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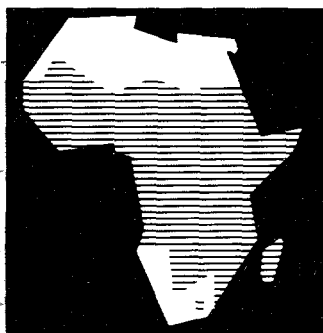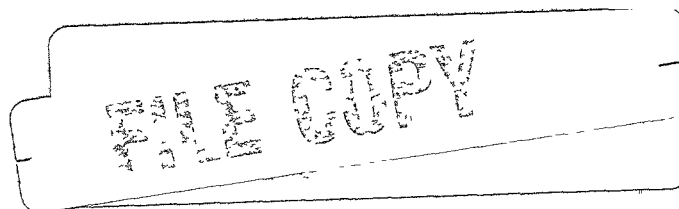
SOCIAL DIMENSIONS OF ADJUSTMENT IN SUB-SAHARAN AFRICA

WORKING PAPER NO. 5
POLICY ANALYSIS

A Poverty Profile for Ghana, 1987–88

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SDA Working Paper Series
Foreword

Integration of social and poverty concerns in the structural adjustment process in Sub-Saharan Africa is a major driving force behind the design of the World Bank's adjustment lending program in the Region. To further the goal, the Social Dimensions of Adjustment (SDA) Project was launched in 1987, with the United Nations Development Programme and the African Development Bank as partners. Since then many other multilateral and bilateral agencies have supported the project financially as well as with advice. The task presents a formidable challenge because of the severity of economic and social constraints in Africa and the intrinsic difficulty of tracing the links between economic policies and social conditions and poverty. It is essential to have a continuous professional dialogue between all concerned parties, so that the best ideas get discussed by the best minds, and become, as quickly as possible, available for implementation by policymakers. This is the aim of the SDA working paper series.

To fulfill its mission, the SDA Project operates on different levels. Conceptually, contributions need to be made which advance our understanding of how the economic crisis in Africa on the one hand and the adjustment response on the other hand affect the living conditions of people. Empirically, major improvements are needed in our knowledge of the social dimensions of life in Africa, how they change, and whether all groups in society participate effectively in the process of economic development. Gaining this knowledge will demand new efforts in data collection and policy oriented analysis of these data. Most importantly, policy actions are needed in the short term to absorb undesirable side-shocks stemming from the adjustment process so that the poor and disadvantaged are not unduly hurt, and in the long term to ensure that these groups fully participate in the newly generated growth. The SDA Project's mandate is to operate, in a concerted way, in all three domains: concepts, data, actions. This working paper series will report progress and experience in all three areas. I encourage every reader's active participation in the series and the work it reports on. It is meant to be a forum not only for exchange of ideas but even more importantly to advance the cause of sustainable and equitable growth in Africa.

Edward V.K. Jaycox
Vice President, Africa Region

The Social Dimensions of Adjustment (SDA) Project Working Paper Series

The SDA Project has been launched by the UNDP Regional Programme for Africa, the African Development Bank, and the World Bank in collaboration with other multilateral and bilateral agencies. The objective is to strengthen the capacity of governments in the Sub-Saharan African Region to integrate social dimensions in the design of their structural adjustment programs. The World Bank is the executing agency for the Project. Since the Project was launched in July 1987, 30 countries have formally requested to participate in the Project.

The Project aims to respond to the dual concern in countries for immediate action and for long-term institutional development. In particular, priority action programs are being implemented in parallel with efforts to strengthen the capacity of participating governments (a) to develop and maintain statistical data bases on the social dimensions of adjustment, (b) to carry out policy studies on the social dimensions of adjustment, and (c) to design and follow up social policies and poverty alleviation programs and projects in conjunction with future structural adjustment operations.

The working paper series "Social Dimensions of Adjustment in Sub-Saharan Africa" aims to disseminate in a quick and informal way the results and findings from the Project to policymakers in the countries and the international academic community of economists, statisticians, and planners, as well as the staff of the international agencies and donors associated with the Project. In the light of the three terrains of action of the Project, the working paper series consists of three subseries dealing with (a) surveys and statistics, (b) policy analysis, and (c) program design and implementation.

The Surveys and Statistics subseries focuses on the data collection efforts undertaken by the SDA Project. As such, it will report on experiences gained and methodological advances made in the undertaking of household and community surveys in the participating countries to ensure an effective cross-fertilization in the participating countries. The subseries would also include "model" working documents to aid in the implementation of surveys, such as manuals for interviewers, supervisors, data processors, and the like, as well as guidelines for the production of statistical abstracts and reports.

The Policy Analysis subseries will report on the analytical studies undertaken on the basis of both existing and newly collected data, on topics such as poverty, the labor market, health, education, nutrition and food security, the position of women, and other issues that are relevant for assessing the social dimensions of adjustment. The subseries will also contain papers that develop analytical methodologies suitable for use in African countries.

Another subseries, Program Design and Implementation, will report on the development of the conceptual framework and the policy agenda for the project. It will contain papers on issues pertaining to policy actions designed and undertaken in the context of the SDA Project in order to integrate the social dimensions into structural adjustment programs. This includes the priority action programs implemented in participating countries, as well as medium- and long-term poverty alleviation programs and efforts to integrate disadvantaged groups into the growth process. The focus will be on those design issues and experiences which have a wide relevance for other countries as well, such as issues of cost-effectiveness and ability to reach target groups.

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Executive Summary

The successes of the Economic Recovery Programme in Ghana are now well known. Nevertheless, as recognized by the Government of Ghana, many individuals remain in acute poverty. Furthermore, the process of adjustment by its very nature is likely to cause short run hardship for certain vulnerable groups. The first requirement for planning a poverty sensitive strategy of short run adjustment and long run growth is information on the nature of poverty. The object of this paper is to present a baseline poverty profile for Ghana in 1987–88.

While a number of past studies exist on poverty in Ghana, these relate to the period prior to the Economic Recovery Programme. More recent reference to poverty has generally been based on "stylized facts". However, the Ghana Living Standards Survey, conducted by the Ghana Statistical Service with the support of the World Bank provides detailed information on the living conditions of households—covering incomes, expenditures and basic needs fulfillment along with other dimensions of the standard of living. The information these survey results provide is much more detailed than anything available hitherto, and enable the construction of a detailed profile of poverty in Ghana.

Chapter 2 of the paper begins with a review of conceptual issues in measuring poverty. After a brief tour d'horizon of these issues, it recommends that in an operational setting the monetary standard of living of individuals in a household is best measured by total expenditure per capita, after correcting for value of home produced consumption and for price differences. It is argued that this should be supplemented by figures on basic needs achievements, along the dimensions of health, education and housing. Given the monetary based measure of the standard of living, the chapter then discusses indices of poverty, and recommends the use of a family of decomposable poverty indices, put forward recently by Foster, Greer and Thorbecke (1984). This family of indices offers sufficient flexibility to encompass a range of value judgements on poverty, as well as being operationally convenient.

Chapter 3 of the paper discusses previous research on poverty in Ghana—Appendix 1 provides a more detailed review. The general conclusion is that previous studies are generally not based on comprehensive surveys, and even when they are satisfactory the data are more than 15 years old. In this situation, the GLSS represents a major advance on the information base.

Chapter 4 focusses on the task of using the GLSS to operationalize measures of poverty. It contains a detailed technical discussion of how the answers to questions asked in the survey, particularly those on incomes and expenditures, can be used to construct a measure of the welfare of a household. Appendix 2 discusses some of the conceptual basis for the empirical formulation in the text.

Chapter 5 proceeds to an analysis of poverty measures based on the monetary measure of standard of living developed in Chapter 4. The analysis is conducted with two poverty lines. The first line is chosen at two thirds of mean per capita household expenditure per annum while the second—the "hard core" poverty line—a chosen at one-third of mean per capita household expenditure per annum. We find that around 36% of all Ghanaians were below the higher poverty line of 32,981 cedis per person per annum at 1987–88 Accra prices. Correspondingly, around 7% of all Ghanaians were below the hard core poverty line of 16,491 cedis per person per annum at 1987–88 Accra prices. In addition, we find that the "poverty gap" in Ghana was 53 billion cedis per annum while the hard core poverty gap was 4 billion cedis per annum.

Poverty in Ghana is overwhelmingly a rural phenomenon. The incidence of poverty in rural areas is more than eleven times the incidence of poverty in Accra, and around 80% of the national incidence of poverty is accounted for by the rural incidence of poverty. Moreover, this disparity becomes even more marked as we move to poverty measures that emphasize the depth of poverty.

Chapter 6 of the paper focuses on patterns of expenditure and sources of income of the poor in Ghana. Through a series of progressively more disaggregated tabulations, we investigate how poor Ghanaians

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spend their income, and how they earn it. Not surprisingly, food is the dominant item of consumption in Ghana. Adding together consumption of market purchased items and that of home produced items, food accounts for around two thirds of the total expenditure of Ghanaian households. What is surprising, however, is that this figure, while certainly higher for poor households compared to non-poor households, is not dramatically so. In other words, the Engel curve appears to be relatively flat. This somewhat surprising finding will bear further investigation. The paper then goes on to investigate the finer categories of commodity expenditure, and attempts to tie in the pattern to the impact of price changes in food and fuel on the welfare of the poor.

Turning now to the pattern of sources of income, agriculture accounts for 55.8% of the total income of the GLSS sample. The next most important category is non-farm self-employment income, which accounts for 28.2% of total income. Thus self-employment income (agricultural and non-agricultural) accounts for 83.3% of total income. The paper goes on to look at more disaggregated categories. Thus cocoa accounts for 21% of poor incomes in Ghana, while 24% of all cocoa income in Ghana accrues to the poor. With these figures, we can conclude—approximately and on average—that of every cedi of increase in cocoa incomes, around a quarter will accrue to poor households. Comparing these ratios with those for other crops, we would be in a better position to design a poverty alleviating agricultural growth strategy.

Chapter 7 of the paper completes the task of establishing a baseline poverty profile for Ghana by looking at basic needs achievements of poor households. The picture here is not encouraging. The poor have a worse record of health consultation conditional upon being ill, and when consultation does take place, for the poor it is rarely in a hospital. The figures here confirm the importance of primary health care for the poor. Education, literacy and numeracy rates are significantly higher for the non poor than for the poor, as are school attendance rates across the various age groups. These findings are not of course surprising, but the quantification provided here represent a start in the systematic analysis of the role of public expenditure policy in achieving satisfactory levels of basic needs achievements among the poor.

Chapter 8 concludes the paper by noting once again that while our object has not been to analyze *specific* policy options, the baseline poverty profile established here should provide the framework for future discussion of poverty alleviation in Ghana.

1. Introduction

The successes of the Economic Recovery Programme implemented in Ghana in April 1983 in reversing the economic decline which characterized the preceding decade are now well known. Nevertheless, as recognized by the Government of Ghana (1987), many individuals remain in acute poverty. This in part reflects the magnitude of the historical decline as well as the inevitable fact that the benefits of the Recovery Programme do not accrue to all groups of the population equally. Furthermore, the process of adjustment by its very nature is likely to cause short run hardship for certain vulnerable groups (Kanbur, 1987); this has been recognized in practice by the establishment of a program of actions to mitigate the social costs of adjustment (PAMSCAD; Government of Ghana, 1987) which seeks to minimize these short run costs.

While a number of past studies on poverty in Ghana have been conducted (see Chapter 3 and Appendix 1), these relate exclusively to the period prior to the Economic Recovery Programme. More recent reference to poverty has generally been based on stylized facts. However, the Ghana Living Standards Survey, conducted by the Ghana Statistical Service with the support of the World Bank, provides detailed information on the living conditions of households covering incomes, expenditures, basic needs fulfillment, asset ownership and capital transactions. The information these survey results provide is much more detailed than anything available hitherto and enable the construction of a detailed profile of poverty in Ghana.

Ideally a study of poverty should take dynamic aspects into account, looking at the changing levels of welfare of particular households over time. Such an approach enables the permanently poor to be distin-guished from the temporarily poor, and may also be used to relate the pattern of poverty to the changing economic environment. In the future, the Ghana Living Standards Survey will provide this possibility by collecting information on a panel of households for consecutive years. This paper, however, is based on only the first year results (September 1987—October 1988). Nevertheless, we believe that the analysis presented here is useful as a base-line for policy discussions.

The organization of this paper is along the following lines. Theoretical issues relevant to the measurement of poverty are discussed in Chapter 2. A brief review of past studies of poverty in Ghana is given in Chapter 3; Appendix 1 provides more detailed discussion of the methodology and conclusions of these studies. The Ghana Living Standards Survey which provides the information on which this profile is based is discussed in Chapter 4 along with an explanation of the procedures used to estimate aggregates of household incomes and expenditures from the survey results. The use of these aggregates for construction of a measurement of households' welfare is also discussed in this chapter and in more detail in Appendix 2. Chapter 5 identifies the poor and provides summary measures of poverty by region. Chapter 6 characterizes the poor by their sources of incomes and patterns of expenditure while Chapter 7 considers their basic needs fulfillment. It should be emphasized that we view our task as being one of providing a *description* of poverty in Ghana using the latest techniques of analysis. Some tentative lines for policy research are discussed in Chapter 8, and future work will doubtless explore these avenues further.

2. Conceptual Issues in Measuring Poverty[1]

We are interested in an analysis of the nature and characteristics of poverty in Ghana. This requires us to specify what we mean by the poor and by poverty. In order to do this, we have to answer two questions: (i) what is the "standard of living" concept on which our discussions are to be based; and (ii) given this concept, how are we to delineate the poor from the non-poor?

The definition of what constitutes the standard of living is not an easy task, and the academic literature has often taken a philosophical turn on this issue (Sen, 1987). Even eschewing abstract discussions of what it means to have a certain standard of living, operationalizing the concept is difficult because of its multidimensional nature. A straightforward economic approach would focus on the consumption of goods and services. For market items, the many dimensions of the standard of living can be reduced to a single numeraire by using prices to convert quantities into expenditure. For items such as home-produced consumption, prices can be imputed and used in the same way. The same can be done for education and health, but the use of the market framework becomes more tenuous for these publicly-supplied services and others, such as access to clean water, public transportation, etc. In principle, of course, all these could be reduced to the same unit of account if we could find appropriate "shadow" prices. However, this is bound to be a controversial exercise. For this reason, from the operational point of view, it seems appropriate to separate out private consumption from "basic needs" indicators such as health or education.

For operational purposes, then, it is useful to have a unidimensional monetary measure of the standard of living. But what should this be? Should it be income, expenditure, or something else? An important issue here is the time horizon. Conceptually, the ideal would be permanent income or expenditure. But what we have in most cases, as in the present case of Ghana, is a snapshot household survey with measured income and expenditure for a year (or an even shorter period). If one is interested in current consumption, then the latter is a better indicator to use. In fact, given the difficulties of measuring income in rural areas of developing countries, it can be argued that total expenditure is probably a better track of "permanent income" than is measured income (some have argued that a narrower category—food expenditure—would be even better; see Anand and Harris, 1985). If we focus on expenditure, then we need to allow, of course, for price differences within a country and over time. The extent to which this can be done depends entirely on data availability.

Given the focus on real expenditure, there is still the question of whose real expenditure we are interested in—the individual, the family, the household, or the extended household, etc. From the normative point of view, it can be argued that we should ultimately be interested in the welfare of individuals and that larger groupings are relevant only insofar as there is income sharing. In fact, data availability largely forces upon us the use of household expenditure—the only question being how this is to be corrected for household size and composition. While there is a large literature on the use of adult equivalent scales to adjust for household composition, this literature is controversial (see Deaton and Muelbauer, 1980). In any case, equivalence scales will have to be country specific and their calculation is a major research effort.

An additional issue, which has generated much literature in recent years, is that of intra-household inequality. The use of adult equivalent scales corrects for different needs of adults and children (or men and women), but their use in a normative context implies the assumption that consumption is distributed according to these needs. There is some evidence that there may be discrimination against female children in some parts of the world (Kynch and Sen, 1983), while other attempts to identify such discrimination have concluded that the evidence does not support this (Deaton, 1987). At the theoretical level, much work is now under way in modelling intra-household allocation decisions in the framework of noncooperative game theory (see Haddad and Kanbur, 1989b). However, we must conclude that the literature as it currently stands does not provide clear guidelines on how intra-household inequality is to be incorporated

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into poverty measurement, particularly if, as is almost always the case, the only data available are income or expenditure at the household level. Some recent work suggests that even if data were available at the intra-household level, this would not necessarily overturn conclusions on patterns of poverty based on household level data (see Haddad and Kanbur, 1989).

Thus, while there are clearly a number of important issues unresolved in the literature, and the analyst should be aware of these, our recommendation is that for operational purposes real household expenditure (or income) per capita be used as the measure of individual welfare.

Given that what we are interested in is the distribution of individuals by household expenditure per capita, the next question is: what features of this distribution are we *most* interested in? In the literature on income distribution, a distinction is made between a concern with inequality, which is to do with the distribution as a whole, and a concern with poverty, where the focus is on the lower end of the distribution. This is not the place to get embroiled in the debate on which of these is the most important, or the conditions under which these two concerns are consistent with each other (in general they are not, but see Atkinson, 1987). Rather, we base our argument on the current policy concerns with *poverty* groups. In addition, it may be easier to arrive at a consensus on poverty alleviation as an objective as opposed to inequality reduction—the latter might involve, for example, weighing up the relative incomes of the rich and the super rich.

Accepting a poverty focus, this still leaves open the question of *where* a poverty line should be drawn. This is related to the question of whether a poverty line (along the *real* expenditure per capita dimension) should differ from country to country, and whether it should change over time. This is in turn related to the absolute versus relative poverty debate.

Clearly, the nature and meaning of poverty are country and culture specific, so that there is an undeniable relativistic element to it. It is neither inconsistent nor incoherent to say of two individuals, one in the United States and one in Ghana, that both are in poverty even though the *real* income of the former (after making all relevant price corrections) is far greater than the real income of the latter. Moreover, as the income and structure of a country changes, what constitutes poverty also changes, although this change may occur over a long period—too long to be of relevance to an adjustment program of a short period of around three years.

Ideally, what one would like is a specification of a basket of goods and services that it is thought an individual should be able to purchase to be considered

not to be in poverty. This would include not only basic food and nutrition but also clothing and housing. It is in the specification of these and other items that differences may arise between countries. However, one would like an operational shortcut to arrive at the poverty line which is reasonably applicable in a range of situations.

If an established poverty line already exists in a country (as it does, for example, in India and Sri Lanka, where it is based on nutritional standards), then the analyst would do best to adopt this line but do a sensitivity analysis about this line. However, the development of such lines is not an easy task and controversies may take a long time to resolve (in the case of India, a high level Committee of the Planning Commission arrived at the line and it took a decade or more of constant use by analysts to establish its primacy). In the absence of any other widely accepted line, there appear to be two conceivable operational procedures.

Given a distribution of individuals by real household expenditure per capita, choose a poverty line which cuts off a certain fraction, say the bottom 30 percent, of individuals. In addition, choose a "hard core" poverty line which cuts off a smaller fraction, say the bottom 10 percent, of individuals in some base period. These become the poverty lines with which to evaluate changes in poverty over time and differences across regions at a point in time. It should be emphasized that the procedure is meant as an operational device, and one which may address some problems regarding differences across cultures in what is meant by poverty. However, once chosen, these lines are to remain fixed in real terms, so that the poverty figures capture changes in absolute poverty over time. This device was used, for example, in Kanbur, 1988b.

An alternative is to use a given fraction of mean expenditure per capita as the poverty line. This is as arbitrary as (i), but has the feature that it is possible, in principle, for poverty to be zero, whereas with (i) there will always be a poor group. In this study we will take the second route, and chose two poverty lines—at 2/3 and 1/3 of mean expenditure per capita.

Given the distribution of real per capita expenditure and the poverty line, we still have the problem of how to represent the information on poor incomes in an operationally convenient and normatively significant way. There is now a large literature on axiomatic approaches to poverty measurement (see Sen, 1976; Donaldson and Weymark, 1986). However, for operational purposes the chosen measure must be able to capture a range of value judgments on the significance of the extent and depth of poverty, but be easy to handle and interpret. One measure that has been found to be useful in this context is that put forward by Foster, Greer, and Thorbecke (1984), henceforth

FGT. If real expenditures or incomes are ranked as follows:

$$Y_1 \le Y_2 \le \ldots \le Y_q < z < Y_{q+1} \le \ldots \le Y_n$$

where z is the poverty line, n is the total population, and q is the number of poor, then the FGT measure is:

$$P_\alpha = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z - y_i}{z} \right)^\alpha \; ; \; \alpha \ge 0.$$

What the measure does is that it takes the proportional shortfall of income for each poor person,

$$\left(\frac{z - y_i}{z} \right)$$

raises it to a power $\alpha (= 0)$ to reflect concern about the depth of poverty, takes the sum of these over all poor units, and normalizes by the population size.

As α varies, P_α takes on a number of interesting features. When $\alpha = 0$, so that there is no concern for depth of poverty,

$$P_0 = \frac{q}{n} = H.$$

This is simply the "head-count ratio"—the fraction of poor units in the population. This has been criticized (Sen 1976) for focusing on the number of the poor and ignoring how poor they are. However, with $\alpha = 1$,

$$P_1 = HI = H \left(\frac{z - \bar{y}^s}{z} \right)$$

where $\bar{y}^s$ is the mean income of the poor and

$$I \; (= \frac{z - \bar{y}^s}{z})$$

is known as the "income gap ratio"—the average shortfall of income from the poverty line. As can be seen, $P_0 = H$ focuses on the number of the poor but not on the extent of their poverty, while I focuses on the average extent of poverty but not on the number of the poor. P_1 combines these two and is perhaps a benchmark poverty index that should be the focus of interest in policy-oriented analyses. It should also be noted that nzP_1 is, quite simply, the total amount of resources required to eliminate poverty if (i) there were no incentive effects in transferring money, and (ii) if targeting was perfect. As such, it gives a lower bound on the financial commitment required to eliminate poverty.

While the P_1 measure should become, in our view, a standard measure of poverty, it is insensitive to redistribution among the poor (since it depends only upon their mean income). However, with an $\alpha = 2$, this sensitivity can be ensured. While with $\alpha = 1$, a dollar gained by the very poor would have the same effect on poverty as a dollar gained by the moderately poor, with $\alpha = 2$, these two would be differentiated. The differentiation increases as α increases, and more and more weight is given to the poorest of the poor.

Another important feature of the P_α is that it is subgroup decomposable. By this is meant that if we divide the population into mutually exclusive and exhaustive groups indexed by j, and if $P_{\alpha,j}$ is the poverty in the jth group, then

$$P_\alpha = \sum_{j=1}^{m} x_j \; P_{\alpha,j}$$

where x_j is the proportion of total population in group j. The above expression is useful, since we can assign the "contribution" of poverty in group j to national poverty as

$$C_j = \frac{x_j P_{x,j}}{P_\alpha}$$

Such a decomposition of national poverty into regional, occupational, crop production, or other sectoral groups can help in developing a poverty profile for the country in question in a policy relevant manner and the P_α class of measures is particularly useful for this reason (the well known Sen index of poverty cannot, for example, be used in this way). An application of this to Ghana will be seen in Chapter 5.

As agreed earlier, although in principle all aspects of the standard of living might be reducible to a single monetary measure, there are some dimensions that are difficult to reduce. Access to education, literacy, numeracy, quality of education, health care and its quality, drinking water, and basic housing amenities, etc., are all dimensions which seem to fall into this category. The term "basic needs" is sometimes used to capture the distinction between these non-monetary measures and more conventional income/expenditure measures. However, it is to be expected that income/expenditure may well be correlated with achievements along the other dimensions. If the achievement of basic needs, or lack of it, compounds a low income/expenditure measure, then this is significant from the policy point of view. What is also significant for policy is that the bulk of these basic needs are usually supplied by the government. Cuts in government expenditure in these areas—unless

managed and targeted in particular ways—may well end up worsening basic needs achievements of the poor. For this reason an income/expenditure based poverty profile needs to be extended along basic needs lines, and this is done in Chapter 7.

Note

1. This chapter is based on parts of Kanbur (1987), Kanbur (1988a), and particularly Kanbur (1988b).

3. Previous Research on Poverty in Ghana

Previous studies of poverty in Ghana relate almost exclusively to the period prior to the Economic Recovery Programme, being based mainly on data for the late 1960s and 1970s. The methodology and results of these studies are discussed in Appendix 1. Nevertheless, some discussion of the broad patterns of poverty found by these studies is appropriate here to provide a background to the more up to date and detailed profile made possible by the first year results of the Ghana Living Standards Survey.

The predominant conclusion of these studies is that over this period poverty was predominantly concentrated in rural areas, this conclusion applying whether poverty is defined in monetary terms or in terms of access to basic amenities. Various authors have identified a dichotomy between the North and South of the country, with much greater poverty in the North reflecting its less developed state. Analysis of poverty at a more disaggregated regional level broadly supports these findings; considering a composite indicator summarizing basic needs fulfillment, Morris (1979) found that in 1970 the Northern and (former) Upper Regions were most deprived (see Appendix 1, Table A1.1).

Despite general agreement on these features of the pattern of poverty in Ghana in the late 1960s and early 1970s, statistical evidence is very limited. That which is available is generally not based on comprehensive surveys. One of the more satisfactory data sources, the National Household Budget Survey conducted by the Central Bureau of Statistics in 1974/75, has been used by Ewusi to study poverty. Using per capita incomes to rank households, the above stylized facts are broadly confirmed; he also finds that poverty tends to be particularly prevalent in households whose head works in agriculture and/or is illiterate (see Appendix 1, Table A1.2 for more detailed results).

However, it is clear that the available evidence on poverty in Ghana is based on statistical information which is incomplete and very out of date. The availability of the first year results of the Ghana Living Standards Survey offers the opportunity of a more detailed, firmly based and up to date study of poverty than has hitherto been possible. This survey is described in the following chapter.

4. The GLSS and Operationalizing Poverty Measurement[2]

The conceptual framework for poverty analysis outlined in Chapter 2 can be put into operation with data generated from a basic household income/expenditure survey which is supplemented by information on basic needs achievement and the economic activities of individuals. The Ghana Living Standards Survey (GLSS) is just such a survey, with the potential of being utilized for analysis of poverty and construction of poverty profiles.

The general procedures of the survey are described in World Bank (1988). It was started in September 1987, and data for 1987–1988 are now being analyzed. Information is collected at the level of the community, the household and the individual. Crucially important for us is the information collected on income and expenditures. This is done predominantly at the household level, so that one cannot investigate intrahousehold inequality along this dimension. At the individual level information is collected on health, employment and education as well as standard demographic characteristics. Price data is collected at the community level and this can be used to construct regional price indices (see Appendix 2).

Detailed aspects of sampling procedure and the survey techniques are discussed in World Bank (1988). Suffice to say that data such as these are very rare in Africa, particularly in West Africa. Past studies of poverty in Ghana were based on earlier, much less extensive surveys (see Appendix 1). It should be clear that the GLSS is a major advance on earlier household level information. The sample size is 3,200 households, across approximately 200 enumeration areas stratified by urban/rural and by ecological zones. The definition of the household is by now fairly standard: "a group of individuals who live and eat together for a period of at least nine months of the year preceding the interview" (World Bank, 1988).

Let us move now to our central concern—income/expenditure measures. Each household in the survey is visited twice. In the "second round", questions are asked on daily expenditures during the previous two weeks on both food and non-food expenditures in the last two weeks and the last 12 months. Home produced consumption is also accounted for, and respondents are themselves asked to impute a monetary value to this at market prices. In addition individuals who are in the labor force are asked for their income and enough information is collected on the agricultural side on revenues and costs to allow an attempt at income computation. Similarly, net income from non-farm household enterprises and from other sources can be calculated. We now proceed to a detailed discussion of these computations from the GLSS.

The initial estimates of incomes and expenditures for Ghana on which this study is based are derived using more or less conventional national accounting definitions of what constitutes household incomes and expenditures. However, the unusually wide scope of the Living Standards Survey is designed to provide much more information on the economic activities of households than previously has been the case, so the estimates derived are more readily obtainable from this one source. This particularly applies to the information relating to the household as a producing unit which, hitherto, has been a relatively neglected area in such surveys even though many households in developing countries are engaged directly in production activities. From the standpoint of the household accounts, and especially the aggregates discussed below, this implies an explicit recognition of the household production accounts which impinge on the household income and expenditure accounts in several ways. Principally, of course, they do so in that their net revenue generates one of the components of household incomes. One can thus think of household production accounts (revenues and current costs) subsumed within the household consumption account (income and outlay). In this context it is helpful to maintain a distinction between agricultural and non-

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agricultural household production activity; this is re-flected in the choice of income aggregates.

Apart from transfer income referred to shortly, household members typically derive their income in two ways. First, they sell their labor services to other production units in the economy and receive wages or salaries in return, in cash and/or in kind. Secondly, they may receive income from productive assets which they own. In practice a major source of this is rent on the ownership of dwellings; either actual rent, or in the case of owner-occupied dwellings, imputed rent. Income from own account production activities is intermediate between these two in that it represents a return to both labor and capital services provided by the household. In practice it may be difficult to calcu-late the return to these factors individually, but this is unimportant for the present exercise. Non-factor in-come can arise as transfers between households or receipts or transfers from other institutions such as government (e.g. education scholarships). Such in-come receipts may be highly transient and it may be difficult to distinguish them from capital transfers at the margin (e.g. gifts received, dowry).

On the expenditure side of the household (current) accounts, in addition to recorded cash expenditures (on food, services, housing, etc.) the survey provides information on household consumption of home-pro-duced goods (and services). Clearly, this is especially important in respect of subsistence agriculture but it is conceptually no different for home consumption of non-farm production. Although this is generally rec-ognized in principle, it is often hard to obtain estimates in practice. These expenditures also appear as an ele-ment of income, as indicated earlier. Likewise, non-cash incomes in kind (e.g. housing subsidies) should be included as an imputed expenditure. The survey results offer some scope for imputing values of such incomes and expenditures, and these estimates are included in the aggregates.

A final area of conceptual development where a departure from existing conventions may arise con-cerns the treatment of consumer durables. Viewing the household as a consumer, national accounting conventions treat all purchases of durable goods as a current expenditure. Houses would be a capital pur-chase, however, since they are regarded as generating housing services which, for owner-occupiers, would constitute both an income and expenditure stream. A legitimate question can be poised as to whether other consumer durables (cooking and heating appliances, etc.) may be treated similarly and, if so, what might be the most appropriate method of imputing consump-tion flows or "use values". The estimates for Ghana

include some initial estimates of "use values" for du-rable goods.

Detailed income and expenditure aggregates at the household level may be sought at many levels of disaggregation. For present purposes it has proved convenient to assemble estimates of seven categories of income and six categories of expenditure. Detailed sources and methods for each of these categories are described in Appendix 1 of Johnson, McKay and Round (1989a). Here a broad description of the content and scope of each category is given.

Income Categories

(1) Income from employment

In many households there may be more than one individual who is an active member of the labor force. Moreover, such individuals may have more than one job during any year, any week, or indeed, at any period of time. This income category relates solely to employee compensation (either in cash or imputed in kind) with annual estimates of such income being computed for each individual household member and then aggregated over all individuals in the household. It may well be that an individual is not only an em-ployee but also works in an own-household enterprise or on own-account. Such income is included else-where (in categories (2) and (3)). This category is strictly confined to employee compensation whether the employment is in a corporate enterprise or an unincorporated family-run activity operated by a member of some other household, and whether or not this is the principal or secondary occupation of the individual.

(2) Net household agricultural income

Household members engaged in own-household agricultural activities receive income derived either from the sale of cash crops or livestock products, or imputed from the consumption of homegrown agri-cultural produce. To obtain this measure of income two approaches are possible. First, an estimate of total inputs to such agricultural activity (seeds, fertilizer, feed etc.) inclusive of wages paid to non-household individuals and an allowance for the depreciation of capital assets, may be deducted from an estimate of gross output. Secondly, estimates of self-employment income from agricultural activity may be obtained directly. The two estimates are not necessarily equally reliable and in these circumstances, the former is pre-ferred and so has been used in this study. Either way,

the incomes generated represent a combination of returns to both labor and productive capital owned and operated by household members.

(3) Net non-farm self employment income

This constitutes all income from own account activities other than those that are agricultural-based. The principles for deriving the estimates are the same, however. Estimates of total household income can be obtained by estimating the value of gross output (inclusive of an imputed value of any home consumption or of commodities transacted in kind) and subtracting the current cost of all inputs other than factor services provided by the household and its members, including an allowance for the depreciation of capital assets owned and employed by them. In practice, however, this does not give a satisfactory estimate being negative in many cases; therefore, the direct responses on profits were used instead for estimation (the resulting estimate takes both consumption of home production and the depreciation of capital assets into account). As in category (2) the resulting income will constitute a return to both labor and capital supplied by the household. However, households may operate more than one unincorporated business enterprise and the Living Standards Survey allows income estimates for up to three such enterprises. These are totalled for each household.

(4) Rent: actual and imputed

A further element of factor income received by households relates to rent. This includes actual income received from leasing land, equipment, buildings or dwellings. In addition, imputed rent has to be included especially in regard to owner-occupied dwellings, with a corresponding imputed expenditure on dwelling services (see expenditure category (11)).

While for the preliminary work on the first half of the survey results, estimates of imputed rents were based on hedonic equations, this method did not give satisfactory results for the full survey. In the interim the responses to the direct question on the potential rental value have been used; in practice such results may not be very reliable, especially in areas without a well developed rental market.

(5) Educational scholarships

Educational scholarships represent a transfer rather than factor income; they are identified as a separate category in view of their size and importance amongst the incomes received by individuals in many households. In this category the total annual value of schol-

arships across individuals within each household is obtained.

(6) Remittances received

Whether or not these remittances should be included in the household current account depends on whether or not they are due to be repaid. A remittance due to be repaid represents an acquisition of a financial liability and as such belongs in the capital account. However, most remittances are made as part of the "extended family system" i.e. there is no obligation for repayment. As current and capital remittances cannot fully be distinguished all remittances received have been included in this category.

(7) Other income

All other incomes received are aggregated into this final total. It includes a mixture of transfers and factor incomes of various kinds such as social security and pension receipts together with dividends on investments, interest on savings and certain windfall gains. In this instance, the majority of the items recorded in the Living Standards Survey as "miscellaneous income" are included in this category although it may be arguable in some cases whether they might be more appropriately treated as a capital receipt rather than as income.

Expenditure Categories

(8) Consumers' expenditure on food

Expenditure on food by households is a relatively straightforward category of household expenditures. Although estimates of expenditures on individual food items are available from the survey results, this category consists of a simple aggregation of them. However, there is a significant problem in rationalizing two alternative estimates of this aggregate derived from responses to questions concerning expenditures over the past year and expenditures between the enumerator's two visits (two week). Both estimates are susceptible to significant error, especially in respect of memory lapse in one case and seasonality in the other. Because of the interest in distribution across individuals in this study, the former estimate has been used (the latter estimate may be more appropriate for other purposes).

(9) Consumption of home production: food

Aggregate domestic consumption of agricultural output is separately distinguished as a category of

expenditure for each household. This is an imputed expenditure estimated simply from the value of home consumption reported by the household respondent, which is supposed to be valued at market prices. Such imputed expenditures are also included in the imputed incomes of the household (category (2)), where appropriate allowances for input costs are made.

(10) Consumption of home production: non-food

This is the analogue of category (9) for non-food items, that is, domestic consumption of the output of household non-farm enterprises. Again this imputed expenditure is also incorporated in the relevant income category (category (3)) and is estimated in the same manner.

(11) Other consumption expenditures

This category of household expenditure on goods and services contains an aggregate of all non-food consumption expenditures. It principally includes expenditure on all forms of actual rent, imputed rent on dwellings, expenditures on health and education, and all other daily and annual expenses. In addition, however, it includes an estimate of the "use value" of durable goods (as opposed to expenditure on durable goods per se). In line with increasing trends in current practice, purchases of durable goods are considered to represent capital expenditures with "use values" or consumption flows being estimated here essentially as the depreciation of these capital assets. As a consequence of this, "use values" appear as a current expenditure although incomes of households are unaffected.

(12) Remittances paid out

An item consistent with the treatment of remittances received (category (6)) is the transfer payment of remittances to other households. These are estimated directly from survey responses to questions concerning payments in money and in kind. However, the same problem arises as with remittances received in that current and capital remittances cannot satisfactorily be distinguished.

(13) Expenditure corresponding to employment income in kind

This aggregate is the same as the total of the estimated value of employment income in kind but summed over individuals in the household. It in-

cludes the value of payments as food or animals and subsidies of various kinds such as housing or transport. This item is therefore recorded as an item of both income and expenditure for a household (it is subsumed within part of the larger aggregate for category (1) on the income side of the accounts). It covers all income and expenditure in kind derived from individuals' primary and secondary jobs.

Further details of how the aggregates for the subcategories developed above are derived from the questionnaire are to be found in the Appendices to Johnson, McKay and Round (1989a and b). Having obtained nominal values of expenditures we need a price index to allow for regional price variation. This price index can be constructed from prices collected in the community level questionnaire. However, there is not an exact match between commodities for which prices are collected and for which expenditure data is available. The details of how these discrepancies are resolved are to be found in Appendix 2.

Using the price index developed in Appendix 2, we can arrive at real household expenditure and hence at per capita household expenditure. This leads to *a distribution of individuals by real per capita household expenditure (PCHHE)*. As discussed in Chapter 2, this is about the best we are able to do in operationalizing the standard of living. Mean per capita household expenditure for our sample is 49,472 cedis per annum in constant prices. What should be the poverty line?

As detailed in Chapter 2, this line is bound to be arbitrary and there is no simple non-controversial solution. The best choice would be a line about which there is already some policy consensus, but such a line does not as yet exist for Ghana. In the absence of such a consensual line, we propose two poverty lines—one that is two thirds of the mean of the distribution of individuals by per capita household expenditure, and a second, "hard core", poverty line which is set at one third of the mean of this distribution. According to our calculations, this mean is 49,472 cedis per annum. Thus, our chosen poverty lines are respectively 32,981 cedis and 16,491 cedis in constant prices per person per annum. However, it should be emphasized that these lines are simply proposals to generate a response from which an eventual consensus can be built.

This is our operationalization of the concepts of Chapter 2. Let us see what the picture actually looks like in Ghana.

Note

2. Parts of this chapter draws on Johnson, McKay, and Round (1989a).

5. Monetary-based Poverty Measures for Ghana: 1987–88

The previous chapters have discussed why income/expenditure based measures of the standard of living are relevant, despite their shortcomings, to an analysis of poverty. They have also documented how the GLSS can be used to operationalize and estimate income/expenditure aggregates for each household in the sample. In this chapter we will actually calculate measures of poverty for Ghana, using the poverty lines specified in Chapter 4.

Before looking at poverty, Table 5.1 gives us an overview of the expenditure distribution by presenting information on deciles of the distribution of individuals by per capita household expenditure. As can be seen, 10% of the individuals live in households with per capita household expenditure less than 18,119 cedis per annum. Thus if we had chosen *this* as our poverty line we would have an incidence of poverty of 10%. Similarly, 30% of individuals live in households with mean per capita household expenditure of 29,300 cedis per annum. Put another way, with a poverty line 29,300 cedis per annum the incidence of poverty would be 30%. Notice that the *highest* per capita household expenditure revealed in our sample is 280,764 cedis per annum.

Table 5.2 provides a slightly different look at the expenditure distribution by looking at the percentage of individuals below various multiples of mean per capita household expenditure. It shows, for example, that more than 50% of individuals have expenditures less than the mean. The mean therefore exceeds the median, indicating the leftward skewness that is typically found in most income distributions or expenditure distributions. It also shows that if we had selected 60% of mean per capita household expenditure as the poverty line, the incidence of poverty would have been 30.6%.

We now move to a detailed analysis of poverty for the first of our chosen poverty lines, 32,981 cedis. Table 5.3 presents information on the P_α class of indices, introduced and discussed in Chapter 2, for all Ghana and for three regional classifications—rural, urban

excluding Accra and Accra. Starting with all Ghana, notice that the P_0 measure is 0.3593; in other words, the incidence of poverty with this poverty line is 35.93%. Thus almost 36% more than one third of Ghanaians in the sample lived in households whose per capita consumption was less than two thirds of the overall average.

Moving along the all Ghana row in Table 5.3, we see that the value of the P_1 index is 0.1164. From Chapter 2 we know this value can be interpreted in terms of a poverty gap. A P_1 value of 0.1164 tells us that if perfect

Table 5.1. Characteristics of the Distribution of Individuals by Per Capita Household Expenditure (PCHHE)

Decile	Expenditure cut-off (constant cedis p.a.)
1	18,119.0
2	23,897.0
3	29,300.0
4	35,272.0
5	40,897.0
6	47,583.0
7	56,239.0
8	68,684.0
9	91,420.0
10	280,764.0
Mean PCHHE	49,471.5

Table 5.2. Percentage of Individuals with PCHHE Less than Various Multiples of Mean PCHHE

Multiples of mean PCHHE	% of individuals
0.2	1.1
0.4	13.1
0.6	30.6
0.8	47.2
1.0	62.6
1.2	72.8
1.4	80.2

targeting were possible then to "fill up" the poverty gap in Ghana so as to ensure that there was no poverty would require 3,839 (0.1164 x 32,981) cedis per annum per person in Ghana, which is 7.8% of mean PCHHE. With a population of 13.7 million in 1987/88 the total poverty gap would come to 52.6 billion cedis per annum in 1988. Of course, this is the *minimum* of resources necessary to eliminate poverty "at a stroke". With difficulties in targeting and leakages the actual figure would be much higher. This seems to illustrate the importance of growth in any Ghanaian poverty alleviation strategy. Redistribution on its own will require resources unlikely to be available to the economy in the short to medium term.

Let us now look at the rural-urban pattern of poverty. It is seen at once that no matter which of the three indices, P_0, P_1, P_2 is used, the ranking is the same—rural areas are poorest, followed by urban excluding Accra, and then comes Accra with the lowest poverty of all. Table 5.3 provides a very clear confirmation of patterns that are known to exist and to have existed in the past (see Chapter 3 and Appendix 1)—poverty in Ghana is primarily a rural phenomenon. Over 43% of rural inhabitants are below a poverty line which cuts of 36% of all Ghanaians, 27% of non-Accra urban residents, and only 4% of those in Accra. The incidence of poverty in rural areas is more than *eleven* times the incidence in Accra. The P_1 measure in rural areas is *thirty* times the P_1 measure in Accra. Notice also that the poverty measures correlate with mean per capita household expenditures in these regions.

Around 80% of the national incidence of poverty is accounted for by the rural incidence of poverty, and the contribution to national poverty *increases* as α goes from 0 through 1 to 2. In other words, not only is the incidence of poverty greater in rural areas, the *depth* of

poverty is also greater. The contribution to national poverty of the other two areas declines as α increases, and dramatically so for Accra. Its contributions to P_0 is a small 0.9%, but this falls to 0.2% for P_2, a fall of 78%.

The patterns discussed above persist when we focus on *hard core* poverty, i.e., those who are poor as defined by the lower poverty line of 16,491 cedis per person per annum. This is seen in Table 5.4, which shows that with this line 7.39% of all Ghanaians are classified as poor. The rural sector now has a poverty incidence of 9.5% while Accra has a *zero* incidence of poverty—there appear to be no individuals resident in Accra in our sample who lived in households where per capita expenditure was less than 16,491 cedis per annum. The non-Accra urban areas come in the middle. The contribution to national poverty of rural areas goes from 83.8% with P_0, through 88.1% with P_1, to 91.4% with P_2, showing that even with hard core poverty, the *depth* of poverty is an important consideration in rural areas, alongside its incidence.

The P_1 measure for all Ghana is 0.0174 with the lower poverty line. The minimum resources required to eliminate poverty as defined by this line, with perfect targeting, are thus 7% (0.017 ÷ 0.1164 ÷ 2) of what is required with the higher poverty line: around 3.9 billion cedis per year.

Tables 5.5 and 5.6 present poverty decompositions by ten geographical regions in Ghana. Table 5.5 concentrates on the higher poverty line while Table 5.6 provides the analysis for hard core poverty. Certain clear patterns emerge with respect to geographical regions. The Accra metropolis area has the highest mean per capita household expenditure and the lowest values of the P_0, P_1 and P_2 indices in both tables (note that the figures in Tables 5.3–5.4 refer to Accra city only). Looking at Table 5.5, its contribution to

Table 5.3. Rural-Urban P_α Poverty Indices

	Population share %	Mean PCHHE	P_o	P_1	P_2	Contribution to national poverty		
						P_o	P_1	P_2
Rural	64.95	43,043.8	0.4388	0.1440	0.0656	79.3	80.4	81.9
Urban excluding Accra	26.76	52,975.7	0.2654	0.0839	0.0349	19.8	19.3	17.9
Accra	8.29	88,527.6	0.0397	0.0048	0.0010	0.9	0.3	0.2
All Ghana	100.00	49,471.5	0.3593	0.1164	0.0520	100.0	100.0	100.0

Table 5.4. Rural-Urban P_α Poverty Indices for the Hard Core Poor

	Population share %	Mean PCHHE	P_o	P_1	P_2	Contribution to national poverty		
						P_o	P_1	P_2
Rural	64.95	43,043.8	0.0954	0.0235	0.0086	83.8	88.1	91.4
Urban excluding Accra	26.76	52,975.7	0.0448	0.0077	0.0020	16.2	11.9	8.6
Accra	8.29	88,527.6	0.0000	0.0000	0.0000	—	—	—
All Ghana	100.00	49,471.5	0.0739	0.0174	0.0061	100.0	100.0	100.0

national poverty is 1.3% with P_o, and this falls to 0.6% for P_1 and 0.4% for P_2. At the other extreme we have a Savannah region, where the incidence of poverty is 56% (higher even than that for all rural areas, as shown in Table 5.3). The P_1 measure in the Savannah is twice that for all Ghana and twenty-eight times that for Accra. It accounts for 18.4% of the national value of P_o (as compared with a population share of 11.8%), and this contribution increases to 23.8% for P_1 and 28.7% for P_2, indicating a problem not only in terms of the number of the poor but also the depth of their poverty. A similar story holds for the Volta Basin, which in Table 5.5 comes close behind Savannah as the next poorest region in terms of mean per capita household and expenditure as well as in terms of P_0 and P_1. After the Volta Basin is the Mid Coast region. In Table 5.5, this is less poor than the Volta Basin in terms of mean per capita household expenditure and P_o. However, its P_1 and P_2 values are *greater* than those for the Volta Basin, indicating the presence of some very poor households. This is also shown in the steady increase in its contribution to national poverty as α increases from 0, through 1 to 2, and by the results in Table 5.6.

The basic patterns are seen to be preserved when we move to hard core poverty, in Table 5.6. Savannah's poverty is seen to be very much of the hard core type. Its contribution to the national incidence of poverty is now 34.6%, compared to a contribution 18.4% when we use the higher poverty line. In fact, with the hard core poverty line and the index P_2 (which emphasizes the depth of poverty), Savannah's contribution to national poverty increases to an astonishing 50%. Thus although Savannah accounts for only around one tenth of the nation's population, it accounts for around one half of its P_2 poverty. No other region comes close. At the other extreme, we have the Accra metropolis region. This also accounts for around one tenth of the national population, but only for around one thousandth of national P_2 poverty.

We end this chapter by noting that the information in Tables 5.3–5.6 might be used in designing regional priorities for income increasing policies. It can show that, under certain conditions, if the objective is to minimize the national P_α, priorities should be formulated in terms of rankings for $P_{\alpha-1}$ (Besley and Kanbur, 1988). With this in mind, note that the ex-

Table 5.5. Poverty by Locality

	Population share %	Mean PCHHE	P_o	P_1	P_2	Contribution to national poverty P_o	P_1	P_2
Accra Metropolis	8.2	87,618.5	0.0552	0.0082	0.0027	1.3	0.6	0.4
Mid Coast	8.8	40,414.1	0.5120	0.1823	0.0857	12.5	13.8	14.5
West Coast	9.9	61,336.3	0.1619	0.0378	0.0135	4.5	3.2	2.6
East Coast	9.1	60,790.7	0.2061	0.0620	0.0266	5.2	4.9	4.7
East Forest	10.6	55,778.1	0.1989	0.0619	0.0264	5.9	5.6	5.4
Mid Forest	9.1	40,541.1	0.4728	0.1466	0.0645	11.9	11.4	11.3
West Forest	11.8	42,608.5	0.4081	0.1025	0.0359	13.4	10.4	8.2
Upper Forest	9.0	43,242.6	0.3984	0.1094	0.0404	10.0	8.5	7.0
Volta Basin	11.6	37,964.1	0.5233	0.1787	0.0781	16.8	17.7	17.4
Savannah	11.8	35,009.4	0.5593	0.2347	0.1264	18.4	23.8	28.7
All Ghana	100.0	49,471.5	0.3593	0.1164	0.0520	100.0	100.0	100.0

Table 5.6. Hard Core Poverty by Locality

	Population share %	Mean PCHHE	P_o	P_1	P_2	Contribution to national poverty P_o	P_1	P_2
Accra Metropolis	8.2	87,618.5	0.0064	0.0007	0.0001	0.7	0.3	0.1
Mid Coast	8.8	40,414.1	0.1287	0.0310	0.0102	15.3	15.7	14.7
West Coast	9.9	61,336.3	0.0133	0.0020	0.0005	1.8	1.1	0.9
East Coast	9.1	60,790.7	0.0403	0.0068	0.0020	5.0	3.6	2.9
East Forest	10.6	55,778.1	0.0311	0.0079	0.0032	4.5	4.8	5.6
Mid Forest	9.1	40,541.1	0.1139	0.0214	0.0059	14.0	11.2	8.8
West Forest	11.8	42,608.5	0.0373	0.0060	0.0015	6.0	4.1	3.0
Upper Forest	9.0	43,242.6	0.0371	0.0081	0.0020	4.5	4.2	3.0
Volta Basin	11.6	37,964.1	0.0877	0.0170	0.0055	13.7	11.3	10.4
Savannah	11.8	35,009.4	0.2162	0.0641	0.0263	34.6	43.6	50.7
All Ghana	100.0	49,471.5	0.0739	0.0174	0.0061	100.0	100.0	100.0

tremes of regional rankings are invariant to whichever α is chosen. However, some subtle changes do occur as α varies. For example, the rankings of Mid Coast and Volta Basin switch over as we go from P_0 to P_1 to P_2 (with the upper poverty line). Thus with an objective of P_3 the targeting indicator is P_2, and Mid Coast should be favored (see Table 5.5). The same is true when the objective is P_2 so that the targeting indicator is P_1. But when the objective is P_1, and hence the targeting indicator is P_0, Volta Basin climbs above Mid Coast in the targeting indicator. This suggest that the value judgement implicit in choice of α is important not only in its own right but in terms of what policy rankings it gives rise to.

6. Patterns of Expenditure and Sources of Income by Poverty Groups

The previous chapter has outlined the broad contours of the extent of poverty in Ghana. However, we now wish to investigate how the poor tie into the production sectors of the economy and how the patterns of expenditure and of income in the economy correspond to poverty groups. We shall consider three groups of people—the poor, the non-poor, and all Ghanaians surveyed. As in the previous chapter, poverty will be defined with reference to two separate poverty lines—the higher line of 32,981 cedis per person per annum, which cuts off 35.9% of all Ghanaians as poor, and the lower "hard core" poverty line of 16,491 cedis per person per annum, which cuts off 7.4% of all Ghanaians as hard core poor.

Table 6.1 presents a first cut at investigating consumption patterns with respect to poverty defined by the higher line. The columns represent all Ghanaians, the non-poor and the poor. The rows represent different categories of expenditure. These categories are rather broad at present—finer classifications will be created presently. The categories are discussed above and in greater detail in Johnson, McKay and Round (1989a) but are fairly basic.

The first row represents market purchases of food items while the second represents imputed value of consumption of home produced food items. There are some items of non-food home produced consumption (output of non-farm enterprises consumed domestically) and the value of these is imputed in the third row. The fourth row comprises the more usual type of non-food consumption, purchased in the market. In Johnson, McKay and Round (1989a) two further categories of expenditure are distinguished within the framework of the household current account—remittances paid out and "expenditure corresponding to employment income in kind". These rather small categories form the fifth and sixth rows of Table 6.1. The seventh row represents total expenditure.

Each cell in Table 6.1 contains two entries. The top right hand entry corresponds to a column percentage while the bottom left hand entry is a row percentage. Thus, consider the cell at the intersection of the non-poor column and the consumption of home-produced food row. The figures there show that, of the total expenditure of non-poor households, 22.2% is accounted for by consumption of home-produced food—this is simply the well known "budget share" entry for non-poor households. The other entry 77.0%, is also of interest. What it shows is that of the total consumption of home-produced food in the country, 77.0% is accounted for by the non-poor. The rest, 23.0%, is accounted for by the poor, as shown by the bottom left hand entry in the cell at the intersection of the poor column and the consumption of home-produced food row.

Tables 6.1 and 6.2 show that food is the dominant item of consumption in Ghana. Adding together consumption of market purchased items and that of home-produced items, food accounts for 66.6% (42.6 plus 24.0) of the total expenditure of Ghanaian households. There is a difference between poor and non-poor with regard to expenditure on food. The poor spend 69.1% of their expenditure on food while for the non-poor the figure is 66.1%. This does not appear to be a very big difference. On these figures, the Engel curve in Ghana seems to be remarkably flat. Further investigation of this is certainly called for. This may reveal severe data problems, particularly on the prices front. However, it may also be that we are picking up an effect discussed recently by Deaton and others, where the Engel curve has an inverse-U shape: for very poor households, food share might increase with total expenditure over a certain range.

Disaggregating total food expenditure into its two components does reveal a difference. For the poor, consumption of home-produced consumption ac-

counts for 33.0% of total expenditure, while for the non-poor the figure is 22.2%. Clearly, then, the poor rely on market purchases of food less than the non-poor. However, the poor are by no means isolated from market conditions.

As discussed in Besley and Kanbur (1988) for many purposes what is important is not the budget share of a particular commodity but the fraction of total consumption of a commodity accounted for by the poor, in other words, the row percentages in Table 6.1. These show, for example, that although the poor account for 35.9% of the Ghanaian population, they account for only 14.1% of market purchases of food. The remaining 85.9% is of course accounted for by the non-poor, as shown in the bottom left hand entry in the cell at the intersection of the consumers' expenditure on food row and the non-poor column.

Tables 6.3 and 6.4 provide much greater detail by picking the first row in Tables 6.1 and 6.2 respectively, i.e., consumers' expenditure on food, and disaggregating it further. Table 6.3 is for poverty as defined by the higher poverty line while Table 6.4 is for hard core poverty. We have picked out key items that may be of relevance in Ghanaian policy making. Notice the large share of purchased fish in total purchased food—22.4% of market expenditure on food items by all Ghanaians goes on fish. This figure is 25.7% for poor Ghanaians and 21.9% for non-poor Ghanaians. This may appear surprising but remember that this is as a percentage of market purchased food—and we know that poor Ghanians spend far less (both in absolute and in relative terms) on purchased food than do their non-poor counterparts. In fact, of all the fish purchased by Ghanaians, only 16.2% is accounted for by the poor. Notice also the large residual "others" category which is an aggregation of almost 50 different commodities.

Tables 6.5 and 6.6 present a disaggregation similar to that in Table 6.3 and 6.4, except that we now focus on market purchases on non-poor and all Ghanaians, while Table 6.6 gives corresponding results based on the lower poverty line. From Table 6.5 it is seen that

Table 6.1. Expenditure Pattern by Poverty Group

	All		Non-poor		Poor	
Consumers Expenditure on Food		42.6		43.9		36.1
	100		85.9		14.1	
Consumption of Home-Produced Food		24.0		22.2		33.0
	100		77.0		23.0	
Consumption of Home-Produced Non-Food Items		1.9		1.9		1.7
	100		84.5		15.5	
Other Consumption Expenditure		27.9		28.1		27.0
	100		83.9		16.1	
Remittances Paid Out		2.1		2.3		1.4
	100		89.3		10.7	
Expenditure Corresponding to Employment Income in Kind		1.5		1.6		0.8
	100		90.8		9.2	
Total Expenditure		100.0		100.0		100.0
	100		83.3		16.7	

Table 6.2. Expenditure Pattern by Hard Core Poverty Group

	All		Hard core poor		Others	
Consumers Expenditure on Food		42.6		38.5		42.7
	100		1.6		98.4	
Consumption of Home-Produced Food		24.0		32.2		23.8
	100		2.6		97.4	
Consumption of Home-Produced Non-Food Items		1.9		2.0		1.9
	100		2.0		98.0	
Other Consumption Expenditure		27.9		28.1		27.9
	100		0.9		99.1	
Remittances Paid Out		2.1		0.9		2.1
	100		0.9		99.1	
Expenditure Corresponding to Employment Income in Kind		1.5		0.2		1.5
	100		0.3		99.7	
Total Expenditure		100.0		100.0		100.0
	100		1.9		98.1	

shoes and clothing form a large fraction of Ghanaian non-food expenditure, more so for the poor than the non-poor. However, the share of non-food expenditure in total expenditure is smaller for the poor.

One expenditure category that is at the heart of much policy debate is fuel. The three categories which pick upon this in Table 6.5 and 6.6 are "charcoal or wood", "other fuel (kerosene, etc.)" and "gasoline". The rankings here are very clear. The most unsurprising of the categories is gasoline. Of total expenditure on gasoline in Ghana, only 0.2% of it is accounted for by the poor (and fully 0% by the hard core poor). The worries about raising gasoline prices *cannot* therefore be based on their *direct* consequences for poverty. Rather, attention might focus on indirect effects via transport costs (the poor account for 13.3% of all expenditure on public transport). Data such as those available in GLSS allow us to give a firm quantitative grounding for such policy conclusions.

The comparison of "charcoal or wood" and "other fuel (kerosene, etc.)" may seem surprising at first sight. The data seems to suggest that the poor account for *more* of the consumption kerosene than of traditional fuels. But remember that these are disaggregations of *market* purchase expenditure. Once this is realized, the ratios are no longer surprising. The poor may well account for a larger fraction of *total* consumption of traditional fuels than the data suggest. But their market expenditure is low since much of the wood is gathered, not purchased. Yet from the point of view of price effects on welfare, it is *market* purchases that are important since it is these that policy can influence.

Tables 6.7 and 6.8 pick up on the pattern of *home produced* food consumption. For small changes in market prices the welfare impact operating through home produced consumption is likely to be zero—since what the household loses as consumer it gains as producer (see Besley and Kanbur, 1988). However, the patterns are nevertheless interesting and may well be important in identifying those areas of production that are important in poor households' consumption. Of all home produced food consumption in Ghana, the single largest commodity category is cassava (the "others" category itself comprises many smaller sub-groups). From Table 6.7 it is seen that about 22.4% by value of all home produced food consumption is

Table 6.3. Food Expenditure Pattern by Poverty Group

	All	Non-poor	Poor
Rice	4.4	4.5	4.3
	100	86.2	13.8
Maize	3.8	3.8	3.9
	100	85.5	14.5
Bread	4.6	4.8	3.6
	100	89.2	10.8
Cassava	7.7	7.7	7.6
	100	86.1	13.9
Kenkey	6.5	6.5	6.9
	100	85.1	14.9
Fish	22.4	21.9	25.7
	100	83.8	16.2
Meat	5.7	5.9	4.3
	100	89.2	10.8
Palm Oil	2.1	2.0	2.3
	100	84.2	15.8
Refined Oil	1.1	1.2	0.9
	100	88.8	11.2
Fruit	2.2	2.3	1.6
	100	89.9	10.1
Alcoholic Drink	3.2	3.1	3.9
	100	82.6	17.4
Vegetables	11.8	11.6	12.6
	100	84.9	15.1
Others	25.0	25.5	22.5
	100	87.3	12.7
All	100.0	100.0	100.0
	100	85.9	14.1

Table 6.4. Food Expenditure Pattern by Hard Core Poverty Group

	All	Hard core poor	Others
Rice	4.4	3.7	4.4
	100	1.4	98.6
Maize	3.8	3.3	3.8
	100	1.4	98.6
Bread	4.6	3.0	4.7
	100	1.1	98.9
Cassava	7.7	7.1	7.7
	100	1.5	98.5
Kenkey	6.5	5.9	6.5
	100	1.5	98.5
Fish	22.4	27.4	22.3
	100	2.0	98.0
Meat	5.7	4.1	5.7
	100	1.2	98.8
Palm Oil	2.1	2.2	2.1
	100	1.7	98.3
Refined Oil	1.1	0.7	1.1
	100	1.0	99.0
Fruit	2.2	1.7	2.2
	100	1.3	98.7
Alcoholic Drink	3.2	3.3	3.2
	100	1.7	98.3
Vegetables	11.8	14.2	11.7
	100	2.0	98.0
Others	25.0	23.4	25.0
	100	1.5	98.5
All	100.0	100.0	100.0
	100	1.6	98.4

cassava. The next biggest category is maize, followed by the category "millet, sorghum, guinea corn", which is particularly important in the North. Although there are some differences in the patterns of shares of home produced consumption, the similarity is more strik-

ing. In comparing the top right hand side entries in each cell, no difference exceeds more than three percentage points. Similarly, looking at the entries in the bottom left hand side of the cells in the poor column, the differences are not as large as those revealed in

Table 6.5. Non-Food Expenditure Pattern by Poverty Group

	All	Non-poor	Poor
Cigarettes, Tobacco,	4.2	3.6	7.1
Cola Nuts	100	72.7	27.3
Soap	8.6	8.2	10.6
	100	80.0	20.0
Charcoal or Wood	5.5	5.8	4.1
	100	88.1	11.9
Other Fuel	4.6	4.1	7.3
(Kerosene, etc.)	100	74.7	25.3
Gasoline	1.3	1.5	0.02
	100	99.8	0.2
Shoes and Clothing	20.7	20.4	22.0
	100	82.8	17.2
Public Transport	5.7	5.9	4.7
	100	86.7	13.3
Medicines, Medical	5.7	5.5	6.3
Services	100	82.0	18.0
Education	8.6	8.6	8.6
	100	83.9	16.1
Housing	4.4	4.1	5.7
	100	78.9	21.1
Utilities	2.6	2.9	1.4
	100	91.5	8.5
Other	23.1	24.9	13.4
	100	90.6	9.4
All	100.0	100.0	100.0
	100	83.9	16.1

Table 6.6. Non-Food Expenditure Pattern by Hard Core Poverty Group

	All	Hard core poor	Others
Cigarettes, Tobacco,	4.2	10.7	4.0
Cola Nuts	100	5.1	94.9
Soap	8.6	11.4	8.5
	100	2.7	97.3
Charcoal or Wood	5.5	2.5	5.6
	100	0.9	99.1
Other Fuel	4.6	9.4	4.5
(Kerosene, etc.)	100	4.1	95.9
Gasoline	1.3	0.0	1.3
	100	0.0	100
Shoes and Clothing	20.7	21.2	20.7
	100	2.1	97.9
Public Transport	5.7	4.1	5.7
	100	1.5	98.5
Medicines, Medical	5.7	6.1	5.6
Services	100	2.2	97.8
Education	8.6	7.7	8.6
	100	1.8	98.2
Housing	4.4	7.5	4.3
	100	3.4	96.6
Utilities	2.6	0.7	2.7
	100	0.6	99.4
Other	23.1	10.6	23.3
	100	0.9	99.1
All	100.0	100.0	100.0
	100	2.0	98.0

Table 6.7. Pattern of Home Produced Food Consumption by Poverty Group

	All	Non-poor	Poor
Maize	16.3	16.4	16.0
	100	77.5	22.5
Millet, Sorghum,	13.9	13.3	15.8
Guinea Corn	100	73.9	26.1
Cassava	22.5	22.4	22.8
	100	76.7	23.3
Yams	6.6	6.2	7.7
	100	73.2	26.8
Cocoyams	7.8	8.1	6.6
	100	80.4	19.6
Plaintains	9.8	10.1	8.8
	100	79.4	20.6
Others	24.2	24.6	23.1
	100	78.2	21.8
All	100.0	100.0	100.0
	100	77.0	23.0

Table 6.8. Pattern of Home Produced Food Consumption by Hard Core Poverty Group

	All	Hard core poor	Others
Maize	16.3	15.1	16.4
	100	2.4	97.6
Millet, Sorghum,	13.9	25.6	13.6
Guinea Corn	100	4.8	95.2
Cassava	22.5	17.9	22.6
	100	2.1	97.9
Yams	6.6	6.8	6.5
	100	2.7	97.3
Cocoyams	7.8	3.2	7.9
	100	1.1	98.9
Plaintains	9.8	6.3	9.9
	100	1.7	98.3
Others	24.2	25.1	24.2
	100	2.7	97.3
All	100.0	100.0	100.0
	100	2.6	97.4

Table 6.5. Notice, however, the importance of home produced millet, sorghum and Guinea corn for the hard core poor, as shown in Table 6.8.

We turn now to an analysis of the sources of income in the Ghanaian economy, by poverty group. Tables 6.9 and 6.10 present an initial decomposition for the higher and lower poverty lines, respectively. The categorization employed here is discussed more fully in Johnson, McKay and Round (1989a). Clearly, agriculture is the most important source of income in Ghana, accounting for 55.6% of the total income of the GLSS sample. The next most important category is non-farm self-employment income, which accounts for 28.2% of total income. Thus self employment income (agricultural and non-agricultural) accounts for 83.8% of total income. Clearly, any strategy for Ghanaian growth or poverty alleviation must pay particular attention to these sectors. Employment income accounts for only 7.3% of all household income while the next biggest category is remittances received. Around 4% of the average Ghanaian's income is accounted for by remittances.

Turning now to the pattern for the poor, there is an expected pattern so far as employment income is concerned. This only accounts for 4.4% of poor households' income, while the comparable figure for the non-poor is 8.1%. The opposite is true for agricultural income. Fully 65.1% of poor households' income comes from agriculture; while the figure is only 52.9% for non-poor households. What might be surprising, however, is that non-farm self-employment income accounts for a *smaller* fraction of poor households' income than it does of non-poor households' income;

however, this does cover some formal activities (e.g., doctors, lawyers) in addition to informal activities (which comprise the vast majority). This holds true for the hard core poverty group analysis in Table 6.10 as well. This should confirm, if confirmation were necessary, that the agricultural sector dominates even the informal sector (at least nationally) when it comes to accounting for poor households' income. The conclusion is maintained even when we look at row percentages. Of all agricultural income in Ghana, 26.0% accrued to the poor while 18.0% of all informal sector income accrued to the poor.

However, the categorizations in Tables 6.9 and 6.10 are too broad as they stand. We can disaggregate further and look more deeply into the structure of some of the categories. The most important is clearly agriculture, and an analysis of different sub-categories of agricultural income is provided in Tables 6.11 and 6.12. Following the GLSS questionnaire modules, we distinguish between crops, transformed crops and livestock. For each of these, the information available in the GLSS questionnaire allows us to compute revenue and input costs. In addition, we can calculate land expenditure costs, which are not directly attributable to any of the three sub-categories above. For this reason, we cannot arrive at a net income figure for each of "crops", "transformed crops" and "livestock", to see which of these is the most important source of income for the poor. In addition, following the accounting procedures developed by Johnson, McKay, and Round, home produced food consumption is entered on the income side of the accounts to balance its presence on the expenditure side.

Table 6.9. Sources of Income
by Poverty Group

	All	Non-poor	Poor
Employment	7.30	8.10	4.40
Income	100	86.6	13.4
Agricultural	55.60	52.90	65.10
Income	100	74.0	26.0
Non-farm self-employment	28.20	29.70	22.80
income	100	82.0	18.0
Actual and imputed Rent	1.70	1.60	2.10
	100	72.9	27.1
Educational	0.08	0.10	0.04
scholarships	100	89.4	10.6
Remittances	4.10	4.10	4.20
received	100	77.4	22.6
Other Income	3.00	3.50	1.40
	100	89.7	10.3
All	100.00	100.00	100.00
	100	77.8	22.2

Table 6.10. Sources of Income
by Hard Core Poverty Group

	All	Hard core poor	Others
Employment	7.30	4.10	7.40
Income	100	2.3	97.7
Agricultural	55.60	60.40	55.40
Income	100	4.5	95.5
Non-farm self-employment	28.20	24.50	28.30
income	100	3.6	96.4
Actual and imputed Rent	1.70	2.70	1.70
	100	6.5	93.5
Educational	0.08	0.10	0.08
scholarships	100	5.4	94.6
Remittances	4.10	5.80	4.00
received	100	5.8	94.2
Other Income	3.00	2.40	3.00
	100	3.3	96.7
All	100.00	100.00	100.00
	100	4.1	95.9

Table 6.11. Sources of Agricultural Income by Poverty Group

	All	Non-poor	Poor
Revenue from crops	100.13	73.23	26.90
Revenue from transformed crop products	14.50	11.87	2.63
Revenue from animal products	0.12	0.09	0.03
Consumption of home-produced food	217.10	167.50	49.60
Expenditure on crop inputs	–17.22	–13.20	–4.02
Expenditure on inputs for transformed crop products	–0.58	–0.45	–0.12
Expenditure on inputs for livestock rearing	–2.30	–1.89	–0.41
Expenditure on land	–2.69	–1.93	–0.76
Total	309.06	235.22	73.85

Note: Figures in million cedis.

Table 6.12. Sources of Agricultural Income by Hard Core Poverty Group

	All	Hard core poor	Others
Revenue from crops	100.13	3.67	96.46
Revenue from transformed crop products	14.50	0.69	13.81
Revenue from animal products	0.12	0.01	0.12
Consumption of home-produced food	217.10	5.70	211.41
Expenditure on crop inputs	–17.22	–0.57	–16.65
Expenditure on inputs for transformed crop products	–0.58	–0.01	–0.57
Expenditure on inputs for livestock rearing	–2.30	–0.12	–2.18
Expenditure on land	–2.69	–0.06	–2.63
Total	309.06	9.31	299.77

Note: Figures in million cedis.

Focussing purely on the revenue from sales of crops, transformed crops and animal products, we see first of all the relatively small role that animal products play in total revenue. In fact, notice that expenditure on inputs for livestock rearing exceeds revenue from animal products—in other words, livestock operations appear to make a loss for the average Ghanaian. This holds true whether we look at the figures for poor or for non-poor Ghanaians, and in Table 6.12, on agricultural income source patterns by hard core poverty group.

The poor account for around a quarter of all revenue from crops, even though they account for more than a third of the total population. The hard core poor, although they account for around 8% of population, account for only 4% of revenue from crops. However, the picture is even more dramatic where *transformation* of crops, processing, is concerned. The poor account for only 18% of all revenue from transformed crops (about one half of their population share). Clearly, then, any attempt at a general subsidy to either crops or transformed crops is unlikely to reach an efficiency (i.e., transfers to poor per dollar spent) on excess of 25%. However, if a generalized product price subsidy *is* contemplated, crops themselves are better candi-

dates than transformed crops so far as poverty alleviation efficiency is concerned.

Of course, the policy discussion is formulated more in terms of pricing policy for specific crops. Tables 6.13 and 6.14 disaggregate one of the rows of Tables 6.11 and 6.12 further. This is the row pertaining to the revenue from sale of crops. Tables 6.13 and 6.14 present revenue figures, by poverty group and hard core poverty group respectively, for a number of crop categories. Some of these crops are clearly tradeable and are produced primarily for export, while other crops are primarily non-tradeable (these latter include root crops such as Cassava). It can be seen from Table 6.13 that so far as Ghana's most important export crop, cocoa, is concerned, it is seen that of all revenue from sale of cocoa, 24.1% goes to the poor and 75.9% goes to the non-poor. Thus, at the margin and at an approximation, every cedi used in raising the producer price of cocoa will be divided roughly speaking in the ratio 1 to 3 between poor and non-poor households. Put another way, of every cedi transferred to general revenues by decreasing the producer price, around a quarter will come from poor households.

The crops show a fair amount of differentiation along the dimension of the critical ratio indicating

poverty alleviation efficiency. Pineapples are definitely *not* to be supported if the objective is to alleviate poverty. On the other hand, oil palm, yam and cocoyam top the list in terms of commodities for which poor households' production accounts for a relatively large fraction of total production. Rice has a higher subsidy efficiency ratio than cocoa, but "yam and cocoyam" category dominates rice for the higher poverty line. It is hoped that a Table such as 6.13 (and Table 6.14 for the hard core poor) will play a role in forming the policy debate on production prices in Ghana, particularly from the point of view of poverty alleviation.

Table 6.13. Revenue from the Sale of Crops by Poverty Group

	All	Non-poor	Poor
Cocoa	22.9	23.5	21.00
	100	75.9	24.1
Oil Palm	3.4	2.9	4.90
	100	62.3	37.7
Plantain	9.6	10.1	7.90
	100	78.2	21.8
Bananas, oranges, other fruit trees	2.4	2.5	2.30
	100	75.1	24.9
Groundnut	4.3	3.9	5.70
	100	65.4	34.6
Pineapple	0.2	0.2	0.04
	100	94.3	5.7
Cassava	10.5	11.1	8.80
	100	78.1	21.9
Yam, cocoyam	7.8	6.8	10.70
	100	64.0	36.0
Maize	16.7	16.6	16.80
	100	73.6	26.4
Rice	3.3	3.2	3.70
	100	70.8	29.2
Vegetables	16.2	16.9	14.30
	100	76.9	23.1
Others	7.7	7.3	9.00
	100	69.5	30.5
All	100.0	100.0	100.0
	100	73.1	26.9

Table 6.14. Revenue from the Sale of Crops by Hard Core Poverty Group

	All	Hard core poor	Others
Cocoa	22.9	16.80	23.1
	100	2.7	97.3
Oil Palm	3.4	0.70	3.5
	100	0.8	99.2
Plantain	9.6	4.60	9.7
	100	1.8	98.2
Bananas, oranges, other fruit trees	2.4	1.90	2.4
	100	2.9	97.1
Groundnut	4.3	10.20	4.1
	100	8.6	91.4
Pineapple	0.2	0.01	0.2
	100	0.2	99.8
Cassava	10.5	11.10	10.5
	100	3.9	96.1
Yam, cocoyam	7.8	6.20	7.9
	100	2.9	97.1
Maize	16.7	18.50	16.6
	100	4.1	95.9
Rice	3.3	6.00	3.2
	100	6.6	93.4
Vegetables	16.2	13.00	16.3
	100	2.9	97.1
Others	7.7	13.90	7.4
	100	6.6	93.4
All	100.0	100.00	100.0
	100	3.7	96.3

7. Basic Needs Indicators and Poverty

As discussed in Chapter 2, while in principle various basic needs achievements could be reduced a common monetary numeraire by applying the appropriate shadow price, such shadow prices are difficult to specify conceptually and to estimate empirically. It is important therefore to consider the basic needs dimension separately, and analyze its correlation with the income/expenditure dimension. In this chapter we will consider some simple tabulations of basic needs achievements by poverty groups. More detailed analysis will follow in the sectoral papers to be written under the program of the SDA project in Ghana.

a. Health

Table 7a.1 presents some basic information in illness in Ghana during 1987–88 and its distribution across place of residence (i.e., locality) and across poverty groups. The GLSS questionnaire asks whether or not each individual sampled was ill during the past 28 days. Information on illness is therefore based on *self-reporting*, with all that this entails. In particular, notice that the incidence of illness increases as we go from

very poor, to poor, to the average Ghanaian! This has been found to be the case in earlier work on Côte d'Ivoire as well, and it seems to be a consequence of self-reporting. Since there is no objective check, the observed phenomenon might be explained as the greater propensity of the rich to classify themselves as having been ill. In other words, what constitutes illness in the minds of the poor and the minds of the rich are very different things.

Table 7a.2 shows that mean reported length of illness *conditional* upon reporting oneself ill, is for the most part the same across all groups. What is more interesting is Table 7a.3, which shows some evidence that mean length of inactivity, conditional upon inactivity being due to illness is less for the poor than for the rich. This is plausible—the poor simply cannot afford to be inactive for as long as the non-poor. Still, it is a sobering thought that among the very poor in rural Ghana, when illness struck it led to 5 days on average of inactivity in the previous 28 days.

The next sequence of Tables in this chapter takes up the question of the use of health services by poor and non-poor Ghanaians. Table 7a.4 shows the extent of

Table 7a.1. Percentage of individuals ill during the past 28 days, by locality and poverty group

	Very poor	Poor	All
Rural	24.3	29.6	35.2
Urban excluding Accra	24.3	33.9	38.4
Accra	*	33.3	38.9

* There are no individuals defined as "very poor" in Accra.

Table 7a.2. Mean length of illness for those ill, by locality and poverty group (in days)

	Very poor	Poor	All
Rural	7.0	7.5	7.7
Urban excluding Accra	7.1	6.9	7.0
Accra	*	6.6	7.1

* There are no individuals defined as "very poor" in Accra.

Table 7a.3. Mean number of days inactive for those showing inactivity due to illnesses, by locality and poverty group

	Very poor	Poor	All
Rural	5.0	5.0	5.3
Urban excluding Accra	3.0	4.5	4.5
Accra	*	2.4	4.5

* There are no individuals defined as "very poor" in Accra.

Table 7a.4. Percentage of ill individuals who consulted Health Personnel, by locality and poverty group

	Very poor	Poor	All
Rural	29.5	37.5	44.4
Urban excluding Accra	41.5	41.9	50.8
Accra	*	57.1	59.1

* There are no individuals defined as "very poor" in Accra.

health service use by those who reported themselves as being ill over the past 28 days. It is seen that there is a clear gradient in terms of consultation of health personnel. Only 29.5% of the very poor who were ill in rural areas consulted health personnel after the illness, while the average figure for all rural inhabitants is 44.4% and for the average Accra resident the figure is 59.1%. In other words, conditional upon being ill the probability of health personnel consultation for this illness among the very poor in rural Ghana was half that of the average Accra resident. The gradient holds true within regions and across regions—a fairly robust pattern.

Table 7a.5 presents a more detailed picture of the consultations that did take place, by locality, while Table 7a.6 does the same by poverty group. Among the 460 individuals who reported illness in Accra, 188 (40.9%) did not consult any health personnel. Of the remaining 272 who did, no fewer than 250 (91.9%) consulted a doctor. Now consider the corresponding figures for the rural areas. Of the 3,273 individuals reporting illness, 1,819 (55.6%) did *not* consult health

personnel. But of the remaining 1,454 who did report such consultation, only 566 (38.9%) reported consulting a doctor. Almost an equal number 455 (31.3%), consulted a medical assistant, and 182 (12.5%) consulted a nurse.

Table 7a.6 confirms this pattern of health personnel consultation, by poverty group (since the bulk of the poor live in rural areas, we would expect the patterns by poverty group to be strongly influenced by the patterns by regions). Among all ill Ghanaians who consulted health personnel (5,204 − 2,731 = 2,473 individuals in the sample), 53.9% consulted a doctor. The corresponding number for the poor is 43.8% and for the very poor it is 41.3%. Medical assistant consultation is more important for the very poor (31.6%) than it is for the poor (30.8%) and for the average Ghanaian (23.2%).

Tables 7a.7 and 7a.8 present the complementary information of where consultation took place. The average Ghanaian, if ill and if consulting health personnel, is about as likely to consult health personnel in a hospital as a clinic (1,020 and 1,046 individuals in

Table 7a.5. Type of consultation by ill people in the sample, by locality

	Rural	Urban excluding Accra	Accra
Doctor	566	518	250
	(17.3)	(35.2)	(54.3)
Nurse	182	52	9
	(5.6)	(3.5)	(2.0)
Medical Assistant	455	117	2
	(13.9)	(8.0)	(0.4)
Other	251	60	11
	(7.7)	(4.1)	(2.4)
None	1,819	724	188
	(55.6)	(49.2)	(40.9)
All	3,273	1,471	460
	(100.0)	(100.0)	(100.0)

Note: Percentages (column) in brackets.

Table 7a.6. Type of consultation by ill people in the sample, by poverty group

	Very poor	Poor	All
Doctor	33	263	1,334
	(13.1)	(16.9)	(25.6)
Nurse	8	57	243
	(3.2)	(3.7)	(4.7)
Medical Assistant	25	185	574
	(10.0)	(11.9)	(11.0)
Other	13	95	322
	(5.2)	(6.1)	(6.2)
None	172	953	2,731
	(68.5)	(61.4)	(52.5)
All	251	1,553	5,204
	(100.0)	(100.0)	(100.0)

Table 7.a7. Where consultation took place for those who were ill and who consulted someone, by locality

	Rural	Urban excluding Accra	Accra
Hospital	488	410	122
	(33.6)	(54.9)	(44.9)
Dispensary	39	6	1
	(2.7)	(0.8)	(0.4)
Clinic	641	268	137
	(44.1)	(35.9)	(50.4)
Other	286	63	12
	(19.7)	(8,4)	(4.4)
All	1,454	747	272
	(100.0)	(100.0)	(100.0)

Table 7a.8. Where consultation took place for those who were ill and consulted someone, by poverty group

	Very poor	Poor	All
Hospital	23	192	1,020
	(29.1)	(32.0)	(41.2)
Dispensary	0	10	46
	(0.0)	(1.7)	(1.9)
Clinic	38	281	1,046
	(48.1)	(46.8)	(42.3)
Other	18	117	361
	(22.8)	(19.5)	(14.6)
All	79	600	2,473
	(100.0)	(100.0)	(100.0)

the sample, respectively). But the corresponding likelihood for the poor Ghanaian was weighted towards clinics (192 and 281 individuals, respectively) and this was even more so in the case for the very poor Ghanaian (23 and 38 individuals, respectively).

While the small cell sizes in some cases mean that we should make inferences with caution, the conclusion is that, once ill, poor Ghanaians are less likely to consult health personnel, and if they do it is more likely to be a medical assistant and to take place in a clinic (when compared to the corresponding figures for Ghanaians on average).

b. Education

Another important aspect of basic needs fulfillment is that individuals should have had at least a rudimentary education. The extent to which this need is fulfilled is considered below for individuals of five years of age and over; the number of such individuals in each region and poverty group is given in Table 7b.1. Overall such individuals account for around 80% of the sample.

Literacy (reading), literacy (writing) and numeracy rates are given by region and poverty group in Tables 7b.2, 7b.3 and 7b.4, respectively; the definition of these concepts correspond to those in Section 3 of the Ghana Living Standards Survey questionnaire. In each of these tables there is again evidence of a clear gradient with rates highest for all Accra residents and lowest for the very poor rural residents. Literacy rates in particular are very low for rural residents and the very poor, and for the very poor rural residents fall to the extremely low figures of 10.1% (reading) and 9.6% (writing).

Table 7b.5 demonstrates that the appallingly low literacy and numeracy rates of these groups are only in part accounted for by individuals who have never attended school. For the very poor rural residents who have a literacy (reading) rate of 10.1%, 37.7% have attended school at some stage in their lives. For the majority in this group (and similarly for the very poor and rural residents in general) school attendance fails to equip them with the most basic skills. This may reflect either deficiencies in the education provided (which may in turn be a consequence of the standard of teaching provided or of lack of resources), or the fact that individuals only attended school for a very short period before leaving, possibly to work on a household farm or enterprise.

Education has been somewhat more successful in the urban areas with a higher proportion of those who have attended school acquiring basic skills. Nevertheless, this proportion is lower for the poor than for the average resident; thus throughout the country, not only are the poor less likely to have ever attended

Table 7b.1. Sample characteristics: Number of individuals age 5 years, by locality and poverty group

	Very poor	Poor	All
Rural	722	3,376	7,819
Urban excluding Accra	140	863	3,325
Accra	*	35	1,070

* There are no individuals in Accra defined as being very poor.

Table 7b.2. Literacy (reading) rates, by locality and poverty group

	Very poor	Poor	All
Rural	10.1	17.3	23.0
Urban excluding Accra	20.0	24.0	35.4
Accra	*	51.4	62.6

* There are no individuals in Accra defined as being very poor.

Table 7b.3. Literacy (writing) rates, by locality and poverty group

	Very poor	Poor	All
Rural	9.6	15.9	20.0
Urban excluding Accra	13.6	20.6	32.7
Accra	*	48.6	54.5

* There are no individuals in Accra defined as being very poor.

Table 7b.4. Numeracy rates, by locality and poverty group

	Very poor	Poor	All
Rural	18.7	29.1	35.0
Urban excluding Accra	27.1	35.7	49.0
Accra	*	62.9	71.7

* There are no individuals in Accra defined as being very poor.

Table 7b.5. Percentage of Individuals who have ever attended school, by locality and poverty group

	Very poor	Poor	All
Rural	37.7	47.3	53.5
Urban excluding Accra	48.6	61.4	68.8
Accra	*	80.0	85.6

* There are no individuals in Accra defined as being very poor.

Table 7b.6. Percentage of children aged 6-11 currently attending school, by locality and poverty group

	Very poor	Poor	All
Rural	47.8	55.7	58.2
Urban excluding Accra	61.3	73.4	73.7
Accra	*	80.0**	68.1

* There are no individuals in Accra defined as being very poor.
** Sample size 5.

Table 7b.7. Percentage of children aged 12-18 currently attending school, by locality and poverty group

	Very poor	Poor	All
Rural	40.7	50.2	50.5
Urban excluding Accra	50.0	55.7**	61.4
Accra	*	57.1**	58.5

* There are no individuals in Accra defined as being very poor.
** Sample size 7.

Table 7b.8. Percentage of individuals aged 6-18 not currently attending school who intend to return, by locality and poverty group

	Very poor	Poor	All
Rural	28.9	37.5	48.2
Urban excluding Accra	12.5	37.0	56.3
Accra	*	33.3	75.2

* There are no individuals in Accra defined as being very poor.

Table 7b.9. Percentage of individuals currently attending school who are attending a private school, by locality and poverty group

	Very poor	Poor	All
Rural	12.5	9.6	8.9
Urban excluding Accra	7.4	16.1	13.3
Accra	*	17.9	27.9

* There are no individuals in Accra defined as being very poor.

school, they are also less likely to have attained elementary levels of literacy and numeracy as a result. Thus level of education measured by attendance or results tends to be inversely correlated with poverty, although the causal relationship is probably complex. Lack of education may be a contributory causal factor of poverty if, as a result, individuals only have the opportunity to work in low wage activities. On the other hand, poverty may mean that the opportunity and other cost of sending children to school is too high. More information and more detailed study is needed to determine the importance of such causal mechanisms in practice.

However, as these tables are based on all individuals in the sample except those below the age of five, they represent a summary of school attendance and its results over a long period. Perhaps of greater interest for policy purposes are current attendance rates; these are given by region and poverty group in Tables 7b.6 and 7b.7 for children in the 6–11 and 12–18 age ranges, respectively. In some cases, cell sizes are quite small, so that the results should be interpreted with caution. However, a similar pattern is displayed to that of historical school attendance: attendance is lower for rural than urban residents, and is lower than average for the poor. This would seem to reflect the fact that for poor households and those living in rural areas, the costs of sending their children to school is high, at least in the short term, relative to the perceived benefits. Not only are children of poor households less likely to be attending school at any point in time, once they leave they are less likely to return (Table 7b.8), at least judging by intentions.

Finally, Table 7b.9 summarizes the percentage of the population attending private schools. Such schools appear to be more common in urban than in rural areas. However, no clear pattern across poverty groups within these regions is evident.

Ewusi (see Appendix 1, Table A1.2) found that in 1974/75 poverty was higher in households whose head is illiterate. This survey has enabled the educational status of all household members to be taken into account. Again the results demonstrate that members of poorer households, especially in rural areas, are less likely to be educated than the average Ghanaian. It seems that a vicious circle may be in operation. Individuals without education are only able to obtain low wages and are thus more likely to be poor; such households may then be less likely to send their children to school, or will send them for shorter periods, compared with the average household because of the high opportunity (and other) costs involved.

8. Conclusion

The object of this paper has been to establish a base-line poverty profile for Ghana using the Ghana Living Standards Survey. At the conceptual level, we have used the latest developments in the theory of poverty indices. In particular, we have advocated the use of a class of indices put forward by Foster, Greer, and Thorbecke (1984). We have discussed the operationalization of poverty measurement through household income/expenditure surveys, in particular the GLSS for 1987/88. In doing so, we hope once again to have provided a base-line methodology that can be used for subsequent years.

In implementing the concepts, one is inevitably made aware of data shortcomings. The GLSS is no exception. Appendix 2 discusses some of the problems with the price data. Some other possible data problems are revealed in the observation that the Engel curve for Ghana seems to be quite flat. Pending further investigation, therefore, our results are presented in the spirit of a preliminary investigation of the data set and should be taken as such.

It should be emphasized that our object in this paper is *not* to discuss *specific* policy interventions. For this, of course, far greater institutional detail would be required and this would take us beyond the scope of the present exercise. Nevertheless, the poverty profiles presented here do speak, in general terms, to current policy concerns in Ghana. They provide support for an improvement in the rural-urban terms of trade, in favor of the former. Poverty in Ghana is overwhelmingly a rural phenomenon. Thus, a policy of raising the producer prices of key agricultural commodities is unlikely to be in conflict with the objective of poverty alleviation. However, the poverty profiles developed in this paper allow a more detailed differentiation to be made between different crops, although the more detailed the disaggregations are, the more tentative the conclusions have to be.

On the expenditure side, the poverty profiles can also speak to certain policy debates. They provide an empirical framework for assessing the poverty impact of various policy options on, for example, gasoline pricing. They cannot, of course, provide the whole answer. To do this would require a full analysis of the various interaction effects that poverty profiles by their very nature cannot capture. What they can do, however, is to establish a bench mark for discussion. They can also, at times, reveal surprising features that call for further investigation. The importance of soap in poor people's expenditure patterns certainly surprised us, and we would invite further work on this.

Finally, the poverty profiles highlight achievements (or lack of them) on the basic needs front. Once again, the profiles in themselves cannot be an analysis of policy options. Their role is to provide a base-line and an input into more detailed sectoral or sub-sectoral analysis of interventions.

Appendix 1: Previous Research on Poverty in Ghana

The GLSS provides an incomparable source of data for poverty analysis in Ghana. However, there have been some attempts in the past to study the dimensions of poverty in Ghana, and this Appendix contains a brief review of past studies.

Rural-Urban Dimension

Available evidence from surveys (Ewusi, 1983 and 1987; Rourke, 1971; Dutta Roy, 1968) indicates that incomes in rural Ghana are generally lower than incomes in the urban areas.

Regional Dimensions of Poverty

Using available indices for various socio-economic variables Ewusi (1976) developed a composite index of the level of development of the various regions. He established that the Greater Accra Region is far more developed than any other region. The index for Greater Accra Region was double that of the second region (Central). The least developed regions were found to be the Upper and Northern Regions, with indices less than 10% of the index for Greater Accra Region.

In 1979, Morris provided a useful method of summarizing spatial differences in levels of poverty through the use of the Physical Quality of Life Index (PQLI). The PQLI combines infant mortality, the level of literacy and the expectation of life at birth. Awusabo Asare (1981/82) applied the PQLI to indicate that the quality of life in rural Ghana is worse than that in urban Ghana. Recent estimates of the PQLI for the various regions of Ghana by UNICEF indicates that the incidence of absolute poverty measured by this index is highest in the Upper and Northern Regions. It is worthy of note that both Ewusi and UNICEF using 1970 data get the same ranking for the Northern and Upper as the poorest regions in Ghana. Table A1.1 compares Ewusi's indices with UNICEF's indices.

The North-South Dichotomy

Even though Ghana now has 10 administrative regions and five ecological zones, considering the agricultural systems as well as the socio-cultural practices, Ghana must be classified into two broad regions, the North and the South. There are stark differences in the levels of poverty between the North and the South as a result of resource endowments and the associated imbalances between the North and the South, as well as their respective capacities to respond to new economic opportunities. Bequele (1980) has analysed the data from the 1970 and 1974 Agricultural Censuses. According to these censuses, there was a clear evidence of farmers switching to food production in the 1970s. Thus, although the number of holders increased by 6.5% between 1970 and 1974, the number of holders for maize for example increased by nearly 49%.

Bequele has also attempted to disaggregate the available data in the North and South and the results strongly suggest assymetrical development between the North and South. The number of agricultural holders in the country as a whole increased by 6.5%. While

Table A1.1. Measure of Development for the Localities of Ghana, 1970

Locality	Measure of development	PQLI (UNICEF) Accra=100
Greater Accra	1.000	1.000
Central Region	0.398	0.693
Western Region	0.392	0.778
Eastern Region	0.355	0.893
Ashanti Region	0.340	0.862
Volta Region	0.306	0.778
Brong Ahafo Region	0.265	0.862
Northern Region	0.110	0.240
Upper Region	0.071	0.265

Source: K. Ewusi, "Disparities in Levels of Regional Development in Ghana", Social Indicators, Vol. 3 No. 1, June 1976, p. 89.

the number of holders in the North declined by 7.8%, the number in the South increased by 10.7%. The area of land under cultivation remained unchanged in the South, while it declined by nearly 8% in the North. We deduce from these figures a continuation of the historical experience of the earlier years of Ghana's development in the heydays of expansion of the cocoa industry. The South, which then relied to a considerable extent on Northern labor for capital accumulation and economic growth continued to feed upon it for its sustenance as well. Unlike the migration of earlier periods, this migration differed in the absolute decline in the farming population in the North and the abandonment of farms to which this gave rise.

Estimates of Incidence of Poverty

Before the initiation of the Ghana Living Standards Survey (GLSS) in 1987, two comprehensive National Household Budget Surveys had been conducted by the Central Bureau of Statistics in 1962 and 1974. Ewusi (1984) has analyzed the income data of the 1974/75 Household Budget Survey and finds that for the country as a whole 75% of the sample fall below a poverty line defined as per capita household income of less than US$100.00. Table A1.2 gives details of Ewusi's findings on poverty incidence by a number of variables.

Considering the rural and urban regions together, the poorest regions are the Volta, the Northern and Upper Regions. Education, occupation and size of household are other variables that seem to affect poverty. Education and occupational status are negatively correlated with poverty while size of household is positively related. Illiterate heads of households have higher poverty rates than literate heads of households. Farmers tend to have higher rates than non-farmers and large-size households have higher rates of poverty than small size households. The only perhaps unexpected result we get is that incidence of poverty is slightly higher in households headed by males than those headed by females.

Table A1.2. Incidence of Poverty in Ghana by Different Characteristics, 1975

Rural/Urban	
Rural	85.08
Urban	53.48
Total Country	75.41

Regional	
Western	62.00
Central	78.17
Greater Accra	49.51
Eastern	75.51
Volta	92.36
Ashanti	68.76
Brong Ahafo	82.63
Northern	90.28
Upper	88.46

Regional and Rural/Urban		
Region	Rural	Urban
Western	66.48	50.70
Central	81.11	70.83
Greater Accra	47.22	49.60
Eastern	83.51	54.21
Volta	94.05	80.56
Ashanti	83.23	42.94
Brong Ahafo	88.14	55.56
Northern	90.56	88.89
Upper	95.63	35.29

Sex of Head of Household	
Male	76.35
Female	72.53

Size of Household	
Single Member Household	32.05
Small Family Household (2–5)	72.17
Medium Family Household	(6–8)
Large Family Household (+9)	92.92

Primary Occupation of Head of Household	
Agriculture	86.44
Non-Agriculture	65.02

Education of Head of Household	
Illiterate	82.51
Literate	63.03

Appendix 2: Calculation of the Welfare Index

The appropriate focus of an analysis of poverty should be the (suitably truncated) distribution of welfare among the individuals in question. In practice of course, a number of theoretical and empirical problems will arise in this approach, mostly consequences of the ill-defined and multidimensional nature of the concept of "welfare". A number of strong assumptions will generally be necessary in order to arrive at an operationally useful definition. This would suggest the need to conduct robustness tests using alternative indicators.

It is self-evident that if individual level data are available then the welfare indices should also be calculated at the level of the individual. However, even if only household level data are available (as in this study), it is still the distribution among individuals that matters. This means that not only is it necessary to adjust the household level figures to reflect household size or composition, but that an index of welfare should be assigned to each individual in the household (based on the household level figure). This approach means that, for example, a large household in which all the members are poor will contribute to poverty incidence more than would a smaller household whose members were all poor. Ultimately, social welfare functions should be defined over individuals, not households.

Calculation of the frequency distribution of welfare thus requires the following stages:

(i) establishment of a theoretical basis for the measurement of welfare at the household level;

(ii) using the available household survey data to establish and empirical counterpart to this theoretical measure; and

(iii) attributing welfare indices to individuals based on the household level measures.

Theoretical Measurement of Welfare

An appropriate theoretical framework is that provided by a household production-consumption model; such models are typically considered in the context of agricultural households, but are equally applicable to households engaged in independent non-agricultural production. In such cases, it is necessary to take account of the possibility of households consuming some of the output of their own production; this consumption should be considered as both an imputed income and inputed expenditure for the households concerned. Partitioning the vector of goods demands $x = (x_1', x_2')'$ where x_1 is the vector of purchases in the market and x_2 the vector of consumption of home production, and letting the corresponding price vector be $p = (p_1', p_2')'$, then household consumption behavior may be represented by the following simple model:

Maximize $U(x) = U((x_1', x_2')')$

subject to $p_1'x_1 \leq p_2'(q_2 - x_2) + A - C$

where q_2 represents the output vector of the household production enterprises, A other income (assumed autonomous) and C the total of production input costs. Associated with this consumption model is a prior production model in which households choose inputs in order to maximize net revenue (before any domestic consumption). This procedure determines q_2 and C, which then become parameters of the consumer optimization problem.

Solving this consumer optimization problem gives demands for goods in the usual manner. However, of greater interest in the context of the present analysis is the dual problem of expenditure minimization:

Minimize $p_1'x_1 + p_2'x_2$

subject to $U((x_1', x_2')') \geq \overline{U}$

where $\overline{U}$ is some reference level of minimum acceptable utility (dependent on the production decision and on A). Solving the dual problem gives the expenditure function $e((p_1', p_2')', \overline{U})$

It is well known that the expenditure function is a monotonically increasing the function of $\overline{U}$. Hence, if

it can be assumed that households have the same utility function (for example because of the assumed social welfare function), and if all households face the same prices, then the ranking of expenditure will be the same as a ranking of utilities. This offers a much more practical means of ordering household welfare, assuming optimizing consumption behavior on the part of households.

In reality however, the prices paid by different households for goods and services, whether explicitly in the market or implicitly in the consumption of their own output, will not generally be the same. Nominal expenditures cannot be used to compare welfare until a consistent pricing system is used. Price variations may be cross-sectional (regional, urban-rural, etc.) or temporal; in either case it is necessary to deflate nominal expenditures by an appropriate price index.

Considering initially the cross-sectional variation in prices, household expenditures in the different regions must be made comparable by deflation with an appropriate cost of living index. An ideal cost of living index may be calculated for region i in comparison with reference region r by evaluating the cost of attaining the welfare level of the "typical household" in the reference region (U_r) and expressing this relative to the equivalent cost in region r, that is as the ratio equivalent of the compensating variation

$$CC_i = \frac{e(p_{1i}, p_{2i}, U_r)}{e(p_{1r}, p_{2r}, U_r)}$$

where p_{1i}, p_{2i} are the price vectors p_1, p_2 in region i, p_{1r}, p_{2r} are the corresponding vectors for region r and CC_i is the compensating cost of living index for region i. Given this index, it may be used to estimate expenditure in region i evaluated at the prices of the reference region:

$$\frac{e(p_{1i}, p_{2i}, U_i)}{CC_i} = \frac{e(p_{1i}, p_{2i}, U_i)}{e(p_{1i}, p_{2i}, U_r)} \times e(p_{ir}, p_{2r}, U_r)$$

Alternatively, this deflation may be carried out using the equivalent variation expressed as a ratio (CE_i)

$$CE_i = \frac{e(p_{1i}, p_{2i}, U_i)}{e(p_{1r}, p_{2r}, U_i)}$$

to give

$$\frac{e(p_{1i}, p_{2i}, U)}{CE_i} = e(p_{1r}, p_{2r}, U_i)$$

Given the fact that the resulting deflated expenditure is more easily interpretable, this latter method is pref-

erable. It has the effect of expressing the expenditure of each household at the prices of the reference region. The expenditures corrected in this manner may be used as welfare indicators of all households surveyed at the same point in time.

Note that the prices of both goods purchased in the market and goods consumed from the household's production output enter into the cost of living index. This may seem surprising; it is a direst consequence of the fact that the expenditure measure used as the welfare indicator includes the consumption of home production. The opportunity cost at which households value this consumption may vary across regions, so this should be taken into account in deflating the nominal expenditures.

In practice it will be necessary to calculate an appropriate approximation to the ideal cost of living index. A suitable index is a Paasche cost of living index, which when used to deflate nominal expenditures will give a Laspeyres regionally harmonized expenditure measure. This measure is intuitive and easily interpretable, being essentially the same as constant price national accounts aggregates.

A second correction to the nominal expenditures is necessary to remove the effect of any general price inflation over the same period. If the Consumer Price Index (CPI) is available then inflation may be corrected by deflating all expenditures by the level of the CPI in the appropriate region in the month in which the survey was conducted, expressing the CPI so that its level is the same (e.g., 100) for all regions at the beginning of the overall period under consideration. If the CPI is not available by region on a commensurate basis, then it will be necessary to deflate using an index covering a wider geographical area, on the assumption that interregional differences in price *inflation* (as opposed to price *levels*) are small.

Once these two corrections are made household expenditures are expressed in the constant prices of the reference region at a specific point in time (e.g., the beginning of survey activities). As explained above, and subject to all the assumptions there mentioned, these may then be used to compare welfare across households. The practical procedure used to estimate this theoretical concept is described below.

Calculating Household Welfare in Practice

Income and expenditure aggregates for households have been calculated from the results of the 1988 Ghana Living Standards Survey by Johnson, McKay and Round (1989a). Based on these estimates, total household expenditure was calculated as follows (see Johnson, McKay and Round (1989a) for precise definitions):

Consumers' expenditure on food (estimate 2)

- Consumption of home-produced food
- Consumption of home-produced non-food items
- Other consumption expenditure
- Remittances paid out
- Expenditure corresponding to employment income in kind (estimate 1)

Thus, this indicator includes consumers' expenditure on non-durable goods and services, imputed consumption flows from durable goods (included in other consumption expenditure), transfers made by the household and imputations of expenditure corresponding to consumption of home production and wage payment received in kind. In the case of consumers' expenditure on food, estimate 2 (the normative estimate reflecting typical expenditure) was preferred over estimate 1 (based on the past two weeks expenditures). The latter estimate, being less prone to recall error, probably provides more accurate estimates of the cross-household mean; however, in the case of a commodity displaying seasonality in its consumption pattern, or a commodity which is infrequently purchased, estimate 1 may provide less accurate estimates than estimate 2 of the expenditure of any one household and of the cross-household variance. Given the focus in this study on distribution, it is appropriate to choose estimate 2.

Total household expenditure is expressed in nominal terms, so, as previously observed, it is necessary to take account both of regional variations in the cost of living and of general inflation over the sample period (c. 30%).

The regional cost of living index was calculated as a Paasche price index using information from the price questionnaire and expenditure weights calculated from the household survey. Deflating nominal expenditure by a Paasche price index gives a Laspeyres quantity index, that is, all expenditures are valued at the prices of one region. For this reason the Laspeyres quantity index is perhaps more easily interpreted than its Paasche counterpart.

The regions chosen were the ten administrative regions of the survey. Such a choice meant that the sample size was approximately the same in all regions; this would not have been the case had the "official" regions been used, for example, as in some of these official regions the sample size would have been very small.

As survey activities were conducted in each of the ten regions, simultaneously, a simple cross-sectional index may be calculated. In order to express each of the expenditures in the prices of the region "Accra Metropolis" the following cost of living index was calculated:

$$ C_r = \frac{\sum\limits_{i=1}^{n} V_{ri}}{\sum\limits_{i=1}^{n} \left(V_{ri} \cdot \frac{Pa_i}{Pr_i} \right)} $$

C_r is the cost of living index for region r, where V_{ri} is the value of expenditure in region r on commodity i, Pa_i is the price of commodity i in Accra Metropolis and Pr_i is the price of the same commodity in region r. This may alternatively be expressed as:

$$ C_r = \sum\limits_{i=1}^{n} \frac{1}{\left(S_{ri} \cdot \frac{Pa_i}{Pr_i} \right)} $$

where

$$ S_{ri} = V_{ri} / \sum\limits_{i=1}^{n} V_{ri} $$

is the fraction of expenditure in region r accounted for by commodity i.

Thus calculation of the cost of living index would seem to be a simple matter of calculating average prices and expenditure shares by region where the expenditure shares take consumption of home production into account. However, it is made more complicated by the fact that there is not a one-to-one correspondence between the commodities for which price information is available and those for which expenditure information is available. For the most part, the commodities for which price information is available represent a subset of those for which expenditure information is available. Thus an important practical question arises: is it better to base the index only on the commodities for which price information is available (thus assuming that the regional price variation in the other commodities are in line with the general index), or to take the regional price variation of a specific commodity as being indicative of regional variation in the price of one or more related commodities in a similar expenditure group?

Preliminary theoretical investigation indicated that there was no unambiguous answer to this question, but not surprisingly it depends on how accurately the choice of expenditure groups (commodities of similar regional price variation) is made. In this exercise an attempt was made to establish expenditure groups; these groupings and the commodity for which the price was used as an indicator are listed in Table A2.1.

Many of the items in the price questionnaire could not be used in the construction of the index because

they were not available in all regions. In addition, no prices of services were available. Nonetheless, it is possible to construct cost of living indices for food and non-food items which cover around 65% and 45% respectively of the corresponding market expenditures. While it is recognized that the weights in these indices should also take into account consumption of home-produced commodities, it was not possible to satisfactorily match consumption of the output of non-farm enterprises to the respective commodity categories. The food and non-food indices were combined using weights again reflecting shares of market expenditure to give the overall cost of living indices. The resulting food, non-food, and overall indices are listed in Table A2.2.

The overall regional cost of living index was used to deflate total household expenditure (calculated as explained above). A correction for inflation over the sample period was also made; for each household expenditure was divided by the Consumer Price Index for all Ghana for the month in which it was surveyed (according to the survey plan), expressing the index so that it took the value 1.000 at the beginning of sample activities. It is recognized that this is a rather crude correction for inflation, assuming for example that inflation was the same in all regions.

The resulting household expenditures are now expressed in the constant prices of Accra Metropolis in September 1987 and are now comparable across the country and over time.

Welfare Indices for Individuals

As observed above the ultimate interest is in the distribution of welfare across individuals, not across the households in which they happen to reside at any one point in time. However, in the absence of individual level expenditure data, it is necessary to base the measure of individual welfare on a household level measure. In this study this has been done by attributing to each individual the per capita expenditure of the household in which he/she resides.

It may be argued that this is not the appropriate procedure, that it may overcorrect for household size because it ignores household composition (which will influence nutritional requirements for example) and the existence of economies of scale in household level consumption. Thus a disproportionate number of large households may be found to be poor simply on account of their size. An alternative procedure to dividing by household size would be to employ adult equivalent scales. However, such equivalent scales should be considered as country-specific; their estimation would be a project in itself and, as observed in Chapter 2 above, is an area of some controversy. In the absence of widely agreed adult equivalent scales for Ghana, unweighted household size has been used; the possibility that large households are overrepresented among the poor should be allowed for.

Table A2.1. Price Indicator Variables and Associated Commodity Groups Used in the Regional Cost of Living Index

Price indicator variable	Commodity grouping
Cassava (01)	Raw cassava (305), cassava in form other than garri (307)
Maize (02)	Maize (302), Kenkey (314), Tuo zaafe, etc. (357)
Guinea corn (03)	Millet, guinea corn, sorghum (303)
Garri (06)	Garri (306)
Yam (07)	Yam (310)
Cocoyam (08)	Cocoyam (311)
Plantain (09)	Plantain (312)
Onion (10)	Onion (346)
Garden egg (11)	Garden egg (347), okro (348)
Fresh tomato (12)	Fresh tomato (344)
Tomato paste (13)	Tomato paste (345)
Dried pepper (14)	Other non-leafy vegetables (350)
Oranges (15)	Oranges, tangerines (332), mangoes (333)
Chicken eggs (17)	Eggs (328)
Smoked fish (19)	Fish and shellfish (318)
Palm oil (22)	Palm oil (329), oil palm nuts (315)
Groundnuts (25)	Groundnuts (316)
Akpeteshie (26)	Alcoholic beverages (341)
White sugar (27)	Sugar, candy, etc. (339)
Evaporated milk (28)	Milk (354), milk products (355)
Nivaquine (31)	Medicines (127)
Kerosene (35)	Other fuel for cooking and lighting (108)
Matches (40)	Matches and candles (107)
Charcoal (41)	Charcoal, wood (106)
Local cloth (43)	Cloth (117), material (118, 119), clothing (120, 121)

Note: In each case the commodity category numbers as used in the GLSS price and household questionnaire respectively are given in brackets.

Table A2.2. Regional Cost of Living Indices for Ghana, Accra = 100

Region	Food index	Non-food index	Overall index
Accra Metropolis	100.0	100.0	100.0
Mid Coast	107.8	118.9	111.9
West Coast	105.8	111.8	108.2
East Coast	97.5	110.9	102.7
East Forest	99.4	111.1	103.5
Mid Forest	106.2	132.0	116.5
West Forest	108.8	118.1	113.1
Upper Forest	102.2	107.9	104.1
Volta Basin	107.2	108.0	107.5
Savannah	108.4	120.1	113.6

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