résultats en ce qui concerne les familles dirigées par une femme montrent que le fait de résider dans le centre, le sud-ouest ou les zones rurales du pays augmente la probabilité de pauvreté. Au regard de ces résultats, nous avons proposé des actions à entreprendre pour réduire la pauvreté sexospécifique au Nigeria.

Mots clés : *pauvreté féminisée, pauvreté sexospécifique, profil de pauvreté, incidence de la pauvreté, portée de la pauvreté, gravité de la pauvreté.*

1. INTRODUCTION

The feminization of poverty – a phenomenon that is said to exist if poverty is more prevalent among female-headed households than among male-headed households – has been the focus of many recent studies. Reasons advanced for the existence of feminized poverty include discrimination against women in the labor market; or that women tend to have lower education than men and therefore are paid lower salaries. However, at a time when markets and states are undergoing dramatic and rapid changes,

"feminized poverty" may deepen and strengthen gender inequalities. As Bastos *et al.* (2009) have noted, poverty is not a gender-neutral condition, as its incidence is greater among women than men; furthermore, women and men experience poverty in distinctive ways.

In most countries, women constitute half of the population. Therefore, any development process that ignores the life-chances of half the population cannot address the problem of poverty and the crisis of sustainability. This is why at this critical juncture of global change, it is a necessity for the development process to fully incorporate an agenda for women's empowerment by including women's realities in the fullest sense. Thus, an understanding of gendered poverty is a precondition for effective pro-poor development strategies. The determinants of gendered poverty are not only complex but also multidimensional, involving, among other things, age, location, education, and occupation. To understand gendered poverty and to be able to delineate policy options, we need to study these dimensions. Thus, this paper analyzes the incidence of poverty in Nigeria by gender, its causes, and what specific measures can be taken to reduce it.

The remainder of the paper is organized as follows. Section 2 presents the methodological issues in Nigeria. Section 3 presents the results, discusses the profile of poverty in Nigeria by gender using the 1980–96 nationwide survey results, and presents the empirical estimates of the determinants of gendered poverty. Section 4 concludes with the policy implications.

2. METHODS

2.1 Data sources

The data used in this study derive from the National Integrated Survey of Households (NISH) of Nigeria. Under the NISH, the National Bureau of Statistics (NBS formerly the Federal Bureau of Statistics (FOS)) conducted four Consumer Expenditure Surveys in 1980, 1985, 1992, and 1996 respectively. These surveys provide data that can be used to address in some detail issues of household and individual welfare. The National Consumer Surveys (NCSs), which are supplemental modules of the NISH, have been part of NBS activities for a number of decades, the first taking place in 1953. Surveys were conducted on an ad hoc basis until 1980, when the first NCS was conducted as part of NISH. In 1985, an enlarged survey was carried out, while others followed in 1992 and 1996.

The NISH program is run in line with the United Nations Household Survey Capability Program. The design of the NCSs follows the general NISH design. Each NCS covers all the states in the Federation, including the Federal Capital Territory (Abuja). In each state, 120 Enumeration Areas (EAs) are covered annually, with 10 EAs randomly allocated to each month of the survey. From the selected EAs, a sample of households (10) is covered each month for the General Household Survey (GHS), with five households subsampled for the NCS. A national household sample of 10,000 is aimed at. However, by 1996, with the number of states increasing to 30, the sample size was increased (see Okojie *et al.*, 2001; World Bank, 1998). The actual figures for data sizes used for this paper are provided in Table 1.

Table 1: Sample sizes for NCS datasets

Year	Sample Design	Urban		Rural		Total
		No.	%	No.	%	
1980	Three Stages – towns, EAs, HHs	5,582	54.3	4,698	45.7	10,280
1985	Two Stages – EAs, HHs	5,273	56.6	4,044	43.4	9,317
1992	Two Stages – EAs, HHs	3,978	41.0	5,719	59.0	9,697
1996	Two Stages – EAs, HHs	3,037	21.1	11,358	78.9	14,395

Notes: HHs = Households; EAs = Enumeration Areas

Source: Federal Office of Statistics (now National Bureau of Statistics), 1999, data files.

2.2   Poverty Indices

The Pα index measures proposed by Foster *et al.* (1984), which can be used to generate the headcount ratio ($\alpha = 0$), as well as the depth ($\alpha = 1$), and severity ($\alpha = 2$) of poverty, were used in this paper. The simplest and most common measure of poverty is the headcount ratio or the "incidence of poverty." The poverty headcount is the number of people in a population who are poor, while the poverty headcount ratio (H) is the fraction who are poor. That is:

$$H = (q/n) \qquad (1)$$

Where:

q = the number below the poverty line;
n = the population size

The poverty headcount and the headcount ratio are only concerned with the number of people below the poverty line. They are insensitive to the depth or severity of poverty and to changes below the poverty line. That is, they do not satisfy the axioms of "strong monotonicity" or "distributional sensitivity." However, the headcount ratio is the most commonly used measure of poverty because of its simplicity and ease of calculation (Fields, 1997).

The Pα index proposed by Foster *et al.* (1984) incorporates some degree of concern about poverty through a "poverty aversion" parameter α.

The Pα class measure can be written as:

$$P\alpha = \frac{1}{n} \sum_{i=1}^{q} \frac{(Z - Y_i)^{\alpha}}{Z}. \qquad (2)$$

Where:

Z = poverty line
q = number of persons/households below the poverty line
Y = income of the person/household
α = the FGT parameter which takes the value 0, 1, 2 depending on the degree of concern about poverty
Z - Y = is the proportionate shortfall below the poverty line

This figure is raised to power α. By increasing the value of α, the "aversion" to poverty is measured. When there is no aversion to poverty, that is α = 0, the index is simply:

$$P\alpha = \frac{1}{n}(q) = q/n = H. \qquad (3)$$

H is the headcount ratio, which measures the incidence of poverty. When $\alpha = 1$, $P\alpha$ measures the depth of poverty; when $\alpha = 2$, $P\alpha$ measures the severity of poverty.

The $P\alpha$ index satisfies the Sen transfer axiom, which requires that when income is transferred from a poor to a richer household, measured poverty increases. Another advantage of the $P\alpha$ measure is that it is decomposable by population subgroups. Thus, the overall measure of poverty can be expressed as the sum of group measures weighted by the population share of each group. That is,

$$P\alpha = \sum_{j=1} K_j P\alpha_j. \qquad (4)$$

Where:

j = 1, 2, 3, ... m groups,
K_j = population share of each group,
$P\alpha_j$ = the poverty measure of each group.

From this, the contribution of each group C_j to overall poverty can be calculated as follows:

$$C_j = \frac{K_j P\alpha_j}{P\alpha}. \qquad (5)$$

This property of the index implies that when any group becomes poorer, aggregate poverty will increase. In this paper, the $P\alpha$ index is used: P_0 (the headcount or poverty incidence), P_1 (the depth of poverty), and P_2 (the severity of poverty) were calculated. The contributions of various subgroups in the population to overall rural poverty were also calculated.

2.3   Analysis

In the paper, the nationally defined poverty line is used. Total real per capita expenditure was used as a proxy for the standard of living of households interviewed. Households were classified as poor or nonpoor in relation to their level of total expenditure (food or nonfood). To do this, two lines were set relative to the standard of living in the country: a moderate poverty line equal to two-thirds of the mean per capita expenditure, and a core poverty

line equal to one-third of the mean per capita expenditure. Households were then classified into one of three groups – core (extreme) poor, moderately poor, and non-poor – as determined by these poverty lines. To derive poverty lines for 1996, a raising factor equal to the ratio of CPI (Consumer Price Index) – 28.56 – for the year relative to that for 1985 was used.

Multivariate analysis, using a logistic regression in accordance with the basic principles of discrete choice models on the 1996 dataset were used. In order to explore the correlates of poverty by gender with the variables thought to be important in explaining poverty, a logistic regression model was estimated, with the dependent variable being the dichotomous variable of whether the Nigerian household is poor (1) or not poor (0). The explanatory variables considered important in the analysis of poverty by gender (household is male- or female-headed) were: personal characteristic (age and its square), demographic characteristic (household size and its square), educational attainment (primary, secondary, and post-secondary), occupation (professional, administrative, clerical, sales, services, agriculture/ farming, production, manufacturing, and "other"), geographical residence (the zones being: north-east, north-west, central, south-east, south-west, and south-south), and location (urban or rural).

Indeed, it is argued that poverty increases with old age as the productivity of the individual decreases, whereas the individual has few savings to compensate for this loss of productivity and income. This position is consistent with those of Gang *et al.* (2002), Datt and Jolliffe (1999), and Rodriguez (2002).

The literature is also replete with evidence that large households are associated with poverty (World Bank, 1991a, 1991b, 1996; Lanjouw and Ravallion, 1994; Cortes, 1997; Székely, 1998; Anyanwu, 1997, 1998a; and Gang *et al.*, 2002). The absence of well-developed social security systems and low savings in developing countries (especially those in Africa) tends to increase fertility rates, particularly among the poor. This is one of the rationales for parents to increase their number of children, to safeguard support from them when they grow old. Also, as Schultz (1981) indicated, high infant mortality rates among the poor tends to provoke excess replacement births or births to insure against high infant and child mortality, which will increase household size.

In addition, the literature shows that education increases the stock of human capital, which in turn increases labor productivity and wages. Since labor is by far the most important asset of the poor, increasing the education of the poor will tend to reduce poverty. In fact, there appears to be a vicious

cycle of poverty, in that low education leads to poverty and poverty leads to low education (see also Bastos *et al.*, 2009). The poor are unable to afford education, even if it is provided publicly, because of the high opportunity cost that they face. All too often the poor cannot attend school because they have to work to survive. Indeed, Palmer-Jones and Sen (2003) found that rural households in India, where the primary wage-earner has received no formal education or only up to primary level, are more likely to be poor than households whose earning members have attended secondary school and beyond.

It is hypothesized that occupation has a high correlation with poverty because occupations that require low amounts of capital, either human or physical, will be associated with low earnings and therefore with higher poverty rates. Location of residence also matters. In particular, due to more job opportunities in urban areas, poverty tends to be lower in urban than rural areas.

Thus, in the model, the response variable is binary, taking only two values, 1 if the Nigerian household is poor, 0 if not. The probability of being poor depends on a set of variables listed above and denoted as x so that:

$$
\begin{aligned}
&\mathrm{Pr}ob(Y=1)=F(\beta'x) \\
&\mathrm{Pr}ob(Y=0)=1-F(\beta'x)
\end{aligned}
\tag{6}
$$

Using the logistic distribution we have:

$$
\begin{aligned}
\mathrm{Pr}ob(Y=1)&=\frac{e^{\beta'x}}{1+e^{\beta'x}} \\
&=\Lambda(\beta'x)
\end{aligned}
\tag{7}
$$

where Λ represents the logistic cumulative distribution function. Then, the probability model is the regression:

$$
\begin{aligned}
E[y/x]&=0[1-F(\beta'x)]+1[F(\beta'x)] \\
&=F(\beta'x).
\end{aligned}
\tag{8}
$$

The results are meant to strengthen and clarify the descriptive analysis. To gauge the determinants of gendered poverty in Nigeria, a separate estimation was made by gender of household head. The dependent variable is defined as 1 if average per capita household expenditure is below the poverty line and 0 if it is above the poverty line (see also Anyanwu, 1997, 1998b, 2005; Anyanwu and Erhijakpor, 2010; Rodriguez, 2002; Ghazouani and Goaied, 2001; and Gang *et al.*, 2002).

Since the logistic model is not linear, the marginal effects of each independent variable on the dependent variable are not constant but are dependent on the values of the independent variables (Greene, 2003). Thus, to analyze the effects of the independent variables upon the probability of being poor, we looked at the change of odds ratio as the dependent variables change. The odds ratio is defined as the ratio of the probability of being poor divided by the probability of not being poor. This is computed as the exponent of the logit coefficients ($e^{ß}$) and can be expressed in percentage as [$100(e^{ß}-1)$].

3.   RESULTS

3.1   Poverty profile in Nigeria by gender

The indices of poverty used in this section are headcount index (incidence), poverty gap index, and poverty severity index. Table 2 shows the distribution of headcount poverty by rural–urban residence, zone, and gender of household head. In 1980, the incidence of poverty was higher in female-headed households. Since 1985, however, poverty has been lower in female-headed households than in male-headed households. The incidence of poverty by rural–urban residence follows national trends. Poverty is higher in rural households, whether headed by a male or female. In 1996, the incidence of poverty was about the same in both male and female-headed households in urban areas. The incidence of poverty varies widely between zones. In 1980, poverty was higher in female-headed households in all the six zones. The incidence of poverty was generally higher in the Northern zones in both male and female-headed households.

Table 2: Poverty headcount by gender of household head and zone

Region	1980		1985		1992		1996	
	Male	Female	Male	Female	Male	Female	Male	Female
	%		%		%		%	
All Nigeria	26.9	29.1	47.4	38.6	43.1	39.9	62.7	59.9
Urban	17.2	17.2	38.7	30.6	37.8	34.8	59.4	59.7
Rural	28.1	30.5	52.6	42.9	46.2	44.1	72.6	60.4
ZONE:								
North-East	34.9	40.6	56.3	45.2	54.5	39.1	68.4	53.1
North-West	37.6	39.1	52.3	46.7	37.0	21.6	68.6	62.3
Central	31.6	43.9	51.2	47.1	45.8	49.4	66.8	60.3
South-East	9.1	26.4	31.8	23.2	41.5	38.4	68.3	61.6
South-West	12.9	16.9	39.9	32.4	47.8	44.6	67.8	59.9
South-South	13.3	13.9	45.8	54.9	42.1	35.5	66.9	63.3

Source: National Consumer Surveys 1980, 1985, 1992 and 1996.

Table 3 shows the poverty headcount by gender and characteristics of household heads.

Table 3: Poverty headcount by gender and characteristics of household head

Region	1980		1985		1992		1996	
	Male	Female	Male	Female	Male	Female	Male	Female
Education:								
None	29.2	33.6	52.7	42.5	52.7	39.2	75.3	63.8
Primary	25.7	16.9	49.8	49.8	56.9	45.4	61.3	55.3
Secondary	16.8	32.1	41.4	33.0	70.3	36.6	53.3	56.0
Post-secondary	20.7	26.1	27.7	13.5	74.0	22.8	47.9	44.7

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Table 3 (cont.)

Region	1980		1985		1992		1996	
	Male	Female	Male	Female	Male	Female	Male	Female
Occupation:								
Prof.-Technical	12.0	52.1	47.2	33.4	35.8	33.4	53.4	47.8
Administrative	1.1	0.0	73.4	30.9	23.9	0.0	24.2	0.0
Clerical	8.5	31.1	42.9	36.9	35.0	25.5	62.3	58.3
Sales	15.7	12.2	48.8	41.7	31.5	39.0	57.7	60.4
Services	21.0	24.7	49.7	42.2	37.4	41.1	76.7	42.6
Agriculture	31.7	29.0	47.3	34.2	48.4	40.4	73.1	61.1
Transport	15.4	70.2	41.4	38.1	38.3	55.6	65.1	69.8
Manufacturing	8.6	86.8	46.6	76.4	33.1	58.6	50.8	0.0
Others	1.6	100.0	47.9	76.6	42.1	45.6	62.7	62.8
Apprentice/Student	13.6	55.1	47.8	40.1	41.6	46.6	53.3	45.3
Household Size								
1	0.1	0.6	0.6	0.9	2.7	3.3	9.1	17.8
2-4	8.5	10.7	19.3	19.3	17.1	29.7	50.9	54.4
5-9	29.2	37.9	50.6	49.5	44.8	52.2	74.7	81.2
10-20	50.6	60.2	70.9	76.4	65.5	79.9	88.9	78.3
20+	73.2	100.0	74.0	100.0	93.4	39.9	95.1	-

Source: National Consumer Surveys, 1980, 1985, 1992, 1996.

Education: In 1980, poverty was lower in households of female heads with primary education; otherwise, poverty was higher in female-headed households. In other years, female-headed households recorded lower levels of poverty, although female-headed households with secondary education recorded a higher incidence of poverty than their male counterparts in 1996. In general, poverty declined the higher the level of education of the household head.

Occupation: The two occupational areas in which women are to be found in substantial numbers are agriculture (rural women) and sales activities.

Women are found in fewer numbers in clerical and professional-technical occupations. Table 3 shows that while only 12.2% of women in sales occupations were poor in 1980, this had risen to 60.4% by 1996. The majority of urban women in Nigeria are engaged in sales activities. Similarly, the incidence of poverty among women in agricultural occupations increased from 29.0% in 1980 to 61.1% in 1996. Over the same period, the incidence of poverty among female heads in professional-technical occupations declined from 52.1% in 1980 to 47.4% in 1996, probably because by then women had access to better jobs because of higher educational attainment.

Household Size: For all survey periods, poverty increased with household size in both male and female-headed households, but more so in the latter. The incidence of poverty was very high in households with more than nine members.

Our analysis of national levels of poverty using these three indices of poverty showed that the incidence of poverty increased sharply between 1980 and 1985, declined slightly between 1985 and 1992, but increased sharply between 1992 and 1996 (see Table 4). The proportion of the population living in poverty based on the headcount index rose from 27% in 1980 to 46% in 1985, it declined slightly to 42% in 1992 and increased sharply to 67% in 1996. The gap and severity indices reflected a similar trend during this period. For example, the depth of poverty increased between 1980 and 1985, and hardly changed from 1985 to 1992. However, a spike in this index can be noticed between 1992 and 1996, when it increased from 16.3% to 30.4%, which implies that the average shortfall (gap) between the poor households' expenditure levels and the poverty line nearly doubled between 1992 and 1996. Similarly, the average poverty gap became more unequally distributed among the poor in 1996 compared to the other years. For example, it rose from 4.3% in 1980 to 17.4% in 1996.

In terms of gender distribution of poverty, all the indices showed that poverty was more pronounced in the female-headed household in 1980. For example, the headcount, gap and severity indices in 1980 were 29.1%, 11.1%, and 6.6% respectively as against 26.9%, 8.8%, and 4.1% respectively for the male-headed households (Table 4). However, this picture changed from 1985–96, when male-headed households demonstrated a higher incidence of poverty. The only exception was in 1992, when the female-headed households marginally demonstrated more depth of poverty (16.9% as against 16.4%) than the male-headed households. Tables 5 to 7 show the gendered distribution and distribution of poverty from 1980 to 1996.

Table 4: Headcount, depth and severity of poverty by sector and household head characteristics

Variable	1980			1985			1992			1996		
	Head Count	Depth	Severity	Head count	Depth	Severity	Head count	Depth	Severity	Head count	Depth	Severity
National	0.271	0.090	0.043	0.463	0.163	0.078	0.427	0.164	0.086	0.669	0.304	0.174
Urban	0.172	0.052	0.023	0.378	0.121	0.054	0.375	0.135	0.067	0.593	0.263	0.150
Rural	0.283	0.095	0.046	0.514	0.189	0.093	0.460	0.183	0.098	0.717	0.330	0.189
Male-Headed	0.269	0.088	0.041	0.473	0.167	0.080	0.431	0.164	0.086	0.677	0.308	0.177
Female Headed	0.291	0.110	0.066	0.386	0.135	0.065	0.399	0.169	0.095	0.599	0.267	0.150
Household size												
1 person	0.002	0.000	0.000	0.006	0.001	0.000	0.028	0.017	0.014	0.120	0.034	0.015
2–4 persons	0.088	0.019	0.007	0.193	0.046	0.017	0.194	0.057	0.026	0.515	0.197	0.100
5–9 persons	0.300	0.089	0.039	0.504	0.167	0.075	0.453	0.161	0.080	0.750	0.348	0.200
10–20 persons	0.510	0.186	0.089	0.713	0.291	0.153	0.661	0.292	0.163	0.885	0.472	0.301
20+ persons	0.809	0.605	0.481	0.748	0.474	0.344	0.933	0.605	0.420	0.950	0.664	0.489
Educ. Level												
No education	0.296	0.099	0.048	0.513	0.187	0.091	0.464	0.181	0.097	0.741	0.349	0.203
Primary	0.248	0.081	0.037	0.497	0.177	0.086	0.433	0.165	0.084	0.605	0.262	0.145
Secondary	0.185	0.064	0.035	0.406	0.132	0.060	0.303	0.112	0.058	0.535	0.225	0.123
Post Secondary	0.214	0.059	0.021	0.263	0.077	0.034	0.257	0.084	0.042	0.478	0.181	0.096

.../cont.

Table 4 (cont.)

Variable	1980			1985			1992			1996		
	Head Count	Depth	Sever-ity	Head count	Depth	Sever-ity	Head count	Depth	Sever-ity	Head count	Depth	Sever-ity
Age group												
15-24	0.162	0.071	0.039	0.253	0.099	0.050	0.286	0.103	0.052	0.389	0.184	0.112
22-34	0.177	0.048	0.021	0.334	0.101	0.044	0.285	0.103	0.052	0.533	0.217	0.115
35-44	0.266	0.103	0.056	0.459	0.154	0.070	0.421	0.156	0.082	0.655	0.293	0.166
45-54	0.272	0.083	0.035	0.496	0.177	0.084	0.457	0.181	0.095	0.721	0.338	0.196
55-64	0.396	0.128	0.056	0.557	0.209	0.106	0.482	0.190	0.104	0.714	0.327	0.189
65+	0.287	0.077	0.033	0.491	0.195	0.101	0.494	0.189	0.098	0.704	0.334	0.198

Source: National Consumer Surveys 1980, 1985, 1992, and 1996.

Table 5: Distribution of poverty by sector and household head: Head Count Index (%)

Variable	1980			1985			1992			1996		
	Dist.	Index	Cont.	Dist.	Index	Cont.	Dist.	Index	Cont.	Dist.	Index	Cont.
Urban	10.4	17.2	6.6	37.5	37.8	30.6	38.3	37.5	33.5	38.9	59.4	34.6
Rural	89.6	28.3	93.4	62.5	51.4	69.4	61.7	46	66.5	61.1	71.7	65.4
Male-Headed	89.9	26.9	89.2	88.0	47.3	90.0	89.6	43.0	90.3	89.9	67.7	91.0
Female Headed	10.1	29.1	10.8	12.0	38.6	10.0	10.4	39.9	9.7	10.1	60.0	9.0

Notes: Dist. = Weighted population share

Cont. = Contribution to total poverty

Source: National Consumer Surveys 1980, 1985, 1992 and 1996.

Table 6: Distribution of poverty by sector and household head: Gap Index (%)

Variable	1980			1985			1992			1996		
	Dist.	Index	Cont.	Dist.	Index	Cont.	Dist.	Index	Cont.	Dist.	Index	Cont.
Urban	10.4	5.2	6.0	37.5	12.1	27.7	38.3	13.5	31.3	38.9	26.4	33.8
Rural	89.6	9.5	94.0	62.5	18.9	72.3	61.7	18.3	68.7	61.1	33.0	66.2
Male-Headed	89.9	8.8	87.7	88.0	16.7	90.0	89.6	16.4	89.3	89.9	30.9	91.1
Female Headed	10.1	11.1	12.3	12.0	13.5	10.0	10.4	17.0	10.7	10.1	26.8	8.9

Notes: Dist. = Weighted population share

Cont. = Contribution to total poverty

Source: National Consumer Surveys 1980, 1985, 1992 and 1996.

Table 7: Distribution of poverty by sector and household head: Severity Index (%)

Variable	1980			1985			1992			1996		
	Dist.	Index	Cont.	Dist.	Index	Cont.	Dist.	Index	Cont.	Dist.	Index	Cont.
Urban	10.4	2.3	5.5	37.5	5.4	26.0	38.3	6.7	29.8	38.9	15.1	33.7
Rural	89.6	4.6	94.5	62.5	9.3	74.0	61.7	9.8	70.2	61.1	18.9	66.3
Male-Headed	89.9	4.1	84.6	88.0	8.0	90.1	89.6	8.6	88.6	89.9	17.7	91.3
Female Headed	10.1	6.6	15.4	12.0	6.5	9.9	10.4	9.5	11.4	10.1	15.0	8.7

Notes: Dist = Weighted population share

Cont = Contribution to total poverty

Source: National Consumer Surveys 1980, 1985, 1992, and 1996.

3.2 Multivariate Analysis: determinants of gendered poverty in Nigeria

Our empirical results are summarized in Table 8. These results provide strong support for earlier descriptive analysis.

The results for male-headed households show that the coefficients of household size; possessing primary, secondary and post-secondary levels of education; working in professional, clerical, sales, services, agricultural, production, manufacturing, and "other" occupations; and dwelling in Central, South-east and South-south zones are significantly different from zero at different confidence levels. The variables that are positively correlated with the probability of being poor in male-headed households in Nigeria are: size of the household; working in professional, clerical, sales, services, agricultural, production, manufacturing, and "other" occupations; and living in the rural areas. The variables that are negatively correlated with the probability of being poor in male-headed households are: possessing primary, secondary, and post-secondary levels of education (coefficients are in increasing order), and living in the Central, South-east and South-south zones of the country.

On the other hand, for female-headed households, the coefficients of age (and squared); household size; possessing primary, secondary, and post-secondary levels of education; being in production and "other" occupations; and dwelling in the Central and South-west zones are significantly different from zero at different confidence levels. The variables that are positively correlated with the probability of being poor in female-headed households in Nigeria are: quadratic of age; size of the household; working in production and "other" occupations; and living in the Central and South-west zones of the country. The variables that are negatively correlated with the probability of being poor are: age; and attaining primary, secondary, and post-secondary levels of education.

Table 8: Determinants of poverty in Nigeria by gender, 1996

Variables	Male-headed Household		Female-headed Household	
	(1) Coefficient	z-value	**(2)** Coefficient	z-value
Age				
Age	-0.657	-0.43	-10.288	-2.70*
Age squared	0.097	0.48	1.367	2.72*
Household size				
HH size	2.043	14.17**	1.938	7.13**
HH size squared	-0.084	-1.53	-0.012	-0.08
Education				
Primary	-0.214	3.30*	-0.413	-2.93*
Secondary	-0.397	5.04**	-0.854	-4.24**
Post Secondary	-0.838	7.19**	-1.372	-3.72*
Occupation				
Professional	2.150	2.72*	0.645	1.12
Admin /Clerical	2.246	2.85*	0.171	0.28
Sales	1.864	2.37*	0.564	1.21
Services	2.506	3.09*	…	…
Agriculture	2.052	2.61*	0.252	0.53
Production	2.349	2.90*	…	…
Manufacturing	1.904	2.38*	1.294	2.24*
Others	2.444	3.07*	1.248	2.42*
Zones				
North-east	-0.131	-1.43	0.315	-0.54
North-west	0.044	0.46	…	…
Central	-0.550	-6.52**	1.273	2.31*
South-east	-0.899	-9.22**	0.114	0.21
South-west	…	…	0.936	1.70
South-south	-0.582	-6.32**	0.167	0.30

…/cont.

Table 8 (cont.)

Variables	Male-headed Household		Female-headed Household	
	(1)		**(2)**	
	Coefficient	**z-value**	**Coefficient**	**z-value**
Location Urban Rural	… 0.419	… 6.03**	… 0.434	… 3.07*
Constant	-3.141	-1.06	16.298	2.27*
	Pseudo R^2 = 0.2015 LR chi2(21) = 3283.99 Prob > chi2 = 0.0000 Log likelihood = -6508.1152 N = 11940		Pseudo R^2 = 0.2200 LR chi2(19) = 605.28 Prob > chi2 = 0.0000 Log likelihood = -1073.1524 N = 1989	

 ** Significant at 1% level; * Significant at 5% level;

… Variable not included because it was not found to be statistically significant at the univariate analysis stage or because its effect on poverty in female- and male-headed households was similar.

Source: National Consumer Survey data of 1996.

3.3   Marginal effects and odds ratios

Table 9 shows the odds ratios for each independent variable for the gendered results reported in Table 8.

Table 9: Odds ratio estimates of the determinants of poverty in Nigeria by gender, 1996

Variables	Male-headed Household	Female-headed Household
Age Age Age squared	0.518 1.101	0.00003* 1.924*

…/cont.

Table 9 (cont.)

Variables	Male-headed Household	Female-headed Household
Household size		
HH size	7.714**	6.945**
HH size squared	0.919	0.988
Education		
Primary	0.807**	0.662*
Secondary	1.487**	0.426**
Post Secondary	2.312**	0.254*
Occupation		
Professional	8.585*	1.906
Admin/ Clerical	9.450*	1.187
Sales	6.449*	1.758
Services	12.256*	…
Agriculture	7.783*	1.287
Production	10.475*	3.647*
Manufacturing	6.713*	…
Others	11.519*	3.483*
Zones		
North-east	0.877	1.370
North-west	0.957	…
Central	0.577**	3.572*
South-east	0.407**	1.121
South-west	…	2.550
South-south	0.559**	1.182
Location		
Urban	…	…
Rural	1.520**	1.543*

** Significant at 1% level; * Significant at 5% level.

… Variable not included because it was not found to be statistically significant at the univariate analysis stage or because its effect on poverty in female- and male-headed households was similar.

Source: Estimations from National Consumer Survey data of 1996.

As can be seen from Table 9, the quadratic age of male and female household head; household size (for all estimations); secondary and post-secondary education for male-headed households; professional, clerical sales, services, agricultural, production and "other" occupations for male-headed households; professional, clerical, sales, agricultural, production and "other" occupations for female-headed households; dwelling in rural areas (for both estimations); and dwelling in the North-east, Central, South-east, South-west, and South-south in female-headed households have odds ratios greater than one, which means that these variables are positively correlated with the probability of being poor. Those with odds ratios lower than one are negatively correlated with the probability of being poor.

Thus, from the gendered results, increases in the age of the female household head significantly reduce poverty, though this relationship is nonlinear, with further increases in age leading to less than proportionate decreases in rural poverty. We also find that household size is positively and significantly related to poverty, for both male- and female-headed households. Our results indicate that having primary, secondary, and post-secondary levels of education (in increasing order of magnitude) significantly decreases the level of poverty in both male- and female-headed households, but with greater magnitude for the latter. Our results show that no occupation significantly reduces gendered poverty in Nigeria though most increase it for male-headed households, while production and "other" occupations in particular appear to significantly increase poverty in female-headed households. Further, our results indicate that location matters in explaining gendered poverty in Nigeria. Location in the Central, South-east, and South-south zones of Nigeria has a statistically significant negative effect on the probability of being poor in male-headed households, while a rural location statistically increases it. Contrariwise, the results with respect to the female-headed households show that location in the Central and South-west zones and in the rural areas increases the probability of being poor.

4.   DISCUSSION AND POLICY IMPLICATIONS

Our results and analyses above suggest that policy interventions are necessary to reduce poverty in Nigeria. First, there is a need to focus on gender-based poverty interventions (World Bank, 1995; UNDP, 2005), especially among female-headed households in Nigeria. Thus, in Nigeria, "headship" is a useful criterion for targeting anti-poverty interventions.

Second, given that poverty increases with the number of household members (or family size) in both male- and female-headed households, there is an urgent need to intensify family planning services and related activities in Nigeria, so as to improve knowledge, acceptance, and practice (KAP) of family planning. This will involve not only increased financial outlay but also research on fertility determinants as well as decentralized planning, delivery, and supervision of family planning services (Anyanwu *et al.*, 1998b, 1998c).

Third, given the finding that incremental education reduces poverty in Nigeria for both male- and female-headed households, policymakers need to tackle this challenge head on. The literature has identified a number of possible policy instruments to deal with poverty, including conditional cash transfers, guaranteed employment schemes, labor market training, greater access to health, nutrition and education through increased social investments, affirmative action, and land and property rights reforms, especially to benefit rural dwellers (particularly women). Evidence has shown that conditional cash transfers and expenditures (for education, for example) are effective levers of poverty reduction and redistribution (see Levy, 2006; Kanbur, 2008; Anyanwu and Erhijakpor, 2010). Improving access to education, for example, can reduce poverty both by increasing individual productivity and by facilitating the movement of poor people from low-paid jobs in agriculture to higher-paid jobs in industry and services. More importantly, public spending on education, when targeted toward the poor, can produce a double dividend, reducing poverty in the short run and increasing the chances for poor children to access formal jobs and thus break free from the intergenerational poverty trap. Increasing educational levels (and its quality) should be accompanied by a strong investment climate to ensure that productive jobs are created for the newly educated.

Fourth, the above policy interventions have become imperative, given that occupations overall are poverty accelerating, especially in male-headed household. This can be explained by the vicious cycle of poverty given low capital, inadequate inputs, and lack of access to modern techniques both in the farms and other nonfarm occupations. Investing in the agricultural sector to reduce poverty should be a matter of great priority. There is also need to encourage productivity and access in both farm and nonfarm occupations through direct input supply, strengthening and expanding of agricultural research and extension services, adapting agricultural technology and extension services to poor farmers, and by improving physical infrastructure such as electricity and other forms of energy supply, roads, railroads, airports, ICT, and irrigation. At the same time, a diversification of income sources should be encouraged. In the same vein, the government

should design socioeconomic policies to promote long-term employment. Government can assist households through increased and broadened support to National Agricultural and Rural Development Banks, Community Banks and Employment Creation Funds, for onlending to small-scale enterprises. Further, school curricula should be oriented towards skills acquisition, among other measures.

Lastly, since poverty in Nigeria does have important spatial implications, geographic targeting (especially in the Central and South-west zones for female-headed households) can play an important role in government anti-poverty efforts. Targeting is also necessary in rural areas, given that residence in these areas is positively related to high poverty for both male- and female-headed households. Moreover, geographically targeted programs are attractive, partly because they are more cost-effective than untargeted programs. Thus, making financial capital, physical infrastructure (especially roads, electricity, and ICT) and technological innovation available in poor rural areas will boost government efforts to reduce poverty in the country.

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