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Working Paper

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WIDER Discussion Paper, No. 2002/37

Provided in Cooperation with:

United Nations University (UNU), World Institute for Development Economics Research (WIDER)

Suggested Citation: Okojie, Christiana E. E. (2002) : Gender and education as determinants of household poverty in Nigeria, WIDER Discussion Paper, No. 2002/37, ISBN 9291901970, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki

This Version is available at:

<https://hdl.handle.net/10419/52915>

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United Nations
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World Institute for Development Economics Research

Discussion Paper No. 2002/37

Gender and Education as Determinants of Household Poverty in Nigeria

Christiana E.E. Okojie*

March 2002

Abstract

The paper examines the linkages between gender of household heads, education and household poverty in Nigeria between 1980 and 1996. Data analyzed were obtained from four national consumer expenditure surveys conducted in Nigeria in 1980, 1985, 1992 and 1996 by the Federal Office of Statistics. Adjustments were made for price differentials over time and across regions of the country. However, only aggregated data for households were available. Per capita expenditure was used as the indicator of poverty, while the unit of analysis was the household. Two poverty lines were set: a moderate poverty line equal to two-thirds of mean per capita household expenditure, and a core poverty line equal to one-third of mean per capita expenditure. The $P\alpha$ index proposed by Foster, Greer and Thorbecke was used to generate the headcount ratio as well as the depth and severity of poverty. Trends in inequality were analyzed using Gini coefficients and the Theil's index. Multivariate analysis was used to examine the relationships between gender, poverty and other household variables, including education, for all households as well as for subgroups of male-headed and female-headed households respectively. .../...

Keywords: gender, education, poverty, Nigeria, households

JEL classification: I32

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This study is linked to the theme of Growth and Poverty discussed at the WIDER Development Conference, 25-26 May 2001, Helsinki. UNU/WIDER gratefully acknowledges the financial support from the governments of Denmark, Finland and Norway to the 2000-2001 research programme

The analysis showed that poverty increased substantially in Nigeria between 1980 and 1996. The poverty headcount increased from 27.1 percent in 1980 to 47.3 percent in 1985, it declined to 42.7 percent in 1992, but increased to 66.9 percent by 1996. Furthermore, The Gini coefficient and Theil's Entropy Indices showed that the level of inequality is fairly high in Nigeria. Much of the inequality was within-group rather than between groups for all survey periods. Multivariate analysis for all households showed that female-headed households are more likely to be poor for all survey periods. Education decreased the likelihood of being poor while larger households were more likely to be poor. The two variables were also significant when separate regressions were run for male and female-headed households. These findings suggest that policy attention should be directed at increasing female education and reducing fertility levels since poverty was higher in larger households.

Acknowledgements

The author acknowledges with gratitude the financial and training support of the African Economic Research Consortium, Nairobi, for the research project which provided the material for this paper. The author also gratefully acknowledges comments from an anonymous reviewer of this paper.

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UNU World Institute for Development Economics Research (UNU/WIDER)
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Camera-ready typescript prepared by Lorraine Telfer-Taivainen at UNU/WIDER
Printed at UNU/WIDER, Helsinki

The views expressed in this publication are those of the author(s). Publication does not imply endorsement by the Institute or the United Nations University, nor by the programme/project sponsors, of any of the views expressed.

ISSN 1609-5774
ISBN 92-9190-196-2 (printed publication)
ISBN 92-9190-197-0 (internet publication)

1 Introduction

The relationship between gender and poverty has become an important topic in the literature on poverty. A large body of literature has focussed on female-headed households and the disadvantages they face (Buvinic and Gupta, 1997; Appleton, 1996). Gender is now regarded as an essential concept for the analysis and eradication of poverty. The causes and outcomes of poverty are seen as heavily engendered while traditional conceptualizations consistently failed to delineate poverty's gender dimensions, resulting in policies and programmes which failed to improve the lives of poor women and their families (Beneria and Bisnath, 1996). It is now recognized that women are disproportionately represented among poor households and that poverty is being increasingly feminized. To eradicate poverty, the gender dimension needs to be addressed in development planning. The term 'feminization of poverty' appeared in the mid 1980s and was used to describe the growing proportion of women and of households headed by women in the ranks of the poor during the recession of the early 1980s, and in the context of cutbacks in welfare programmes (UN, 1995).

Analysis of female poverty suggests that the main causes arise from the perpetual disadvantages which women face in terms of their position in the labour market, and their limited access to productive resources, education and income for the satisfaction of their basic needs. Experience has shown that any approach to poverty alleviation that leaves the economic situation of women unchanged tends to fall short of its goal (UN, 1995).

Studies of poverty often take the household as the unit of analysis without differentiating levels of poverty of each household member. It is suggested that the conventional household survey approach does not allow direct measurement of income poverty among women. This is regarded as one reason why data on education and health, which can be collected at the individual level, are valuable as they facilitate a gender-disaggregated perspective on many dimensions of poverty (World Bank, 2000).

In examining the relationship between gender of household head and poverty, there are two aspects to be examined (Appleton, 1996; Sahn et al., 1990). The first question is, can gender of household heads be used to predict poverty? The second is, what are the likely determinants of poverty and how do such factors differ between male and female-headed households? That is, what are the particular features of female-headed households that make them vulnerable to poverty, and what measures are required to reduce their vulnerability to poverty? While evidence from some countries suggests that the incidence of poverty is higher in female-headed households, the contrary is the case in others. Analyses of poverty among male-headed and female-headed households across a large number of developing countries have found mixed evidence. For example, surveys of household consumption and expenditure in many countries of North and South America, Europe and the Commonwealth of Independent States (CIS) show the incidence of income poverty to be higher among female-headed households. But elsewhere, there is no difference between male-headed and female-headed households—Zimbabwe, Viet Nam, Morocco, and Indonesia, for example. According to Lipton and Ravallion (1995), females are not generally over-represented in consumption-poor households; nor are female-headed households more likely to be poor as a rule (see for example, Haddad, 1991 for Ghana, and Louat et al., 1995). A review of 61 studies on headship and poverty found female-headed households to be

disproportionately represented among the poor in 38 cases (Buvinic and Gupta, 1997). In contrast to this, another study (Quisumbing, Haddad, and Pena, 2000) found robust and statistically significant differences in poverty between female and male-headed households in only two cases. Other recent studies find that evidence varies across countries, studies, and methodologies (World Bank, 2001). According to Kabeer (1992), little is known about the distribution of income/consumption in male-headed households below the poverty line. However, even if it were true that consumption-poverty incidence is on average no greater amongst women, they are severe victims of poverty in other respects, for example, access to education. The precarious position of women in the global economy is in part related to their low educational levels, including high levels of illiteracy in many countries (Beneria and Bisnath, 1996).

This paper examines the linkages between gender of household heads, education and household poverty in Nigeria between 1980 and 1996. Section two of this paper reviews the literature on the interrelationships between gender, education and poverty. Section three describes the data sources and methods used in the paper. Section four discusses trends in poverty and inequality in Nigeria while section five presents the model specification, estimation and testing procedures. Section six presents the results of the multivariate analysis. Section seven reviews past poverty alleviation programmes in Nigeria while section eight concludes the paper.

2 Review of the literature

2.1 Gender and education

In the last three decades, the United Nations has been at the forefront of efforts to promote the status of women. Several conferences and seminars within and between countries have focussed on gender and education. Comprehensive plans of action have emerged from some of them on what needs to be done to address gender imbalance in education. In all countries, education is now recognized as a major vehicle for promoting and improving the status of women. It has been realized that sustainable human development is not possible if half of the human race remain ignorant and marginalized. According to the Nairobi Forward Looking Strategies (1985), ‘...education is the basis for the full promotion and improvement of the status of women. It is the basic tool that should be given to women in order to fulfil their roles as full members of the society’. According to the ICPD (International Conference on Population and Development) Programme of Action, ‘...education, together with reproductive health, is one of the most important means of empowering women with the knowledge, skills, and self-confidence necessary to participate fully in the development process’ (para. 42). Education is regarded as the cornerstone of women’s empowerment because it enables them to respond to opportunities, to challenge their traditional roles and to change their lives. This was reiterated in the *Human Development Report* (UNDP, 1997) which stressed that an important strategy for empowering women is to promote their access to education.

The World Conference on ‘Education for All’ held in Jomtien, Thailand in 1991, drew attention to the gender gap in educational opportunity and its consequences for human development. The Beijing Platform for Action emphasized that investing in formal and non-formal education and training for girls and women has proved to be one of the best

means of achieving sustainable development and economic growth. This view was supported by the World Bank which stated that a country with more educated girls and women is not only healthier, it is also wealthier. Furthermore, recent research has shown that investment in education for girls is the single most effective way to reduce poverty. Even a few years of education empowers women to have smaller families and to enjoy a higher standard of living. Educated mothers are more likely to send their children to school creating a virtuous cycle of education and poverty reduction (Hill and King, 1995; Okojie et al., 1996; DFID, 1999, 2000).

The gap between human capital investments in men and women is highest in the low income regions which currently invest the least in the education of women compared to men (Schultz, 1994). Why do parents in low income countries invest less in the education of women? Family preferences for boys' education, and the need for children's labour services within and outside the household often limit the education of girls in rural communities (Beneria and Bisnath, 1996).

2.2 Gender and poverty

Based on the weakness of the income/consumption indicators of gender inequality, the female-headed household is often used as an alternative indicator of the gender dimension of poverty. However, taking account of female-headed households will not capture women's access to household income when compared to men. The question is: are women poorer than men because more households headed by women fall below the income poverty line than households headed by men? That is, is there widespread feminization of poverty? The UNDP's (1997) answer to this question is 'yes and no'. UNDP (1997) noted that women and men experience poverty in different ways. The feminization of poverty is not necessarily a question of whether more women than men are poor but one of the severity of poverty and the greater hardship women face in lifting themselves and their children out of the poverty trap. However, as mentioned earlier, even if it were true that consumption-poverty incidence is on average no greater amongst women, they are severe victims of poverty in other respects, for example access to education and health services. The wide range of biases in society—unequal opportunities in education, employment and asset ownership—mean that women have fewer opportunities than men (Beneria and Bisnath, 1996). Poverty accentuates gender gaps, and when adversity strikes, it is women who often are the most vulnerable.

It is asserted that gender-based poverty is a major feature of the African scene and that there is increased feminization of poverty in Africa (World Bank, 2001a). Factors contributing to this trend include: limited skills and knowledge; unfriendly market structures that concentrate women in lower paying and time-consuming work and restrict their access to capital and credit; traditional family structures that perpetuate gender inequality through patriarchal norms of property ownership and inheritance; discrimination in the public domain; non-recognition of the value of women's work; etc (World Bank, 2001). The position of female-headed households with no economically active male either present or working elsewhere is the most severe. The lack of able-bodied male labour is a key characteristic of many of the poorest African households.

Lipton and Ravallion (1995) identified three key factors why women are severe victims of human poverty: Firstly, women work longer than men to achieve the same level of living, the burden of both parts of the 'double day' of market labour and domestic labour is more

severe for poor women (see World Bank, 1997). Secondly, women face lower chances of independent escape from poverty in part because women's large share of domestic commitments prevents them from seizing new and profitable work opportunities as readily as men (see also World Bank, 1995a). Thirdly, in some cultures, widows face effective barriers against employment or remarriage, and are treated as second class citizens within the home, leading to high risks of poverty. Furthermore, the World Bank (1997) indicated that feminized poverty persists because of women's low levels of education and training, poor health and nutritional status, and limited access to resources which depress their quality of life and hinder economic efficiency and growth.

In addition, gendered dimensions of poverty can be understood by using the concepts of 'entitlements' and 'capabilities' to discuss poverty and gender biases. In this respect, it is asserted that poor women's relatively low entitlements are at the source of their dependency, vulnerability, and low degree of autonomy. Similarly, their limited capabilities such as illiteracy or low educational attainment tend to lock them in the vicious circle of poverty and deprivation (Beneria and Bisnath, 1996). In general, women tend to have less capacity than men in terms of education and training, less time to devote to productive resources and less command over important resources such as land and capital.

An important way in which poverty is feminized is that male-dominated societies make the escape from poverty harder for women, suggesting that poverty is more likely to be chronic for women, and transient for men. However, poverty measures have been found to be poor predictors of gender inequalities in deprivation and wellbeing. The form of women's economic activity has been shown to have greater bearing on this question. Sen (1990) noted that gender differentials in labour force participation are more closely aligned with gender differentials in life expectancy across much of the low income countries. The implication of this is that higher rates of female labour force participation and greater mobility may help to improve their economic value to their households as well as their physical wellbeing. Thus, there is need to pursue the achievement of equal rights, responsibilities, opportunities and participation for men and women in political, civil, economic, social and cultural life, with the full enjoyment by women and the girl-child of all human rights and fundamental freedoms (World Bank, 2001).

2.3 Interrelations between gender, education and poverty

In recent years, attempts to explain gender inequalities in the accumulation of human capital have focussed on the key role of household decision making and the process of resource allocation in households. Family outcomes (e.g. intrahousehold resource allocations) are the result of behavioural decisions taken in the light of a number of factors which are not observed by researchers and policymakers (Behrman, 1998:223-42).

Inadequate investment in human capital is caused partly by poverty which in its turn contributes to its perpetuation. Various determinants of investment in human resources and their relation to poverty are found in the simple Becker-Woytinsky lecture framework for the demand and the supply of human capital (Behrman, 1990). For poor families, demand for education will be low the lower public expenditure on education, the lower parents' educational attainment, and the less the availability of non-earned income. Poverty can make parents discount future earnings very heavily. They may therefore limit human resource investment in their children and reinforce transgenerational poverty links. All other things equal, poverty may have an impact on schooling investments through the

supply side since the poor are less likely to have access to funds or to incur higher transportation costs to schools of given (better) quality (Behrman, 1990). Thus from both the supply and demand sides, poverty leads to lower human capital investment in children thereby promoting inter-generational transmission of poverty.

Poverty can influence girls' access to education in various ways. Gender disparities in education are often greatest among the poor. A recent study of boys' and girls' school enrollment in forty-one countries indicates that within countries, gender disparities in school enrollment rates are greater among the poor than among the non-poor (World Bank, 2001). Similar patterns emerge when comparing poor and non-poor countries. While gender equality in education has increased considerably over the last three decades in low income countries, disparities in male and female school enrollments are still greater in those countries than in middle-income and high-income countries (World Bank, 2001).

Evidence from West Africa also suggests that poverty may contribute to the gender gap in access to education (Appleton, 1996; Atolagbe, 1999; Okojie, 1998). As shown in the human capital model, households need to be able to afford school fees and the loss of child labour. Poor households may be unable to afford to educate all their children, they therefore give preference to boys because they perceive higher benefits of boys' education in the labour market. Poorer households may also be more dependent on their offspring for greater support in old age and they are more likely to invest in sons if customs dictate that it is sons who should provide old age support. Thus to the extent that education is not regarded as an investment good for girls, poor parents will be less willing to allocate resources to give their daughters its consumption benefits. Poorer households are also less able to afford domestic help and therefore make greater use of the child labour of their daughters in domestic work which reduces their attendance in school resulting in poor academic performance. Furthermore, poverty may also be more associated with disabling traditional attitudes towards women. All these possibilities provide reasons why gender differences in educational attainment are associated with household poverty (Appleton, 1996).

Female education raises various implications for feminization of poverty. Firstly, women with low educational human capital investment end up in low status, low income jobs and are likely to remain poor. Secondly, daughters of women with low human capital investment are likely to have low levels of human capital investment themselves and therefore end up in low status and low income jobs like their mothers and remain poor. Female poverty is thus transmitted from mother's to daughter's generations. Thirdly, discrimination in female access to education means that women will continue to have less education than men and be confined to low income jobs, thereby perpetuating female poverty.

Therefore an important strategy for reducing female poverty is greater educational human capital investment in women. This will increase their access to higher-paying and higher status jobs, thereby reducing household as well as female poverty, in addition to other non-market benefits of women's education. Women make important contributions to household incomes, their incomes help many families to survive. Furthermore, an increase in women's educational human capital assures more effective use of half of the nation's productive work force thereby enhancing economic growth. Higher investment in women's educational human capital is therefore a sound economic policy.

3 Data sources and methods

3.1 Data sources

The analysis of evolution of poverty and welfare over time in Nigeria has been difficult in the past because of data considerations. Under the National Integrated Survey of Households (NISH), four consumer expenditure surveys have been conducted by the Federal Office of Statistics (FOS). These surveys were conducted in 1980, 1985, 1992, and 1996. They provide data which can be used to address in some detail issues of household welfare.

More details about the four datasets have been provided elsewhere (FOS, 1999). The national consumer surveys (NCS) which are supplemental modules of the NISH have been part of FOS activities for a number of decades, the first was in 1953. Surveys were conducted on an adhoc basis until 1980 when the first National Consumer Survey was conducted as part of NISH. In 1985, another enlarged survey was carried out, others followed in 1992 and 1996 respectively. The NISH programme is run in line with the United Nations Household Survey Capability Programme. The design of the national consumer surveys 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. By 1996, however, with the number of states increasing to thirty, the sample size was increased.

Adjustments for price differentials

Adjustments were made for differentials over time and for regional price differentials as follows:

Differentials over time

If poverty situations are to be compared over time, price indices have to reflect temporal differences. The poverty line at the base year (1985) was kept constant while expenditure data for other years were deflated to base year prices, thus permitting analysis of poverty trends.

Regional price differentials

In order to use total expenditure as the basis of measurement of standard of living, it was necessary to correct for regional price differences or differentials across states. One point in the country was taken as the base and data from other points in the country were deflated to the price level of the base point. Lagos state was taken as the base and deflation was done separately for urban and rural areas. Separate deflators were also computed for food and non-food items where information was available (FOS, 1999). Adjustment was made for seasonal price differentials.

Weighting procedure

An important consideration in the data cleaning process was the weighting procedure which is described in the report by the Federal Office of Statistics (FOS, 1999). The weight used in the analysis (*wta*) was computed at the World Bank. Using this weighting factor amounted to using population figures as auxiliary variables, an accepted procedure for improving survey estimates (FOS, 1999).

3.2 Methods

Measurement of poverty

Poverty analysis in a country requires that a poverty line be defined. In this study, per capita expenditure is used as the indicator of poverty. The unit of analysis is the household, the poverty line defined by the FOS (1999) was used. Their approach was based on the fact that the data collected did not lend itself to intangibles or physical quantities of food consumed. Total real per capita expenditure was used as a proxy for the standard of living of households interviewed. Households were classified as poor or non-poor in relation to their level of total expenditure (food or non-food). 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 other years, a raising factor equal to the ratio of CPI (Consumer Price Index) for other years relative to that for 1985 was used. These were 0.44 for 1980, 5.186 for 1992, and 28.56 for 1996.

Poverty indices

The $P\alpha$ index measures proposed by Foster, Greer and Thorbecke (1984) were used in this study to generate the headcount ratio ($\alpha=0$), as well as the depth ($\alpha=1$), and severity ($\alpha=2$) of poverty. The $P\alpha$ index incorporates some degree of concern about poverty through the ‘poverty aversion’ parameter α . When $\alpha = 0$, $P\alpha$ measures the headcount ratio, which estimates 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 poor to a richer household, measured poverty increases. Another advantage of the $P\alpha$ measure is that it is decomposable by population subgroups.

In this paper, the $P\alpha$ index is used to generate P_0 (the headcount or poverty incidence), P_1 (the depth of poverty), and P_2 (the severity of poverty). It was also decomposed for subgroups of the population.

Measures of inequality

In this paper, trends in inequality were analysed by calculating Gini coefficients and the Theil’s ‘entropy’ index. Both the Gini coefficient and Theil’s index were obtained by running the INEQDECO programme in STATA.

Multivariate analysis

The determinants of household welfare and poverty were examined, the model and estimation procedures are described in a subsequent section.

4 Gender and trends in poverty and inequality in Nigeria

4.1 Descriptive statistics

Buvinic (1993) criticized studies of gender and household poverty for not disaggregating female-headed households by type of headship, that is, by marital status of head since households are heterogeneous. Such analysis shows that widows are the most over-represented among the poor (see Appleton, 1996; Sahn et al., 1990). Unfortunately, because of the aggregated nature of the data available for this analysis, it is not possible to disaggregate household heads by marital status of head. Table 1 shows female headship and literacy rates and poverty headcount by state in Nigeria.

Table 1
Female headship rates literacy rates and poverty incidences

State/Region	Female headship rate 1991	Female adult literacy rates 1991	% of female heads economically active 1991	Poverty incidence 1996
Northeast				
Adamawa	10.3	32.1	68.1	67.0
Bauchi	4.0	28.1	47.1	81.5
Borno	11.0	21.1	56.5	52.4
Taraba	6.9	22.4	67.7	63.0
Yobe	8.0	18.7	45.8	86.8
NE region		25.8		70.1
Northwest				
Jigawa	3.8	30.9	31.0	82.5
Kano	3.8	44.5	40.3	57.8
Katsina	4.7	30.6	35.6	71.8
Kebbi	3.9	23.0	39.7	82.6
Sokoto	4.1	25.1	38.7	83.9
NW region		32.7		77.2
Central				
Benue	12.1	29.8	72.1	64.2
FCT (Abuja)	6.8	43.0	73.3	53.0
Kaduna	5.9	46.0	49.6	56.0
Kogi	25.3	38.0	76.4	87.3
Kwara	16.8	37.6	81.8	67.5
Niger	4.1	25.4	57.8	52.1
Plateau	6.1	32.7	58.3	65.9

table continues...

Central		32.6		64.6
Southeast				
Abia	27.7	55.6	82.1	58.6
Anambra	21.7	68.5	79.2	41.8
Enugu	24.2	40.2	79.3	56.8
Imo	26.8	58.2	62.5	53.6
SE region		51.1		53.5
Southwest				
Lagos	15.7	71.4	84.5	53.0
Ogun	25.9	44.1	87.0	69.9
Ondo	25.1	44.1	87.2	71.6
Osun	26.2	49.5	89.6	66.7
Oyo	20.4	51.0	90.2	49.0
SW region		57.4		60.9
Akwa Ibom	25.1	53.3	78.4	72.3
Cross River	25.7	51.5	82.1	61.5
Delta	32.5	49.4	79.9	59.3
Edo	23.4	47.8	75.3	53.3
Rivers	24.0	72.6	77.8	44.3
Southsouth		57.5		58.2
All Nigeria	15.2	44.0	76.0	70.3

Sources: (1) FOS (1999); (2) NPC (1998).

4.2 Gender and poverty trends

Recently analyzed data on poverty in Nigeria showed that poverty headcount increased in Nigeria between 1980 and 1996 in both male-headed and female-headed households. This is presented in Table 2.

Table 2 shows that in 1980, poverty was higher in female-headed households. Since 1985 however, poverty has been higher in male-headed households than in female-headed households. The incidence of poverty by rural-urban residence followed 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 also varies widely between zones. In 1980, poverty was higher in female-headed households in all zones. The incidence of poverty was generally higher in the northern zones in both male and female-headed households. In 1992, poverty was higher in female-headed households in the Central zone. In 1980, poverty was lower in households of female heads with primary education, otherwise, poverty was higher in female-headed households. In other years, poverty was lower in female-headed households, in 1996 however, female-headed households with secondary education recorded higher incidence of poverty. Generally, poverty declined the higher the level of education of the household head.

Table 2
Poverty headcount by gender of household head, sector, zone and characteristics of household head

	1980		1985		1992		1996	
	M	F	M	F	M	F	M	F
Region								
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								
Northeast	34.9	40.6	56.3	45.2	54.5	39.1	68.4	53.1
Northwest	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	46.4	66.8	60.3
Southeast	9.1	26.4	31.8	23.2	41.5	38.4	68.3	61.6
Southwest	12.9	16.9	39.9	32.4	47.8	44.6	67.8	59.9
Southsouth	13.3	13.9	45.8	54.9	42.1	35.5	66.9	63.3
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
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	29.7	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: Computed from FOS consumer survey data.

The two occupations in which women are found in significant numbers are agriculture (rural women), and sales activities. There are fewer women in clerical and professional-technical occupations. The table shows that only 12.2 percent of women in sales occupation were poor in 1980, this had increased to 60.4 percent by 1996. In 1992 and 1996, the incidence of poverty was higher in the households of female heads in sales

occupations. Similarly, the incidence of poverty among female heads in agricultural occupations increased from 29.0 percent in 1980 to 61.1 percent in 1996. Over the same period, the incidence of poverty among female heads in professional-technical occupations decreased from 52.1 percent in 1980 to 47.8 percent in 1996, probably because women now have access to better jobs because of higher educational attainment. Poverty increased with household size in both male and female-headed households, the incidence of poverty was very high in households with more than nine members. This is partly because nearly half of household members in Nigeria are dependent children (NPC, 1998).

Depth and severity of poverty by gender of household head

In the analysis of poverty, three indices were used, these are— the headcount index (already reported), gap index (depth), and severity index. The analysis showed (figures not shown) that depth and severity of poverty were higher in female-headed households in 1980 and 1992, while for 1985 and 1996, male-headed households experienced greater depth and severity of poverty.

4.3 Trends in inequality by gender of household head

Trends in inequality by gender of household head were also examined. The Gini coefficient and Theil’s entropy indices were the measures of inequality used—shown in Table 3.

Table 3
Degree of inequality by gender of household head: per capita expenditure

Index	1980		1985		1992		1996	
	male	female	male	female	male	female	male	female
Gini	0.503	0.489	0.419	0.439	0.507	0.510	0.455	0.527
Theil's index								
GE(0)	0.435	0.455	0.298	0.329	0.450	0.467	0.357	0.491
GE(1)	0.524	0.446	0.355	0.401	0.560	0.507	0.426	0.662
GE(2)	1.555	0.783	0.747	1.086	2.457	0.963	0.971	2.266
Group	within	between	within	between	within	between	within	between
GE(0)	0.437	.00001	0.302	0.002	0.452	0.0006	0.371	0.004
GE(1)	0.516	.00001	0.362	0.002	0.554	0.0006	0.456	0.004
GE(2)	1.479	.00001	0.805	0.002	2.292	0.0006	1.197	0.004

Source: national consumer surveys.

From Table 3, the Gini coefficients and the Theil’s entropy indices show that there is a high degree of inequality among households. In 1980, female-headed households who recorded higher levels of poverty had a lower degree of inequality (expenditure). In 1985, 1992, and 1995, female-headed households had lower levels of poverty and a greater degree of inequality than male-headed households. Theil’s decomposition into within and between-group inequality showed that inequality was mainly within-group rather than between-group inequality. Thus the data suggest that although female-headed households experience lower poverty, the degree of inequality is higher in female-headed households. Much of the inequality was in non-food expenditure, especially in 1985, 1992 and 1996 (table not shown).

However, it should be recognized that female headship is a narrow index of household economic welfare in general. It is difficult to draw hard conclusions about gender dimensions of poverty from standard headship analysis because of the heterogeneity of male- and female-headed households. In all the survey periods, female heads were between 10 and 15 percent of total respondents. As Table 1 showed, majority of women in Nigeria live in male-headed households. It is therefore necessary to examine poverty among women in male-headed households. The results here suggest that the incidence of poverty is lower in female-headed households than in male-headed households. The results of multivariate analysis where other variables are controlled for are presented in section six.

5 Model specification, estimation and testing procedures

5.1 Model specification

Two models were estimated. The first model is a regression of the household welfare indicator—mean real per capita household expenditure expressed in logs. The second model estimated the likelihood or probability of the household being poor. It was assumed that household per capita expenditure and the probability of being poor depend on vectors of variables representing personal, household and community characteristics as well as unobserved variables. Thus the models estimated can be specified as follows:

Welfare model

This model analyzed the determinants of household per capita expenditure, it provides an insight into the determinants of household economic welfare. The multiple regression model estimated can be summarized as follows:

$$\text{Log PCE} = f(X, Y, Z),$$

where:

Log PCE = Log of mean per capita household expenditure,

X = a vector of personal characteristics of household head,

Y = a vector of household characteristics, and

Z = a vector of community variables.

If the relationship is assumed to be approximately linear, the equation to be estimated is of the form:

$$\text{Log PCE} = \beta_0 + a_1X_1 + \dots a_nX_n + b_1Y_1 + \dots b_mY_m + c_1Z_1 + \dots c_jY_j + \varepsilon$$

The error term ε is assumed to be normally distributed with zero mean, constant variance and uncorrelated with the explanatory variables.

Poverty model

The second model focused directly on poverty, that is, whether the household's economic welfare falls below the poverty line (the household is poor) or above the poverty line (the household is non-poor). The probability of being poor is specified as the value of the cumulative distribution function of Z which is specified as a function of exogenous explanatory variables. The equation is of the form:

$$\text{Prob (Poor} = 1) = F(Z) = F(\beta_0 + \beta_1 X)$$

where $F(Z) = e^z / (1 + e^z)$ is the cumulative logistic distribution, representing the probability of being poor. X represents the vector of explanatory variables, these include personal characteristics of the household head, household characteristics and community variables.

Explanatory variables

Explanatory variables included variables hypothesized to be determinants of household welfare and poverty. The list of correlates depends on the dataset. Only information about the characteristics of the household head was available, therefore, other relevant factors were omitted for lack of data. Personal characteristics include: age, education, sex and sector of employment of household head. Household characteristics include household size, while community factors include location of residence such as rural or urban location and zone of residence of household.

Age of household head influences household welfare. Welfare increases with age as the individual acquires more human capital (education and experience). However, income and therefore welfare may fall at older ages with retirement and declining productivity. A negative relationship is therefore hypothesized between welfare and the square of age.

Education is hypothesized to have a positive relationship with income, and therefore with welfare. Thus the more educated the household head, the less the probability that the household will be poor and the higher household welfare is likely to be. Education dummies are used in the study—no education, primary education, secondary education, and tertiary education with no education as the reference category.

Sex of household head also influences household income and welfare. Labour market studies suggest that because of their limited access to education, women tend to concentrate in low-paying jobs, especially in the informal sector. This suggests that female-headed households are more likely to be poor than male-headed households. A dummy was used (one for male-headed households and zero otherwise).

Household size also influences household income and welfare, it reflects the dependency ratio as well as the number of workers in the household. With respect to welfare, the larger family size and the greater the number of dependants, the more resources are required to meet the needs of household members and therefore the greater the likelihood that the household will be poor. The sector of employment is included (farming or non-farming) as there are variations in earnings between different sectors of the labour market. It is expected that household welfare is higher and the probability of being poor lower in non-farming households as well as in urban households. Zone of residence was also included since poverty levels varied between zones.

Estimation and testing procedures

For the first model (welfare model) which estimates the determinants of household welfare, an ordinary least squares regression of the household welfare indicator was estimated, with the dependent variable, mean real per capita household expenditure expressed in logs. Since per capita expenditure was used as the measure of household welfare, the model estimates the determinants of household per capita expenditure. The second model (poverty model) was a logistic regression which measured the probability of the household's economic welfare falling above or below the poverty line. Since this is a dichotomous

measure of poverty (poor or non-poor), a logistic model was estimated. The STATA package was used for the analysis. The logit model which gives coefficients similar to the ordinary least squares model is reported.

Tests for 'poolability'

The two models were run for all households. Separate regressions were run for male and female-headed households respectively. Combining two datasets is valid only if the regression parameters and variances are the same for both datasets. If these parameters are not the same, and the datasets are combined, it is equivalent to restricting the functions of the equations for the datasets to be identical, when they are not. The least squares estimates of the parameters in the restricted (pooled) model will therefore be biased and inconsistent. Tests for 'poolability' of the datasets were carried out for the two models.

Welfare model

Chow's test, which can be used to determine if two or more datasets can be 'pooled' together for purposes of regression analysis was used for the welfare model. For each year, the restricted (pooled) regression was estimated, while separate regressions (unrestricted) were run for male-headed and female-headed households respectively. The F statistic (F^*) was then calculated. The null hypothesis tested was that there is no difference in the coefficients obtained from the separate datasets for male and female-headed households. The null hypothesis was rejected if $F^* > F_{0.05}$, that is, we accept that the two functions differ significantly and the datasets should not be pooled. The F statistic was calculated for each survey year, the results (see Table 8) showed that separate functions should be estimated for male and female-headed households.

Poverty model

The logistic function was estimated for the poverty model. The log-likelihood ratio was calculated for each survey year. The full model, which included all the explanatory variables, was estimated. The restricted model, which excluded the gender variable (sex of household head) was then estimated and the LR-test performed. The results (see Table 8) show that separate regressions were justified for the 1980, 1992 and 1996 datasets, while the data for 1985 could be pooled for regression purposes.

Given the justification for separate regressions for male and female-headed household, separate regressions were run for male and female-headed households, although only the coefficients for education are presented.

Tests of predictive performance

To test for the predictive performance of the poverty model, two STATA commands were used, these are the *lstats* and the *lroc* commands. The *lstats* generates the 'sensitivity' and 'specificity' ratios. 'Sensitivity' measures the fraction of observations with positive outcomes that are correctly classified, while 'specificity' measures the fraction of observed negative outcomes that are correctly classified. The outcome was classified as positive if $\text{Pr}(D) \geq 0.5$, where the true D was defined as poor = '0'. The *lroc* estimates the area under the ROC (receiver operating characteristic) curve. The curve is a graph of 'sensitivity' versus one minus 'specificity'. The area beneath the curve is used as a measure of predictive power of the model. A model with no predictive power has area 0.5, while a perfect model has area 1.0. The results are shown in Table 8.

Table 4
Determinants of household welfare (all households)

Variables	1980	1985	1992	1996
Constant	8.371 (121.77)	8.031 (116.26)	7.796 (99.09)	7.391 (114.92)
Age	0.0013 (0.468)	-0.019 (-6.915)	-0.004 (-1.315)	-0.006 (-2.456)
Agesq	-0.00005 (-1.879)	0.0002 (6.373)	0.00004 (1.257)	0.00007 (2.609)
Primary	0.010 (0.570)	0.049 (1.086)	0.059 (2.574)	0.177 (10.340)
Secondary	-0.033 (-1.260)	0.056 (3.082)	0.170 (6.203)	0.249 (12.004)
Tertiary	-0.059 (-1.124)	0.309 (12.963)	0.353 (9.405)	0.427 (14.288)
Urban	0.098 (5.768)	0.059 (3.716)	0.101 (5.230)	0.165 (9.380)
Northwest	0.086 (3.576)	0.151 (6.538)	0.348 (12.50)	0.067 (3.850)
Central	-0.043 (-1.974)	0.086 (3.976)	0.082 (3.082)	0.179 (9.263)
Southeast	0.479 (15.462)	0.462 (15.535)	0.153 (4.286)	-0.153 (-7.697)
Southwest	0.238 (10.120)	0.134 (5.559)	0.042 (1.428)	- -
Southsouth	0.516 (19.484)	0.216 (0.216)	0.098 (3.323)	- -
Farming	-0.223 (-13.138)	-0.118 (-6.850)	-0.066 (-3.223)	-0.035 (-2.037)
Hhsize	-0.171 (-76.784)	-0.098 (-57.936)	-0.143 (-61.063)	-0.152 (-63.568)
Male	0.204 (8.665)	-0.012 (-0.593)	0.199 (8.267)	0.098 (5.201)
Adj R ²	0.465	0.347	0.404	0.294
F	642.96	354.99	504.83	501.31
Prob>F	0.0000	0.0000	0.0000	0.0000
Root MSE	0.7117	0.6629	0.7427	0.7082
N	10,280	9,317	9,682	14,395
Joint F tests-educ				
F	1.73	43.76	22.93	69.73
Prob>F	0.158	0.0000	0.0000	0.0000

Source: author's computations from national consumer surveys, 1980, 1985, 1992, 1996.

Note: t values are in parentheses.

6 Results of multivariate analysis

6.1 Determinants of household welfare

Table 4 presents the results of the determinants of household welfare, the dependent variable is log of real per capita household expenditure. Age influences household welfare. In 1980, welfare increased with age but declined eventually at older ages as hypothesized, only age-squared is marginally significant (at 10 percent level). In subsequent years, 1985, 1992 and 1996, welfare initially declines with age and increases at older ages, the association is statistically significant in 1985 and 1996. Age is insignificant in 1992. This finding may be due to the high levels of unemployment and retrenchment of younger workers during the structural adjustment period.

With respect to education, in 1980, when poverty levels were low, education was an insignificant determinant of household welfare. As poverty levels increased, from 1985 onwards, education became an important determinant of family welfare with the likelihood of a household being poor declining as the level of education increased. As expected, household welfare is higher among urban dwellers than rural residents. There are more income-earning opportunities in urban areas. The zone of residence was also correlated with family welfare, with most of the zones being better off than the reference zone—the northeast zone—for all survey years (this was supported by joint F tests for zone). Sector of employment was also associated with household welfare. Household welfare was lower in households where heads were in farming occupations as compared with those in non-farming occupations. The association was more significant in 1980 when poverty levels were very low.

For all survey years, household size exerted a strong negative influence on household welfare, the association was highly significant. Household size has the highest level of all the explanatory variables, suggesting that large households are likely to be poor. With respect to sex of household head, except for 1985, per capita expenditure tends to be lower in female-headed households. This suggests that after controlling for other variables, female-headed households are worse off than male-headed households despite their lower poverty headcount figures for 1985, 1992, and 1996.

Multivariate analysis therefore suggests that age, education, urban residence, sector of employment, household size, and sex of household head are important correlates of household welfare in Nigeria. Table 5 shows the coefficients of education variables for the regressions of the determinants of welfare in male-headed and female-headed households respectively.

The results for male and female-headed households were generally similar to the results for all households combined (full table not shown). In 1980, education was not an important factor in both male and female-headed households. In subsequent years, education increased household welfare, especially in 1992 and 1996. The analysis suggests that the main influences on household welfare in Nigeria are education, rural-urban residence, main economic activity (farming or non-farming) and household size. The directions of influence were generally similar for both male and female-headed households.

Table 5
Education as a determinant of household welfare (male and female heads)

	1980	1985	1992	1996
Male heads				
Primary	0.012 (0.649)	0.032 (0.679)	0.048 (1.917)	0.156 (8.313)
Secondary	-0.049 (-1.799)	0.048 (2.477)	0.132 (4.505)	0.219 (9.803)
Tertiary	-0.057 (-1.032)	0.287 (11.310)	0.315 (7.392)	0.402 (12.736)
<i>Joint F test-educ</i>				
F	1.73	43.76	22.93	69.73
Prob > F	0.156	0.000	0.000	0.000
Adj R ²	0.4779	0.3496	0.3297	0.2977
F	649.94	327.60	312.14	476.94
Prob>F	0.0000	0.0000	0.0000	0.0000
Root MSE	0.707	0.659	0.782	0.700
N	9216	7901	8224	12390
Female heads				
Primary	0.00005 (0.001)	0.150 (1.105)	0.129 (2.158)	0.279 (6.510)
Secondary	0.071 (0.872)	0.106 (1.954)	0.408 (5.260)	0.392 (6.596)
Tertiary	-0.1201 (-0.656)	0.472 (6.602)	0.495 (4.320)	0.463 (4.925)
<i>Joint F test-educ</i>				
F	0.43	14.64	12.61	24.98
Prob > F	0.733	0.000	0.000	0.000
Adj R ²	0.3883	0.3245	0.3835	0.3116
F	51.27	53.29	70.70	83.45
Prob>F	0.0000	0.0000	0.0000	0.0000
Root MSE	0.740	0.567	0.785	0.729
N	1064	1416	1456	2005

Source: author's computations from national consumer surveys, 1980, 1985, 1992, 1996.

6.2 Determinants of household poverty

Tables 6 and 7 present the results of the poverty regression for all households and the education variable for male and female-headed households respectively. A logistic regression was estimated. The results for the poverty equations were similar to those of the household welfare equations. Education and urban residence reduced the likelihood of the household falling into poverty. Male-headed households were also less likely to be poor than female-headed households (Table 6). Large households and male-headed farming households were also more likely to be poor. Urban residence was more significant for male-headed households. Female-headed farming households were less likely to be poor

than non-farming households but the association was only significant in 1996 when the incidence of poverty was very high among all households in Nigeria. This corroborates the tabular presentation earlier which showed that women in sales occupations (where women predominate, especially urban women) have become poorer over the years.

Table 6
Determinants of poverty (poverty model): all households

Variables	1980	1985	1992	1996
Constant	-3.347 (-9.179)	-2.582 (-9.175)	-1.329 (-5.219)	-1.131 (-5.502)
Age	0.003 (0.216)	0.024 (2.020)	-0.008 (-0.780)	0.00002 (0.003)
Agesq	0.00006 (0.386)	-0.0002 (-2.380)	0.00006 (0.595)	-0.00002 (-0.229)
Primary	-0.214 (-2.341)	-0.002 (-0.010)	-0.103 (-1.470)	-0.443 (-8.065)
Secondary	0.069 (0.531)	-0.373 (-5.402)	-0.399 (-4.459)	-0.624 (-9.321)
Tertiary	0.222 (0.900)	-0.974 (-9.585)	-0.857 (-6.326)	-0.993 (-10.007)
Urban	-0.214 (-2.502)	-0.169 (-2.811)	-0.215 (-3.350)	-0.426 (-7.477)
Northwest	-0.139 (-1.221)	-0.466 (-5.561)	-1.204 (-13.622)	-0.125 (-2.194)
Central	-0.001 (-0.008)	-0.194 (-2.486)	-0.427 (-5.342)	-0.442 (-6.995)
Southeast	-1.039 (-5.678)	-1.335 (-10.826)	-0.667 (-6.118)	0.376 (5.777)
Southwest	-0.634 (-5.171)	-0.242 (-2.709)	-0.314 (-3.510)	- -
Southsouth	-1.303 (-7.477)	-0.414 (-4.343)	-0.539 (-6.000)	- -
Farming	0.673 (7.736)	0.245 (3.866)	0.170 (2.684)	0.111 (2.018)
Household size	0.352 (30.949)	0.375 (35.911)	0.335 (36.584)	0.462 (42.821)
Male	-0.608 (-5.215)	-0.079 (-1.007)	-0.513 (-6.862)	-0.301 (-5.032)
LR chi2	1917.56	2558.02	2368.05	3578.70
Prob>chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.2502	0.2174	0.1946	0.1808

table continues...

Log likelihood ratio	-2873.354	-4603.380	4899.963	-8106.504
N	10280	9317	9697	14395
Joint test—educ				
Chi2	7.43	100.40	50.63	160.73
Prob > Chi2	0.0595	0.0000	0.0000	0.0000

Source: author's computations from national consumer surveys, 1980, 1985, 1992, 1996.

Note: z values are in parenthesis

Table 7
Education as a determinant of household poverty—male and female heads

	1980	1985	1992	1996
Male heads				
Primary	-0.179 (-1.861)	0.022 (0.125)	-0.077 (-1.020)	-0.392 (-6.445)
Secondary	0.139 (1.027)	-0.307 (-4.266)	-0.313 (-3.280)	-0.524 (-7.255)
Tertiary	0.271 (1.051)	-0.824 (-7.810)	-0.794 (-5.568)	-0.891 (-8.461)
LR chi2	1735.49	2122.00	1993.41	3057.56
Prob>chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.2513	0.2096	0.1919	0.1803
Log Likelihood ratio	-2585.058	-4000.938	-4078.602	-6949.388
N	9216	7901	8237	12390
Female heads				
Primary	-0.615 (-2.032)	-0.054 (-0.092)	-0.269 (-1.403)	-0.637 (-4.660)
Secondary	-0.607 (-1.405)	-0.915 (-3.998)	-1.059 (-3.738)	-1.101 (-5.644)
Tertiary	-0.567 (-0.664)	-2.497 (-5.521)	-0.916 (-2.112)	-1.316 (-4.138)
LR chi2	215.13	477.78	455.22	540.84
Prob>chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.2839	0.2804	0.2560	0.1950
Log Likelihood ratio	-271.381	-574.568	-661.342	-1116.154
N	1064	1416	1459	2005

Source: author's computations from national consumer surveys, 1980, 1985, 1992, 1996.

6.3 Discussion of findings

The multivariate analysis has shown that after controlling for all relevant variables, female-headed households are more likely to be poor than male-headed households. The application of Chow's test for the welfare model, and the likelihood-ratio test for the poverty model (see Table 8) justified the estimation of separate equations for male and

female-headed households. However, the likelihood ratio tests supports the estimation of a ‘pooled’ model for 1985, the gender variable was not statistically significant in 1985 in the poverty model. Important determinants of household welfare in female-headed households were education, household size, rural residence and main occupation. Thus, the higher the education of the head, the greater household welfare and the lower the probability of the household being poor, while the larger the household size, the lower family welfare, the greater the likelihood of poverty. Joint tests for education showed that education was not a significant determinant of either household welfare or poverty in 1980, it was however significant for all other years. Rural households were more likely to be poor, while women in non-farming occupations were highly likely to be poor.

Table 8
Tests of poolability and predictive performance

Test of ‘poolability’	1980	1985	1992	1996
F Tests				
F*	15.604	4.16	2.76	10.949
K	13	13	13	11
Likelihood ratio test				
Chi2	25.15	1.01	46.14	25.33
Prob>Chi2	0.0000	0.3151	0.0000	0.0000
Predictive performance				
Sensitivity-% of poor correctly classified	20.73	45.06	41.64	76.01
Specificity -% of non-poor correctly classified	97.84	89.44	90.27	66.81
% of sample correctly classified	88.35	74.97	74.67	71.90
Area under ROC curve	0.863	0.822	0.798	0.782
No. of observations—N	10,280	9317	9697	14,395

Source: author’s computations from national consumer surveys, 1980, 1985, 1992, 1996.

Table 8 shows that the estimation of separate regressions for male and female-headed households was justified for all years for the welfare model. For the poverty model, the table also suggests that separate regressions were justified for all years except 1985. Furthermore, tests of predictive performance show that the poverty model performed fairly well in classifying households as poor or non-poor. It was however more successful in correctly classifying non-poor than in classifying poor households, except in 1996.

The findings reported in this paper suggest that policy attention to reduce female poverty in Nigeria should focus on increasing women’s access to education and other productive resources as well as reducing family sizes. Studies of women’s access to education, female labour force participation and fertility behaviour in Nigeria also underscore the importance of female education for feminization of poverty. They show that:

- Women’s education influences employment options in the labour market, it is negatively and significantly related to participation in the informal sector, that is, educated women were less likely to be employed in the informal sector (Okojie, 1989/90, 1990).

- Education is a positive and highly significant determinant of women's incomes, the higher the level of educational attainment, the higher the level of income (Anyanwu, 1996).
- Mother's education is important for daughter's educational attainment, the higher the mother's education, the less likely that her daughter drops out of school and the more years her daughter spends in school (Okojie et al., 1996).
- Female education increases contraceptive use levels and leads to lower fertility (Okojie and Okojie, 1997).

An important strategy for reducing poverty in Nigeria therefore is to increase women's access to education. This will not only increase their incomes and therefore improve household welfare, it will also reduce inter-generational transfer of poverty to daughters and their families. However, increased access to education has to be accompanied by policies to increase women's access to other productive resources such as land, agricultural inputs, credit, information and markets. Poverty reduction strategies in Nigeria should be engendered to ensure that women are targets and beneficiaries of poverty alleviation programmes. What efforts have been made to integrate women's concerns into poverty alleviation programmes in Nigeria?

7 Poverty alleviation programmes and women in Nigeria

Successive governments of the federation have since independence embarked on various programmes to provide basic social and economic services aimed at improving the quality of life of Nigerians. Some other programmes were also aimed at reducing poverty directly or indirectly. In general, these programmes/policies fall into two categories (Aliyu, 1999):

- programmes with mandates relevant to poverty alleviation, and
- core poverty alleviation programmes through investment promotion in micro and small business enterprises.

Several programmes which had mandates relevant to poverty alleviation were designed and implemented in Nigeria. These programmes were to provide various services, which enhance the productivity, incomes and welfare of the poorest segments of the society. They were merely palliatives however. In the absence of a poverty line for Nigeria, they were not precisely targeted to deserving beneficiaries. Thus the majority of the poor did not benefit from these services. Women were the most marginalized. Since the late 1980s, programmes designed to target poverty more directly were designed and implemented, including those targeted at women. Core poverty alleviation programmes implemented in Nigeria include the following:

- The Family Economic Advancement Programme (FEAP) was set up to provide capital and indigenous machinery / equipment to cooperative societies formed by low- income groups to set up and run productive micro and macro enterprises.
- The National Directorate of Employment (NDE) was set up to combat mass unemployment.

- The People's Bank of Nigeria (PBN), was designed to make banking services and credit accessible to the low income groups.
- The Better Life Programme for Rural Dwellers (BLP) aimed at reducing rural poverty, especially among women.
- The Family Support Programme (FSP) was to provide social and welfare services to the family in order to improve their living standards.

Of these programmes, only two were targeted at women specifically, these were the Better Life Programme for Rural Women (BLP), and the Family Support Programme (FSP) which was essentially a continuation of the BLP with some modifications. In the current democratic era, the civilian government of President Obasanjo has also shown concern for poverty alleviation. In the year 2000 a programme titled Poverty Alleviation Programme (PAP) was designed and implemented. The sum of ten billion naira was provided for the programme. It was discontinued and replaced with a new programme titled National Poverty Alleviation Programme (NAPEP), a component of which is the Youth Empowerment Scheme (YES). The sum of twenty-five billion naira was provided for the programme in the 2001 budget.

7.1 Programme objectives

The main objective of core poverty alleviation programmes was poverty alleviation through:

- microcredit delivery
- small-scale enterprise promotion
- provision of support services, including training, entrepreneurship development
- employment creation.

Non-core poverty alleviation programmes were concerned with infrastructural development, provision of agricultural inputs, etc. The core poverty alleviation programmes were targeted at various groups, not necessarily the poor. The programmes adopted general approaches with the poor being one of the many undifferentiated target groups. For example, the Better Life Programme was targeted at rural women in general. NDE was targeted at the unemployed who may not necessarily come from the poorest households. Only the People's Bank of Nigeria had poverty alleviation as a specific mandate, and some of its programmes were targeted at the very poor. FEAP programmes were not necessarily targeted at the poor, though its activities were to create employment through investment in small-scale industries. Only the BLP was targeted primarily at women although women have benefited from the other programmes. Overall, although women have been involved, it appears that the programmes have not helped to improve the quality of women's economic activities significantly, women are still concentrated in lower status activities in the self-employment sector, especially petty trading.

It should be pointed out that in addition to government programmes, NGOs and the United Nations system in Nigeria are also involved in carrying out poverty-reduction activities. Their activities have been discussed elsewhere (Okojie, 2000). Several NGOs are also involved in promoting women's development rights especially by enhancing their access to

micro-credit as well as through vocational training and skill development programmes. In addition, the UN Development System in Nigeria is also involved in promoting the development rights of women. Over 30 percent of the financial resources available to the UN System in Nigeria is devoted to activities benefiting women (Chinsman, 1998). Half of these resources are devoted to programmes in Women in Development, especially those focusing on poverty reduction, advocacy, women's legislation agenda, access to credit, capacity development, and the elimination of all forms of harmful practices against women and girls in Nigeria (Chinsman, 1998). Attention is also shifting towards support of NGOs and community-based organizations, especially through the provision of micro-credit.

7.2 Women as beneficiaries of government programmes

Women only benefited to a limited extent from government poverty alleviation programmes, many of which have been disbanded or merged. Women, especially rural women, were the target group of the Better Life Programme (BLP). The BLP succeeded in improving the lives of many women. A major outcome of the BLP was its success in raising awareness of the plight of women in Nigeria.

Between 1998 and 1999, the Family Economic Advancement Programme (FEAP) disbursed four batches of loans to beneficiaries through its participating banks. The total amount disbursed was N3,304,931,900.00 representing 61.82 percent of its total allocation (FEAP, nd). Available data show that about one-quarter of benefiting co-operatives were women's cooperatives. However, it should be pointed out that some of the cooperatives were mixed in the sense that they had both male and female members. Thus the data suggest that women were not discriminated against in loan disbursements. It is difficult to assess the impact of FEAP since the life span was very short.

Essentially, the Peoples' Bank of Nigeria (PBN) was set up as a micro-credit institution to alleviate poverty, and especially to empower rural women and the urban poor. Women benefited from loans by the PBN. As at 1999, about 50 percent of PBN total credit was given to deserving women customers (PBN, 1999). This is very important since women usually find it more difficult than men to obtain credit from conventional financial institutions. The PBN extended credit to women through the Better Life Programme and Family Support Programme women's cooperatives. According to the managing director, women benefited more from the poorest of the poor loans which constituted about 20 percent of the bank's loan portfolios, primarily because women are more involved in petty trading than men. Most of the petty traders' needs for capital were met under the bank's poorest of the poor loan delivery scheme (PBN, 1999). Loans were extended to widows through organized widow's cooperative groups. The bank's support of the informal sector where women predominate has meant that women benefited significantly from PBN's loans schemes.

7.3 Reasons why women did not benefit significantly from poverty alleviation programmes

The brief review above shows that successive administrations have paid some attention to poverty alleviation in Nigeria. A multiplicity of government agencies were established to implement the programmes. Although some notable achievements were recorded, the escalation of poverty and unemployment in Nigeria shows that these strategies/programmes were inadequate to fight poverty and unemployment. Given the

existence of all these efforts by government, the private sector and the donor community, why did Nigerian women not benefit significantly from poverty alleviation programmes?

Some of the factors responsible for this and which should be addressed by policies and programmes by all stakeholders include the following:

- non-identification of women as specific target groups in most government programmes resulting in the crowding out of women by male beneficiaries
- over-centralization of programmes in federal agencies leaving little scope for lower levels of government which are nearer to target groups
- poor funding, inadequate manpower as well as non-sustainability of programmes due to changes in administrations
- duplication/overlapping of programmes and functions by several government agencies
- lack of accountability and corruption by programme executors
- poor evaluation and monitoring of policies/programmes
- poor coordination of activities/programmes of government, NGOs and the donor community, and
- concentration of programme activities in urban areas thereby discriminating against rural women who are the most disadvantaged.

As a result of the above limitations, the numerous programmes which should have benefited women more significantly (as well as intended male beneficiaries), have generally lacked effectiveness, consistency, dynamism and impact (UNDP, 1998). Frequent policy and programme changes did not help matters, some programmes were scrapped for political reasons before their impacts could be assessed. It is therefore important to learn from past mistakes.

7.4 Women and education in Nigeria

In Nigeria, efforts have been made to promote women's access to education. In 1986, the Blueprint on Women Education in Nigeria was launched, this was followed by the setting up of Women Education Units in Federal and State Ministries of Education. Non-Governmental Organizations and donor agencies such as UNICEF, UNESCO, UNDP and the British Council have also been involved in promoting women's education. Despite all these efforts, progress in reducing the gender gap in access to education has been slow. Available data show that at the primary school level, equality of access has been more or less achieved. However, wide gaps still exist at the secondary and especially tertiary levels. One of the factors restricting access to education in Nigeria is poverty. Where the household is poor, girls are more likely to be denied access to education, especially beyond primary education.

7.5 Promoting greater involvement of women in poverty alleviation programmes

How can women's participation in poverty alleviation programmes be enhanced? In general, conventional gender-blind development and poverty alleviation programmes

which were also top-down and non-participatory in approach cannot empower women to fight poverty. The following policy/programme implications can be suggested:

Gender mainstreaming

There is a need to mainstream gender concerns into all government policies and programmes. To this end, development programmes should have women's components or women's units to ensure that women benefit.

Affirmative action

In addition affirmative action is required whereby a prescribed proportion of beneficiaries of government poverty alleviation programmes, say at least 30 percent, should be women.

Poverty reduction programmes

Implementation of programmes to reduce poverty should be intensified as poverty is both a cause and a consequence of non-attainment of gender-equality. Reducing poverty among women will involve programmes to eradicate illiteracy, improve access to gender-sensitive improved technology for women's domestic and economic activities and other productive resources.

Participatory development

A participatory approach to programme design and implementation should be adopted whereby women are involved in identifying their needs as well as in the design and execution of projects and programmes meant to improve their situation. In this respect, there should be collaboration with NGOs and CBOs which work closely with women.

Awareness campaigns

Given the pervasiveness of customs, beliefs and practices which discriminate against women, there is a need for intensified awareness campaigns on the roles of women in the economy and society especially among policy makers. These beliefs lead to scepticism by policymakers towards programmes designed to improve the position of women in Nigeria

Gender analysis and gender disaggregated data

It is difficult to evaluate the position of women because much of available data is not gender disaggregated. It should be made mandatory for all research agencies to provide gender-disaggregated data. Furthermore there is a need to build in gender analysis when evaluating government programmes, in order to know the extent to which women have benefited from such programmes. In general, women should be empowered to fight poverty, that is, they should be equipped with the means to participate directly and actively in their own development. This means that women's capabilities in terms of education, skills, productivity and inventiveness should be enhanced, this requires strategies aimed at:

- encouraging and assisting women to set up small-scale enterprises
- improving access to credit and financial services
- skill development and vocational training for self-employment

- enhancing access by girls and women to education. Efforts in implementing programmes designed to increase women' access to education at all levels should be intensified.

8 Conclusion

This paper examined the linkages between gender of household head, education and household poverty and welfare in Nigeria between 1980 and 1996. Two models were estimated, a welfare model and a poverty model. The welfare model estimated an ordinary least squares regression of the determinants of household welfare (mean per capita household expenditure). In the poverty model, a logit regression of the probability of the household being poor was estimated. Tests for 'poolability' of datasets for male- and female-headed households were carried out using the F-test for the welfare model and the likelihood-ratio test for the poverty model. Both tests did not support the pooling of the two datasets, except the poverty model for 1985. Separate regressions were run for male and female-headed households although only the education coefficients of education were reported. Tests of prediction performance of the poverty model was also done for all survey years.

Multivariate analysis showed that female-headed households were more likely to be poor after controlling for other individual and household characteristics. Education and household size exerted significant influences on household welfare and the probability of being poor. The higher the educational attainment of the head, the higher household welfare and the less the likelihood of the household falling into poverty. This was confirmed by joint F-tests of the education categories, education was however not significant in 1980 when the level of poverty was low. The larger the household size, the lower household welfare because of the higher dependency burden resulting from high fertility levels. The two variables—education and household size—remained significant when separate regressions were run for male and female-headed households respectively. Rural-urban residence and occupation of head also influenced household welfare and the probability of being poor. These findings suggest that policy attention should be directed at increasing female education and reducing fertility levels to reduce household size.

A review of past efforts to alleviate poverty in Nigeria showed that women benefited minimally from such efforts. Majority of the programmes did not target women specifically. There is a need to mainstream women into poverty alleviation programmes in Nigeria to ensure that they benefit women.

References

- Aliyu, A., (1999) *Perspecticves of Poverty Alleviation Programmes in Nigeria and the Way Forward*, FEAP: Abuja
- Anyanwu, J.C. (1996) 'Empirical Evidence on the Relationship Between Human Capital and the Income of Women in Nigeria', *Journal of Economic Management* Vol.3
- ____ (1998) 'Poverty of Nigerian Rural Women, Incidence, Determinants and Policy Implications', *Journal of Rural Development* 17(4):651-67.

- Appleton, S. (1996) 'Women-Headed Households and Household Welfare: An Empirical Deconstruction for Uganda', *World Development* 24(12):1811-27.
- ____ (1997) 'The Interaction between Poverty and Gender in Human Capital Accumulation, the Case of Primary Leaving Examination in Côte d'Ivoire', *Journal of African Economies* 4(2)192-224.
- Atolagbe, M.G. (1999) *An Overview of the National Policy on the Education of the Girl Child*, Women Education Unit, Federal Ministry of Education: Abuja.
- Behrman, J.R. (1990) 'The Action of Human Resources and Poverty on One Another: What we have yet to Learn', *Living Standards Measurement Study Working Paper No.74*, World Bank: Washington DC.
- ____ (1998) 'Intrahousehold Allocation of Resources: Is There a Gender Bias', *Too Young to Die: Genes or Gender?* UN: New York,.
- Beneria, L., and S. Bisnath (1996) *Gender and Poverty: Analysis for Action*, UNDP: New York.
- Buvinic, M. (1993) 'The Feminization of Poverty? Research and Policy Needs', mimeo, International Center for Research on Women: Washington DC.
- Buvinic, M. and G. Gupta (1997) 'Women-Headed Households and Women-Maintained Families: Are They Worth Targeting to Reduce Poverty?', *Economic Development and Cultural Change* 42(2), The University of Chicago Press: Chicago.
- Chinsman, B. (1998) *A Matter of People*, UNDP: Lagos.
- DFID (1999) 'Breaking the Barriers: Women and the Elimination of World Poverty', *DFID UK Social Development Working Papers No.7/99*.
- ____ (2000) 'Poverty Elimination and the Empowerment of Women' *Strategies for Achieving the International Development Targets 9/00*, DFID: London.
- Federal Office of Statistics (FOS) (1999) *Poverty Profile for Nigerians, 1980-1996*, FOS: Lagos.
- Foster, J., J. Greer and E. Thorbecke (1984) A Class of Decomposable Poverty Measures, *Econometrica* 52(3):761-6.
- Glick, P and D. Sahn (1997) 'Gender and Education Impacts on Employment and Earnings in West Africa', *Economic Development and Cultural Change* 45(4)792-3, The University of Chicago Press: Chicago.
- Greeley M. and R. Jenkins (2001) 'Mainstreaming the Poverty-Reduction Agenda: an Analysis of Institutional Mechanisms to Support Pro-Poor Policy Making and Implementation in Six African Countries', *Institute of Development Studies Research Report* 51.
- Haddad, L. (1991) 'Gender and Poverty in Ghana', *IDS Bulletin* 22(1)5-16.
- Hill, M.A., and E.M. King (1995) 'Women's Education and Economic Wellbeing', *Feminist Economics* 1(2):21-46.
- Kabeer, N. (1992) 'Women in Poverty: A Review of Concepts and Findings', mimeo, Institute of Development Studies: Sussex.

- Lanjouw, P. and M. Ravallion (1995) 'Poverty and Household Size', *The Economic Journal*, 105(November):1415-34.
- Lipton, M., and M. Ravallion (1995) Poverty and Policy, in J. Behrman and T.N. Srinivassan (eds) *Handbook of Development Economics*, Vol. III, pp.2553-2657.
- Louat, F., M. Grosh and J. van de Gaag (1995) 'Welfare Implications of Female Headship in Jamaican Households', *LSMS Working Paper 96*, World Bank: Washington DC.
- Maddala, G.S. (1992) *Introduction to Econometrics* (Second Edition), Prentice-Hall: Englewood Cliffs NJ.
- Menard, S. (1995) *Applied Logistic Regression Analysis*, Sage University Press: Thousand Oaks CA.
- National Population Commission (NPC) (1998) *1991 Population Census of the Federal Republic of Nigeria: Analytical Report at the National Level*, National Population Commission: Lagos.
- Nigerian Economic Society (1997) *Poverty Alleviation in Nigeria, Selected Papers from the 1997 Annual Conference*, NES: Lagos.
- Okojie, C.E.E. (1989/90) 'Educational Attainment and Female Employment in Nigeria', *The Educational Planner* 1(3, 4):16-35.
- ____ (1990) 'The Absorption of Labour into the Urban Informal Sector: The Position of Women in Nigeria', *The Nigerian Journal of Economic and Social Studies* 32(3):247-68.
- ____ (1993) 'Some Interrelationships between Maternal Education and Child Survival in Nigeria: Evidence from Household Surveys and Focus Group Discussions', *Proceedings of the XXIIInd International Population Conference* 4:241-62.
- ____ (1998) 'Gender, Poverty and Educational Human Capital Investment in Nigeria', *Nigerian Economic and Financial Review* 3(December):71-110.
- Okojie, C.E.E., O. Chiegwe, and E. Okpokunu (1996) 'Gender Gap in Access to Education in Nigeria', a research report submitted to the African Academy of Sciences Nairobi, Kenya.
- Okojie, C.E.E., and C.G. Okojie (1997) 'The Determinants of Contraceptive use Dynamics in Edo and Delta States of Nigeria', a research report submitted to the World Health Organization, Geneva.
- People's Bank of Nigeria (1999) *Ten Years of the People's Bank of Nigeria*, PBN: Abuja.
- Sahn, D.E., J. Arulpragasam and L. Merid (1990) 'Policy Reform and Poverty in Malawi, A Survey of a Decade of Experience', *Cornell Food and Nutrition Policy Program Monograph* 7.
- Schultz, T. P. (1989) 'Benefits of Educating Women', *PHREE Background Paper Series*, World Bank: Washington DC.
- ____ (1994) 'Investments in the Schooling and Health of Women and Men: Quantities and Returns', *Economic Growth Center Discussion Papers* No.481, Yale University: New Haven.

- Sen A. (1981) *Poverty and Famines: An Essay on Entitlement and Deprivation*, Clarendon Press: Oxford.
- ____ (1990) 'Gender and Co-operative Conflict', in I. Tinker (ed.) *Persistent Inequalities*, Oxford University Press: Oxford.
- STATA (1999) *Stata Reference Manual Release 6(2) H-O*, Stata Press: College Station TX.
- Quisumbing, A.R., L. Haddad, and C.L. Pena (2000) *Are Women Over-represented Among the Poor? Poverty Measures and Dominance Analysis for Ten Developing Countries*. International Food Policy Research Institute: Washington DC.
- United Nations (1995) *The Beijing Declaration and the Platform for Action*, UN: New York, NY.
- UNDP (1997) *Human Development Report 1997*, UNDP and Oxford University Press: New York and Oxford.
- UNDP (1998) *Human Development Report 1998*, UNDP: Lagos.
- World Bank (1990) *World Development Report 1990*, World Bank: Washington DC.
- World Bank (1997) *Development in Practice: Taking Action to Reduce Poverty in Sub-Saharan Africa*, World Bank: Washington DC.
- World Bank (2000) *World Development Report 2000/2001: Attacking Poverty*, World Bank: Washington DC.
- World Bank (2001) *Engendering Development, Through Gender Equality in Rights, Resources and Voice*, World Bank: Washington DC.
- World Bank (2001a) *African Poverty at the Millennium*, World Bank: Washington DC.