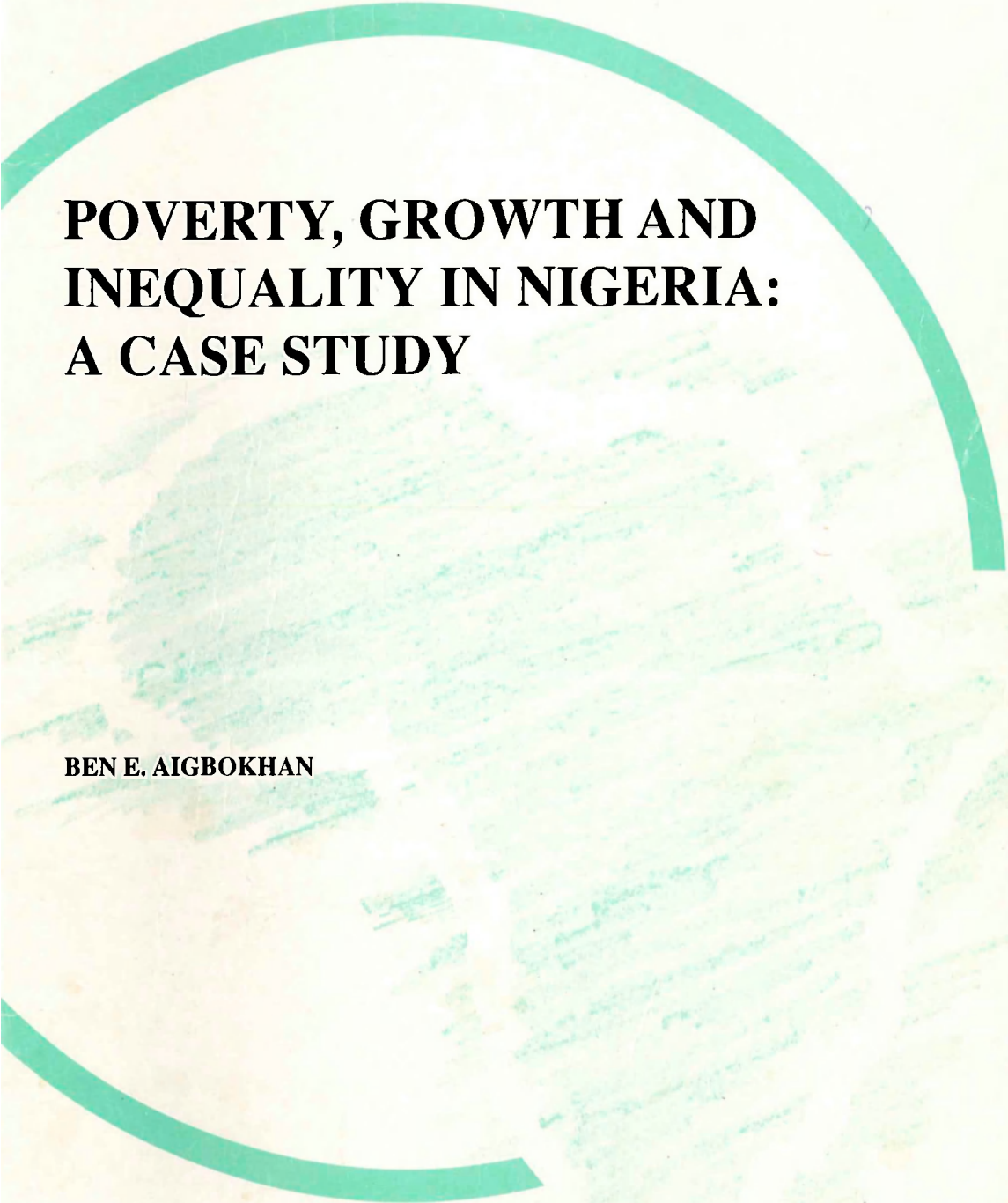# POVERTY, GROWTH AND INEQUALITY IN NIGERIA: A CASE STUDY

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AFRICAN ECONOMIC RESEARCH CONSORTIUM

CONSORTIUM POUR LA RECHERCHE ECONOMIQUE EN AFRIQUE

Poverty, growth and inequality in Nigeria: A case study

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Abstract

Major economic reform policies were introduced by the government of Nigeria in mid 1986. These reforms were expected to revitalize the economy's growth. Growth in turn was expected to contribute noticeably to improved equity in the country. Some earlier studies suggested that poverty actually declined in the first seven years of the reforms, but debate raged about the effect of the reforms. To contribute to the debate, this study investigated the inequality and poverty profile in Nigeria during the period 1985–1997, using data for the 1985/86, 1992/93 and 1996/97 national household income surveys conducted by the Federal Office of Statistics. Households are classified by sector (urban/rural), gender and region (geopolitical zones).

The central objective was to examine how far poverty has been reduced by the policies introduced during the period, and particularly the pattern of growth these policies engendered. The food energy intake (FEI) method, a variant of the absolute poverty approach, was used. The issue of polarization in income distribution was also examined.

The study found evidence of worsening inequality and poverty in spite of economic growth. It was found also that male-headed households seem to have fared worse, and that poverty is more pronounced in rural areas and in the northern regions (zones). The poor policy stance during the period is found to have contributed to increased poverty.

1. Introduction

The Nigerian economy faced severe economic shocks during the 1980s. Though these have been attributed to declining prices of oil, the country's main export good, and rises in real international interest rates that compounded the external debt burden, domestic policy mistakes have also been identified as a major cause. The initial response by government was the Economic Stabilization Policy of 1982. In mid 1986 the government introduced a programme of structural adjustment (SAP), elements of which included rapid and sizeable exchange rate devaluation, trade and financial reforms, and budgetary and monetary contractions.

Following the reforms, the real growth rate became positive after 1988, leading to the widespread view that adjustment has produced positive results. However, little attempt has been made to investigate the effects on equity and poverty, even though studies pioneered by Chenery et al. (1974) emphasized the need for "growth with equity". Notable exceptions are Aigbokhan (1991, 1997) and Canagarajah et al. (1997). These studies examined the effect of adjustment by comparing situations at two points in time, a year before and a year during adjustment This may provide only a partial effect of adjustment policies, however, especially as the adjustment period year in these studies was a few years after the introduction of SAP and there may be carry-over effects from pre-SAP policies. For example, Aigbokhan 1991 and 1997, respectively, compared 1980 and 1989, and 1983/84 and 1991; Canagarajah et al. compared 1985/86, and 1992/93. A fuller effect of adjustment might be better understood by comparing two points in time during adjustment. This study uses three national consumer surveys, 1985/86, 1992/93 and 1996/97, to profile the poverty situation in Nigeria.

2. Research problem

Achieving equitable distribution of income and alleviation of poverty has for some time been a major development objective. Studies have, therefore, especially in the 1970s, appraised development policies in terms of how far these objectives are being realized. In the 1980s many least developed countries (LDCs) introduced SAPs in an effort to promote growth and redress the negative trends in a number of economic indicators. Studies have found that adjustment policies have had negative impact on some socioeconomic groups. This has led to attempts to identify effective targeting indicators. An area that is attracting growing attention is gender-related equity and poverty. For example, there is the view that "contrary to the implications of the economists' standard unitary household model, unequal bargaining power within the household can result in under-investment in human capital for women. Public interventions targeting poor households can therefore be inadequate. Gender-targeted polices might be far more effective" (World Bank, 1995: 1). For Nigeria, "women lag far behind men in most indicators of socio-economic development. Women constitute the majority of the poor, the unemployed and the socially disadvantaged, and they are the hardest hit by the current economic recession... and that 52% of rural women are living below the poverty line" (Ngeri-Nwagha, 1996). Aigbokhan (1997), on the other hand, found that the incidence of poverty is higher among males than females. Apparently, there are still unresolved issues in this area.

There is the view that rural income benefited noticeably from policies introduced during the SAP years. For example, Obadan (1994) noted that major agricultural export producers, notably of rubber, experienced growth in income following naira exchange rate devaluations. Similarly, Faruqee (1994) reported that terms of trade turned in favour of the rural sector, so that the urban–rural income gap narrowed substantially. An implication of this is that poverty declined in the rural areas. Canagarajah et al. (1997) reported evidence that this was actually the case between 1985 and 1993. In the light of these arguments, it would be useful, for policy purposes, to examine the situation post-1992/93 when some of the policies may have had a longer period to work through the economy.

Finally, there is the view that there may have been increased polarization in income distribution, resulting in a wider gulf between the poor and the rich, manifested in a "disappearing" middle class. Polarization refers to a situation in which observations move from the middle to both tails of the distribution. This phenomenon, it is felt, explains increased incidence of poverty, but conventional inequality measures are not able, so far at least, to distinguish polarization from other kinds of inequality. No attempt has so far been made to empirically investigate this issue with the Nigerian data.

Thus, the central problem this study is concerned with is to investigate changes in the profile of inequality, poverty and welfare and the causes of poverty among males and females, as well as the incidence of polarization in income distribution in Nigeria.

Research objectives

The major objectives of the study are:

- To investigate the profile of income inequality and poverty among identified socioeconomic groups.
- To investigate the relative impact of growth and changes in inequality on poverty and welfare changes among identified socioeconomic groups, especially among males and females, and among urban and rural dwellers.
- To investigate the issue of the "disappearing middle class" in Nigeria and how this may explain the poverty outcome.

The report is organized as follows. Section 3 briefly discusses issues of measurement of poverty, including a review of the food energy intake and cost of basic needs methods. Section 4 outlines the socioeconomic background to the performance of the economy since the 1980s. Section 5 reports the results of estimates of poverty, and simple dominance test of poverty lines. The section also presents results of the decomposition analysis. The analysis is at two levels. At the first level is decomposition of overall poverty into its subgroups by gender and geographical zones. At the second level is decomposition into growth and redistribution components. Section 6 provides a summary and conclusions.

The significance of the study and its contribution

Because poverty reduction is an important development concern, designing effective targeting indicators requires in-depth knowledge of the determinants of poverty and characteristics of the poor. Most recent studies on poverty in Nigeria have rightly recognized the need to focus on expenditure rather than income as a better indicator of welfare. There are two advantages of using consumption (expenditure) instead of income as a measure of welfare. For one, measuring income is more problematic than measuring consumption, especially for rural households whose income comes largely from self-employment in agriculture. Moreover, given that annual income is required for a satisfactory measure of living standards, an income-based measure requires multiple visits or the use of recall data, whereas a consumption measure can rely on consumption over the previous few weeks (see Deaton, 1997, for further elaboration).

Most studies have adopted a rather arbitrary and variable method of defining the poverty line on the basis of which poverty is profiled for Nigeria. For example, Aigbokhan (1991, 1997), Canagarajah et al. (1997), and Federal Office of Statistics (FOS, 1997) all adopted ratios (one-third and two-thirds) of mean income/expenditure as a basis for

defining the poverty line. The limitations of this approach in tracking welfare are now well known. For example, having a particular level of income/expenditure is not a sufficient indicator of the level of welfare to define the poverty line. More important is how that amount is spent in determining the level of welfare and ability to undertake economic activity. Recognition of this fact has led to adoption of consumption-based approaches to defining the poverty line.

The present study is the first, to the author's knowledge, to apply the food energy intake (FEI) variant of the consumption-based method in poverty analysis in Nigeria. This approach relies on actual food consumption expenditure and the calorie content of the goods consumed. The issue of the disappearing middle class and how this explains the incidence of inequality and poverty is also examined, an issue so far neglected in the literature on Nigeria, and indeed much of sub-Saharan Africa.

In this respect, the study contributes to knowledge on poverty in Nigeria.

The issue of gender inequality and poverty seems to attract much attention. Evidence remains inconclusive. Some suggest that women fared worse than men during adjustment (e.g., World Bank, 1996a; Ngeri-Nwagha, 1996), while some suggest the reverse (e.g., Canagarajah et al., 1997). There is therefore need for further investigation of the issue.

The study will be at two levels. At the first level is analysis of inequality and the incidence, depth and severity of poverty among identified socioeconomic groups, particularly among males and females, and the contribution of each group to overall poverty. The second level involves analysis of the impact of growth and distribution on changes in poverty between 1985 and 1997. Considering the perception that members of the middle class in Nigeria generally feel that their position has been largely eroded since the adjustment period, the issue of polarization in income distribution will be specifically investigated and its influence on poverty will be inferred. This would constitute a major contribution of the study.

3.   Poverty profile

Although concern for equity and poverty reduction could be said to have been heightened by Chenery et al. (1974), because adjustment has been going on in developing countries for about a decade and half, the literature in this area is only beginning to grow. Much of the existing work has been at the World Bank in their country studies programme.

Measurement issues

There is a problem of how to link aggregate macroeconomic variables to the micro-level distribution of income and poverty. A number of approaches have been proposed in the literature and can be grouped into qualitative and quantitative approaches. Maasland (1990) provides a review of these. One method under the qualitative approach adopts a dependent economy model, in which the economy is divided into tradeable (exports) and non-tradeable sectors. The effects of exchange rate devaluation on the sectors are then analysed. Devaluation benefits the export sector by raising income, and if the sector is labour intensive it will increase real wages. Since wage income is generally more equally distributed than return to capital, income distribution would improve, and so would poverty. However, the non-oil exports sector in Nigeria is very small. Analysis based on the sector would therefore not sufficiently reflect the overall effect of adjustment on the economy.

Under the quantitative approach, the micro data and macro model analysis method involves examination of household micro data and then links macro model to micro analysis. Kanbur (1987) suggests the following approach. Using a household survey, a poverty profile is created that is disaggregated by socioeconomic groups that are relevant to the policy instrument under consideration. The poverty index to be applied should be decomposable by groups and should be sensitive to the depth of poverty among the poor.

Foster, Greer and Thorbecke (FGT, 1984) proposed a widely used index that satisfies these conditions. Among others, Kakwani (1990) and Grootaert and Kanbur (1990) used the index for their studies on Côte d'Ivoire, Huppi and Ravallion (1990) for Indonesia, Canagarajah et al. (1997) and Aigbokhan (1997) for Nigeria, and Taddesse et al. (1997) for Ethiopia.

The FGT measures are additively separable. This makes them useful in investigating groups' contributions to overall poverty. This feature of the measures implies that when any group becomes poorer, aggregate poverty also increases.

Using the FGT measures, Huppi and Ravallion (1990) investigated the sectoral structure of poverty in Indonesia and found that the poverty measures were higher in

rural areas within any given sector of employment, and for the sectors the highest concentration of poverty was among farmers. Grootaert and Kanbur (1990) found the incidence of poverty and contribution to poverty to be higher in the savannah region of Côte d'Ivoire than in the other four regions.

Analysis of poverty in the context of adjustment has been taken a step further by evaluating the relative impact of growth and distribution. Ravallion and Huppi (1991) determined that both economic growth and reduction in overall inequalities of consumption contributed to aggregate poverty reduction in Indonesia. Similarly, Huppi and Ravallion (1990) found that distributional changes helped alleviate poverty in 22 of the 28 sectors. For Nigeria, Canagarajah et al. (1997) observed that although growth reduced poverty, the distribution of income worsened between 1985 and 1992; they went on to conclude that if income distribution had remained unchanged, the national incidence of poverty would have declined by another 4%. The extent to which weight can be placed on the influence of growth in reducing poverty in such analysis has however been questioned by Ali (1996), as is discussed below.

Both studies on Nigeria neglected the issue of the disappearing middle class. It has been reported that "the middle income groups experienced substantially lower growth of incomes than the national average, and thus most middle class households considered themselves worse off during this (adjustment) period" (World Bank, 1996b).

The report further noted that "it is also evident that the inflation consequent to the failure to maintain fiscal discipline has hurt the recipients of wage income in both the public and private sectors, causing a significant erosion in their purchasing power". Furthermore, "poverty fell from 46 percent to 28.4 percent for wage earners" (World Bank, 1996b: vi, 19, 31). In light of these observations, it would be necessary to investigate whether measured inequality reflects this perception of a disappearing middle class.

Methodology

The Gini coefficient is used in this study to analyse inequality. Since Fei et al. (1978) the coefficient has been found to be useful for this purpose.

The coefficient is calculated as the ratio of the area between the Lorenz curve and the diagonal line of perfect distribution and the total area below the line. It can also be obtained as:

$$G = 1 + \frac{1}{n} - \frac{2}{n^2 \bar{y}}(y_1 + 2y_2 + 3y_3 + \dots + ny_n) \tag{1}$$

where $\bar{y}$ is mean income, n is the population sample size and y_j is the income of the jth household $(j = 1, n)$ (see UNDP, 1998; Deaton, 1997).

Given the study's focus on the disappearing middle class, a second measure, capable of isolating the impact of the phenomenon, is also calculated. This is the Wolfson polarization index, proposed by Wolfson (1994) and measured as

$$W = \frac{2(\mu^* - \mu^L)}{m}$$

(2)

where μ^* is the distribution-corrected mean income (i.e., actual mean times 1-Gini ratio), μ^L is mean income of the poorest half of the population and m is mean income. It is not sufficient to know whether inequality increased or declined during the reform period; it is more helpful to know if such a change resulted in polarization. If there is polarization, the resultant social tension may have implications for the sustainability of the reform measures. Since it appears that such a tension has existed in Nigeria especially in the 1990s, estimating this index will provide an insight into the causes. It should be emphasized, though, that polarization and inequality are different concepts, as Wolfson (1997) has demonstrated, and are therefore not directly comparable. Wolfson also demonstrated that both Lorenz curves and polarization curves can and do cross in practice, and so some rankings could be ambiguous. A polarization curve, according to Wolfson (1994: 355), "shows, for any population percentile along the horizonal axis, how far its income is from the median, thus giving an indication of how spread out from the middle (50th percentile) the distribution of income is". It has been found, however, that the two measures may move together or diverge. They move together if there is an equalizing transfer of income from an individual/household above the median to an individual/ household below the median. In such case the two measures both decline. However, where the equalizing transfer is entirely on one side of the median, the two measures will diverge. Such transfer reduces inequality but increases polarization (see Wolfson, 1997, for details).

Poverty is defined as the inability to attain a minimal standard of living. Given this definition, there is the problem of measuring standard of living so as to be able to express the overall severity of poverty in a single index. The conventional method is to establish a poverty line that delineates the poor from the non-poor.

There are two approaches to the construction of a poverty line, the absolute poverty approach and the relative poverty approach. In the former, some minimum nutritional requirement is defined and converted into minimum food expenses. To this is added some considered minimum non-food expenditure such as on clothing and shelter. Greer and Thorbecke (1986) and Ravallion and Bidani (1994) propose different methods of deriving this measure; these are discussed below. A household is then defined as poor if its income or consumption level is below this minimum. The relative method takes a proportion of mean income as the poverty line. For example, one-third and two-thirds of mean income have been popular; the former defines the core poverty line and the latter defines the moderate poverty line. The absolute poverty approach is used in this study.

There are various methods for estimating the poverty line under the absolute poverty approach. One is the subsistence measure; this focuses on material deprivation, such as inability to consume basic food and non-food items, otherwise known as the cost of basic needs approach. The other, known as the basic needs measure, focuses on both material deprivation and deprivation in access to basic services such as health, education and drinking water. The latter is more problematic because of difficulties in accurately

valuating the second type of deprivation, hence it will not be used in the study. (See Jafri and Khattak, 1995, for an application to Pakistan.)

The next stage is to express overall poverty in a single index. The simplest and most common measure is the head-count ratio (H), which is the ratio of the number of poor to total population.

$$H = \frac{q}{n} \tag{3}$$

where q is the number of poor and n is the total sample population. This gives the proportion of the population with income below the poverty line.

The head-count ratio has been criticized for focusing only on the number of the poor and being insensitive to the severity of poverty and to changes below the poverty line. That is, it treats all the poor equally, whereas not all the poor are equally poor. Also, neither a transfer from the less poor to the poorer, nor a poor person becoming poorer would register in the index, since the number of the poor would not have changed.

Foster et al. (1984) proposed a family of poverty indexes, based on a single formula, capable of incorporating any degree of concern about poverty through the "poverty aversion" parameter, α. This is the so-called P-alpha measure of poverty or the poverty gap index:

$$P\alpha = \frac{1}{N} \sum_{i=1}^{q} (\frac{z - y_i}{z})^\alpha \tag{4}$$

z is the poverty line, q is the number of households/persons below the line, N is the total sample population, y_i is the income of the ith household, and α is the FGT parameter, which takes the values 0, 1 and 2, depending on the degree of concern about poverty. The quantity in parentheses is the proportionate shortfall of income below the line. By increasing the value of α, the "aversion" to poverty as measured by the index is increased. For example, where there is no aversion to poverty, $\alpha = 0$, the index is simply:

$$P_o = \frac{1}{N} q = \frac{q}{N} = H \tag{5}$$

which is equal to the head-count ratio. This index measures the *incidence* of poverty.

If the degree of aversion to poverty is increased, so that $\alpha = 1$, the index becomes

$$P_1 = \frac{1}{N} \sum_{i=1}^{q} (\frac{z - y_i}{z})^1 = HI \tag{6}$$

Here the head-count ratio is multiplied by the income gap between the average poor

person and the line. This index measures the *depth* of poverty; it is also referred to as "income gap" or "poverty gap" measure.

Although superior to P_0, P_1 still implies uniform concern about the depth of poverty, in that it weights the various income gaps of the poor equally. P_2 or FGT or income gap squared index allows for concern about the poorest of the poor by attaching greater weight to the poverty of the poorest than to that of those just below the line. This is done by squaring the income gap to capture the *severity* of poverty:

$$P_2 = \frac{1}{N} \sum_{i=1}^{q} (\frac{z - y_i}{z})^2 \tag{7}$$

This index satisfies the Sen-Transfer axiom, which requires that when income is transferred from a poor to a poorer person, measured poverty decreases.

Another advantage of the P-alpha measures is their decomposability. The overall poverty can be expressed as the sum of groups' poverty weighted by the population share of each group. Thus,

$$P\alpha = \sum kjP\alpha j \tag{8}$$

where $j = 1,2,3...m$ groups, kj is population share of each group, and $P\alpha j$ is the poverty measure for each group. The contribution of each group, Cj, to overall poverty can then be calculated.

$$cj = \frac{kjP\alpha j}{P\alpha} \tag{9}$$

The contribution to overall poverty, as in the case of decomposable measures of inequality, will provide a guide to where poverty is concentrated and where policy interventions should be targeted.

This study uses the P-alpha index discussed above. In addition to calculating the incidence, depth and severity of poverty, the study also investigates the relative impact of growth and distribution on poverty changes between 1985 and 1997.

Following Ravallion and Huppi (1991), the change in $P\alpha$ can be written as the sum of a growth component, redistribution component and a residual element.

$$P\alpha_t = P\alpha(\frac{yt}{z, d_t}) \tag{10}$$

where z is the poverty line, y_t and d_t are, respectively, the mean per capita income/expenditure and the distribution of income in year t. For any two years 1 and 2, the growth component is a change in the mean per capita income/expenditure from y_1 to y_2,

with no change in income distribution. The redistribution component is defined as the change in poverty due to a change in income distribution, with no change in mean per capita income/expenditure. Thus,

$$P(\frac{y_2}{z,d_2}) - P(\frac{y_1}{z,d_1}) = [P(\frac{y_2}{z,d_1}) - P(\frac{y_1}{z,d_1})] + P(\frac{y_1}{z,d_2}) - P(\frac{y_1}{z,d_1})] + \tag{11}$$

That is, change in poverty equals the growth component plus the redistribution component plus the residual element. The growth component relates to the change in mean income/expenditure between the two years with distribution unchanged; the redistribution component is measured by the change in distribution, while maintaining mean income at the base year level.

This methodology is also used in this study. Canagarajah et al. (1997) applied the methodology to data for 1985/86 and 1992/93. The present study updates knowledge on Nigeria, using a consumption-based approach, though Canagarajah's study used one-third and two-thirds per capita expenditure methods of defining the poverty line. To that extent our results are not exactly comparable.

In the current literature, the most popular methods of estimating poverty lines are the food energy intake (FEI) and the cost of basic needs (CBN) methods. Both methods are anchored on estimating the cost of attaining a predetermined level of food energy or calorie intake.

Food energy intake (FEI) method

There are basically two procedures under the FEI method. One procedure, and the simpler one, is to take a subsample of households whose total income or expenditure is equal or close to the recommended calorie level and derive a simple average. This gives the total line. The other involves fitting a regression of the cost of a basket of commodities consumed by each household (food expenditure, E) on the calorie equivalent implied by the basket (calorie consumption, C). The estimated coefficients are then applied to the calorie requirements to derive the poverty line. The method automatically includes an allowance for non-food basic needs consumption, and as is argued shortly, this is one of its attractions in application to developing country situations. Another appeal of the method lies in its non-reliance on the need for price data, which can be very problematic in most developing countries. A third appeal is that the method allows for differences in preferences between subgroups. For the widely culturally, religiously and ethnically diversified societies that many developing countries are, this is a desirable and realistic provision. Other attractions are discussed below. The method, which has been widely used since Greer and Thorbecke (1986), has its formula as:

$$LogE = a + bC \tag{12}$$

where E is food expenditure and C is calorie consumption.

The poverty line, Z, is then derived as:

$$Z = e^{(a+Rb)} \qquad\qquad (13)$$

where R is the recommended calorie intake.

The FEI method has been shown to possess some limitations, however. Notably, Ravallion and Bidani (1994) and Ravallion and Sen (1996) demonstrated that the method suffers the inconsistency problem. It is argued that when the aim of setting a poverty line is to inform policy, whether or not a given standard of living constitutes poverty should not depend on the subgroup to which the person belongs. So, consistency requires that the poverty lines used should imply the same command over basic needs within the domain of the poverty profile (Ravallion and Bidani, 1994). Specifically, it has been argued that where food is relatively cheap, people will consume more, and poverty lines will be higher where the prices of food are higher. The authors showed that higher food prices in urban areas, together with the lower calorie requirements of most urban jobs, imply that urban calorie intake is lower than that of rural areas. At the same level of per capita expenditure, urban consumers tend to consume fewer calories than rural consumers do. As a result, the same nutritional standard requires a higher level of per capita expenditure in the urban areas. When applied to Indonesia and Bangladesh, Ravallion and Bidani (1994) and Ravallion and Sen (1996), respectively, found the FEI method to result in a much higher poverty line in urban areas, and higher level of poverty in urban areas, contrary to the general observation that poverty is more pronounced in rural areas, where both real income and real consumption are noted to be lower. The authors therefore suggested the cost of basic needs method.

The cost of basic needs (CBN) method

This approach considers poverty as a lack of command over basic consumption needs, and the poverty line as the cost of those needs. The modified CBN method suggested by Ravallion and Bidani (1994) relies on the FEI method. First, set the basic food basket, using the nutritional requirements. The composition would need to reflect local foods and the observed diets of the poor. Then cost the bundle at local prices to get the food poverty line component of the CBN poverty line. As for the non-food component, there is less agreement on how best to estimate this. A common practice is to divide the food component of the poverty line, that is, the food poverty line, by some estimate of the budget share devoted to food. But the exact procedure varies among analysts. One method is to use the amount spent on non-food goods by households that are just able to reach their nutritional requirements but choose not to do so. Another is to use the typical value of non-food spending by households just able to reach their food requirements and take this as the minimal allowance for non-food goods.

Another procedure involves estimating an Engel function as suggested by Ravallion and Bidani (1994). This requires regressing food share on the logarithm of food expenditure, taking account of differences in household size and composition:

$$W_i = +_{\log}(X_i / Z_i) + \text{error term} \tag{14}$$

where w_i is the food share of household I, x_i is per capita consumption expenditure, z_i is the food poverty line.

This method has been found to result in underestimation of the food share in richer regions, however, and thus results in lower poverty lines (see Taddesse et al., 1997). The authors on their part used a method that involves dividing the food poverty line by the average food share of households that failed to meet a food consumption level equal to the food poverty line. This method is also likely to overestimate the total poverty line in richer regions because the food share is still likely to be lower.

Yet another method has been suggested. If a basic non-food item is defined as one that a person wants enough to forgo a basic food to acquire, one can measure the non-food component of the poverty line as the expected value of non-food spending by a household just capable of affording the food component of the poverty line if it were to use all its expenditure on food items alone (World Bank, 1997). The mean of the proportion spent on food by this subsample is used to derive the proportion that is combined with the food poverty line to derive the total poverty line, or the moderate poverty line if the food poverty line is taken as the core poverty line. So, like most methods of estimating the non-food component, this method is anchored on the consumption behaviour of the poor. The method tends to result in less overestimation of total poverty line in richer regions than some alternative methods.

From the foregoing, a major weakness of the CBN approach is apparent. Because there is less agreement on an anchor for estimating the non-food component of the poverty line, there tends to be much arbitrariness in determining the level of poverty. This means that there may be as many poverty lines as there are variations in the assumptions used to determine the level of non-food component, even from the same data set, which may not be helpful to policy makers.[1] For example, Ravallion and Sen (1996) set the non-food allowance at 35% of food poverty line in Bangladesh for the 1983/84 data, while other authors also cited by them, using the same data, set it at between 25% and 40%. In fact, Ravallion and Sen (1996: 771–772) acknowledged that "from the foregoing discussion it is evident that the main ingredients of a poverty measure—the caloric requirement, the food bundle to achieve that requirement and the allowance for nonfood goods—entail normative judgements". In particular, "setting the nonfood component of the poverty line is a further potential source of contention, since there is no agreed anchor analogous to the role played by food-energy requirements in setting the food component of the poverty line". In the same vein, Ravallion (1998: 16) recognizes that "the basis for choosing a food share (for deriving the nonfood component) is rarely transparent, and very different poverty lines can result, depending on the choice made.... Of all the data that go into measuring poverty, setting the nonfood component of the poverty line is probably the most contentious".

In light of the foregoing, a relatively more consistent method, in the sense that it entails less arbitrariness in its application, is to be preferred. The FEI method seems to satisfy this condition, more so as it is able to reflect other determinants of welfare such as access to publicly provided goods since it automatically includes non-food basic needs in the calculation of the poverty line. This is in addition to the attractions mentioned above.

Data and sources

The data for the study are from three national consumer surveys by the Federal Office of Statistics. The 1985/86 survey had a sample size of 8,183 urban and rural households. The 1992/93 survey sampled 8,955 urban and rural household and the 1996/97 survey covered 13,574 urban and rural households. The survey data were processed with the assistance of the UNDP and the World Bank, and are therefore of reasonable quality.

The 1992/93 sample, like the 1985/86 sample, was designed to be nationally representative. A two-stage stratified sample was used. In the first stage, 120 enumeration areas (EAs) (48 urban, 12 semi-urban and 60 rural) were selected. The survey ran from April 1992 to March 1993.

Information was collected on household income from various sources—income in kind, cash income, consumption from own production, imputed rent and other receipts—and on household expenditure on various food and non-food items. The 1996/97 survey was similar in design and execution as the 1992/93 survey. A total of 120 EAs were selected in each state, 60 in the Federal Capital Territory. The 120 EAs in each state were randomly allocated in the 12 months of the survey so that in each month ten EAs were slated to be studied. Five housing units were studied in each EA per month.

The complete household level survey data set was used for the study. These were extracted from diskettes obtained from the Federal Office of Statistics. The eventual sample size used in the study is slightly lower than what is contained on the diskette after some adjustments. For example, the 1996/97 survey originally had a sample size of 13,801 households. However, after eliminating households that were not classified by gender or by sectoral location, the sample size for this study fell to 13,574. Similarly, for 1985/86, the sample size on the diskette is 8,585, but after eliminating households with some missing values considered important for the present study, an eventual size of 8,183 was used. For 1992/93 the corresponding figures are 9,165 and 8,955, respectively.

Price data were extracted from price survey files of the Federal Office of Statistics (FOS). This survey is carried out every month of the year and covers over one hundred food and non-food items, on the basis of which the inflation rate is calculated. For this study prices for 16 food items in urban and rural areas in each state were extracted for 1985, 1992 and 1996.

Estimation procedure

In this study, consumption expenditure rather than income data is used. This is informed in part by the conceptual problems that arise in using income as an indicator of household welfare, and partly by measurement error (especially under-reporting of income) prevalent in countries like Nigeria. Indeed, the data used suggest there is substantial underestimation of income as compared with expenditure, which results in undue overestimation of poverty. For example, using two-thirds mean income and two-thirds mean expenditure in the 1996/97 data resulted in head-count poverty levels of 59.9 and 51.7%, respectively.

The use of consumption expenditure also has its problems. Notable among these are the issue of consumption from own production, which is more prevalent in rural areas, and the issue of household size and within-household distribution of consumption. The former was reasonably taken care of in the survey data in arriving at the value of total expenditure. For the latter, adjustments are usually made using adult equivalence scales, in which case each adult has a value of 1.0 while each non-adult has a value of, say, 0.5. However, given the complexities of deriving such scales from the data used, adjustments have been made only for household size to derive per capita values.

The FEI method was adopted in estimating the poverty lines for this study. This was done in two stages. The first was to run a regression of the cost of a basket of commodities consumed by each household in the sample over the calorie equivalent as represented in Equation 12 .

To derive the values for the variables in the equation, the following steps were taken. First, the total value of food expenditure (E) was obtained by summing the value of purchased food and the value of consumption from own production. This was converted to its per capita value by dividing it by the household size (as the adult equivalent could not be calculated due to absence of information on household composition in the set on the diskettes). The calorie equivalent C was obtained by summing the calorie equivalent of the food items listed for each household.

The next stage was to calculate the cost of the basket by estimating Equation 13. This gives the food poverty line or the cost of acquiring the recommended daily allowance (RDA) of calories, which for the study is 2,030, the minimum energy intake requirement recommended by WHO.

From this, national and regional poverty lines were derived. A national line based on the total sample size was computed. Region-specific poverty lines were also computed. These are reported in Table 1. Appendix A contains the parameter estimates of the FEI equation. See also Appendix B for a application of the cost of basic needs (CBN) model.

Table 1: Food poverty lines: FEI method

	1985/86	1992/93	1996/97
National	766.27	723.77	1,169.18
Urban	808.34	742.06	1,278.25
Rural	742.68	737.96	1,179.76
Gender:			
Male-headed	770.52	833.93	1,237.59
Female-headed	760.18	711.82	1,154.23
Regions:			
Northeast	736.46	795.16	1,169.72
Northwest	817.64	1,282.95	1,169.92
North central	759.55	725.77	1,149.25
Southeast	800.93	807.85	1,379.39
Southwest	764.69	793.18	1,253.88
South south	781.31	824.29	1,156.61

Note: Data used were adjusted to reflect 1996 naira values (see note 4).
Source: Author's calculations.

4. The socioeconomic context

Before presenting and discussing the results, it is useful to provide brief background socioeconomic information on Nigeria. This would help in understanding the context in which the results were obtained and in interpreting the results. Table 2 shows average annual growth rates in 1980/86, 1986/92 and 1993/96, roughly the three periods covered by the three survey data sets used in this report. From negative growth rates in the first period, the economy transformed into positive growth in all the sectors. What is interesting is that the non-oil sector appeared to have pulled up overall growth. If the growth is translated into household income, it would be expected that the level of inequality and poverty would have improved between 1980/86 and 1986/92. However, in the period 1993–1996, key non-oil sectors recorded negative growth and agriculture, though still positive, recorded a significantly lower growth than in the earlier period. This can be expected to affect rural income as well as urban employment and income.

Table 2: Average annual growth rates, 1980–1996

	1980-86	1986-92	1993-96
Agriculture	0.5	3.8	2.9
Industry	-5.1	4.5	-1.8
Manufacturing	-1.8	4.9	-2.1
Mining	-5.9	4.4	4.9
Services	0.2	6.3	3.4
GDP	-1.7	4.7	2.5
Non-oil	-0.2	4.9	3.6
Oil	-5.3	4.5	0.8

Source: Calculated from Central Bank of Nigeria Statistical Bulletin 1996 and
                Federal Government Budget 1997.

Capacity utilization in manufacturing, which was between 40 and 73% in 1980–1985, fell to 36.4% in 1986 and rose to 42–44.5% in 1987–1989. It steadily declined thereafter to 39% in 1990, 36% in 1993, and between 29.3 and 32.5% in 1994/96. Low and declining capacity utilization implies falling employment and income, a widening income gap between those in employment and those laid-off on the one hand, and a higher incidence

of poverty on the other. Figure 1 shows the wages/GDP ratio, the wages/profit ratio and real GDP. Wages as a proportion of GDP has been below 30%. In fact, its highest level was in 1982, when it was 29%. From the 1983 level of 27.5%, it fell continuously to 24.2% in 1984, 21% in 1987, and 20.7% in 1988, the year of highest recorded real growth rate of 9.8%. In 1989/91 it hovered around 15%; it was 10% in 1992/93 , and declined to 8.9% in 1994.[2]

Figure 1:   Wages–GDP ratio, wages–profits ratio and real GDP growth rate in Nigeria, 1980–1996
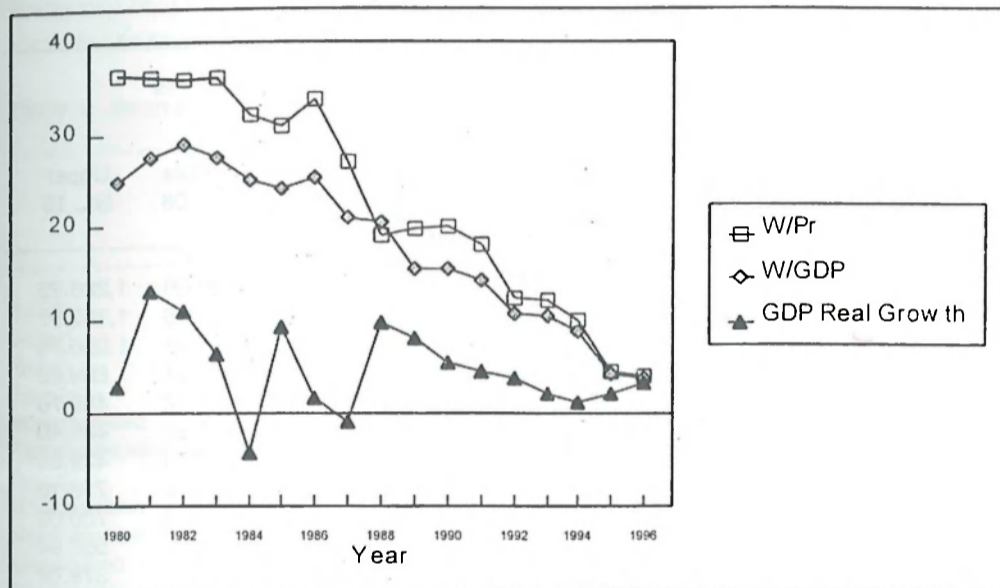
In 1995 and 1996 it was 4.4% and 4%, respectively. Similarly, as a ratio of non-wage income (operating surplus), wage income was between 30 and 36% in 1980/86. In 1987 it fell to 27%, and to 19.2% and 19.9%, respectively, in 1988 and 1989. It rose marginally in 1990 to 20.2%, after which it continued to fall. In the period 1993/96, it fell from 12.3% in 1993 to 10% in 1994, and nose-dived to 4.7% in 1995 and 4.2% in 1996.

The fall from 30.8% in 1985 to 18.2% in 1991, to 12.6% in 1992, and to 4.7% and 4.2% in 1995 and 1996, respectively, has crucial implications for measured poverty in the country. The decline is depicted more vividly by the trend in real wages and salaries in the public sector shown in Table 3. Real wages fell from 94.9% of nominal wages in 1986 to 20.9% in 1992 and more dramatically to 5.4%, 3.8% and 3.5% in 1995, 1996 and 1997, respectively, for the upper income group. What this suggests is that with the real income level of the otherwise stable income earners falling the way it did over these years, the poverty level would have risen significantly during the period. Thus, in the

1990s there is evidence of falling wage income and a tendency for the decline in wage share to have driven the overall shift to a less equal distribution of income. A study had also found that "the real incomes of civil servants appears to have declined by about one-half between 1984 and 1989. On the other hand, real income in rural areas increased by about 40% between 1985 and 1989, [and that] during the 1980s the urban and rural income gap narrowed from about 58% in 1980/81 to about 8 percent in 1984/85. In 1985/86 the gap was almost totally closed, and the gap reversed in favour of rural areas after 1986" (Faruqee, 1994: 279).

Table 3: Real wages and salaries in the public sector, 1985–1997

	All Items		Actual wages/salaries ₦ month		Real wages/salaries ₦ month		
	Consumer price index 1985=100	Lower GL. 01	Middle GL.08	Upper GL.15	Lower GL.01	Middle GL. 08	Upper GL. 15
1985	100.0	171.50	471.50	1,200.00	175.54	482.60	1,228.25
1986	105.4	175.00	485.00	1,220.50	166.03	460.15	1,157.97
1987	117.3	178.50	498.50	1,239.60	152.17	425.34	1,056.78
1988	181.2	275.00	526.40	1,249.60	151.77	290.51	689.62
1989	272.7	312.00	558.26	1,335.42	114.59	204.72	489.70
1990	292.6	350.00	590.16	1,421.24	119.54	201.56	485.40
1991	330.0	410.00	718.06	1,421.24	123.90	217.00	429.51
1992	478.4	982.08	1,854.92	3,713.00	205.43	387.73	776.13
1993	751.9	1,373.60	2,648.04	5,263.50	182.68	352.18	700.03
1994	1,180.7	1,493.60	3,102.24	6,505.00	126.45	262.75	550.94
1995	2,040.4	1,561.62	3,850.62	7,037.84	76.08	189.21	379.66
1996	2,638.1	1,561.62	3,850.62	7,037.84	59.19	145.96	266.78
1997	2,856.0	1,801.62	4,858.62	9,962.84	63.08	170.12	348.84

Note: The figures include transport, rent, meal and other allowances, excluding income tax.
Source: Review of the Nigerian Economy 1997, Federal Office of Statistics 1998 (July) p. 120.

The essence of the foregoing is to show that income level worsened in the 1990s from what it was in the mid 1980s. It is therefore to be expected that both inequality and poverty would have worsened in the 1990s.

On social indicators, the literacy rate increased in recent years to a peak of 50% in 1994. The rate varies by gender, however. The male literacy rate was 58% compared with 41% for females. A 1994/95 survey indicated that 63% of all female heads of households had no formal education, compared with 55% of males (FOS, 1988: 5). Some would argue, on the basis of this evidence, that inequality and poverty are more pronounced among female-headed households. Geographically, states in the extreme northern part of the country are reported to record more than 90% of household heads with no formal education. There are, however, states in the south that also record literacy rates among household heads of below 25%.[3] Given the general evidence that there is a correlation

between education and poverty, it would be expected that states with low literacy rates would record high incidence of poverty.

Table 4 shows mean per capita expenditure by sector, by zone and by gender in 1985/96, while Table 5 shows per capita expenditure and food shares by deciles in the period. It is observed that on average per capita expenditure (PCE) grew by 14.1% between 1985 and 1992, compared with 3.0% between 1992 and 1996. At the level of disaggregation by sector, Table 4 further shows that whereas PCE in the urban areas grew by 10.85% between 1985 and 1992 and by 22.1% between 1992 and 1996, the corresponding figures for the rural areas are 21.1% and 1.9%. Thus, rural PCE grew at a lower rate than that of urban in 1992/96. It could be inferred that rural welfare improved more in the earlier period but at a significantly lower rate in the latter.

Table 4: Mean per capita expenditure by sector, gender and zones, 1985–1996

	1985 N	No	1992 N	No	1996 N	No
National	1,040.78	8,183	1,187.60	8,955	1,223.28	13,574
Urban	1,216.63	3,681	1,348.61	3,455	1,646.67	2,927
Rural	897.00	4,502	1,086.46	5,500	1,106.89	10,647
Gender:						
Male-headed	1,150.67	6,928	1,145.48	7,562	1,173.52	11,768
Female-headed	1,020.88	1,255	1,416.26	1,393	1,547.55	1,986
Regions:						
Northeastern	885.44	1,420	1,388.78	1,086	940.24	2,245
Northwestern	930.59	972	1,084.29	1,285	691.60	2,623
Middle Belt	924.13	2,574	1,242.59	2,430	1,239.53	3,143
Southeast	1,371.70	634	1,216.38	727	1,690.62	1,494
Southsouth	1,191.93	1,118	1,028.74	1,694	1,527.65	2,125
Southwest	1,210.88	1,465	1,204.26	1,733	1,549.40	1,944

Source: FOS National Consumer Survey, 1985/86, 1992/93 and 1996/97 data sets (Lagos).

When disaggregated by gender, there was a more marked disparity. Male-headed household PCE grew by -0.5% in 1985–1992 and by 2.5% in 1992–1996, while female-headed household PCE declined by 9.3% in 1992–1996 after having grown by 39% in 1985–1992. Disaggregation by zone shows similar disparities. In 1985–1992 the northern zones experienced an average growth in PCE of 36%, compared with a -22.93% in 1992–1996. On the other hand, the southern zones recorded average growth rates of -8.5% and 38.7%, respectively, in the periods. These figures refer to nominal rather than real growth.[4] Thus, it could be inferred that in the period 1985–1992 the northern zones experienced a significant increase in income and welfare, while they experienced a decline during 1992–1996. The reverse was the case for the southern zones.

Table 5 provides another perspective from which welfare trends could be inferred. As shown in the table, the poorer five deciles spend 70% and above of their expenditure on

food while the top decile spends barely over 60% on food. Also, on average between 1992 and 1996, households spent an increasing share of their expenditures on food, which is a basic need. The only group that seems to fare better in this respect of share of total expenditure on food is the top decile, which declined from 64.8% in 1985/86 to 61.2% in 1992/93 and to 60.44% in 1996/97.

Table 5: Per capita expenditure and food share by deciles, 1985–1996

	Per capita expenditures food shares			Food shares (%)		
	1985 N	1992 N	1996 N	1985	1992	1996
First decile	206.36	226.64	210.93	69.7	70.36	71.28
Second decile	329.01	395.24	354.90	70.1	73.21	74.50
Third decile	441.06	509.71	461.13	69.5	71.06	74.63
Fourth decile	557.44	638.51	571.80	70.2	70.88	73.03
Fifth decile	679.44	798.53	695.60	70.0	70.54	73.53
Sixth decile	829.52	1,005.43	854.74	67.5	69.77	72.22
Seventh decile	1,029.62	1,267.58	1,062.95	65.1	69.23	71.51
Eighth decile	1,281.41	1,602.97	1,378.02	66.6	67.96	69.80
Ninth decile	1,698.19	2,135.69	1,934.75	63.1	65.73	67.06
Tenth decile	3,351.90	3,384.02	4,709.25	64.81	61.21	60.44
All households	1,040.78	1,187.60	1,223.28	63.52	63.92	66.83

Source: Calculated from Federal Office of Statistics, National Consumer Survey 1985/86, 1992/93 and 1996/ 97 (Lagos).

Table 6 provides some evidence on sources of income by deciles. In 1992/93, for example, the poorest five deciles had their income almost entirely from own production. It appears that the first four deciles are real subsistence farmers, suggesting that they had little or no surplus output for sale as a source of extra income. The table also confirms a widely recognized characteristic of the poor, namely their lack of creditworthiness. Using loans as an indicator, it is seen that the bottom five deciles did not receive any loans. The table shows also that wage income constitutes a negligible source of income to the sampled households. Rather, farm income is the single largest source of employment income. Only households in the top four deciles received some property income. All these have implications for income distribution and the poverty profile in the country.

Table 6: Sources of income by deciles, 1992/1993

	(Percentages)						
	Wage income	Farm income	Rent	Profits/ dividends	Loans	Home consumption	Others
First decile	–	–	–	–	–	100.00	–
Second decile	–	–	–	–	–	100.00	–
Third decile	–	–	–	–	–	100.00	–
Fourth decile	–	–	–	–	–	99.95	0.05
Fifth decile	–	3.03	–	–	–	95.36	1.55
Sixth decile	7.61	18.98	–	–	0.28	53.70	19.86
Seventh decile	0.83	49.22	0.10	–	2.57	38.07	9.26
Eighth decile	6.05	18.4	0.57	–	3.25	67.50	4.23
Ninth decile	7.38	1.16	0.64	–	3.13	83.51	4.17
Tenth decile	8.28	51.43	0.77	1.89	3.61	29.67	4.37

Note: Source breakdown for the first four deciles was not possible from the data set because the entire income was reported under home consumption.

Source: FOS National Consumer Survey, 1992/93 (Lagos).

5. Research findings

Tables 7 to 9 report estimates of the poverty profile in Nigeria in the period 1985–1997. Consumption poverty as measured by the head-count index is, respectively, 0.38, 0.43 and 0.47 in 1985, 1992 and 1996. In other words, 38%, 43% and 47% of the population was living in absolute poverty as defined by local cost of living (see Table 7). Thus, while the level of poverty increased between 1985/86 and 1992/93 by 13%, it increased by 9.3% between 1992/93 and 1996/97.[5] The corresponding figures for urban areas are 38%, 35% and 37%, while for the rural areas the figures are 41%, 49% and 51%.[6] One important observation is that, in general, rural poverty is higher than urban poverty. It will be recalled that the FEI method applied in this study has been observed to have an urban bias, in that it tends to suggest higher urban poverty (Ravallion and Bidani, 1994; Ravallion and Sen, 1996).

The gender distribution of poverty is consistent with the evidence from earlier studies that suggests that poverty is more pronounced among male-headed households (see Canagarajah et al., 1997; Aighokhan, 1997; FOS, 1997, 1998). This is the case with the three measures and in both the urban and rural areas. It should be mentioned, though, that female-headed households are only about 13.5% of the sample studied. It is observed also that male-headed households actually experienced an increase in the incidence of poverty between 1985 and 1996, while female-headed households fared relatively better. The latter indeed experienced some improvement between 1985 and 1992.

The regional distribution of poverty is profiled at two levels. One is at the level of individual states of the federation and the other is at the level of geo-political zones. The regions shown in the tables in Appendix C were mapped into geo-political zones recently defined by the Constitutional Conference of 1994–1996. As observed in Table 8, poverty tends to be generally lower in the southern than in the northern zones. It is observed also that the southern zones experienced an improvement in poverty incidence in the 1990s, while the northern zones experienced a deterioration, particularly in the rural areas.

Table 7: Estimates of poverty by gender and sector, 1985/96

	Composite									Urban									Rural								
	1985			1992			1996			1985			1992			1996			1985			1992			1996		
	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2
All households	0.38	0.14	0.07	0.43	0.17	0.09	0.47	0.18	0.10	0.38	0.13	0.06	0.35	0.10	0.04	0.37	0.14	0.08	0.41	0.17	0.09	0.49	0.22	0.13	0.51	0.20	0.11
Population share	8183			8955			13574			3681			3456			2927			4502			5500			10647		
Male-headed	0.38	0.14	0.07	0.45	0.18	0.09	0.48	0.19	0.10	0.40	0.14	0.06	0.37	0.11	0.04	0.38	0.14	0.08	0.42	0.17	0.09	0.51	0.24	0.14	0.53	0.21	0.12
Population share	6928			7562			11768			3049			2861			2390			3879			4701			9378		
Female-headed	0.38	0.12	0.06	0.32	0.11	0.05	0.34	0.17	0.08	0.30	0.11	0.05	0.28	0.08	0.03	0.34	0.13	0.07	0.36	0.14	0.07	0.37	0.14	0.07	0.35	0.13	0.05
Population share	1255			1393			1806			632			594			537			623			799			1269		

Note: Population share refers to numbers in samples.

Source: Author's estimates.

Table 8: Estimates of poverty by geographical zones and sector, 1985–1996

	Composite									Urban									Rural								
	1985			1992			1996			1985			1992			1996			1985			1992			1996		
	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P2
All households	0.38	0.14	0.07	0.43	0.17	0.09	0.47	0.18	0.10	0.38	0.13	0.06	0.35	0.10	0.04	0.37	0.14	0.08	0.41	0.17	0.09	0.49	0.22	0.13	0.51	0.20	0.11
Northeast	0.14	0.16	0.09	0.31	0.12	0.06	0.61	0.27	0.15	0.42	0.15	0.07	0.25	0.06	0.02	0.51	0.22	0.12	0.45	0.19	0.11	0.39	0.18	0.10	0.64	0.28	0.16
Northwest	0.42	0.15	0.08	0.52	0.21	0.11	0.90	0.53	0.35	0.45	0.15	0.07	0.52	0.17	0.07	0.78	0.42	0.26	0.39	0.15	0.09	0.52	0.23	0.13	0.91	0.54	0.36
Middle Belt	0.40	0.15	0.08	0.40	0.15	0.07	0.45	0.17	0.08	0.40	0.14	0.06	0.34	0.09	0.03	0.34	0.12	0.05	0.45	0.18	0.10	0.46	0.20	0.11	0.58	0.24	0.13
Southeast	0.31	0.11	0.06	0.43	0.17	0.09	0.36	0.12	0.06	0.35	0.12	0.06	0.35	0.11	0.04	0.35	0.11	0.05	0.26	0.10	0.05	0.48	0.22	0.13	0.36	0.12	0.06
Southwest	0.34	0.12	0.06	0.42	0.16	0.08	0.38	0.15	0.08	0.34	0.12	0.06	0.36	0.09	0.03	0.37	0.15	0.08	0.36	0.13	0.06	0.47	0.20	0.19	0.44	0..16	0.08
South south	0.37	0.14	0.07	0.53	0.23	0.13	0.42	0.16	0.08	0.37	0.13	0.06	0.40	0.13	0.05	0.38	0.15	0.08	0.42	0.18	0.10	0.62	0.31	0.19	0.41	0.15	0.08

Northeast	-	Adamawa, Bauchi, Borno, Gombe, Taraba, Jigawa, Yobe
Northwest	-	Kaduna, Kano, Katsina, Kebbi, Niger, Sokoto, Zamfara
Middle Belt	-	Benue, Plateau, Kogi, Kwara, Nassarawa, FCT.
Southeast	-	Abia, Anambra, Ebonyi, Enugu, Imo
Southwest	-	Ekiti, Lagos, Ogun, Ondo, Osun, Oyo
South south	-	Edo, Delta, Akwa Ibom, Bayelsa, Cross River, Rivers

Source: Author's calculation.

However, as Appendix C (tables C1–C3) shows, the incidence of poverty is not uniform even within the zones. For example in 1996/97, whereas head count is 0.36 in the south-south zone, Akwa Ibom, Delta and Edo states have levels higher than 0.50. Similarly, whereas the northeastern zone has 0.61, Bauchi, Jigawa and Yobe each have over 0.80. This observation is applicable to earlier periods as well. This evidence underscores the need to pay attention to within-zone differentials when designing policy interventions.

On the depth and severity of poverty, the pattern remains largely the same. That is, the depth and severity of poverty increased in the period covered (Table 7). However, by geo-political zones the pattern is not uniform. For example, the depth increased in the Middle Belt, northeast and northwest, while it declined in other zones in the 1990s. The increase was more pronounced in the rural areas.

Dominance test of poverty lines

To assess the sensitivity of changes in poverty to changes in the poverty line, it is useful to carry out dominance tests. This involves plotting the entire distribution of expenditures by cumulative proportion of population or decile by socioeconomic groups and locations (Canagarajah et al., 1997). The first order dominance test involves plotting the cumulative percent of population at each level of PCE. When plotted for two time periods, if the curve for the latter period is everywhere below that of the initial period, this suggests that poverty has declined and a change in the line will not change the result. The interpretation becomes less ambiguous when the curves intersect, as in the case of Lorenz curves. As Figure 2 shows, the curve for 1992/93 lies below that of 1985/86. This is also true for the rural areas. However, for the urban areas, the reverse is the case, as Figure 3 (a–b) show.

Similarly, the curve for 1996/97 lies below that of 1992/93, although they intersected up to the point of 25% of the poverty line (Figure 4). The curves intersect at 60% and 50% of the poverty line for urban and rural areas, respectively, and thus introduce less ambiguity than is the case at the national level (Figure 5a–b).

Decomposition analysis

Decomposition of household poverty into relevant subgroups and regions throws further light on the salient features of the poverty profile, and for the purpose of informing policy, it enables identification of areas where poverty tends to be concentrated. Applying Equation 9, estimates in Table 9 indicate that male-headed households contribute over 80% to the three measures of poverty and female-headed households contribute between 5% and 16%, though one should not lose sight of the fact that female-headed households account for around 14% of the study sample.

Decomposition by geo-political zone highlights two aspects of the poverty profile. One is that contribution to poverty tends to be higher in the northern part of the country. Thus, both measured poverty and contribution to poverty are higher in the north. The

second aspect is that while contributions to poverty tend to decline with intensity of poverty in the south, they tend to rise in the north. Both aspects thus suggest that the north constitutes the bulk of the poverty problem in the country.

Figure 2: Poverty incidence curves, natural 1985/86–1992/93

	Composite 1985			1992			1996			Urban 1985		
	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2
Male-headed	86.7	84.7	84.7	88.4	0.89	84.4	87.0	90.4	85.6	87.2	89.2	82.8
Population share	0.847			0.844			11768			0.828		
Female-headed	13.3	13.1	13.1	11.6	10.1	8.7	13.0	9.6	14.4	13.6	14.6	14.3
Population share	0.153			0.156			1986			0.172		
Northeast	18.8	19.9	22.4	8.7	8.5	8.1	21.2	24.5	24.5	14.5	15.1	15.3
Population share	0.174			0.121			2245			0.131		
Northwest	13.2	12.8	13.6	17.4	17.8	17.6	36.6	56.2	66.9	17.4	17.0	17.2
Population share	0.119			0.144			2623			0.147		
Middle Belt	33.2	33.8	36.0	25.2	23.9	21.1	21.9	21.6	18.1	29.5	30.2	28.0
Population share	0.315			0.271			3143			0.280		
Southeast	6.4	6.1	6.9	8.1	8.1	8.1	9.3	3.1	7.3	8.1	8.1	8.8
Population share	0.078			0.081			1664			0.088		
Southwest	16.0	15.3	15.3	19.0	18.3	17.3	12.5	12.9	12.4	18.1	18.7	20.2
Population share	0.179			0.194			1944			0.202		
South south	13.3	13.7	13.7	23.3	25.6	27.3	12.6	12.5	11.3	14.8	15.2	15.2
Population share	0.137			0.189			2125			0.152		
Sample size	8183			8955			13574			4502		

Table 9 continued......

	Urban						Rural								
	1992			1996			1985			1992			1996		
	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2	P_0	P_1	P_2
Male-headed	87.5	91.1	82.8	83.2	82.8	81.7	88.3	86.2	86.2	88.9	93.3	92.1	91.8	92.5	96.1
Population share	0.828			0.817			0.862			0.855			0.881		
Female-headed	13.8	12.5	12.9	16.8	16.1	16.0	12.1	11.4	10.7	10.9	9.2	7.8	8.2	7.7	5.4
Population share	0.172			0.183			0.138			0.145			0.119		
Northeast	22.9	19.2	16.0	10.9	12.4	11.9	22.9	20.9	25.5	19.2	19.7	18.5	28.2	31.5	32.7
Population share	0.320			0.079			0.209			0.241			0.225		
Northwest	17.5	20.1	20.7	19.6	27.9	30.2	9.1	8.5	9.6	13.1	12.9	12.3	33.0	49.9	60.6
Population share	0.118			0.093			0.096			0.123			0.185		
Middle Belt	11.2	10.4	8.6	22.6	21.1	15.4	37.7	36.3	38.1	15.2	14.7	13.7	25.9	27.4	27.0
Population share	0.115			0.246			0.343			0.162			0.228		
Southeast	8.5	9.4	8.5	12.6	10.5	8.3	4.4	4.1	3.8	7.7	7.9	7.9	8.7	7.4	6.7
Population share	0.085			0.133			0.069			0.079			0.123		
Southwest	19.7	17.2	14.3	14.8	15.9	14.8	14.1	12.3	10.7	19.5	18.9	17.6	13.7	12.7	11.6
Population share	0.191			0.372			0.161			0.208			0.081		
South south	19.5	22.2	21.4	38.2	39.9	37.2	12.7	13.1	13.4	23.8	26.5	32.5	6.8	6.1	5.9
Population share	0.171			0.148			0.124			0.188			0.159		
Sample size	3455			2927			3681			5500			10647		

Note: These figures represents percentages of the poor.

Figure 3a: Poverty incidence curves, national, urban 1985/86–1992/93

Figure 3b: Poverty incidence curves, national, rural 1985/86–1992/93

Figure 3c: Poverty incidence curves, national, gender 1992/93

Figure 3d: Poverty Incidence curves, national, gender 1985/86

Figure 4: Poverty incidence curves, national, 1992/93–1996/97
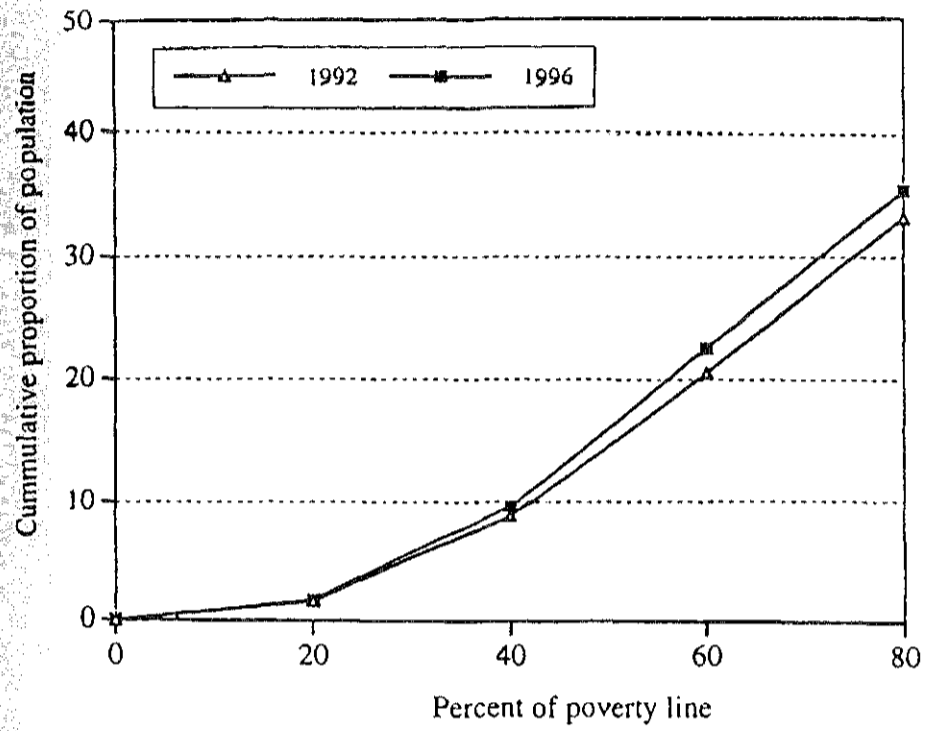
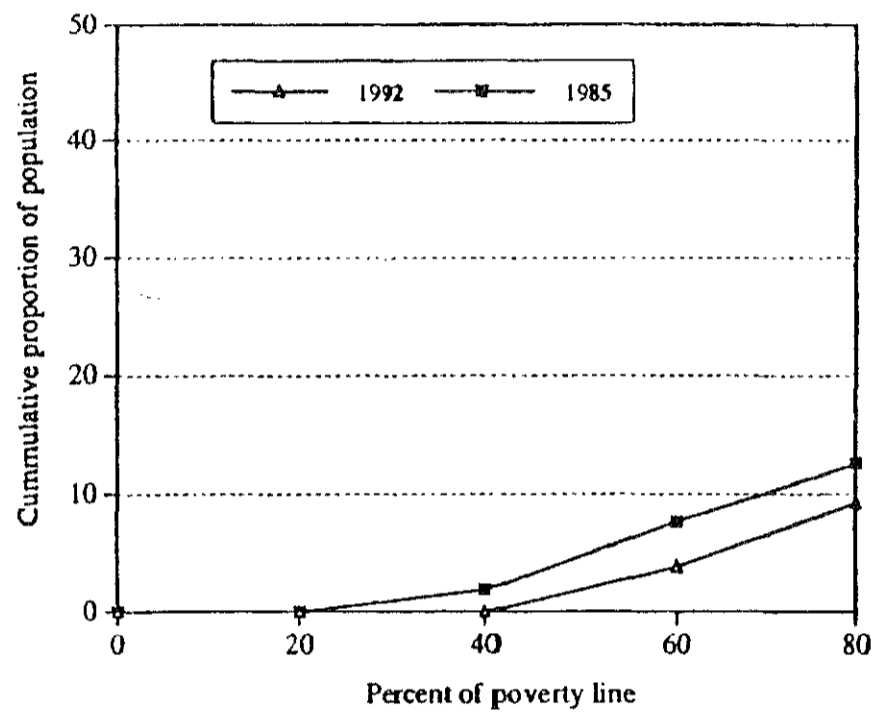**Figure 5a:** Poverty incidence curves, national, urban 1992/93–1996/97
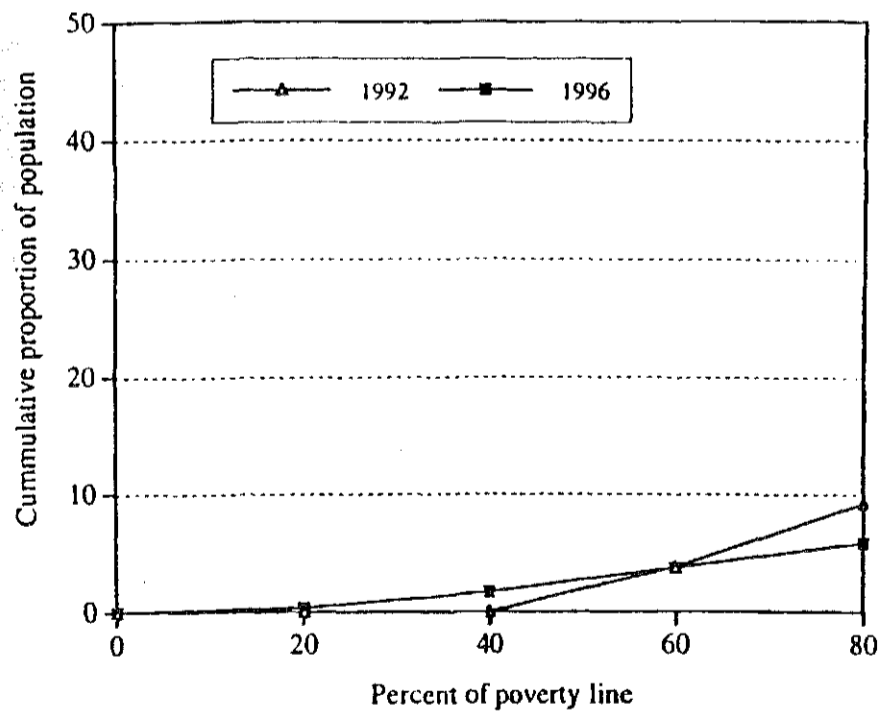
Figure 5b: Poverty incidence curves, national, rural 1992/93–1996/97
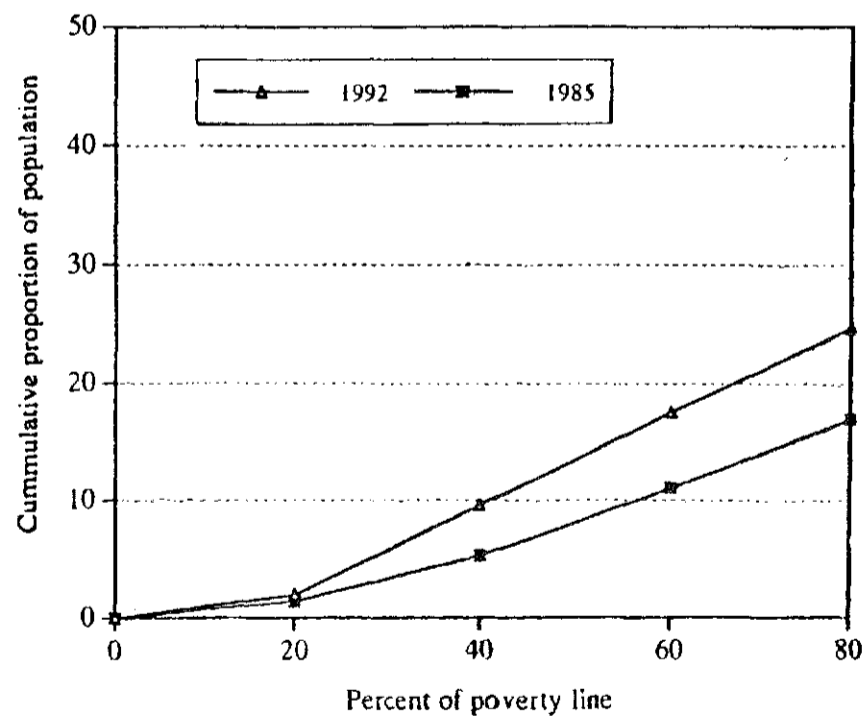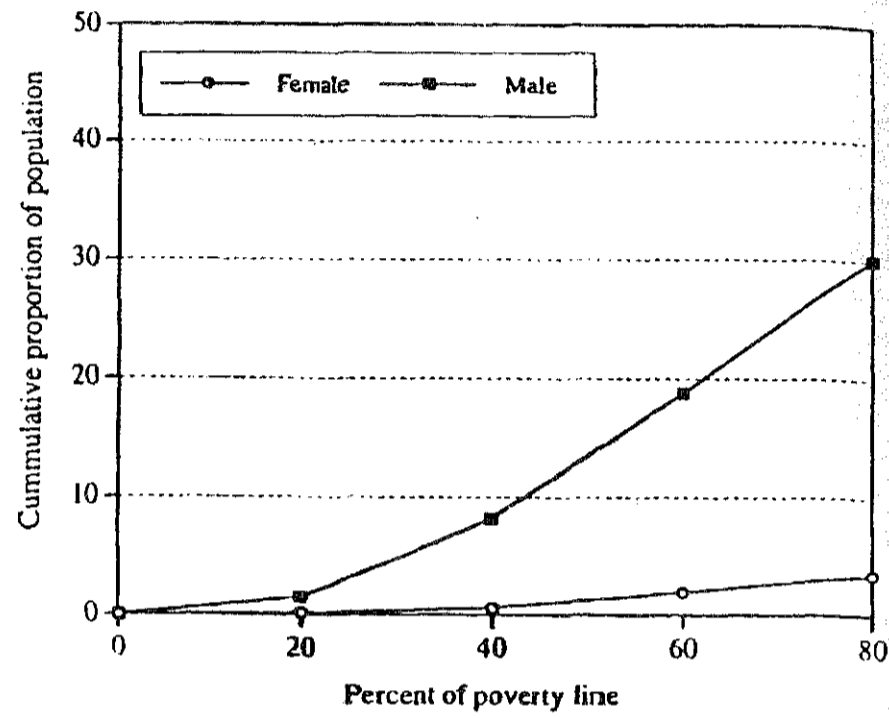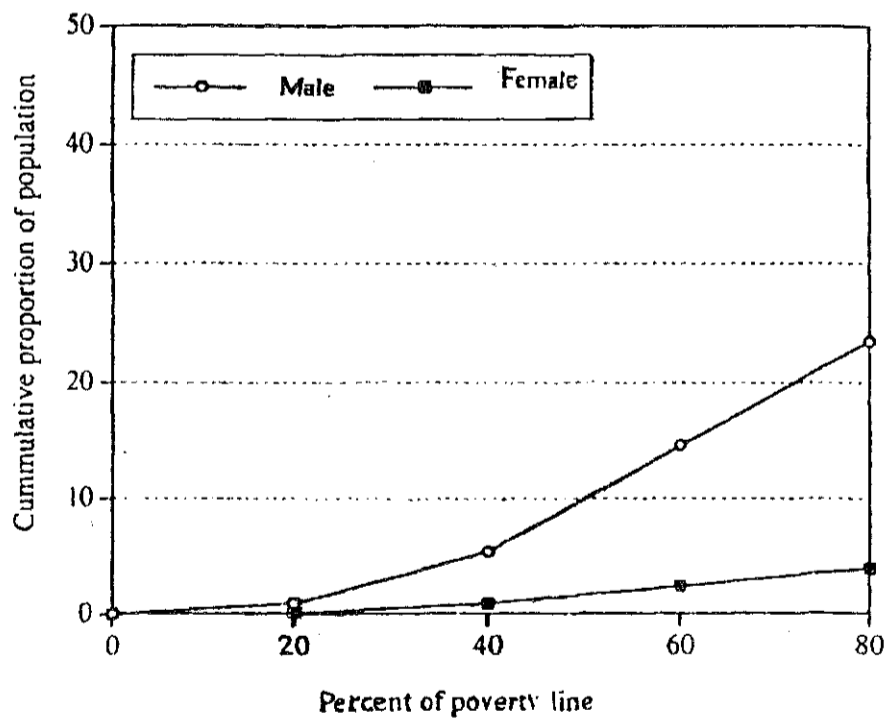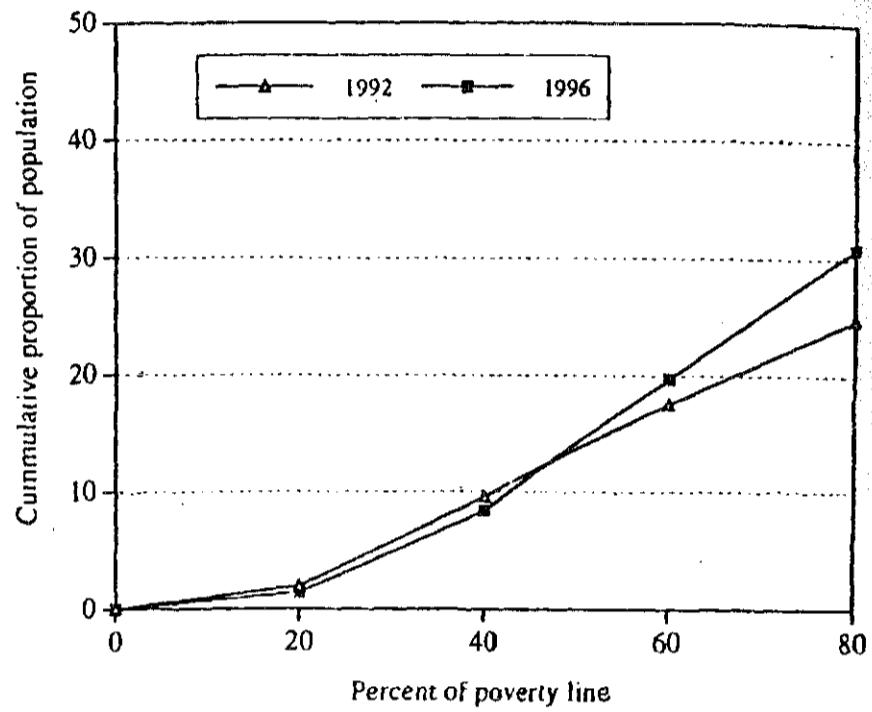

Figure 5c: Poverty incidence curves, national, gender 1992/93
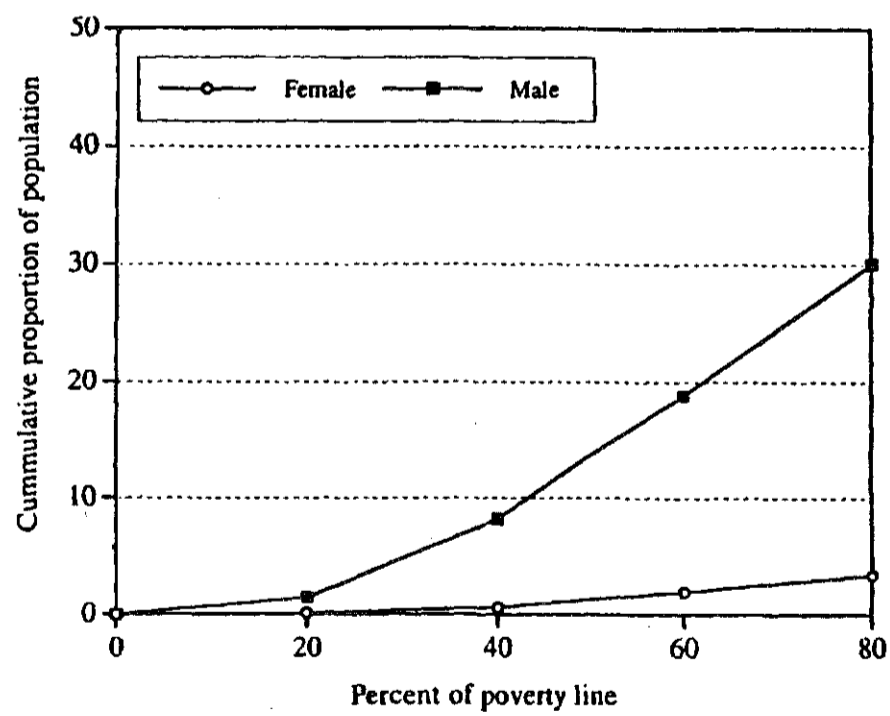
Figure 5d: Poverty incidence curves, national, gender 1996/97

Percent of poverty line
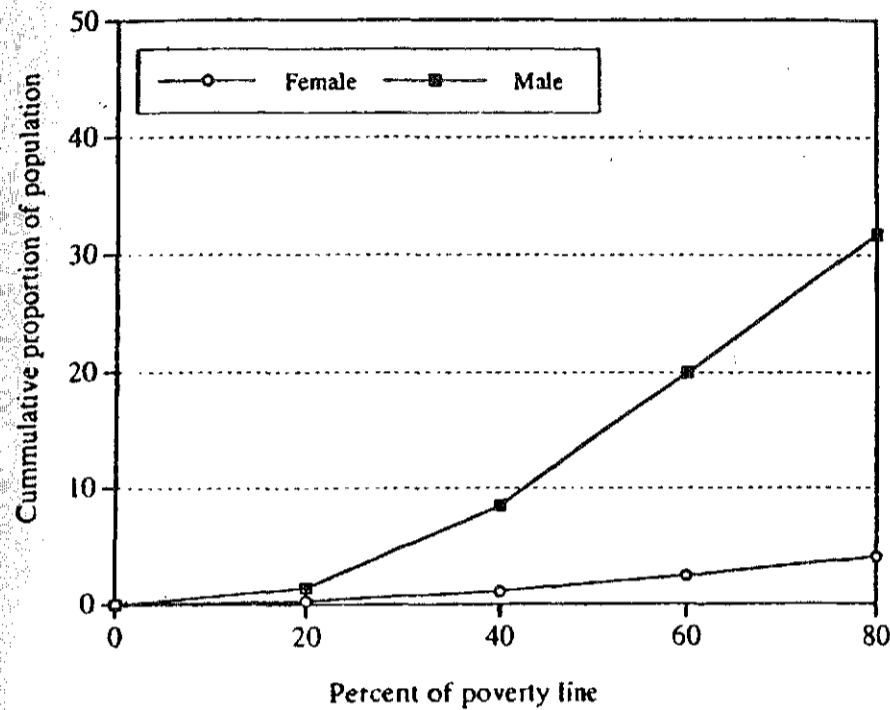
Growth, income inequality and poverty

The link between inequality and poverty has acquired a high profile in discussions on poverty since Ravallion and Huppi (1991). An aspect of inequality that has received little attention is the issue of polarization of income distribution, which is associated with the concept of the disappearing middle class. Table 10 presents two measures, the Gini coefficient, which is more sensitive to the dominance of middle income in the distribution, and the Wolfson index, which is more sensitive to the "absence" or disappearing middle income in the distribution. For a government concerned about continuity and the sustainability of its policies, what is happening to the middle income group may be of more relevance to it. The political feasibility of policy reforms may be significantly influenced by what happens to the middle income. Take, for example, the sudden reversal in reform policies in the early 1990s—could it have been necessitated by political infeasibility in the face of middle income class reaction?

That is why it is important to go beyond conventional inequality measures like the Gini coefficient. Polarization is associated with increased inequality. Figures 6 to 9 display Lorenz curves for the period covered in the study. They provide evidence of increased inequality.

It has been suggested that polarization and inequality can diverge in a developing country context (Ravallion and Chen, 1997). This means that even though conventional measures might suggest that inequality has been decreasing, distribution may become

Figure 6: Lorenz curves for mean per capita expenditure, national, 1985/86–1992/93
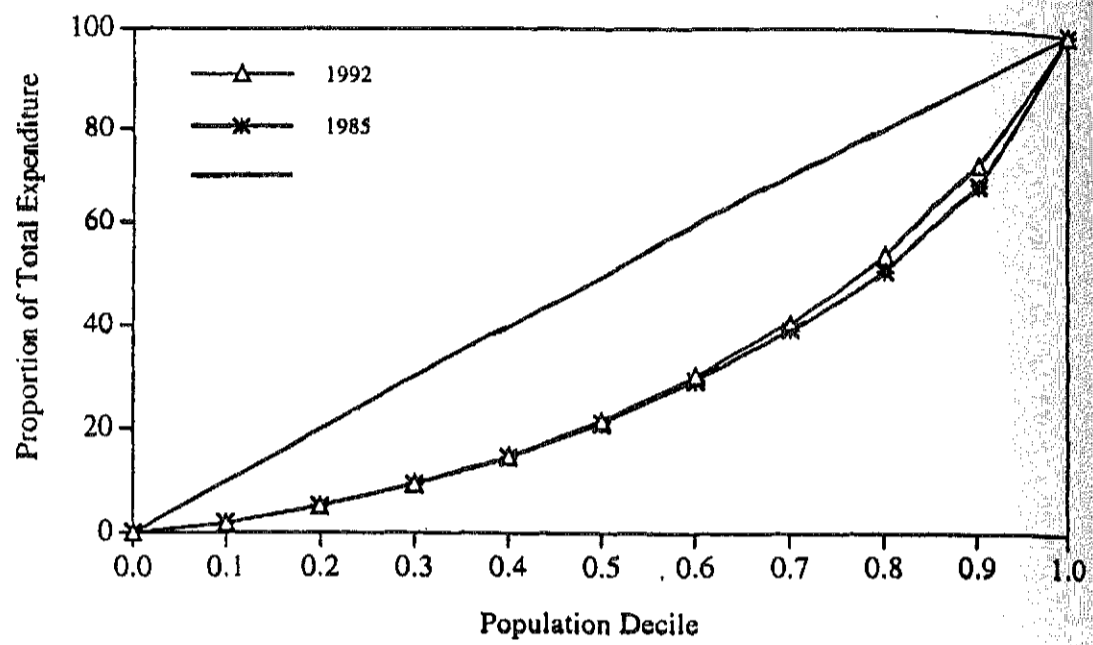
Figure 7a: Lorenz curves for mean PCE distribution (urban 1985/86–1992/93)
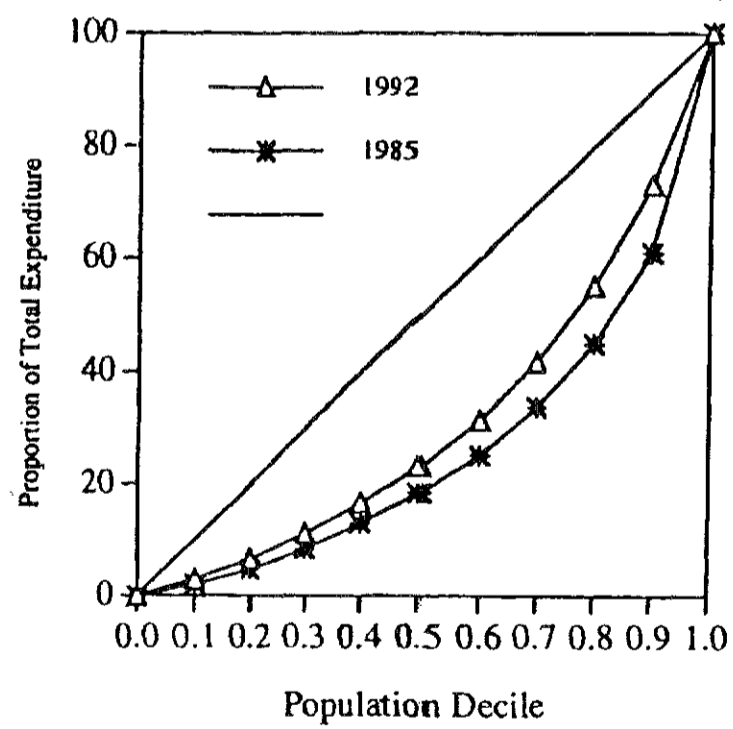
Figure 7b: Lorenz curves for mean PCE distribution (rural 1985/86–1992/93)

Population Decile
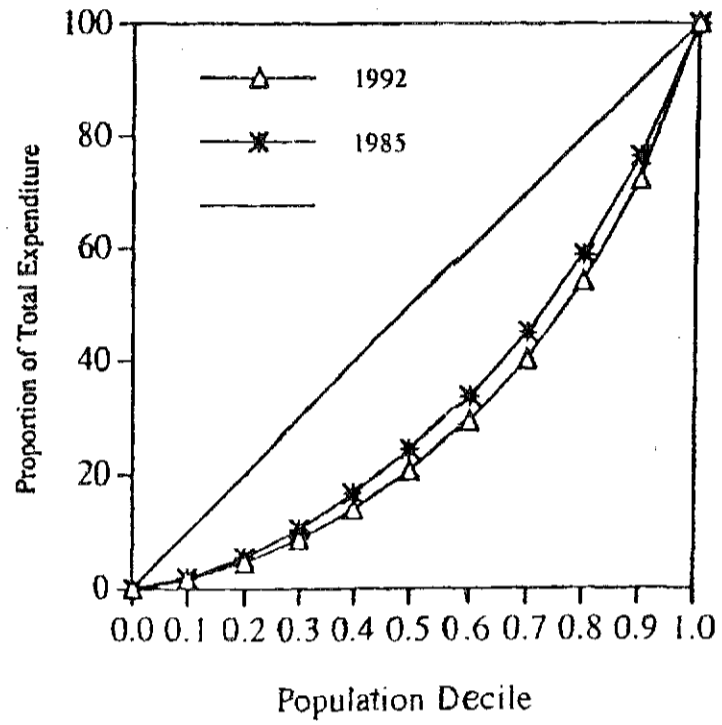
Figure 7c: Lorenz curves for mean PCE distribution (urban and rural 1992/93)

Population Decile
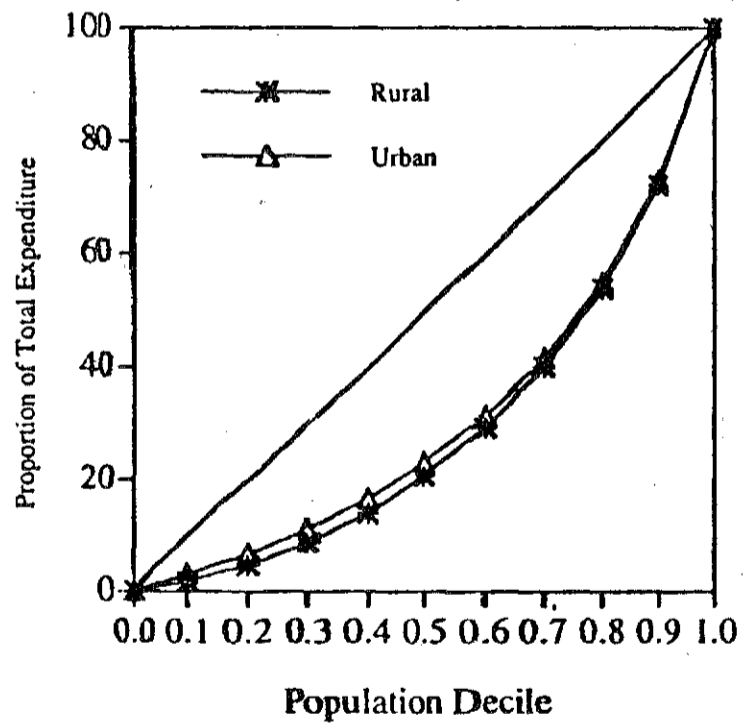
Figure 7d: Lorenz curves for mean PCE distribution (urban and rural 1985/86)
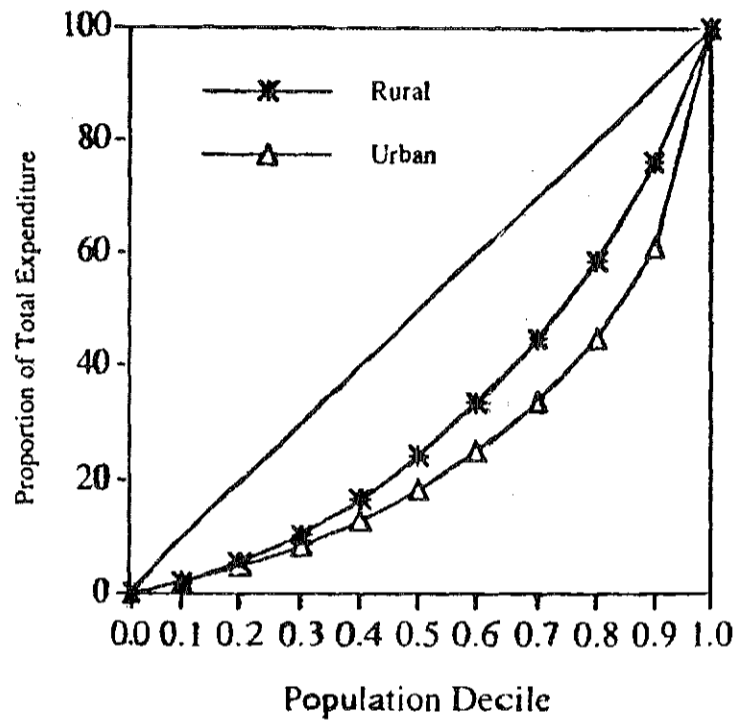
Figure 7e: Lorenz curves for mean PCE distribution by gender 1992/93
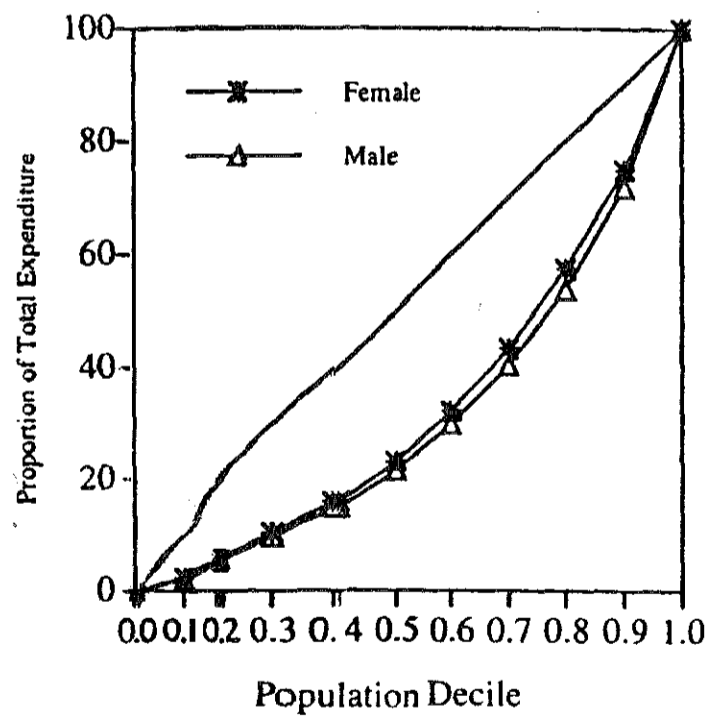
Figure 7f: Lorenz curves for mean PCE distribution by gender 1985/86
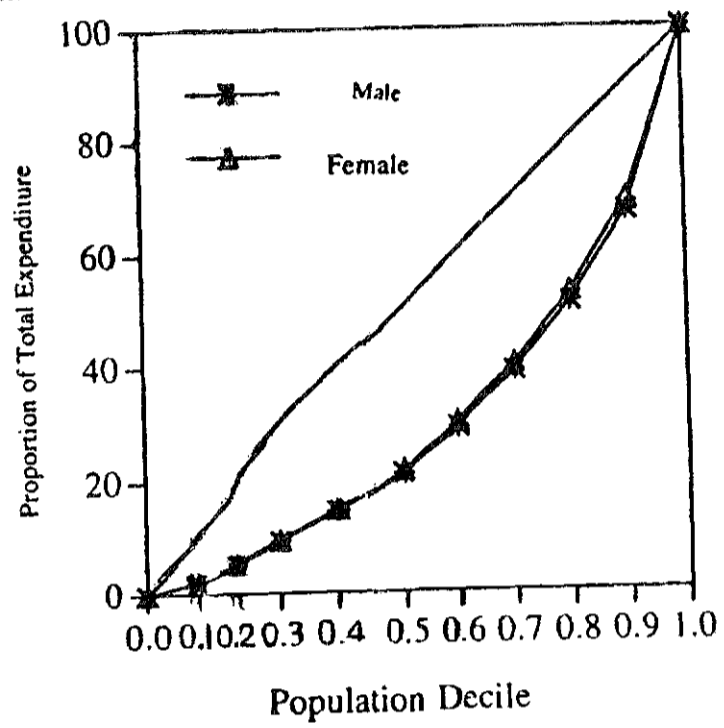
Figure 8: Lorenz curves for mean per capita expenditures, national, 1992/93–1996/97
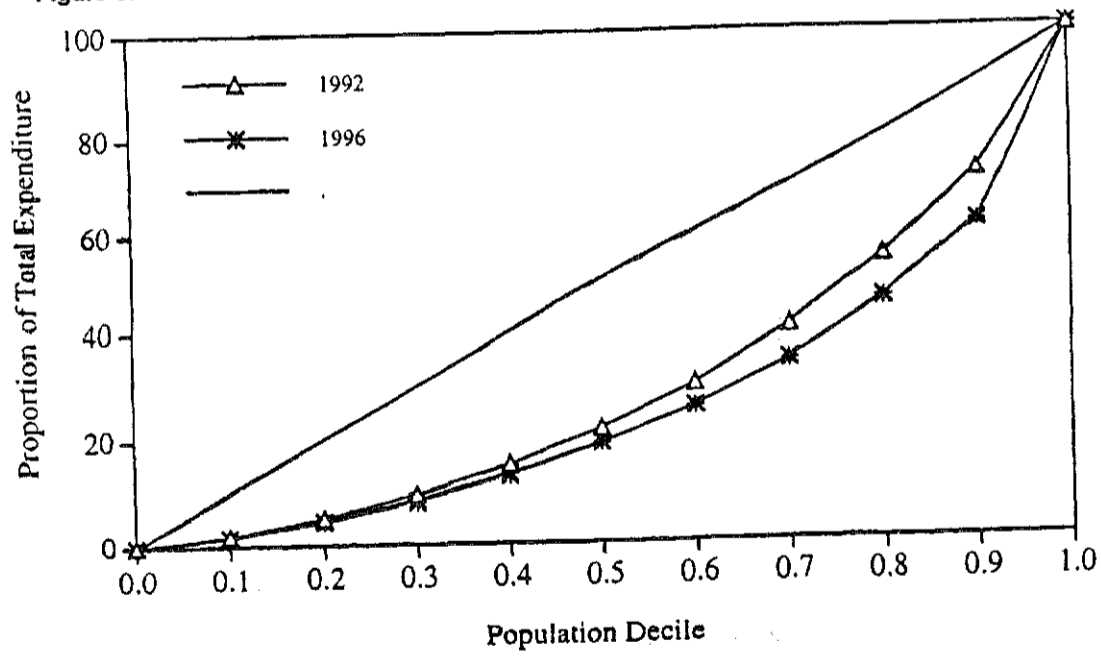
Figure 9a: Lorenz curves for mean PCE distribution (urban 1992/93–1996/97)
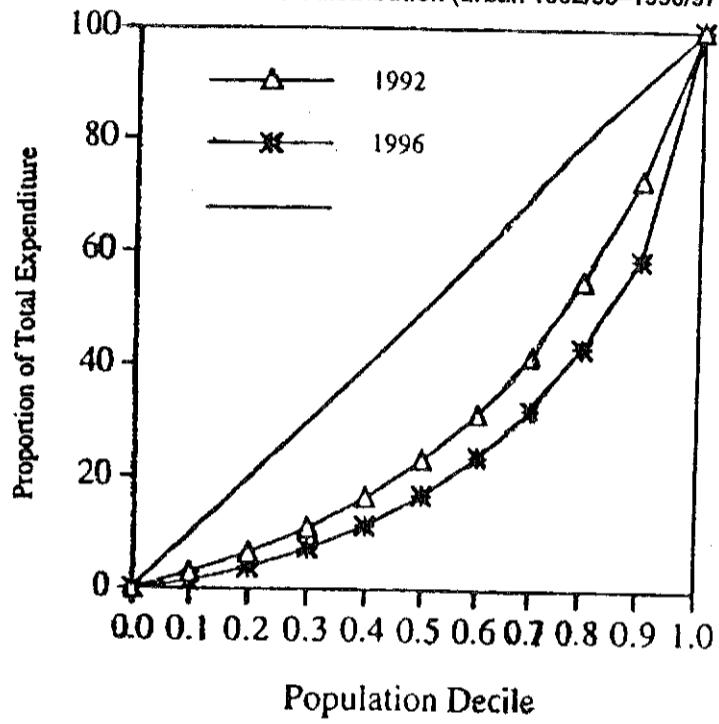
Figure 9b: Lorenz curves for mean PCE distribution (rural 1992/93–1996/97)
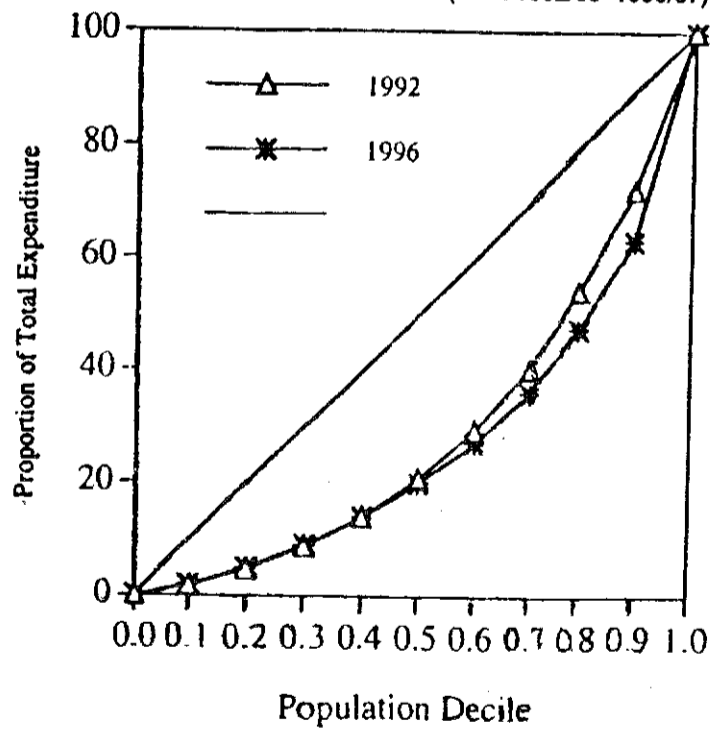
Figure 9c: Lorenz curves for mean PCE distribution (urban and rural 1996/97)
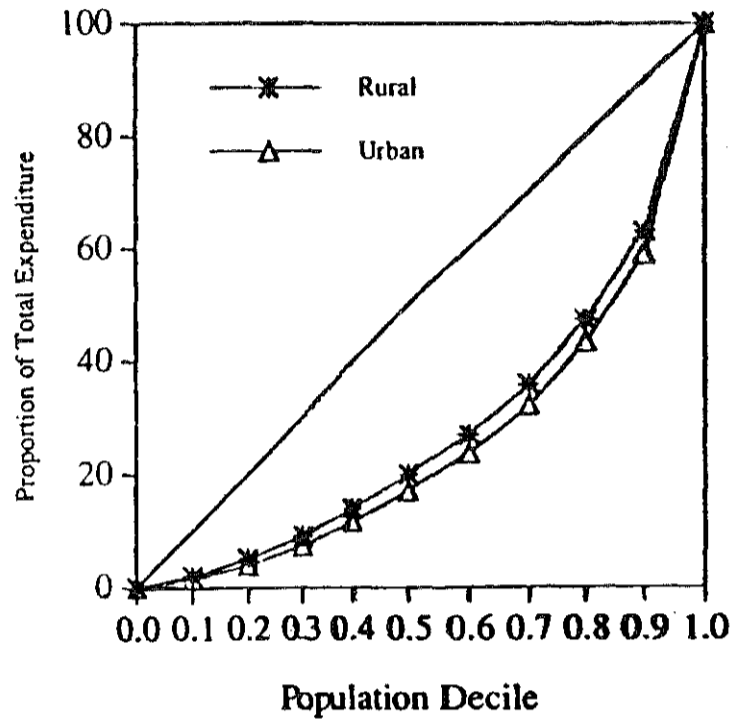
Figure 9d: Lorenz curves for mean PCE distribution by gender 1996/97
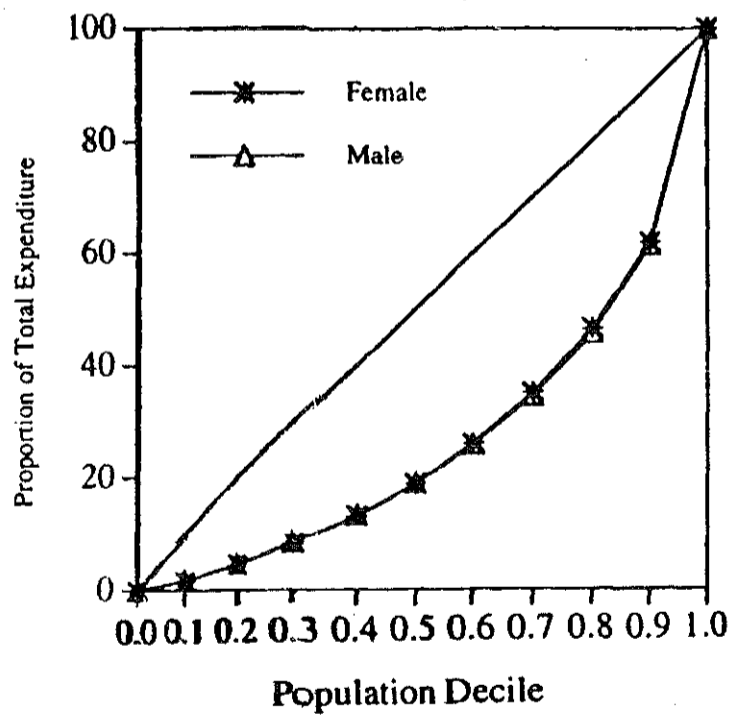
Table 10: Estimates of Gini Coefficient and polarization index by sector, gender and zone, 1985–1996

	Composite						Urban						Rural					
	1985		1992		1996		1985		1992		1996		1985		1992		1996	
	Gini	W	Gini	W	Gini	W	Gini	W	Gini	W	Gini	W	Gini	W	Gini	W	Gini	W
National	0.43	0.64	0.41	0.65	0.49	0.53	0.49	0.55	0.38	0.59	0.52	0.59	0.36	0.72	0.42	0.65	0.47	0.51
Male-headed	0.43	0.63	0.41	0.63	0.49	0.52	0.50	0.51	0.38	0.57	0.51	0.56	0.36	0.68	0.42	0.62	0.47	0.50
Female-headed	0.42	0.69	0.37	0.73	0.48	0.58	0.46	0.46	0.37	0.48	0.52	0.39	0.35	0.43	0.37	0.33	0.46	0.24
Northeast	0.39	0.67	0.39	0.77	0.46	0.47	0.44	0.55	0.39	0.68	0.50	0.29	0.36	0.71	0.38	0.79	0.44	0.80
Northwest	0.41	0.61	0.40	0.58	0.39	0.30	0.45	0.51	0.36	0.48	0.43	0.21	0.35	0.75	0.42	0.62	0.38	0.73
Middle Belt	0.41	0.62	0.40	0.65	0.47	0.53	0.46	0.53	0.38	0.60	0.53	0.42	0.37	0.67	0.41	0.67	0.44	0.67
Southeast	0.44	0.67	0.39	0.69	0.50	0.55	0.51	0.58	0.36	0.64	0.56	0.47	0.30	0.87	0.41	0.69	0.47	0.76
Southwest	0.43	0.66	0.40	0.64	0.49	0.57	0.49	0.62	0.41	0.66	0.51	0.50	0.33	0.74	0.38	0.57	0.45	0.43
South south	0.48	0.62	0.43	0.58	0.47	0.60	0.52	0.56	0.38	0.58	0.42	0.45	0.38	0.73	0.44	0.55	0.48	0.59

Source: Author's estimates.

more polarized and thereby engender social tensions. It should be noted though that the two indexes are not comparable in value, as the polarization index (W) is derived from estimated value of the Gini index (see Equation 2 above). The evidence in Table 10 sheds some light on this perception. First, at the composite level, the two measures tend to diverge noticeably. Secondly, the Wolfson polarization index was generally higher than the Gini in 1985/86 to 1996/97, though less pronounced in the 1990s; it was also more pronounced among female-headed households and in northern zones in 1996/97. Third, at the sectoral level the divergence between the measures became quite pronounced, particularly in the rural areas—once again suggesting a greater degree of polarization in the 1990s. This evidence underscores the need to go beyond conventional measures of inequality if concern is about political feasibility and continuity of reform policies. Another important observation is that as Table 10 shows, while polarization increased between 1985 and 1992, it remained unchanged in urban areas between 1992 and 1996 and actually declined in rural areas. The trend in the latter period is thus in contrast with the general belief of increased polarization.

The issue of the nature of the likely effect of economic growth on inequality dominated the literature for some time after Kuznets (1955) had predicted an initial negative and subsequent positive effect. This issue was examined for Nigeria and was found not to be supported by Nigerian data at the time, drawing on data for 1960, 1975 and 1980 (Aigbokhan, 1985). The current literature has shown a resurgence of interest in this area, particularly the effect of growth on poverty, after the introduction of SAP in many LDCs. An initial impression was that SAP may have brought little real positive benefit to the people, hence the call for SAP "with a human face".

With specific reference to Nigeria, SAP no doubt resulted in positive real growth performance, at least since 1988, as was observed in Table 2. The question has arisen as to whether such growth resulted in reduction or increase in poverty. Canagarajah et al. (1997) examined this issue using data for 1985/86 and 1992/93 and the Ravallion–Datt decomposition methodology. The broad conclusion was that growth accounted for a decline of 4.2 points while distribution accounted for an increase by 14.1 points in the observed decline in poverty.[7]

Three factors make a re-examination of this issue necessary for Nigeria. First is the availability of a more recent data set for 1996/97. Second is the observed phenomenon of polarization in income distribution since that study. And third is the major policy shift in late 1993 that many have seen as a reversal of the reform policy. Thus, in addition to decomposition of change in poverty into its growth and distribution components, it also becomes necessary to attempt to track the effect of change in macroeconomic policy. The latter is more useful for purposes of informing policy making.

Decomposition into growth and distribution components

Following Kakwani (1990) and Huppi and Ravallion (1991), it is widely recognized that a poverty index derived from a well defined poverty line, mean income and Lorenz curve can be decomposed into its growth and redistribution components. That is, changes

in poverty can be attributed to changes in these components. The methodology, represented by Equation 11 and discussed above, is applied in this study. The results are reported in Table 11.

Table 11: Growth and distribution components of the changes in head-count poverty, 1985/86–1996/97

| | | | Decomposition of change in P_0 into: | | | |
| | Change in PCE | | Growth component | | Redistribution component | |
	1985/92	1992/96	1985/92	1992/96	1985/92	1992/96
National	14.1	3.0	1.31	-1.44	-0.27	0.31
Urban	10.85	22.1	2.18	-1.97	-0.12	0.77
Rural	21.1	1.9	1.29	-1.37	-0.05	0.22

Note: Figures in columns 4 to 7 refer to contribution to change in P_0. Figures in columns 2 and 3 are real growth values.
Sources: FOS (1985/86, 1992/93 and 1996/97).

From the evidence in the table, with the income distribution unchanged, poverty would have increased by between 1.29% and 2.18% in 1985/92, while in 1992/96 it would have declined by 1.97%–1.37%. It is observed that the growth effect is more pronounced in the urban areas in the period. An inference that could be drawn is that contrary to the impression that growth may have contributed to an improved poverty situation in 1985–1992, growth in the period seemed to have worsened poverty. However, in the period 1992–1996 the relatively lower growth recorded seemed to have contributed, though marginally, to poverty reduction. The pattern of growth in 1985–1992 and 1992–1996 may explain why there are differential impacts on poverty. First, it should be mentioned that the figures refer to nominal growth. Second, 1985 was the eve of the introduction of SAP. Nominal expenditure therefore grew from a much lower base following naira devaluation-propelled price rises between 1986 and 1992. Third, a very small section of the population, cocoa and rubber farmers, benefited, albeit temporarily, from income rise induced by the devaluation. These factors may explain why in spite of significant growth in nominal PCE in 1985–1992, growth component's contribution was positive rather than negative. In the latter period, on the other hand, a nationwide upward review of salaries in 1992 raised the income level of a large section of the labour force, and this would explain why the resultant growth in PCE had a negative effect on poverty. Redistribution, on the other hand, contributed a lowering impact on poverty in 1985–1992 and an increasing impact in 1996/97.

6. Summary and conclusions

The study investigated the profile of poverty in Nigeria in the context of structural policy reforms introduced in 1986 and the reversal introduced in January 1994. National consumer survey data sets for 1985/86, 1992/93 and 1996/97 from the Federal Office of Statistics were used. Consumption poverty was measured as a departure from earlier studies that measured poverty based on percentile income/expenditure. The issue of polarization of income distribution was also investigated.

As the discussion[6] showed, there are conceptual and empirical problems associated with consumption-based poverty measurement. Also, the data sets used are not without a number of problems typically associated with surveys in developing countries, and especially very large countries like Nigeria. The results, therefore, can only be interpreted with caution.

The findings suggest that there is evidence of increased poverty, inequality and polarization in distribution during the 12-year period covered by the study. While polarization in income distribution increased between 1985 and 1992, it decreased slightly between 1992 and 1996. There is also evidence that poverty and inequality are indeed more pronounced among male-headed households, and in rural areas and the northern geographical zones. This corroborates evidence from other studies based on a different approach to defining the poverty line.

The study found also that there was positive real growth throughout the period studied, yet poverty and inequality worsened. This suggests that the so-called "trickle down" phenomenon, underlying the view that growth improves poverty and inequality, is not supported by the data sets used. This may well be due to the nature of growth pursued and the macroeconomic policies that underlie it. For example, there was generally a deterioration in the macroeconomic policy stance, which nonetheless produced growth. If the relatively more impressive growth of the economy in 1986–1992 could not yield an improvement in poverty, it is not surprising that the relatively lower growth in 1993–1996 could not yield a better poverty profile. This may be because much of the growth is driven by the oil and mining sectors.

In order to improve the poverty situation in the country the findings suggest areas where attention needs to be focused. One such area is to ensure consistency, rather than reversal, in policies. Policies should also be conscious of the need to ensure use of the main assets owned by the poor. Another area is in the distribution of income. Polarization in distribution appears to contribute to increased poverty. A third area is socioeconomic infrastructural facilities. With the widely acknowledged relationship between education and poverty, the low level of literacy reported in this study suggests that there is need to strive to achieve a higher rate.

Notes

1. This is a point also recognized by supporters of the CBN approach. See Ravallion and Sen (1996: 771).

2. The declining trend in income of formal sector wage earners, who are typically among the wealthiest households, suggests the general decline in household income when coupled with declining capacity utilization in manufacturing, which also will be associated with less employment income and profit income growth.

3. By the end of 1996 Nigeria was delineated into 36 states and the Federal Capital Territory, and 774 local government areas. For administrative convenience, six geographical zones were constructed, initially for ease of execution of national programmes on health and education. The structure has, however, assumed geo-political recognition.

4. In line with FOS (1997, 1999), the expenditure figures in the table are in 1996 prices. The factors used by the FOS to raise the prices to 1996 are 28.56 and 5.82 for 1985 and 1992, respectively (FOS, 1999: 35). It has not been possible to clean the data more than was done, otherwise final data may appear radically different from official survey data obtained from the Federal Office of Statistics, which has itself produced three versions to date of the survey data.

5. Canagarajah et al. (1997) found declining poverty between 1985 and 1992 while this study found increasing poverty. This may be due partly to differences in methodology (Canagarajah et al. used a relative poverty approach) and partly to differences in data used. The 1992 and 1996 data set used in this study was revised by the FOS in 1998 after Canagarajah's study. See note 3.

6. In an attempt to compare our result with FOS (1997), we applied the same method used in that study. FOS (1997), adopting a poverty line of 657.67, i.e, two-thirds mean PCE, obtained a head-count measure of 48.5% national, 42.9% urban and 50% rural in the 1996/97 data set. For the present study, a poverty line of 815.52, i.e, two-thirds of mean PCE of 1,223.28, yielded estimates of 51.7%, 40.5% and 55.4% for national, urban and rural poverty in 1996/97. Differences in mean PCE are due to differences in sample size. FOS (1997) had a sample size of 13,801. For the present study the size is 13,574, after eliminating households that were not classified by gender or sectoral location.

7. Canagarajah et al. (1997: 37): "By components, distributionally neutral growth accounted for a decline of 4.2 points, while distributional shifts accounted for an increase by 14.1 points; the residual effect contributes to decreasing poverty by 18.8 points. The growth component dominates for all measures and contributes more to poverty reduction... However, the effect of the growth component in all the cases, mitigated the adverse effect of the redistribution effect."

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Appendix A

Parameter estimates of the FEI equation

		1985/86	
		t-ratio	Adjusted R^2
National			
	a	6.544	
	b	$0.256.10^{-3}$	107.01	0.58
Urban			
	a	6.659	
	b	$0.204.10^{-3}$	79.53	0.63
Rural			
	a	5.951	
	b	$0.592.10^{-3}$	153.86	0.84
Male-headed			
	a	6.490	
	b	$0.311.10^{-3}$	56.91	0.72
Female-headed			
	a	6.547	
	b	$0.248.10^{-3}$	94.53	0.56
Northeast			
	a	6.308	
	b	$0.373.10^{-3}$	49.65	0.63
Northwest			
	a	6.272	
	b	$0.391.10^{-3}$	50.94	0.73
North central			
	a	6.428	
	b	$0.305.10^{-3}$	62.29	0.60
Southeast			
	a	6.917	
	b	$0.154.10^{-3}$	26.32	0.52
Southwest			
	a	6.619	
	b	$0.254.10^{-3}$	54.51	0.67
South south			
	a	6.618	
	b	$0.214.10^{-3}$	38.55	0.57

			1992/93
		t-ratio	Adjusted R^2
National			
a	5.076		
b	$0.771.10^{-3}$	206.04	0.83
Urban			
a	5.304		
b	$0.643.10^{-3}$	164.67	0.89
Rural			
a	4.939		
b	$0.865.10^{-3}$	158.54	0.82
Male-headed			
a	5.052		
b	$0.786.10^{-3}$	186.56	0.82
Female-headed			
a	5.233		
b	$0.690.10^{-3}$	89.48	0.85
Northeast			
a	5.210		
b	$0.685.10^{-3}$	69.22	0.81
Northwest			
a	4.992		
b	$0.845.10^{-3}$	83.41	0.84
North central			
a	5.137		
b	$0.737.10^{-3}$	110.21	0.83
Southeast			
a	5.040		
b	$0.811.10^{-3}$	61.75	0.84
Southwest			
a	5.109		
b	$0.754.10^{-3}$	91.32	0.83
South south			
a	4.956		
b	$0.840.10^{-3}$	85.45	0.81
			1996/97
National			
a	6.016		
b	$0.280.10^{-3}$	95.55	0.40
Urban			
a	6.151		
b	$0.226.10^{-3}$	45.89	0.41
Rural			
a	5.965		
b	$0.314.10^{-3}$	84.49	0.40
Male-headed			
a	5.979		
b	$0.290.10^{-3}$	89.26	0.40
Female-headed			
a	6.261		

b	$0.229.10^{-3}$	34.33	0.40
Northeast			
a	5.747		
b	$0.4459.10^{-3}$	46.80	0.49
Northwest			
a	5.457		
b	$0.838.10^{-3}$	63.57	0.61
Northcentral			
a	6.01		
b	$0.284.10^{-3}$	47.86	0.42
Southeast			
a	6.398		
b	$0.146.10^{-3}$	25.31	0.30
Southwest			
a	6.173		
b	$0.248.10^{-3}$	36.87	0.41
South south			
a	6.095		
b	$0.305.10^{-3}$	47.61	0.52

Appendix B

Cost of basic needs poverty lines for Nigeria, 1996/97

In applying this method the average quantities of food items most frequently consumed by the typical poor, say the bottom 20% of the population, were derived. These are listed in Table B1. This was converted into calorie consumption and was scaled up where necessary to provide 2030 Kcal per person per day. For the 1985/86 data only the rural figures had to be scaled up, and this was by a factor of 1.2. For the 1992/93 data rural figures were similarly scaled up, this time by a factor of 1.5. The 1996/96 data did not require scaling.

Content of the average consumption bundle was then further scaled up to attain the level of Kcals per four-week month. The number of units required of each commodity to attain required calorie intake was then derived. Lastly, the food bundle was valued by multiplying the number of units required by local unit price to obtain total cost of food bundle or food poverty line in urban and rural areas respectively, shown in Table B1 to B6. Current prices were used.

The second stage was to derive the total poverty line, Z. This was done by estimating Equation B1:

$$\text{Log}W = a + b(X_i / Z_f) \tag{B1}$$

The variables are as defined in the text (see Equation 14). Having derived the total poverty lines, P_0, P_1 and P_2 were calculated, reported in table B7.

In an earlier report, national prices (national averages) were used in calculating the cost of basket bundles. This produced lower values of P's. However, use of region-specific prices, which is more representative of the actual situation in each region, yielded higher value of P's.

Table B1: Monthly per capita food poverty line—National urban average, 1985

Food item	Monthly consumption kg	Calories per kg	Total calories consumed per month	Units required	Prices N/Kg 1985	Food expenditure poverty line
Cassava	2.54	3,510	8,915.0	2.54	0.97	2.46
Beans	1.71	3,420	5,848.2	1.71	2.53	4.33
Rice	2.13	3,640	7,753.2	2.13	2.61	5.56
Maize	1.6	3,570	5,712.0	1.6	1.17	1.87
Millet	1.2	3,330	3,996.0	1.2	1.5	1.8
Yam	2.87	1,235	3,544.5	2.87	1.07	3.07
Meat	0.93	2,500	2,325.0	0.93	6.19	5.76
Fish (dried)	1.07	2,890	3,092.3	1.07	13.62	14.57
Eggs	0.53	1,400	742.0	0.53	3.72	1.97
Palm oil	0.8	8,750	7,000.0	0.80	3.61	2.89
Tomatoes	1.73	220	380.6	1.73	1.60	2.77
Pepper	0.58	940	545.2	0.58	2.51	1.46
Fruits	0.17	430	73.1	0.17	1.29	0.22
Vegetables	0.29	250	72.3	0.29	1.10	0.32
Onions	1.87	410	766.7	1.87	1.02	1.91
Sugar	1.47	4,000	5,880.0	1.47	2.49	3.66
			56,646			54.62

Source: Author's calculations.

Table B2: Monthly per capita food poverty line—National rural average, 1985

Food item	Monthly consumption kg	Calories per kg	Total calories consumed per month	Total calories required per month	Units required	Prices N/Kg 1985	Food expenditure poverty line
Cassava	2.13	3,510	7,476.3	8,928.6	2.54	0.82	2.08
Beans	1.25	3,420	4,275	5,130	1.5	2.06	3.09
Rice	1.13	3,640	4,113.2	4,935.8	1.36	2.23	3.03
Maize	2.33	3,570	8,318.1	9,981.7	2.79	0.99	2.76
Millet	1.47	3,330	4,895.1	6,174	1.76	1.27	2.24
Yam	3.4	1,235	4,199	5,038.8	4.08	0.91	3.71
Fish (dried)	0.45	2,890	1,300.5	1,350	0.54	5.12	2.77
Eggs	1.53	1,400	2,142.0	5,306	1.84	11.54	21.23
Palm oil	0.13	8,750	1,137.5	218.4	0.16	3.15	0.51
Tomatoes	0.57	220	125.4	5,985	0.68	3.07	2.09
Pepper	0.61	940	573.4	161	0.73	1.36	0.99
Fruits	0.45	430	193.5	507.6	0.54	2.13	1.15
Vegetables	0.87	250	217.5	448.9	1.04	1.10	1.15
Onions	1.4	410	574.0	420	1.68	0.91	1.53
Sugar	1.07	4,000	4,280.0	526.4	1.28	0.86	1.10
Meat	0.58	2,500	900	1,728.0	0.69	2.11	1.45
			44,720.5	56,840			50.35

Source: Author's calculations.

Table B3: Monthly per capita food poverty line—National urban average, 1992

Food item	Monthly consumption (kg)	Calories per kg	Total calories consumed per month	Units required	Prices ₦/Kg 1992	Food expenditure poverty line
Cassava	4.20	3,510	14,742	4.2	12.26	51.49
Beans	0.91	3,420	3,112	0.91	8.28	7.54
Rice	2.50	3,640	9,100	2.50	12.50	31.25
Maize	1.20	3,570	4,284	1.20	5.76	6.91
Millet	1.00	3,330	3,330	1.00	5.00	5.00
Yam	3.6	1,235	4,446	3.6	19.44	69.98
Fish (dried)	0.38	2,890	1,098	0.38	18.13	6.89
Eggs	0.09	1,400	126	0.09	1.94	0.18
Palm oil	0.48	8,750	4,200	0.48	6.48	3.11
Tomatoes	0.14	220	31	0.14	0.95	0.13
Pepper	0.11	940	103	0.11	1.99	0.22
Fruits	0.17	430	73	0.17	1.17	0.20
Vegetables	0.52	250	130	0.52	2.29	1.19
Onions	3.61	410	1,480	3.61	29.63	106.96
Sugar	2.39	4,000	9,560	2.39	22.23	53.13
Meat	0.41	2,500	1,025	0.41	12.59	5.16
			56,840			349.34

Source: Author's calculations.

Table B4:   Monthly per capita food poverty line—National rural average, 1992

Food item	Monthly consumption (kg)	Calories per month	Total calories consumed per month	Units required	Prices ₦/Kg 1992	Food expenditure poverty line
Cassava	2.78	3,510	9,758	2.78	12.79	35.56
Beans	1.30	3,420	4,446	1.30	10.14	12.18
Rice	0.71	3,640	2,584	0.71	10.65	7.56
Maize	5.06	3,570	18,064	5.06	20.75	104.99
Millet	0.64	3,330	2,131	0.64	2.75	1.76
Yam	2.02	1,235	2,495	2.02	9.29	18.76
Meat	0.32	2,500	800	0.32	8.83	2.83
Fish (dried)	2.93	2,890	8,468	2.93	22.18	64.97
Eggs	0.03	1,400	42	0.03	0.57	0.03
Palm oil	0.24	8,750	2,100	0.44	6.82	3.00
Tomatoes	0.07	220	15	0.07	0.77	0.05
Pepper	0.21	940	197	0.21	3.49	0.73
Fruits	0.23	430	99	0.23	1.45	0.33
Vegetables	1.19	250	297	1.19	4.76	5.66
Onions	1.69	410	693	1.69	12.68	21.43
Sugar	1.15	4,000	4,600	1.15	14.26	16.40
			56,800			299.24

Source: Author's calculations.

Table B5: Monthly per capita food poverty line–National urban average, 1996

Food item	Monthly consumption (kg)	Calories per kg	Total calories per month	Units required	Prices ₦/Kg 1996	Food expenditure poverty line
Cassava	2.64	3,510	9,266.4	2.64	103.30	272.71
Beans	2.46	3,420	8,413.2	2.46	134.77	331.53
Rice	2.20	3,640	8,008.0	2.20	123.06	270.73
Maize	2.28	3,570	8,139.6	2.28	44.95	102.49
Millet	0.38	3,330	1,265.4	0.38	32.00	12.16
Yam	3.29	1,235	4,063.2	3.29	143.72	472.84
Meat	1.63	2,500	4,075.0	1.63	129.87	211.69
Fish (dried)	1.90	2,890	5,491.0	1.90	360.43	684.82
Eggs	0.44	1,400	616.0	0.44	42.11	18.53
Palm oil	0.52	8,750	4,550.0	0.52	186.15	96.80
Tomatoes	2.58	220	567.6	2.58	131.01	338.01
Pepper	0.87	940	817.8	0.87	28.37	24.68
Fruits	0.34	430	146.2	0.34	24.8	8.43
Vegetables	1.28	250	320	1.28	35.58	45.54
Onions	0.57	410	233.7	0.57	47.26	26.94
Sugar	0.22	4,000	880.0	0.22	43.23	9.51
			56,853.1			2,928.93

Source: Author's calculations.

Table B6: Monthly per capita food poverty line–National rural average, 1996

Food item	Monthly consumption kg	Calories per kg	Total calories consumed per month	Units required	Prices N/Kg 1996	Food expenditure poverty line
Cassava	3.20	3,510	11,232.0	3.20	123.14	394.05
Beans	2.30	3,420	7,866.0	2.30	102.60	235.98
Rice	1.92	3,640	6,988.8	1.92	94.71	181.84
Maize	2.73	3,570	9,746.1	2.73	47.23	128.94
Millet	0.54	3,330	1,798.2	0.54	35.56	19.20
Yam	2.94	1,235	3,630.9	2.94	106.21	312.26
Meat	0.86	2,500	2,150.0	0.86	154.89	133.21
Fish (dried)	1.55	2,890	4,479.5	1.55	345.65	535.76
Eggs	0.18	1,400	252.0	0.18	20.20	3.64
Palm oil	0.73	8,750	6,387.5	0.73	122.14	89.16
Tomatoes	1.92	220	422.4	1.92	94.85	182.11
Pepper	0.39	940	366.6	0.39	36.74	14.33
Fruits	0.57	430	245.1	0.57	19.15	10.92
Vegetables	1.03	250	257.5	1.03	28.74	29.60
Onions	0.69	410	282.9	0.69	20.94	14.17
Sugar	0.14	4,000	560.0	0.14	37.76	5.29
			56,665.50			2290.46

Source: Author's calculations.

Table B7: Estimates of poverty, 1996/97: CBN method

	P_0	P_1	P_2
National	0.745	0.390	0.244
Urban	0.872	0.528	0.363
Rural	0.898	0.587	0.432
Male-headed	0.762	0.404	0.255
Female-headed	0.628	0.296	0.175
Northeast	0.824	0.455	0.295
Northwest	0.892	0.520	0.342
North central	0.748	0.385	0.237
Southeast	0.659	0.301	0.169
Southwest	0.612	0.295	0.177
South south	0.699	0.337	0.200

Source: Author's calculations.

Appendix C

Regional distribution of inequality, polarization and poverty, 1985/5–1996/97

Table C1: Regional distribution of inequality, polarization and poverty, 1985/86

	URBAN						RURAL					
	Gini	Wolf-son	P_0	P_1	P_2	N	Gini	Wolf-son	P_0	P_1	P_2	N
National	0.49	0.55	0.38	0.13	0.06	3681	0.36	0.72	0.41	0.17	0.09	4502
Anambra	0.54	0.57	0.33	0.12	0.06	156	0.32	0.89	0.27	0.12	0.06	182
Bauchi	0.38	0.41	0.60	0.20	0.09	118	0.36	0.67	0.52	0.23	0.13	414
Bendel	0.49	0.59	0.36	0.13	0.06	176	0.34	0.67	0.40	0.14	0.07	217
Benue	0.53	0.51	0.38	0.14	0.06	217	0.39	0.68	0.48	0.20	0.11	256
Borno	0.39	0.61	0.38	0.12	0.05	141	0.36	0.68	0.43	0.16	0.09	219
Cross Rivers	0.52	0.58	0.35	0.12	0.05	176	0.40	0.72	0.41	0.18	0.10	198
Gongola	0.46	0.59	0.38	0.15	0.07	222	0.36	0.78	0.39	0.17	0.10	306
Imo	0.44	0.63	0.36	0.12	0.06	169	0.27	0.81	0.23	0.08	0.03	127
Kaduna	0.44	0.58	0.41	0.16	0.07	203	0.35	0.65	0.43	0.16	0.08	340
Kano	0.43	0.48	0.49	0.17	0.08	300	0.34	0.66	0.49	0.18	0.10	255
Kwara	0.45	0.57	0.36	0.12	0.05	302	0.36	0.75	0.40	0.16	0.09	365
Lagos	0.48	0.58	0.38	0.12	0.06	199	0.32	0.79	0.34	0.12	0.06	196
Niger	0.36	0.41	0.64	0.26	0.13	152	0.36	0.59	0.49	0.19	0.09	129
Ogun	0.45	0.65	0.34	0.12	0.06	191	0.37	0.70	0.43	0.18	0.09	214
Ondo	0.50	0.63	0.33	0.12	0.06	178	0.33	0.77	0.33	0.12	0.06	146
Oyo	0.49	0.64	0.28	0.10	0.05	174	0.31	0.63	0.35	0.10	0.04	167
Plateau	0.38	0.49	0.52	0.18	0.08	158	0.38	0.65	0.47	0.19	0.11	452
Rivers	0.54	0.52	0.39	0.14	0.06	209	0.42	0.74	0.49	0.25	0.16	142
Sokoto	0.46	0.55	0.44	0.13	0.06	240	0.36	0.84	0.33	0.13	0.08	177

Source: Author's estimates.

Table C2: Regional distribution of inequality, polarization and poverty, 1992/93

	URBAN						RURAL					
	Gini	Wolf son	P_0	P_1	P_2	N	Gini	Wolf son	P_0	P_1	P_2	N
National	0.38	0.59	0.35	0.10	0.04	3455	0.42	0.65	0.49	0.22	0.13	5500
FCT	0.39	0.42	0.56	0.18	0.07	107	0.39	0.36	0.88	0.52	0.35	179
Akwa Ibom	0.37	0.75	0.24	0.08	0.03	70	0.42	0.42	0.79	0.44	0.28	143
Anambra	0.36	0.60	0.39	0.12	0.05	201	0.37	0.77	0.37	0.15	0.08	228
Bauchi	0.39	0.77	0.21	0.04	0.01	135	0.32	0.84	0.30	0.12	0.07	273
Bendel	0.37	0.49	0.50	0.17	0.07	264	0.43	0.38	0.82	0.46	0.30	291
Benue	0.37	0.68	0.28	0.08	0.03	188	0.39	0.62	0.40	0.14	0.07	229
Borno	0.37	0.53	0.45	0.14	0.05	137	0.39	0.58	0.66	0.32	0.20	173
Cross River	0.39	0.60	0.37	0.12	0.05	195	0.40	0.65	0.56	0.27	0.17	305
Gongola	0.35	0.74	0.17	0.04	0.01	136	0.40	0.82	0.35	0.17	0.10	232
Imo	0.37	0.71	0.32	0.09	0.03	91	0.44	0.58	0.60	0.31	0.19	207
Kaduna	0.37	0.63	0.29	0.07	0.02	182	0.35	0.77	0.33	0.12	0.06	269
Kano	0.35	0.68	0.32	0.08	0.03	121	0.33	0.84	0.24	0.08	0.04	290
Katsina	0.30	0.31	0.74	0.30	0.14	141	0.42	0.42	0.74	0.42	0.26	324
Kwara	0.38	0.51	0.37	0.10	0.03	145	0.42	0.62	0.58	0.29	0.18	265
Lagos	0.40	0.60	0.26	0.06	0.02	200	0.38	0.74	0.41	0.16	0.09	383
Niger	0.36	0.54	0.41	0.12	0.04	268	0.43	0.61	0.53	0.25	0.15	166
Ogun	0.36	0.47	0.56	0.20	0.09	145	0.39	0.40	0.76	0.38	0.08	292
Ondo	0.37	0.56	0.38	0.10	0.03	134	0.39	0.77	0.35	0.15	0.08	275
Oyo	0.30	0.60	0.39	0.11	0.04	113	0.41	0.71	0.42	0.17	0.09	191
Plateau	0.36	0.69	0.28	0.07	0.03	216	0.39	0.77	0.28	0.11	0.05	216
Rivers	0.36	0.66	0.34	0.12	0.05	131	0.45	0.65	0.49	0.23	0.13	295
Sokoto	0.34	0.47	0.59	0.23	0.11	135	0.43	0.55	0.59	0.27	0.15	274

Source: Author's estimates.

Table C3: Regional distribution of inequality, polarization and poverty, 1996/97

	URBAN						RURAL					
	Gini	Wolf-son	P_0	P_1	P_2	N	Gini	Wolf-son	P_0	P_1	P_2	N
National	0.52	0.59	0.37	0.14	0.08	2311	0.47	0.51	0.51	0.20	0.11	8269
FCT	0.64	0.54	0.29	0.12	0.07	107	0.47	0.54	0.42	0.12	0.06	64
Abia	0.49	0.81	0.23	0.10	0.06	49	0.37	0.56	0.41	0.13	0.06	186
Adamawa	0.49	0.71	0.48	0.25	0.15	48	0.48	0.48	0.53	0.21	0.11	466
Akwa Ibom	0.38	0.64	0.59	0.26	0.16	70	0.43	0.48	0.58	0.24	0.13	464
Anambra	0.50	0.44	0.49	0.13	0.05	39	0.52	0.55	0.34	0.12	0.06	357
Bauchi	0.41	0.37	0.85	0.47	0.31	40	0.34	0.25	0.88	0.66	0.47	533
Benue	0.54	0.66	0.25	0.09	0.05	85	0.42	0.51	0.50	0.19	0.09	461
Borno	0.36	0.49	0.37	0.11	0.04	81	0.36	0.41	0.70	0.29	0.16	316
Cross River	0.41	0.77	0.30	0.12	0.06	96	0.41	0.56	0.52	0.22	0.12	427
Delta	0.34	0.68	0.54	0.24	0.14	58	0.48	0.57	0.44	0.17	0.09	321
Edo	0.34	0.57	0.49	0.16	0.08	153	0.43	0.55	0.43	0.14	0.07	126
Enugu	0.64	0.49	0.29	0.11	0.05	59	0.40	0.52	0.46	0.16	0.07	466
Imo	0.39	0.45	0.11	0.05	0.02	38	0.45	0.53	0.49	0.18	0.09	300
Jigawa	0.11	0.08	0.88	0.56	0.43	10	0.32	0.22	0.89	0.79	0.65	544
Kaduna	0.46	0.55	0.39	0.12	0.05	153	0.45	0.51	0.47	0.17	0.08	381
Kano	0.43	0.42	0.83	0.48	0.32	128	0.34	0.25	0.82	0.53	0.34	404
Katsina	0.46	0.50	0.63	0.28	0.16	40	0.36	0.29	0.86	0.44	0.26	455
Kebbi	0.26	0.21	0.78	0.68	0.49	20	0.42	0.35	0.81	0.41	0.25	507
Kogi	0.34	0.24	0.84	0.51	0.34	30	0.45	0.36	0.87	0.54	0.38	337
Kwara	0.42	0.59	0.46	0.18	0.09	219	0.43	0.42	0.70	0.31	0.18	325
Lagos	0.44	0.73	0.36	0.15	0.09	251	0.33	0.27	0.69	0.51	0.27	21
Niger	0.43	0.60	0.30	0.08	0.03	57	0.42	0.48	0.54	0.21	0.10	531
Ogun	0.54	0.62	0.44	0.21	0.13	178	0.47	0.56	0.39	0.14	0.07	252
Ondo	0.43	0.62	0.52	0.23	0.14	83	0.47	0.49	0.46	0.16	0.07	222
Osun	0.37	0.48	0.47	0.29	0.16	264	0.34	0.42	0.71	0.30	0.17	231
Oyo	0.55	0.60	0.29	0.11	0.55	312	0.43	0.74	0.32	0.13	0.07	130
Plateau	0.52	0.48	0.50	0.20	0.10	68	0.40	0.45	0.69	0.32	0.19	325
Rivers	0.53	0.70	0.35	0.15	0.09	55	0.51	0.66	0.25	0.09	0.04	357
Sokoto	0.39	0.38	0.78	0.50	0.33	32	0.43	0.29	0.86	0.71	0.56	483
Taraba	0.39	0.44	0.71	0.34	0.19	7	0.51	0.58	0.54	0.27	0.17	377
Yobe	0.45	0.39	0.83	0.42	0.27	97	0.37	0.27	0.87	0.67	0.50	280

Note: Halfway through survey period six new states were created, bringing it to 36 states. These are Ebonyi (from Enugu), Ekiti (from Ondo), Bayelsa (from Rivers) Gombe (from Bauchi), Zamfara (from Sokoto) and Nassarawa (from Plateau). The state-stature is maintained for this study.

Source: Author's estimates.

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