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ABSTRACT

This paper describes the distribution of welfare in Ghana in 1987-88, as measured by consumption expenditures. The data used are from the first year of the Ghana Living Standards Survey. While primarily descriptive, the paper contains information with clear policy implications. Several findings stand out. First, rural residents are, on average, clearly worse off than urban residents. The poorest group are residents of the rural savannah while the wealthiest are those who live in the capital, Accra. Second, education of the household head is strongly positively correlated with household welfare. Third, households where the head is self-employed, especially in agriculture, are generally found at the lower end of the distribution of welfare, while those headed by a wage earner, either in the private or the public sector, are better off. Fourth, unemployment among household heads is not correlated with household welfare. Finally, although the poorer groups are less likely to seek medical help when they are ill, malnutrition among young children in these groups is not much higher than that among the better off groups.

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A. <u>Introduction</u>

Ghana is richly endowed in material, natural and human resources. Yet these resources are not distributed equitably; a great part of the population and society has very limited access to these resources, while a few regions and towns have a disproportionate share of the social and economic benefits derived from the country's resource endowment.

Perhaps, the best evidence of the unequal distribution of Ghana's wealth and resources is the duality of the economy and society, that is, the unequal distribution between urban and rural areas, between the North and the South, and between the formal, modern wage sector and the informal, traditional subsistence sector. The basic objectives of this paper would be to investigate the extent of this unequal distribution of welfare in Ghana and to identify the characteristics of the poor in the society. The paper would attempt, in this regard, to offer some tentative hypotheses or explanations on the causes for the inequality and poverty found in Ghana.

The paper is divided into six sections. Section I provides a background to the paper by examining some features of the economy and society of Ghana. Section II discusses the theory of economic welfare measurement and how it can be applied to Ghana, using household survey data collected between September 1987 and August 1988. Section III presents a descriptive analysis of the distribution of welfare as an application of the discussion in Section II. Sections IV and V focus on the measurement of poverty and inequality, respectively, while Section VI discusses the policy implications of the

research findings, with suggestions for future research. The Appendices set out in greater detail some of the background information readers may need.

B. Ghana at a Glance

On 6 March, 1957 Ghana became the first African nation, south of the Sahara, to gain independence from colonial rule. Three years later, on 1 July, 1960 Ghana became a sovereign republic within the British Commonwealth. The country is divided into ten administrative regions (see map inside back cover). Lying between latitudes 11° 11'N, and 4° 44'N and between longitudes 1° 12'E and 3° 15'W, Ghana is close to both the Equator and the Greenwich Meridian. The proximity of Ghana to the Equator explains the relatively high temperatures (25.6 - 29.0°C) felt in all parts of the country throughout the year. Rainfall, in general, diminishes northwards and eastwards along the coast from the southwestern corner of the country. The country may be classified into four major climatic regions which, in turn, define its vegetation: the southwestern equitorial rainforest zone; the west and middle semi-equitorial forest zone; the coastal savannah grassland; and the hot savannah woodland of the northern part of the country.

The geographical location and climatic conditions influence economic activities. The forest belt, the southwestern equitorial rainforest and the coastal savannah grassland area are all ideal for growing cocoa and many other tropical crops. The coastal area, with its relatively well developed transport infrastructure, has a predominance of service, trade, fishing and manufacturing activities. The North, on the other hand, is less served by transport and commerce and depends heavily on subsistence agriculture. In

contrast, the forest and rainforest areas have a diversified structure of production, and traditional agriculture is opening up to improved technologies.

The population of Ghana currently stands at 14.4 million, but the country remains sparsely-populated, having only 60 persons per square kilometer. The distribution of the population varies, however, by region and by size of locality. Most Ghanaians live in the towns and ports to the South and in those parts of the forest zone which have a long history of industrial and commercial development. Fewer people live in the more recently developed forest lands of the western and central parts of the country and fewer still are to be found in the areas immediately to the north of the forest zone, with the exception of the extreme northeast and northwest of the country.

The people of Ghana trace descent to a common ancestor, whether matrilineal or patrilineal. So strong are such kinship ties that the network of social relationships goes beyond the nuclear or extended family. All people belonging to the same clan, whether related by blood or not, are seen as members of the same 'abusua' (family) and are required to extend a hand of welcome and assistance to one another. Thus, the membership of any social unit that could be classified as a household could vary from the nuclear to include distant relations and non-relations as well. This social network of relationships acts as social security and economic support mechanism in times of hardship. A recent example of this was in 1983 during the repatriation of hundreds of thousands of Ghanaians from Nigeria and elsewhere. Within a matter of days after these Ghanaians were returned to Ghana, they were either picked up or had found their way to relations and friends who were all too

happy and willing to welcome them back home.

The foundation of the present structure of Ghana's economy was laid in the 1890s and the early 1900s, when the introduction of modern systems of mining and cocoa cultivation came to replace the small export trade in naturally-growing forest products that had provided the basis of the economy up to that time. These two activities continue to dominate and dictate the pace of growth and the structure of the economy.

Soon after achieving republic status in 1960, Ghana embarked on a massive program of industrialization and capital formation. This was during a time when Ghana had chosen the path of socialism in conjunction with an attempt at a welfare state. This choice led to an increase in public consumption and very substantial investments over the five-year period from 1960 to 1965. Despite these investments, economic growth rate did not exceed 3 percent annually over that period. Szereszewski's (1966) analysis of the performance of the economy over the period points out that about 80 percent of this investment consisted of construction of roads and other infrastructure - investments that are not directly productive. Furthermore, he asserts that equally substantial investments were made in the state manufacturing sector which generally outstripped the economy's absorbative capacities by placing a great strain on working capital, technical experience and managerial competence.

Moreover, the policy of industrialization was based more on import substitution than on the use of available raw materials to develop industries that could lead to increased export. The result was that industrial plants which had no local resource bases were built and additional capital was spent

to import the raw materials and/or intermediate inputs, at a time when the finished products could be purchased cheaply on the world market. This tended to discourage local initiative in developing the local industrial base and at the same tended to encourage an affinity, among the population, for imported goods, something that Ghana and Ghanaians are yet to recover from.

C. Developments in the Economy since the 1970s

The period between 1972 and 1980 witnessed slackened economic activity after a relatively fast pace of growth in 1970 and 1971. Government measures to alleviate the impact of high prices of consumer goods were offset by the global oil crisis of 1973-4. In 1975 and 1976, the country experienced a critical economic situation largely on account of crop failures in the agricultural sector, due to unfavorable weather conditions and other factors. Cocoa production fell continuously between 1975 and 1979. The country's terms of trade declined as a result of the soaring prices of crude petroleum and the fall in international cocoa prices. The gross domestic product (GDP), at constant 1975 prices, thus fell by 6.3 percent between 1974 and 1978. The high rate of inflation led to a fall in real earnings of the people and worsened living standards, resulting in an exodus of trained and skilled manpower out of the country.

Between 1979 and 1983, real output further declined by 13.9 percent and real per capita national income declined by more than 23.1 percent. This deteriorating economic performance reflected major structural problems. The country managed a relatively favorable trade balance during this period due more to restrictions on imports than to improvement in export earnings. The

rate of inflation also started declining following stricter and more widespread enforcement of price control measures rather than as the result of increase in the supply of consumer items. A sustained deterioration in the terms of trade and another severe drought during 1981-1983 did not help in efforts at arresting the situation. Extensive bush fires induced by the droughts also worsened the situation, resulting in depressed yields for most agricultural produce.

It became quite apparent that appropriate monetary, fiscal and other initiatives would have to be adopted to take full advantage of the productivity possibilities that existed in agriculture as well as in industry but which had not been utilized because of the absence of appropriate incentives. Thus, in April 1983, the Government of Ghana commenced a major reorientation of economic policy, the Economic Recovery Programme (ERP).

The impact of the ERP reform measures on the economy in 1983 was limited by adverse weather conditions and by the return of hundreds of thousands of Ghanaians from Nigeria and elsewhere. The economy began to respond to these reforms in 1984, when real GDP increased by 9.0 percent, the first substantial growth rate since 1978. The improvement in the economy in 1984 could be traced to the impact of the policy reforms, but more so, it was the result of improved weather conditions (return of normal rainfall) and improved availability of input supplies. The recovery was particularly pronounced in the agricultural sector, which recorded a 14 percent rate of growth in output over 1983, largely a reflection of increased production of food crops. Continued normal rainfall in 1985 ensured the consolidation of this gain, to the extent that a further 0.6 percent growth rate in

agricultural output (over the 1984 figure) was recorded in the year. The GDP also recorded a growth rate of 5.1 percent, bringing real output close to its 1980 level, which was only 2 percent below the last production peak of 1978. Since 1985, the growth in real GDP has averaged 5.7 percent per year, with 1988 recording a 6.2 percent growth rate.

The rate of inflation, which had reached 122.8 percent in 1983, fell to 39.6 percent in 1984 and further down to 10.4 percent in 1985, despite heavy exchange rate adjustments. Further adjustments in the exchange rate at the beginning of 1986 and 1987, however, were not followed by further declines in inflation; the rate of inflation rose to 24.6 percent in 1986 and further up to 39.8 percent in 1987. The policy of exchange rate rationalization, leading to the establishment of a parallel market in September 1986 and foreign exchange bureaus in February 1988, appears to have helped to bring down the rate of inflation to 31.4 percent in 1988, and further down to 25.2 percent in 1989.

D. Programmes for the Future

The Economic Recovery Program (ERP), initiated in 1983, has succeeded in reversing Ghana's deteriorating economic prospects, placing the economy, once again, on the path of sustained growth. The basic objectives of the medium term (1986-88) program were consistent with the macro-economic policies that characterized the earlier phase of the ERP. A further objective in the medium term was to induce a real structural transformation of the economy by broadening the development strategy through programs of employment generation, of increased rewards and remuneration to labor, and of informal sector

investment promotion. These were all aimed at improving the well-being of the average citizen and at ensuring that the benefits to the economy would be widely shared.

The Economic Recovery Programme and its sequence of Structural Adjustment Programmes (SAPs) were designed to improve the living standards of all segments of the population. But the prolonged decline of the economy during the previous decade, particularly the substantial reductions in per capita real income and food production, meant that the processes of economic recovery and structural adjustment would involve painful decisions and experiences. Advances have been made in several sectors and on several fronts since the implementation of the ERP. These include increases in the supply of consumer items, improved social and economic infrastructure, improved transportation and communications networks and the opening up of the North, the Afram Plains and other remote parts of the country through electrification and communication links with the South.

All the same, the Government of Ghana recognizes that not all groups of the society have the same capability and access to opportunities to deal with the side effects of the adjustment process. The Government is therefore committed to providing immediate relief for the groups who have been hardest hit by more than a decade of economic decline and by the effects of the adjustment process itself through programs designed to raise their incomes and therefore increase their purchasing power. The Government is eager to identify the vulnerable groups as well as factors that adversely affect their ability to cope with the adjustment process in the short term.

The Government launched two programmes concurrently in 1987 as a

comprehensive, two-pronged, approach to tackle the problem of vulnerable groups in Ghana, the Ghana Living Standards Survey (GLSS) and the Program of Actions to Mitigate the Social Cost of Adjustment (PAMSCAD). The objective of the GLSS is to improve knowledge of the nature and concentration of poverty in the country and therefore provide the scientific basis for delineating the vulnerable groups in the country. In contrast, the PAMSCAD initiative proposes the appropriate policy responses to improve the situation of the vulnerable groups (Republic of Ghana, 1987). Since some of the vulnerable groups could easily be identified from previous studies and experience, the Government was able to launch the two programmes at the same time. Obviously, both programmes are extremely relevant to discussions of the distribution of welfare in Ghana.

II. MEASUREMENT OF WELFARE - THEORY AND APPLICATION

Before examining the data from the Ghana Living Standards Survey
(GLSS), it is important to clarify how welfare is measured in this paper. In
a sense, human welfare is a very subjective concept - it means different
things to different people. However, if one accepts as reasonable, or at
least useful, the notion of welfare used by economists, it is possible to
measure welfare using data from household income and expenditure surveys.
This section presents the theory of welfare measurement as used by economists
and shows how it may be applied to Ghana, using the GLSS data.

A. Economic Theory and Welfare Measurement

Most people would agree that, other things being equal, increased
consumption of goods and services raises individuals' levels of welfare. Much
of what we observe in human behavior also supports this assumption. Of
course, there may be many factors other than the consumption of goods and
services that affect welfare, but since these tend to be much more difficult
to measure, economists usually restrict themselves to that "portion" of human
welfare which is attributable to consumption. In this paper we generally
follow this methodology, though at some points we will step outside of it
(i.e. when examining evidence of malnutrition).

In welfare economics, the starting point for measuring welfare is the
utility function, which asserts that welfare rises as the consumption of
various goods and services increases. In order to compare the welfare of
different individuals, it is assumed that each individual or household

possesses the same utility function. If they possessed different welfare functions it would be impossible, indeed meaningless, to compare the levels of welfare among different categories of people. If one had data on the consumption of individuals, as distinct from the consumption of households, one could analyze the data using a utility function at the individual level.

Unfortunately, most consumption and expenditure data are collected at the household level and thus require analysis using a household level utility function. Here one assumes that a household's utility is a function of the consumption of goods and services and the composition of household members. The composition "adjustment" is needed to account for the fact that households with different compositions require different consumption levels to attain the same level of welfare (e.g. larger households need more goods and services to attain the same welfare level as smaller households). Again, it is necessary to assume that all households possess the same household utility function. Another consequence of the presence of consumption data at the household, rather than the individual level, is that one does not know the distribution of welfare within the household; one has little choice but to assume that all household members enjoy the same level of welfare.[1]

Ideally, one would like to observe the actual utility levels of households, but of course one only observes their levels of consumption. Since individual utility functions are observably equivalent under monotonic transformations, one needs a method of labeling indifference curves which:

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[1] See Deaton (1988) for an attempt to measure the within-household distribution of consumption using household level data.

1) allows one to distinguish between individuals at different levels of utility given observable data; and 2) does not imply any particular cardinalization of the common individual utility function. This can be done by using "money-metric" utility, which is the amount of money required (given a set of prices and the assumption of utility maximization) to attain a specified level of utility.[2] In practice, observed levels of consumption are equivalent to money metric utility under the assumption of utility maximization.[3]

Household surveys usually collect data on income and on consumption (explicit consumption expenditures plus the consumption of goods produced and consumed by the household). Indeed, this is the case with the GLSS. Many studies of welfare in both developed and developing countries often focus on the income data to the exclusion of the expenditure data (see Adelman and Robinson, 1987; Fields, 1989). Yet, economic theory assumes that it is consumption, not income (which may be saved or given away), that raises welfare. While it is true that income which is saved could be spent to raise welfare in the future, it is equally true that such savings could be used for purposes which do not raise welfare (e.g. debt repayment). It seems more appropriate therefore to focus on present welfare alone. In fact, the life cycle/permanent income hypothesis (see Friedman,1957; and Modigliani,1962) leads one to expect that today's consumption is proportional to life-cycle

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[2] For a thorough presentation see Deaton and Muellbauer (1980).

[3] Adjustments for differences in prices and in household consumption are discussed below.

income. However, in this paper we also present some income numbers for purposes of comparison.

It was noted earlier that using household level consumption data compels one to work with a household level utility function, so that adjustments must be made for household size. That is, additional household members, particularly children, are less "costly", in the sense of requiring additional consumption to maintain the welfare level of the household, relative to the initial cost of attaining that welfare level in a household composed of a single person or a childless couple. Two persons may not be able to live as cheaply as one, but they can live more cheaply in a single household than they can in separate households. This idea is supported by both common sense and economic reasoning. Clothing and other items can be handed down from older to younger children, durable goods such as radios and refrigerators can be enjoyed by additional members at no extra cost, and even in the case of food children consume less than adults. The method for adjusting for this phenomenon is the estimation of "adult equivalence scales", which measure the "cost" of additional household members in terms of fractions of adults (see Deaton and Muellbauer, 1980, Ch. 8).

Finally, money-metric measures of utility also need to be adjusted for differences in prices. This can be done by dividing the value of household consumption by a price index (see Deaton and Muellbauer, 1980, Ch.7).

B. Application of the Theory to Ghana

The data used in this paper are taken from the first year of data of the Ghana Living Standards Survey (GLSS) collected between September 1987 and

August 1988. The survey was based on a self-weighted random sample of 3200

households throughout Ghana.[4/] For a detailed descriptionn of the survey see

Appendix A. This subsection will describe how the data were used to create

the tables in this paper and present some preliminary tables.

The theoretical considerations of the previous section require one to

create a comprehensive measure of household consumption and then to adjust

that measure to account for differences in household size and in prices faced

by households in different parts of the country. Direct consumption data are

taken from Section 2 (expenditure on electricity and water), Section 3

(expenditure on school expenses), Section 5 (in-kind payments received from

employers), Section 11 (non-food expenditures) and Section 12 (food

expenditures and the value of food produced and consumed by the household).

Since some non-food expenditures collected in the GLSS do not contribute to

welfare (taxes, repayment of loans, and gifts and remittances) or are a part

of housing or durable goods costs, both of which need special attention, they

were omitted from the calculation of non-food expenditures.

The enjoyment of housing and durable goods (e.g. cars, television

sets, bicycles, cameras) does not take place only at the time they are built

or purchased, but instead extends over the long period of time (several years)

during which they are used. Thus, the welfare received from the purchase of

such goods should be based on the yearly rental value of owning those goods.

For housing, the best approach is to estimate hedonic rent equations (i.e. to

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[4/] Due to incomplete data 98 households were dropped from the analysis,
leaving 3102 households containing 14,938 people.

predict the rental value of housing based on the characteristics of the dwelling) for those households which are renters. Thus, imputed rents for housing were based on a function estimated from the responses given by the heads of household on the rental value of their dwelling.[5] This equation was estimated separately for urban and rural households. Appropriate methods were used to control for sample selection bias.

For other durable goods, the rental value can be estimated based on depreciation in the real value of those goods over time. The effective rental price of a durable good is its depreciation in value over the year in question (which was estimated from data on the estimated present value of durable items and on their cost when purchased) plus the opportunity cost of owning the good in terms of forgone investment earnings (see Deaton, 1980). Given that financial markets in Ghana offered rates of interest which did not keep up with the rate of inflation, it is assumed that the forgone opportunity cost was zero in real terms. Variations in the assumption should not affect the results of this paper considerably since this valuation of durable goods accounts for only 1.8 percent of the total consumption of Ghanaian households.

All the various types of consumption just described were summed to arrive at total household consumption. Total household expenditures and the percentage contribution by various components are given in Table 1. Equivalence scales were estimated using both Engel's and Rothbarth's

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[5] Given the prevalence of rent control in Ghana, the regression was done on the estimated rental value of housing given by home owners. Indeed this regression had a much better fit (higher R^2) than a similar regression on actual rents paid by renters.

techniques. Engel's method did not give very accurate results, presumably

because there was not very much variation in food shares across rich and poor

households. The Rothbarth method gave more reasonable results (0.07 for

children aged 0-6 and 0.12 for children aged 7-16), but this method tends to

underestimate the true value of the scales (see Deaton and Muellbauer,

1986). Thus we decided on the following equivalence scales: 0.2 for children

aged 0-6, 0.3 for children aged 7-12 and 0.5 for those aged 13-17. These are

somewhat higher than the Rothbarth estimates but have the added advantage of

being the same values used in similar studies on Côte d'Ivoire (Glewwe, 1987a)

and Peru (Glewwe, 1987b), which will allow for easier comparison across

TABLE 1: **Composition of Household Consumption in Ghana, 1987-88**

	All Ghana	Accra	Urban Coast	Urban Forest	Urban Savannah	Rural Coast	Rural Forest	Rural Savannah
Food Purchased	47.1%	58.0%	60.2%	54.4%	46.3%	51.3%	38.9%	30.4%
Food Produced	23.6	1.2	6.3	13.8	24.4	22.3	33.9	47.3
Imputed Rent	2.3	4.0	2.9	2.6	3.3	1.4	1.7	1.2
Durable Services	1.8	4.1	1.4	2.3	2.0	1.0	0.8	1.0
Utilities	0.9	2.7	1.3	1.3	1.0	0.1	0.1	0.0
Other Non-Food	24.3	30.0	28.0	25.7	23.0	23.9	20.7	20.0
Total Food	70.8	59.1	66.4	68.3	70.7	73.6	72.8	77.8
Total Non-Food	29.2	40.9	33.6	31.7	29.3	26.3	27.2	22.2
Total Household Expenditures (Cedis/year)	299,189	416,331	301,699	300,887	309,820	277,586	266,565	277,651

Source: First year of data from GLSS.

Note: These figures are not adjusted for household size or for variation in prices.

countries. The last adjustment to the data was to divide total expenditure by a price index constructed from the GLSS price questionnaire; this is discussed in Appendix B.

Given this measure of welfare, the overall distribution of welfare in Ghana is given in Table 2 by equivalence scale adjusted expenditure

TABLE 2: **Distribution of Consumption Expenditures by Expenditure Deciles: Ghana 1987-88**

Decile	Percent Share of Aggregate Expenditures		Within Decile Mean (Cedis/Year)		Food Share (Fraction of Total Expenditures Allocated to Food)
	Per Capita	Equivalence Scale Adjusted	Per Capita	Equivalence Scale Adjusted	
1	2.79	2.77	15,528	24,533	0.682
2	4.16	4.25	23,146	37,630	0.707
3	5.26	5.38	29,243	47,605	0.723
4	6.38	6.54	35,486	57,821	0.719
5	7.55	7.60	42,010	67,256	0.714
6	8.56	8.86	47,606	78,397	0.697
7	10.15	10.37	56,480	91,696	0.706
8	11.85	12.26	65,912	108,497	0.691
9	15.40	15.47	85,672	136,878	0.697
10	27.98	26.54	155,703	234,780	0.656
All Ghana	100.0	100.0	55,645	88,462	0.691

Source: First year of data from GLSS.

Notes: 1. Each decile contains 10% of the population, <u>not</u> 10% of households.
2. All Cedi figures are in September, 1987 prices.
3. Food Shares are for equivalence scale adjusted consumption deciles.

deciles.[6] Figures are also provided for per capita expenditures (i.e. no equivalence scales used). Whether one views per capita or equivalence scale adjusted expenditures, the poorest 40 percent of the population account for only 19 percent of all consumption in Ghana, while the wealthiest 20 percent account for as much as 42-43 percent. The last column of the table gives food shares as a population of total expenditure, which indicates that food shares are only weakly (negatively) correlated with total household expenditures.

When the data in Table 2 are compared to similar data from Côte d'Ivoire (Glewwe, 1987a), it becomes apparent that the distribution of welfare is less unequal in Ghana than in Côte d'Ivoire; in the latter, the poorest 40 percent account for only 15 percent of total consumption while the wealthiest 20 percent receive 50 percent. One possible explanation of this is that, until recently, Ghanaian governments have tended to intervene more heavily in the economy than the Ivorian government. Indeed, some interventions were undertaken with the explicit aim of trying to bring about a more equitable distribution of income in Ghana. It appears that these efforts were successful, but there may have been a long-run cost in terms of reduced economic growth. The two recent surveys from these two neighboring countries offer an interesting opportunity to evaluate the effectiveness of economic and social policies in both countries; this will be left to future research. The rest of this paper focuses on Ghana, with occasional references to Côte d'Ivoire (and other developing countries).

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[6] Each decile contains 10 percent of the population, not 10 percent of households.

III. THE DISTRIBUTION OF WELFARE AS MEASURED BY CONSUMPTION EXPENDITURE LEVELS

This section examines, in some detail, the distribution of welfare in Ghana, as measured by consumption expenditure levels. The framework of analysis will involve examination of relationships between welfare levels and certain household characteristics such as: 1. Area of residence; 2. Demographic characteristics of the head of household (sex, religion, education); and 3. Labor force characteristics of the head of household (employer and occupation). These relationships are presented in Tables 4a and 4b. Table 3 shows the distribution of these demographic and labor force characteristics by area of residence and is meant to provide useful background information to help in the understanding of the distribution by welfare levels given in Tables 4a and 4b. Finally, relationships between welfare levels of households and school attendance (Table 5), housing characteristics, (Tables 6, 7a and 7b) and ownership of durable goods (Table 8) are examined.

Table 4a shows that about two thirds (65.5 percent) of Ghanaians live in rural areas (those localities with a population of less than 5000), which compares to the 68 percent in the 1984 population census. It may be noted also that Accra, the capital, contains about one third of Ghana's urban population. Table 3 also shows that Accra has a higher proportion of male-headed households than any other area outside of the savannah area (where Islam has a strong influence). Accra also has relatively high levels of education and low levels of self-employment among household heads.

In Tables 4a and 4b all households are divided into consumption expenditure quintiles, that is, the poorest 20 percent of the population

TABLE 3: **Characteristics of Households by Location: Ghana 1987-88**

Household Characteristic	All Ghana	Breakdown by Area of Residence						
		Accra	Urban Coast	Urban Forest	Urban Savannah	Rural Coast	Rural Forest	Rural Savannah
Sex of Head								
Male	74.8	77.4	66.6	65.2	82.7	68.9	71.3	88.9
Female	25.2.	22.6	33.4	34.8	17.3	31.1	28.7	11.1
Religion of Head								
Christian	59.3	81.6	72.0	61.5	27.2	64.7	68.4	31.4
Muslim	15.5	13.0	8.9	26.6	63.6	7.2	6.3	21.6
Traditional	18.7	2.0	15.7	6.1	8.6	20.8	13.6	44.4
Other	6.5	3.4	3.4	5.8	0.6	7.4	11.7	2.7
Education of Head								
None	51.7	23.9	44.4	45.5	66.8	49.6	48.0	76.3
Primary	8.9	6.4	9.4	6.2	6.6	13.5	11.7	4.8
Middle School	31.1	48.6	36.4	38.0	20.3	28.7	33.6	16.1
Teacher Training	2.3	1.3	1.7	4.0	0.3	3.2	2.7	1.3
Sec. Sch. O-Level	3.8	10.9	4.8	3.3	4.3	3.8	2.7	1.3
A-Level	0.7	3.4	1.1	0.5	0.7	0.0	0.5	0.0
Post Sec. Non-University	0.4	0.6	0.8	0.4	0.0	1.0	0.1	0.2
University	1.2	5.0	1.6	2.2	1.0	0.2	0.7	0.1
Employer of Head								
Government	11.9	20.3	13.6	20.8	15.3	6.2	10.9	6.2
Parastatal	3.2	5.8	3.4	8.7	3.0	2.0	2.7	0.3
Private	7.9	30.3	20.3	5.4	3.0	8.6	2.7	1.5
Self-Employment	72.1	38.4	49.4	57.3	72.8	80.3	82.3	85.5
None	4.9	5.2	13.4	7.8	5.9	2.9	1.4	6.6
Occupation of Head								
Cocoa Farmer	17.7	0.2	2.8	10.7	0.0	8.8	44.4	5.7
Other Farmer	41.5	6.2	25.8	17.4	54.4	57.4	33.4	78.3
Sales/Services	12.1	31.8	18.4	29.7	8.5	8.7	5.9	1.8
Prod./Crafts	15.3	40.1	28.2	22.1	20.1	16.7	6.5	4.8
White Collar	9.0	16.6	11.4	12.5	11.2	5.5	8.5	4.5
Retired	1.7	2.0	5.3	1.9	4.9	0.9	0.3	2.4
Unemployed	2.8	3.2	8.1	5.8	1.0	2.0	1.1	2.4

Source: First year of data from GLSS (3102 households and 14,938 individuals).

Note: All columns within each characteristic group sum up to 100%.

TABLE 4a: Characteristics of Households Within Quintiles: Ghana 1987-88

Household Characteristic	All Ghana	Quintiles					Mean Expenditures (Cedis/yr)	
		1	2	3	4	5	Equivalence Scale Adjusted	Per Capita
Area of Residence								
Accra	11.4	1.1	2.8	8.1	13.6	31.2	149,542	99,863
Urban Coast	6.9	5.0	5.3	6.5	9.6	8.0	95,073	60,319
Urban Forest	11.6	4.8	11.5	14.5	15.7	11.2	95,630	60,053
Urban Savannah	4.7	5.8	4.7	5.7	3.1	4.1	77,689	48,701
Rural Coast	13.7	11.6	15.3	14.5	13.8	13.5	88,332	54,958
Rural Forest	31.1	32.1	32.5	36.8	31.9	22.1	80,053	48,741
Rural Savannah	20.7	39.6	27.9	13.9	12.3	9.9	63,940	39,802
Sex of Head of HH								
Male	74.8	77.4	76.1	74.6	73.3	72.7	86,829	55,756
Female	25.2	22.6	23.9	25.4	26.7	27.3	93,313	55,316
Religion of Head								
Christian	59.3	41.6	52.8	60.6	68.8	72.6	91,348	61,508
Muslim	15.5	20.4	16.9	15.2	13.6	11.6	80,388	50,643
Traditional	18.7	33.1	24.5	16.2	10.7	8.9	63,970	40,007
Other	6.5	4.9	5.8	8.1	7.0	6.9	93,008	59,133
Education of Head								
None	51.7	72.3	61.4	50.0	42.1	32.7	73,926	46,149
Primary	8.9	9.6	8.6	8.8	8.1	9.2	86,580	53,754
Middle School	31.1	16.9	25.5	33.1	37.5	42.4	100,569	63,657
Teacher Training	2.3	0.5	2.0	3.5	3.4	1.9	91,678	52,737
Sec. Sch. O-Level	3.8	0.5	2.1	3.7	6.1	6.4	135,138	86,596
A-Level	0.7	0.0	0.0	0.5	0.9	2.1	205,570	138,976
Post Sec. Non-Univ.	0.4	0.2	0.0	0.1	0.4	1.2	160,346	102,618
University	1.2	0.0	0.4	0.2	1.5	4.1	167,141	113,078

(Continued)

TABLE 4a: Characteristics of Households Within Quintiles
(Continued)

Household Characteristic	All Ghana	Quintiles					Mean Expenditures (Cedis/yr)	
		1	2	3	4	5	Equivalence Scale Adjusted	Per Capita
Employer of Head								
Government	11.9	4.7	8.6	3.2	16.7	16.2	104,758	66,035
Parastatal	3.2	1.2	3.4	3.4	4.2	3.8	101,464	64,956
Private	7.9	4.4	4.3	6.6	10.4	14.0	114,951	79,368
Self-Employment	72.1	84.3	77.7	71.7	64.4	62.5	83,009	51,077
None	4.9	5.4	6.1	5.2	4.3	3.5	78,113	53,101
Occupation of Head								
Cocoa Farmer	17.7	16.8	21.3	19.5	17.7	13.1	78,655	48,458
Other Farmer	41.5	61.9	49.6	36.8	32.4	26.9	73,426	45,209
Sales/Services	12.1	5.3	6.4	12.8	15.3	20.6	119,239	74,363
Prod./Crafts	15.3	9.0	12.2	15.8	18.2	21.2	101,663	66,452
White Collar	9.0	2.3	5.4	10.0	12.4	14.8	117,552	74,772
Retired	1.7	2.1	1.9	1.8	1.7	1.2	76,391	52,046
Unemployed	2.8	2.6	3.2	3.4	2.3	2.3	82,556	56,501
Mean Expenditure								
Equiv. Scale Adjus.	88,462	31,082	52,713	72,827	100,097	185,829		
Per Capita	55,645	19,337	32,365	44,808	61,196	120,688		

Source: First year of data from GLSS.

Notes: 1. Columns sum to 100% for each characteristic group.

2. Cocoa farmer includes all households in which both the head is a farmer and the household has at least one acre of cocoa land.

3. All Cedi figures are deflated to September 1987 prices.

TABLE 4b: **Characteristics of Households Across Quintiles: Ghana 1987-88**

Household Characteristic	All Ghana	Quintiles				
		1	2	3	4	5
Area of Residence						
Accra	1.4	2.0	4.9	14.3	24.1	54.8
Urban Coast	6.9	14.6	15.3	18.9	28.0	23.2
Urban Forest	11.6	8.4	20.0	25.2	27.2	19.3
Urban Savannah	4.7	24.6	20.2	24.2	13.5	17.5
Rural Coast	13.7	16.9	22.3	21.1	20.1	19.7
Rural Forest	31.1	20.7	20.9	23.7	20.6	14.2
Rural Savannah	20.7	38.2	27.0	13.5	11.9	19.5
Sex of Head of HH						
Male	74.8	20.7	20.4	20.0	19.6	19.4
Female	25.2	18.0	19.0	20.2	21.1	21.6
Religion of Head						
Christian	59.3	14.0	17.8	20.5	23.2	24.4
Muslim	15.5	26.3	21.8	19.5	17.5	14.9
Traditional	18.7	35.5	26.5	17.3	11.4	9.5
Other	6.5	15.0	17.9	24.7	21.4	21.0
Education of Head						
None	51.7	28.0	23.8	19.3	16.3	12.6
Primary	8.9	21.7	19.3	19.9	18.3	20.8
Middle School	31.1	10.9	16.4	21.3	24.2	27.2
Teacher Training	2.3	4.7	17.7	31.0	30.1	16.5
Sec. Sch. O-Level	3.8	2.5	11.4	19.7	32.3	34.1
A-Level	0.7	0.0	0.0	15.1	25.5	59.4
Post Sec. Non-Univ.	0.4	12.3	0.0	7.0	19.3	61.4
University	1.2	0.0	7.0	3.2	23.7	66.1

(Continued)

TABLE 4b: **Characteristics of Households Across Quintiles**
(Continued)

Household Characteristic	All Ghana	Quintiles				
		1	2	3	4	5
Employer of Head						
Government	11.9	7.9	14.4	22.2	28.2	27.3
Parastatal	3.2	7.6	21.0	21.2	26.4	23.9
Private	7.9	11.2	10.7	16.7	26.2	35.3
Self-Employment	72.1	23.4	21.5	19.9	17.9	17.3
None	4.9	22.0	24.9	21.2	17.9	14.2
Occupation of Head						
Cocoa Farmer	17.7	19.0	24.0	22.1	20.1	14.8
Other Farmer	41.5	29.8	23.8	17.8	15.6	12.9
Sales/Services	12.1	8.8	10.6	21.2	25.4	34.1
Prod./Crafts	15.3	11.8	16.0	20.7	23.9	27.6
White Collar	9.0	5.2	12.0	22.3	27.6	32.9
Retired	1.7	23.9	21.6	20.9	20.1	13.5
Unemployed	2.8	19.0	23.1	24.3	17.0	16.6

Source: First year of data from GLSS.

Notes: 1. Rows sum to 100%, except for All Ghana column, which is the same as in Table 3a.

2. Cocoa farmer includes all households in which both the head is a farmer and the household has at least one acre of cocoa land.

3. All Cedi figures are deflated to September 1987 prices.

belong to the first quintile, the next poorest 20 percent belong to quintile 2, ..., and the wealthiest 20 percent belong to quintile 5. The data in Table 4a give the percentage breakdown of household characteristics <u>within</u> quintiles; for example, it shows that 31.2 percent of the wealthiest 20 percent of the population live in Accra, the capital, while only 9.9 percent live in rural savannah areas. In contrast, Table 4b shows the percentage breakdown of household characteristics <u>across</u> quintiles; for example, of all households found in Accra only 2.0 percent are found in the poorest quintile while 38.2 percent of rural savannah households are in the poorest quintile. These two ways of displaying the data are complementary and the reader is encouraged to look at both tables.

A. Distribution of Welfare by Area of Residence

The two thirds of the sampled population who reside in rural areas are made up of 13.7 percent in the coastal areas, 31.1 percent in the forest areas and 20.7 percent in the semi-arid savannah region (Table 4a). Within the urban areas, 11.4 percent of the population are found in Accra, 6.9 percent in other coastal towns and cities, 11.6 percent in the forest area and 4.7 percent are in the savannah area.

Where are these different areas represented in the overall distribution of welfare? Table 4a shows that 83.3 percent of the poorest 20 percent of the population are found in rural areas while slightly more than half (54.5 percent) of the wealthiest 20 percent are found in urban areas of Ghana. To illustrate in another way, Table 4b reveals that only 2 percent of the population in Accra are found among the poorest 20 percent of the population, while 54.8 percent are in the wealthiest 20 percent of the

population. In contrast, 38.2 percent of the residents of the rural savannah
are found among the poorest 20 percent of the population, while only 9.5
percent are among the wealthiest 20 percent of the sampled population (Table
4b). On the whole, residents of the rural savannah are the poorest in Ghana,
having an equivalence scale adjusted consumption level of only 63,940 cedis
per year (39,802 cedis in per capita terms), while other rural areas are
somewhat better off and urban areas are better off still[1]. The average
resident in Accra, on the other hand, has an average equivalence scale
adjusted expenditure level of 149,542 cedis, which is about $2\frac{1}{2}$ times as high
as that of the average resident in the rural savannah.

The disparity between the savannah and the other areas, particularly
Accra and other urban areas in the south, is explained in part by the fact
that people in the savannah are predominantly uneducated and engaged in
agricultural self-employment activities, while people in Accra and non-
savannah urban areas are more highly educated and engaged in wage labor or
self-employment in the sales/service and production/crafts sub-sectors, which
have relatively high per capita expenditure levels.

While these disparities may seem large, especially those between the
better off urban areas and the poorer rural ones, it is important to realize
that the disparity is much greater in Côte d'Ivoire (see Glewwe, 1987a). In
that country nearly 90 percent of the poorest 20 percent of the population
were found in rural areas, while almost 75 percent of the wealthiest 20
percent were found in urban areas. Further, the capital city of Abidjan had

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[1] Recall that price deflators have been used to control for price
differences across these areas. See Appendix B for details.

an average consumption expenditure level almost four times as large as that found in the rural savannah areas in the northern half of Côte d'Ivoire.

B. Sex of the Head of Household

In some developing countries households headed by women are thought to be at a substantial disadvantage compared to male-headed households, since the presence of an adult male in a household would greatly add to its income. This phenomenon would manifest itself in consumption levels of female-headed households that are substantially lower than those in households headed by males. In Ghana, 25 percent of the population live in female-headed households, but the consumption levels of those households headed by females are about 7 percent higher than those for male-headed households (Table 4a). This suggests that there is no disadvantage, perhaps even an advantage, to living in a female-headed household. Part of the reason that female-headed households appear relatively better off may be that they are more often found in more developed (usually urban) areas. For example, the savannah area (urban and rural), which is the poorest area in Ghana (see Table 4a), has the lowest percentage of female headed households (Table 3). Still, further analysis indicates that within 6 of the 7 areas of residence (the sole exception being urban forest areas) female-headed households were at least as well off as those headed by males.

C. Religion of the Head of Household

In Ghana about 59.3 percent of the population are Christians, 15.5 percent are Muslim and the remainder adhere to traditional African beliefs (18.7 percent) or belong to other religious groups (6.5 percent). As seen in

Tables 4a and 4b, Christian households are somewhat more likely to be found among the better off groups, while Muslim households are slightly worse off. One may be tempted to invoke the thesis of Max Weber (1958) that the Protestant Ethic (71 percent of Christians in the sampled population are Protestant) serves as a springboard for economic success even in the Third World. Yet geography (and education) also provides an explanation; close to half (47 percent) of Muslims reside in the savannah area, the poorest area of the country. Another, perhaps more interesting, finding is that adherents of traditional African religion are much worse off relative to the other religious groups - 62 percent are found among the poorest two quintiles while only a tenth (9.5 percent) are found in the wealthiest quintile (Table 4b). They also are predominantly found (49 percent of such adherents) in the poorest region in Ghana, the rural Savannah, where they make up 44.4 percent of the population (Table 3). In contrast, there are very few in Accra, where they constitute only 2.0 percent of the residents. Further research is necessary to disentangle the indirect effects of area of residence and education on religion in explaining household welfare.

D. Education of the Head of Household

Education is often seen as an important factor of access to economic opportunities in developing countries; households whose members have relatively high levels of education are almost always better off. This turns out to be the case for Ghana as well, as seen in Tables 4a and 4b. About half of the population (51.7 percent) live in households where the head has no education at all. A further 8.9 percent live in households where the head has only a primary education, while 31 percent live in households headed by

someone with a middle school education. On the other hand, only 8.4 percent
of the population live in households where the head has more than a basic
education, the most common being secondary school with 4.5 percent (Table
3). The results indicate that educational levels of household heads are
correlated with area of residence: the savannah areas, urban and rural, have
the highest percentages (66.8 percent and 76.3 percent, respectively) of
households with uneducated heads, while Accra has the lowest (23.9 percent).
This is not surprising given that modern education began in the southern part
of Ghana and Accra is by far the largest area of employment among educated
workers.

From Table 4a it is seen that nearly three fourths (72.3 percent) of
the population in the poorest quintile in Ghana live in households where the
head has no education at all, while almost no households where the head has a
secondary or higher education are found among the poor. In contrast, among
the wealthiest quintile two thirds (67.3 percent) of the population live in
households where the head has some level of education. Looking at particular
levels of education across income groups (Table 4b), almost no households
headed by someone with a university or other post-secondary education are
found among the poorest quintile; indeed, about 90 percent of the population
found in these households are in the top two quintiles, more often in the top
quintile.

Yet there are some other interesting findings as well. First, quite
a few (12.6 percent) of the people who live in households headed by an
uneducated individual are found in the wealthiest quintile (Table 4b) and
constitute about a third (32.7 percent) of the population found in the
wealthiest quintile (Table 4a). These may be the households engaged in sales

and production activities. Second, teacher training appears to be a particularly unattractive type of education in terms of the consumption levels attained. Households headed by someone with a teacher training education do only slightly better than those households headed by individuals with only a primary education. This indicates that teachers are poorly paid in Ghana relative to their level of education (teacher training is about the equivalent of GCE Ordinary level), and this could have serious consequences for the quality of education in Ghanaian schools if many talented teachers decide to look for employment elsewhere.[8] Third, it is somewhat surprising that households headed by A-Level secondary school graduates appear better off than those in which the head has a University or other post-secondary education. While this cannot be resolved in this paper, two points should be kept in mind: 1. The number of households in the sample headed by persons with high levels of education is relatively small, so that this anomaly may not be statistically significant; and 2. It may be that persons with an A-Level education have fewer dependents, so that even though their incomes are lower their direct consumption expenditure levels are higher.

Finally, it is worth noting that disparities in living standards by education in Ghana are not as large as those in Côte d'Ivoire. In Ghana, households headed by people with a university or other post-secondary education attain consumption levels about 2 or 3 times greater than those with

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[8] There may be some teachers who are better paid because they have a higher level of education beyond teacher training. Unfortunately, such teachers are difficult to identify with the GLSS data since they are only identified by their highest level of education (i.e. one would not know if they had had teacher training before going on to a higher level of education).

uneducated heads, but in Côte d'Ivoire the disparity is greater than 5 to 1
(cf. Glewwe, 1987a). The differences in the two countries is in part
explained by the fact that Côte d'Ivoire attaches a much higher premium on
education and on teachers, with the result that salaries and living conditions
of the highly educated are much better there than they are for the highly
educated in Ghana.

E. Employer and Occupation of the Head of Household

Tables 4a and 4b also examine the welfare levels of Ghanaians
according to the employment characteristics of heads of households. Turning
first to the employer figures, 72.1 percent of Ghanaians live in households
where the head is self-employed (own-account worker), while 15.1 percent live
in households headed by government workers (including parastatals). The
figures for private sector wage employment and unemployment are 7.9 percent
and 4.9 percent, respectively. From Table 3, one sees that self-employment is
highest in rural areas and lowest in urban ones, which is not surprising since
private sector and government jobs are most often found in urban areas. In
the poorest quintile, households headed by self-employed individuals are over-
represented, comprising 84.3 percent of the population in this group (Table
4a). In contrast, government and private sector workers are under-
represented. Those without jobs are fairly evenly distributed across the
different quintiles. In the two wealthiest quintiles on the other hand,
government and private sector workers are over-represented relative to their
share in the total sample. For instance, Table 4b indicates that about 55.5
percent of the population in households headed by a government worker (not
including the parastatal employment) are found in the top two quintiles,
while the corresponding figure for private sector workers is 61.5 percent.

Although it is clear that government workers are, on average, better off than most other workers, it should be borne in mind that the differences are not overwhelming. The equivalence scale adjusted mean consumption expenditure level of households headed by government workers is only about 18 percent higher than that of the average Ghanaian household, and is even les than that of households headed by private sector workers. The situation in Côte d'Ivoire is very different - households headed by government workers have consumption levels almost twice as high as those headed by other workers (cf. Glewwe, 1987a), due to government policy concerning teachers, nurses and other public sector workers.

Turning to the occupations of heads of households, Table 3 shows that 17.7 percent of the population live in households headed by cocoa farmers (cocoa is by far the main export crop of Ghana) while a further 41.5 percent live in households headed by farmers of other crops. Households headed by nonfarm workers constitute only 36.4 percent of the population, while 4.5 percent of the population live in households where the head is unemployed or retired.

While cocoa farming households are fairly evenly distributed across quintiles, non-cocoa farming is skewed toward the poorer quintile groups. Thus, while 43.0 percent of cocoa farming households are in the two poorest quintiles and 34.9 percent are found in the two wealthiest quintiles (Table 4b), as many as 53.6 percent of the non-cocoa farming households are found among the two poorest quintiles with only 28.5 percent in the two wealthiest

groups.[9] Households whose heads work in sales and services or in white collar occupations are relatively better off - households found in these two groups enjoy consumption levels that are more than 30 percent higher than those of the average Ghanaian household. The next better off group comprises those households where the head works in a production or crafts occupation. These findings on sales and service and on production occupations are consistent with those of Twum-Baah (1982), using 1978 data from the Eastern Region of Ghana.

Finally, it is worth noting that persons living in households where the head is unemployed are only slightly worse off than the average Ghanaian but better off than cocoa and non-cocoa farming households. This indicates that unemployment is neither concentrated among the poor nor is it a major cause of poverty. This supports the finding of Twum-Baah (1983) that many unemployed persons in the Eastern Region, in 1978, had other means of support so that they could "afford" to be unemployed. In a country where no transfer payment ("hand-out") system exists at the state level, this kind of support can only be explained in terms of the extended family mode of living, with its network of social relationships and economic security mechanisms.

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[9] Dividing both cocoa and non-cocoa farmers into those which own most (50% or more) of the land they farm and those who do not did not reveal unusually large differences. In both cases the "non-owners" were about 20-25% of the total number. The respective per capita (adjusted per capita) means are: cocoa owners, ¢49,271 (¢79,854); cocoa non-owners, ¢44,444 (¢72,734); other owners, ¢44,252 (¢71,851); other non-owners, ¢48,026 (¢78,068).

F. School Attendance by Welfare Groups

The apparent positive relationship between educational level of the head of household and consumption (Table 4b) suggests that education could be an important means for raising household welfare levels. However, such correlation does not constitute proof since causality could run in both directions. Even so, relatively poor households may be able to provide a better future for their children by encouraging them to get a high level of education. Thus it is worthwhile to examine school enrollment ratios to see whether children from poor households are getting as much education as those from wealthier families. These data are presented in Table 5, which shows school attendance figures by area of residence and by quintiles for children between the ages of 6 and 10 and between ages 11 and 15.

For Ghana as a whole, slightly over two thirds (68.5 percent) of all children aged 6-10 have attended school in the past 12 months (prior to the interview), and for those aged 11-15 the figure is 71.5 percent. Analogous figures for the past 7 days are 61.9 percent and 64.2 percent, respectively (these figures are lower primarily because children have summer and other holidays during some weeks). While these attendance rates are not unusually low there is much room for improvement; the stated goal of universal basic (primary and middle) education in Ghana is clearly not being met. Unfortunately, but not surprisingly, these figures are much lower among the poorest welfare groups - only slightly more than half (52.3 percent for the 6-10 age group and 56.6 percent for the 11-15 age group) of the children from the lowest consumption expenditure quintile have attended school within the past 12 months. On the other hand, there appears to be little difference in

school attendance levels among the top three expenditure quintiles, which indicates that access to schooling is not only a matter of welfare levels, but that there may be other factors which have a stronger effect on school enrollment decisions.

In fact, area differences in school attendance seem to be larger than differences by welfare quintiles. Accra has relatively high rates of school attendance, approaching 90 percent for children between the ages of 6 and 10. The other urban areas of Ghana generally have attendance rates which are at or above the national average, and so does the rural forest area. On the other hand the rural coast area (as a result of fishing activities) and the rural savannah (probably for cultural/religious reasons) have very low school attendance rates. It would seem advisable for the government to focus attention on the low rates of school attendance in the rural savannah area, which lags far behind the rest of the country in school attendance and is also by far the poorest area of Ghana.

G. Housing Characteristics by Welfare Groups

What kind of living conditions are associated with different levels of welfare? The data in Tables 7a and 7b provide some answers, but first it is useful to examine Table 6 to shed some light on differences in dwelling characteristics. The data in Table 6 make it clear that households in urban areas are much more likely to have piped water, electricity and flush toilets, than those in rural areas. This is simply due to the fact that in most rural areas these facilities are not available, regardless of the income levels of rural households. Turning to Tables 7a and 7b, one sees that poorer households in Ghana are more likely to obtain their drinking water from

TABLE 5:   School Attendance in Ghana by Quintiles and Area of Residence, 1987-88

	Attendance last 12 months		Attendance last 7 days	
	Ages 6-10	Ages 11-15	Ages 6-10	Ages 11-15
All Ghana	68.5	71.5	61.9	64.2
By Consumption Quintiles				
Quintile 1	52.3	56.6	51.1	54.8
Quintile 2	63.2	66.6	58.4	61.8
Quintile 3	74.3	77.7	67.7	71.9
Quintile 4	73.3	79.2	65.8	67.0
Quintile 5	79.9	78.8	66.3	65.2
By Area of Residence				
Accra	89.9	83.8	70.2	65.7
Other Urban Coast	75.2	79.0	67.5	70.6
Urban Forest	82.5	77.8	78.9	71.3
Urban Savannah	71.7	64.4	69.3	64.4
Rural Coast	64.6	72.7	45.7	54.1
Rural Forest	71.6	78.6	68.4	74.5
Rural Savannah	44.3	44.7	43.7	43.6

Source: First year of data from GLSS.

Note: School attendance within the last 12 months includes all children who attended
school at any time in the past 12 months.

natural sources (rivers, lakes, etc.) and from tubewells (i.e. wells with pumps).[10] On the other hand wealthier households are more likely to get water from piped sources (including plumbing). Perhaps the most interesting fact is that even the wealthier population often gets its drinking water from natural sources and wells - about 50 percent of the population in the wealthiest 20 percent fall into this category. This may simply reflect the fact that almost half (45.5 percent) of the population in the wealthiest quintile still live in rural areas (see Table 4a). The effect on these relatively unhealthy sources of drinking water on public health should be an important topic for future research.

Toilet facilities in Ghana are rather underdeveloped - over half (53.6 percent) of the population use pit latrines and 20.8 percent have no toilet facilities whatsoever (Table 6). Flush toilets are more common among the wealthiest quintile, but even then they are used by only 14.6 percent of the population in this group, only slightly larger than the number in this group that have no toilet facilities whatsoever. This again may reflect the fact that about half of the population in the wealthiest quintile live in rural areas, and flush toilets are closely linked to availability of pipe-borne water. Again the implications of these poor sanitary conditions on the health status of the population should be a topic of serious concern.

Finally, electric lighting is available to only about one fourth (24.4 percent) of the population, and is found more among the wealthier groups

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[10] Tubewells are most often found in the Savannah as its dryer climate results in lower ground water levels, which are best exploited by tubewells than by open wells.

TABLE 6: Housing Characteristics by Location: Ghana, 1987-88

Housing Characteristics	All Ghana	Area of Residence						
		Accra	Urban Coast	Urban Forest	Urban Savannah	Rural Coast	Rural Forest	Rural Savannah
Source of Drinking Water								
Inside Plumbing	2.2	15.2	1.3	2.1	0.4	0.0	0.5	0.0
Inside Standpipe	8.5	36.9	26.1	13.4	8.0	2.0	0.6	0.3
Outside Standpipe								
Private	4.8	16.2	15.4	10.6	1.4	0.8	0.8	1.4
Public	7.1	21.3	21.3	7.8	24.5	14.7	3.5	0.2
Water Truck	0.4	0.0	0.0	0.0	6.6	0.2	0.0	0.0
Neighbor	3.3	11.8	3.1	12.7	2.4	0.8	0.0	0.0
Water Vendor	2.2	16.6	2.7	0.0	1.7	0.2	0.1	0.1
Well w/ Pump	8.2	0.0	1.8	0.0	1.7	2.0	6.3	27.8
Well w/out Pump	12.8	0.0	19.2	35.1	7.0	19.1	5.3	13.6
Rainwater	0.4	0.0	4.1	0.2	0.0	0.0	0.1	0.0
River, Lake, etc.	50.3	0.0	5.1	18.1	46.1	60.2	82.8	56.6
Type of Toilet								
Flush	5.6	27.8	8.6	9.3	2.3	0.2	1.6	0.7
Pan/Bucket	13.4	14.2	47.5	33.9	22.1	10.6	6.0	1.2
Pit Latrine	53.6	28.7	25.3	45.6	36.4	63.7	83.6	33.2
None	20.8	6.4	3.7	7.8	33.7	15.9	6.5	63.7
Other	6.6	22.9	14.9	3.5	5.6	9.7	2.4	1.3
Source of Lighting								
Electricity	24.4	82.1	52.8	57.5	27.1	2.9	8.9	1.6
Kerosene/Oil Lamp	75.0	17.9	47.2	42.4	72.6	97.1	91.0	95.9
Candles/Torch	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
None	0.5	0.0	0.0	0.1	0.3	0.0	0.1	2.2

Source: First year of data from GLSS (3102 households with 14,938 individuals).

Note: Columns sum to 100% for each category.

TABLE 7a: Housing Characteristics Within Quintles: Ghana, 1987-88

Housing Characteristics	All Ghana	Quintiles				
		1	2	3	4	5
Source of Drinking Water						
Inside Plumbing	2.2	0.0	0.0	1.0	2.8	7.3
Inside Standpipe	8.5	1.3	3.6	7.1	12.7	17.4
Outside Standpipe						
Private	4.8	1.9	2.4	4.6	7.1	8.1
Public	7.1	9.2	5.9	7.6	6.7	5.9
Water Truck	0.4	0.0	0.7	0.2	0.4	0.5
Neighbor	3.3	0.5	3.4	3.8	3.9	4.6
Water Vendor	2.2	0.3	0.3	1.8	2.3	6.3
Well w/ Pump	8.2	18.5	7.9	5.7	6.0	3.0
Well w/out Pump	12.8	10.0	13.6	14.3	13.1	13.1
Rainwater	0.4	0.0	0.6	0.5	0.5	0.1
River, Lake, etc.	50.3	58.3	61.5	53.5	44.6	33.8
Type of Toilet						
Flush	5.6	0.5	1.2	4.7	7.0	14.6
Pan/Bucket	13.4	7.5	11.4	13.3	17.1	17.6
Pit Latrine	53.6	53.3	56.1	60.3	53.8	44.5
None	20.8	33.2	26.9	15.6	16.3	12.1
Other	6.6	5.4	4.3	6.2	5.9	11.3
Source of Lighting						
Electricity	24.4	5.6	13.9	22.5	33.9	46.0
Kerosene/Oil Lamp	75.0	92.7	85.4	77.5	65.7	54.0
Candles/Torch	0.1	0.1	0.2	0.0	0.0	0.0
None	0.5	1.6	0.5	0.1	0.4	0.0

Source: First year of data from GLSS.

Note: Columns sum to 100% for each category.

TABLE 7b: Housing Characteristics Across Quintiles: Ghana, 1987-88

Housing Characteristics	All Ghana	Quintiles				
		1	2	3	4	5
Source of Drinking Water						
Inside Plumbing	2.2	0.0	0.0	9.1	25.5	65.5
Inside Standpipe	8.5	3.2	8.6	16.9	30.1	41.3
Outside Standpipe						
Private	4.8	7.9	10.0	18.9	29.4	33.7
Public	7.1	26.0	16.8	21.5	19.1	16.6
Water Truck	0.4	0.0	41.1	8.9	23.2	26.8
Neighbor	3.3	3.3	21.0	23.5	23.9	28.4
Water Vendor	2.2	3.0	3.0	16.4	20.6	57.0
Well w/ Pump	8.2	45.0	19.3	13.8	14.6	7.3
Well w/out Pump	12.8	15.6	21.3	22.3	20.5	20.4
Rainwater	0.4	0.0	32.7	30.8	28.9	7.7
River, Lake, etc.	50.3	23.2	24.4	21.3	17.8	13.4
Type of Toilet						
Flush	5.6	1.8	4.3	16.8	25.0	52.1
Pan/Bucket	13.4	11.2	17.1	19.9	25.5	26.4
Pit Latrine	53.6	19.9	20.9	22.5	20.1	16.6
None	20.8	31.9	25.9	15.0	15.7	11.6
Other	6.6	16.4	13.1	18.6	17.8	34.1
Source of Lighting						
Electricity	24.4	4.6	11.4	18.4	27.9	37.7
Kerosene/Oil Lamp	75.0	24.7	22.8	20.7	17.5	14.4
Candles/Torch	0.1	33.3	55.6	0.0	0.0	11.1
None	0.5	61.8	21.1	2.6	14.5	0.0

Source: First year of data from GLSS.

Note: Rows sum to 100%, except for All Ghana column, which sums by column.

(Table 7b). Yet even so, less than half (46.0 percent) of the wealthiest population group have electric lighting (Table 7a). This reflects the fact that at the time of the survey electric power was apparently only available in urban areas, as was seen from Table 6. Only recently has the Government of Ghana begun a program of rural electrification. As with other household amenities, geographic factors may constitute a stronger explanation of access than income.

H. Ownership of Durable Goods by Welfare Groups

One final way of examining the distribution of welfare is to look at the ownership of expensive consumer goods (durables) to see how differences in consumption possibilities are manifested in consumer behavior. Data on this are given in Table 8 by consumption expenditure quintiles and by area of residence. As one would expect, the wealthier groups are more likely to possess these goods. This is especially true for refrigerators/freezers, television sets and automobiles. One important reason for this is that many electric/electronic goods can only be used by households which have electricity (e.g. refrigerators, television sets, and air conditioners); again, geography may be an important factor in the ownership of these types of durable goods. On the other hand, some goods are only weakly correlated with income levels (particularly radios and motorbikes), while others (e.g, bicycles) are negatively correlated with income levels. The reason for this last finding is that bicycles are most commonly used in the savannah area, which is the poorest area of Ghana. Perhaps the drier climate and the relative lack of bus transportation and motorable roads may account for this.

The data on durable goods are also useful because they present an idea of the incidence of hypothetical taxes, perhaps in the form of import duties, across different welfare groups. Taxing refrigerators/freezers, air conditioners, automobiles, television sets and perhaps motorbikes would generally have little effect on the welfare of the poorest 20 percent of Ghanaians, since they almost never make such purchases. On the other hand, a tax on bicycles would clearly be regressive. Note also that at least two of these goods, television sets and refrigerators, require electricity for their operation and as such are rarely found among the rural areas. They could be taxed directly or indirectly by raising electric rates.

TABLE 8: Ownership of Durable Goods, Ghana 1987-88
(percent who own)

Type of Durable Good	All Ghana	Quintiles					Area of Residence						
		1	2	3	4	5	Accra	Urban Coast	Urban Forest	Urban Savannah	Rural Coast	Rural Forest	Rural Savannah
Sewing Machine	29.8	18.0	26.3	33.5	34.0	37.4	50.8	34.7	37.0	21.8	23.1	33.5	13.6
Radio	28.3	21.7	24.7	30.3	31.7	33.0	37.5	20.8	26.6	35.7	30.6	26.8	25.7
Tape Player	19.1	9.7	14.5	17.0	25.9	28.4	37.2	19.5	24.5	30.4	9.7	16.5	13.5
Refrigerator/Freezer	6.7	0.4	1.6	3.9	9.1	18.4	32.7	13.5	11.1	2.0	3.2	0.5	0.3
Air Conditioner	0.4	0.0	0.0	0.1	0.4	1.4	2.9	0.0	0.6	0.0	0.0	0.0	0.0
Television	6.8	0.8	3.1	4.3	9.9	16.0	31.0	13.6	12.4	3.4	1.8	1.5	0.4
Bicycle	13.2	19.3	19.0	11.2	8.9	7.7	4.8	3.3	5.9	36.4	7.4	2.2	40.4
Motorbike	1.4	0.1	2.6	1.2	1.8	1.3	0.8	0.0	1.4	8.0	0.0	0.6	3.0
Automobile	2.6	0.0	1.1	2.0	2.3	7.8	11.3	2.6	3.2	1.2	1.5	0.5	1.9

Source: First year of Data from GLSS.
Notes: Figures do not sum to 100% due to ownership of multiple goods.

IV. POVERTY IN GHANA

Much of the interest in the distribution of welfare in any country is due to concern for the poorest groups in the society. As this is likely to be the case in Ghana, it is useful to focus on the poorest groups of Ghanaians in order to get a better picture of their characteristics, which should be of particular interest to policy makers. In this section we focus on two groups of the poor in Ghana, the poorest 10 percent and the poorest 30 percent, to see how they differ from the typical Ghanaian household. These poverty lines have been chosen somewhat arbitrarily as there is no official poverty line in Ghana.[11] The 10 percent poverty line represents a very low level of income, roughly 32,500 cedis/year in equivalence scale adjusted terms. The 30 percent poverty line is higher, being about 52,500 cedis/year. Both poverty lines are used here to see whether the choice of poverty lines has a major effect on the characteristics of the poor.

A. General Characteristics of Poor Households

Table 9 gives some general data about both the poorest 10 percent and the poorest 30 percent of Ghanaians. Turning to the former, the average expenditure level per year, in equivalence scale adjusted terms, is 24,533 cedis, which is less than a third of the national average of 88,462 cedis. The poorest 30 percent do slightly better, having an average annual expenditure level of 36,592 (equivalence scale adjusted) cedis, which is still less than half the national average. Levels of per capita food consumption,

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[11] For a more detailed analysis of poverty in Ghana using the same data (GLSS) see OtiBoateng, Ewusi, Kanbur and McKay (1990).

TABLE 9:   General Characteristics of the Poor in Ghana, 1987-88

	Poorest 10%	Poorest 30%	All Ghana
Consumption Levels			
Per Capita Consumption (Cedis/yr)	15,528	22,639	55,645
Adjusted Consumption (Cedis/yr)	24,533	36,592	88,462
Per Capita Food Consumption (Cedis/yr)	10,815	15,687	37,029
Adjusted Food Consumption (Cedis/yr)	17,105	25,375	59,325
Composition of Household Members			
Household Size:			
Equal Weights by Household	6.9	6.3	4.8
Equal Weights by Population	9.0	8.2	6.9
Children 0-6 years	22.6%	23.7%	24.5%
Children 7-12 years	17.2	17.9	17.8
Children 13-17 years	12.4	12.7	11.5
Adults	47.8	45.8	46.3
Members Aged 7 and Above Who Worked in last 7 days	62.5	60.3	58.9
Area of Residence			
Accra	0.0	1.1	11.4
Urban Coast	3.4	4.4	6.9
Urban Forest	2.8	7.5	11.6
Urban Savannah	7.2	5.7	4.7
Rural Coast	13.6	12.2	13.7
Rural Forest	26.0	33.2	31.1
Rural Savannah	47.0	35.8	20.7

Source: First year of data from GLSS.

Notes: 1. All Cedi figures are in September 1987 prices.

2. Equal weights by household means, for example, that an average household in Ghana contains 4.8 members. Equal weights by population means that an average person in Ghana lives in a house with 6.9 members. If there were only two households, one of five persons and the other with only one, average household size would clearly be 3 but the average person would live in a household of 4.3 members (5 persons live in the household with 5 members and one person lives in a household with one member).

relative to the national average, are 29.2 percent for the poorest 10 percent and 42.4 percent for the poorest 30 percent. Finally, poorer households are larger in size than the average Ghanaian household. The typical household among the poorest 30 percent of the population has 6.3 members, on average, while the average household size in Ghana is 4.8 members. The poorest 10 percent of Ghanaians have an average household size of 6.9 members. This reflects the fact that rural households are found more often among the poor and have higher average household sizes than urban households.

It is sometimes suggested that many poor households are in poverty because there are too many dependents (many of them children) for too few workers, who do not earn enough to cater adequately for their needs. However, the data on household composition in Table 9 do not support this conjecture. Poor households have slightly fewer children, especially very young children, than the typical Ghanaian household. Furthermore, labor force participation among poor households is slightly higher than the average for the country as a whole. Thus, it appears that poverty is not due to lack of work, but to low incomes for work done.

Table 9 also shows where most of the poor are located in Ghana. As many as 86.6 percent of the poorest 10 percent and 81.2 percent of the poorest 30 percent are found in rural areas, compared to the figure of 65.5 percent for the population as a whole. Virtually none of the poorest 10 percent lives in Accra and only 1.1 percent of the poorest 30 percent are found there, which implies that policies to help the poorest in Ghana can, for the most part, ignore the capital of Ghana. Urban forest areas are also relatively underrepresented; although they make up 11.6 percent of the population only

2.8 percent of the poorest 10 percent and 7.5 percent of the poorest 30

percent are found in these areas. On the other hand, the savannah areas,

especially the rural savannah, are overrepresented among the poor. The urban

and rural savannah together constitute 25.4 percent of the total population,

but they make up 54.2 percent of the poorest 10 percent and 41.5 percent of

the poorest 30 percent of Ghanaians. The message here is that policies to

help the poor must give priority to savannah area residents, especially those

found in the rural savannah.

B. Characteristics of the Heads of Poor Households

Apart from their location in Ghana, what other traits do poor

Ghanaian households have in common? One aspect seen in Section III, although

still surprising, is that they are less likely to be headed by women. As seen

in Table 10, although 25.2 percent of Ghanaians live in female-headed

households only 19.1 percent of the poorest 10 percent and 23.1 percent of the

poorest 30 percent live in female headed households. This presumably

unexpected finding may merit further investigation.

What do the poor do for a living? In Table 10 it shows clearly that

well over 80 percent of the heads of poor households are self-employed (mostly

in farming or fishing), whether the 10 percent (87.8 percent) or the 30

percent (83.5 percent) definition is used. The implication is that there is

very little scope for helping the poor by raising either government wages or

the wages paid by government-owned (parastatal) corporations; only 2.9 percent

of the poorest 10 percent and 7.6 percent of the poorest 30 percent live in

households headed by such workers. By far the most common occupation found

among poor heads of household are cocoa farming and other farming, especially

TABLE 10: Distribution of the Poor by Characteristics of Head of Household

	Poorest 10%	Poorest 30%	All Ghana
Sex of Head			
Male	80.9	76.9	74.8
Female	19.1	23.1	25.2
Employer of Head			
Government	2.5	5.6	11.9
Parastatal	0.4	2.0	3.2
Private	2.9	3.8	7.9
Self-Employment	87.8	83.5	72.1
None	6.3	5.2	4.9
Occupation of Head			
Cocoa Farmer	13.2	19.4	17.7
Other Farmer	68.9	57.9	41.5
Sales/Services	2.7	5.2	12.1
Prod./Crafts	8.4	9.9	15.3
White Collar	1.8	3.0	9.0
Retired	2.6	2.2	1.7
Unemployed	2.3	2.6	2.8
Education of Head			
None	79.5	69.8	51.7
Primary	6.0	8.4	8.9
Middle	13.7	19.7	31.1
Teacher Training	0.0	1.0	2.3
Secondary O-Level	0.0	1.0	3.8
A-Level	0.0	0.0	0.4
Other Post-Secondary	0.5	0.2	0.4
University	0.0	0.0	1.2
School Attendance Rate			
Ages 6-10	45.7	56.0	68.5
Ages 11-15	49.2	59.2	71.5

Source: First year of data from GLSS.

the latter. Almost 70 percent (68.9) of the poorest 10 percent and 57.9

percent of the poorest 30 percent of Ghanaians live in households headed by

farmers other than cocoa farmers. Relatively few are in white collar, or

sales and service occupations. The lesson here is that measures to assist the

poor need to focus on the income earning activities of Ghanaian farmers,

especially those who do not cultivate cocoa.

Heads of poor households have relatively low levels of education, as

seen in Table 10. Among the poorest 10 percent of Ghanaians 79.5 percent live

in households headed by someone with no education at all; the corresponding

figure for the poorest 30 percent is 69.8 percent. Almost all the rest live

in households where the head has only a primary or middle school education.

It appears that higher levels of education are one way of escaping poverty for

Ghanaian households, probably because higher education opens opportunities for

better paid jobs. Poorer Ghanaian households have lower school attendance

rates, but even so the gap between these rates and the average rates in Ghana

is not very large.

C. Housing Characteristics Among the Poor

Table 11 gives some data on housing conditions among poor Ghanaian

households. Surprisingly, the patterns observed for source of drinking water

are not very different from those found in Ghana as a whole; over half of the

population gets its water from rivers, lakes and other natural sources.

Unfortunately, this is not a very healthy practice as water-related diseases

can easily be spread by drinking water from these sources. Yet, it is still

true that poorer Ghanaians rarely get their water from piped sources (9.3

percent of the poorest 10 percent and 13.4 percent of the poorest 30 percent)
relative to the typical Ghanaian (28.5 percent). Much of this is due to the
fact that poorer Ghanaians are most likely to be found in rural areas, most of
which do not have access to piped water.

TABLE 11: **Housing Among the Poor**

	Poorest 10%	Poorest 30%	All Ghana
Source of Drinking Water			
Indoor Plumbing	0.0	0.0	2.2
Inside Standpipe	1.5	1.8	8.5
Outside Standpipe:			
Private	0.9	1.6	4.8
Public	6.9	7.9	7.1
Water Truck	0.0	0.5	0.4
Neighbor	0.0	1.4	3.3
Water Vendor	0.0	0.2	2.2
Well with Pump	21.5	15.0	8.2
Well without Pump	11.0	11.0	12.8
Rainwater	0.0	0.4	0.3
River, Lake, etc.	58.2	60.2	50.3
Type of Toilet			
Flush Toilet	0.0	0.5	5.6
Pan/Bucket	5.2	8.4	13.4
Pit Latrine	49.7	55.2	53.6
Other	5.7	4.9	6.6
None	39.4	31.1	20.8
Source of Lighting			
Electricity	4.4	7.0	24.4
Kerosene/Oil Lamp	93.1	91.5	75.0
Candles/Torch	0.2	0.2	0.1
None	2.3	1.4	0.5

Source: First year of data from GLSS.

The toilet facilities of the poor in Ghana, like those of many other Ghanaians, are usually a pit latrine or no toilet facility at all (see Table 11). Finally, although nearly one quarter (24.4 percent) of Ghanaians have electric lighting, this is only true for 4.4 percent of the poorest 10 percent and 7.0 percent of the poorest 30 percent. Again, much of this reflects the fact that most of the poor are found in rural areas, which have been difficult to open up to electricity, until recently.

D. Health Status Among the Poor

Poverty is often associated with poor health, especially poor health of children. The extent to which poverty is related to health indicators is portrayed in Table 12. The figures on the incidence of illness and the health practitioners contacted by those who were ill are derived from the health section (Section 4) of the GLSS questionnaire. Each household member was asked about illnesses or injuries suffered in the 4 weeks preceding the interview, as well as who was consulted for treatment. For Ghana as a whole, 35.2 percent of the population reported being ill or injured during the past 4 weeks, and of those who were, the illness or injury lasted about 8 days and impaired their normal activities for about 4 days. Somewhat surprisingly, because one would expect the poor to be sick more often, poorer groups reported being ill or injured less frequently (29.1 percent of the poorest 30 percent and only 25.2 percent of the poorest 10 percent reported). It would be very doubtful to conclude from these figures that the poorer groups are in better health. What is probably happening is that the concept of ill health varies across welfare groups so that a poor person suffering from some health

TABLE 12: Indicators of Health Status Among the Poor

Reported Incidence of Illnness	Poorest 10%	Poorest 30%	All Ghana
% People Ill (last 4 weeks)	25.2	29.1	35.2
Average Days Ill (last 4 weeks)	7.5	7.7	7.6
Average Days Inactive (last 4 weeks)	3.7	3.8	3.8
Health Care Providers Consulted When Ill			
None	73.2%	64.4%	52.4%
Doctor	10.5	16.5	25.8
Nurse	2.8	3.0	4.6
Medical Assistant	10.8	10.4	11.0
Pharmacist	0.3	0.9	1.9
Healer/Spiritualist	1.7	2.4	2.8
Other	0.8	1.6	1.5
Anthropometric Indicators of Poor Health			
Incidence of Stunting (low height for age)			
All Children Aged 0-9	21.1%	22.5%	19.6%
Males	23.1	24.9	21.0
Females	19.1	20.1	18.4
Incidence of Wasting (low weight for height)			
All Children Aged 0-9	3.8%	4.0%	3.5%
Males	4.5	4.4	3.3
Females	3.2	3.7	3.6

Incidence of Stunting by Age	Males	Females
0-11 months	1.7%	3.9%
12-23 months	12.0	12.4
24-35 months	21.3	27.8
36-47 months	25.0	30.7
48-71 months	28.5	21.2
72-108 months	23.0	16.3

Source: First year of data from GLSS.

Notes: Stunting is defined as attaining less than 90% of median height for age, while wasting is defined as attaining less than 80% of median weight for height. The reference population of healthy children is described in Dibley, et at (1987).

problem may perceive it as "normal" while a better off person may regard himself or herself as being ill. This may also explain why the duration of illness for the poor is no different from that of the non-poor; the better off groups are more sensitized to illnesses which the poor may regard as a part of everyday life.

When Ghanaians do perceive themselves to be ill, there is a marked difference in seeking medical assistance between poor and non-poor Ghanaians. About half (52.4 percent) of the time, the average Ghanaian will not seek any medical assistance when he or she is ill, but this figure rises to 64.6 percent for the poorest 30 percent and 73.2 percent for the poorest 10 percent. This demonstrates a clear disparity in the use and, perhaps by implication, the availability of medical services to people at different welfare levels. It could also reflect the way different groups see illness or disability as affecting their income earning activities. When medical attention is sought, the poorer groups are less likely to consult a doctor (11 percent of the poorest 10 percent and 16.5 percent of the poorest 30 percent) than the average Ghanaian (25.8 percent). Thus it appears that there is a need to improve on the delivery of medical services to the poor.

The GLSS also contains data on the height and weight of all household members, which can be used to see whether malnutrition is prevalent.[12] To be specific, stunting (low height for age) and wasting (low weight for height) can be assessed for children based on National Center for Health Statistics and Center for Disease Control (NCHS/CDC) standards (Dibley, et al,

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[12] For a more detailed analysis of this data, see Alderman (forthcoming).

1987).[13] Stunting indicates that at some time in the past the child's food intake had been inadequate so that normal growth is "behind schedule." Wasting indicates that the child's present nutrition status is in a deteriorated state.

The anthropometric data in Table 12 indicate that 19.6 percent of Ghanaian children up to nine years of age are stunted while 3.5 percent are wasted. This suggests that about one fifth of Ghanaian children have received less than adequate nourishment in the past while only about 4 percent are presently malnourished. These figures are slightly higher for the poorest 10 percent and poorest 30 percent of the population, but the fact that these differences are not great implies that malnutrition is only mildly correlated with household welfare. Another interesting finding is that males are more likely to be stunted than females, while wasting is more common among poor male children than among the rest of the population. These results appear to contradict a common belief of discrimination against females in the allocation of food and/or health care to young children.[14]

The figures on stunting by age indicate that there is little stunting among children who are less than one year old, implying that children who are

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[13] These standards should be interpreted with care, because people from the Sahel and Northern Ghana, on average, tend to be relatively tall and thin compared to those from the forest and coastal zones.

[14] This statement assumes that _survival_ of male and female children is similar. If infant deaths are more common among females, and this is due to discrimination among females, an analysis of the survivors only would fail to capture this discrimination. A more detailed analysis is needed to see whether discrimination against females results in a higher mortality rate among infant girls.

not yet weaned are relatively healthy in Ghana. Older children are more likely to be stunted, which is what one would expect given that the introduction of foods other than breast milk can lead to gastrointestinal infections and diarrhoea. In Ghana there was a severe drought in 1983 which led to severe food shortages in that year and the first months of 1984. Children who would have been four or five years old during the time the data were collected would have been born just before or during that time and may have been among the hardest hit by food shortages. This is by and large supported by the data; the highest incidence of stunting among males is for the 48-71 months age group while the highest for females is for those aged 36-47 months.

V. INEQUALITY ANALYSIS USING GROUP DECOMPOSABLE INDICES

This section examines inequality in Ghana using different inequality indices. Before turning to the data, some points need to be emphasized. First, any index of inequality is an attempt to summarize with a single number the spread (dispersion) found in the distribution of a given variable; as such it is only an approximation of the inequality found in the distribution. Since different inequality measures stress different aspects of dispersion (e.g. dispersion in the lower tail vs. dispersion in the upper tail) they may differ in their ranking of the inequality of a set of distributions (see Champernowne 1974). Second, because this paper has chosen to examine expenditure data only, there will be no attempt to analyze the data by income source decompositions; only group decompositions are used (this will be explained below; see also Appendix C). Third, the expenditure levels used here and throughout this paper are adjusted by household composition, as explained in Section II. Yet it is individuals (as opposed to households) who are the unit of observation and each individual receives the same weight, just as in the rest of this paper.

A. Expenditure Inequality in Ghana and in Four Other Developing Countries

Before investigating expenditure inequality in detail for Ghana, it is interesting to compare the overall distribution with that of other developing countries for which similar data are available[15]. Fortunately,

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[15] Such comparisons need to be done very cautiously, since the social structures of these countries are very different. A rigorous study of the causes of inequality in these countries is an important area for future research.

there are four other countries which have undertaken similar household surveys: Côte d'Ivoire, Peru, Mauritania and Jamaica. Table 13 presents four different inequality indices (which are discussed in Appendix C) for all five countries. All four inequality indices take the value of zero if no inequality is present (i.e. everyone has the same adjusted expenditure figure) and take larger values as the distribution of expenditures becomes more unequal. It is not meaningful to compare one inequality measure with another for a given country, since the numbers are not directly comparable. However, the rankings of different countries can be compared, i.e. one can say that all indices show that a given country has higher or lower level of inequality than that found in another country.

TABLE 13: **Inequality in Consumption Expenditures in 5 Countries**

	Gini Coefficient	Theil T	Theil L	Log Variance
African				
Ghana	0.3471	0.2141	0.2046	0.3998
Côte d'Ivoire	0.4350	0.3530	0.3254	0.6079
Mauritania	0.4144	0.3074	0.3062	0.6297
Non-African				
Jamaica	-	0.3487	0.3203	0.6044
Peru	0.4299	0.3534	0.3194	0.5967

Source: First year of data from GLSS.

Note: See Appendix C for discussion of these 4 inequality measures.

It is clear from the figures in Table 13 that the four other countries (Côte d'Ivoire, Peru, Mauritania and Jamaica) all have about the same level of inequality, which is much higher than that found in Ghana.[16/] The most interesting country is Ghana's immediate neighbor to the West, Côte d'Ivoire. Although Côte d'Ivoire was often lauded as a success story (see den Tuinder, 1978) in terms of its economic growth, and was certainly much more successful than Ghana in this regard, it also has a far more unequal distribution of consumption across income groups. Future studies comparing these two neighboring countries and the different development paths they chose in the early 1960s should keep this in mind.

B. Inequality Decompositions by Area of Residence

Given that Ghana has a relatively low level of inequality, what else can be said about the nature of this inequality? Indices of inequality that are group decomposable can answer the following question: How much of overall inequality is due to the fact that different groups, on average, have different welfare levels and how much is due to variation in levels within each of these groups? As explained in Appendix C, the two Theil indices and the log variance index are group decomposable in that the total number is the sum of these two components, i.e. the between-group (differences in mean welfare levels across groups) and the within-group (differences in welfare levels within each group). Here they can be employed to answer the following

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[16/] The numbers from Jamaica in Table 13 use simple per capita expenditure levels. However, using equivalence scale adjusted expenditures would have led to very similar results. Note also that the Gini coefficient has not been calculated for Jamaica.

TABLE 14: Consumption Expenditures Inequality - Decomposed
by Area of Residence

Area of Residence	% of Total Population	Mean Adjusted Exp. (cedis/yr.)	Theil T	Theil L	Log Variance
Accra	11.4	149,542	0.1687	0.1523	0.2788
Urban Coast	6.9	95,073	0.1531	0.1577	0.3288
Urban Forest	11.6	95,630	0.1732	0.1481	0.2591
Urban Savannah	4.7	77,689	0.1854	0.1856	0.3664
Rural Coast	13.7	88,332	0.1805	0.1798	0.3564
Rural Forest	31.1	80,053	0.1724	0.1605	0.3074
Rural Savannah	20.7	63,940	0.2293	0.2174	0.4243
All Ghana	100.0	88,462	0.2141	0.2046	0.3998
Between-Group Component			0.0336	0.0310	0.0661
(%)			15.7%	15.2%	16.5%

Source: First year of data from GLSS.

question: How much of consumption inequality in Ghana is due to the fact that some areas are, on average, better off than others and how much is due to the fact that within each area there is substantial variation in welfare? The answer is provided in Table 14.

The data in Table 14 reveal that inequality within all urban areas as well as within the rural coast and rural forest areas is lower than it is in Ghana as a whole. Note that the three inequality indices do not agree on which area of residence has the lowest inequality; the Theil T index shows the urban coast while the Theil L and log variance indices indicate the urban forest. Yet all three indices agree on which area of residence has the highest level of inequality, the rural savannah area, the only area with an

overall level of inequality greater than that found in Ghana as a whole. And how much of inequality in Ghana is due to differences in mean consumption levels across these seven areas? All three measures are in agreement here: between 15 and 17 percent. This is a relatively low level, for a similar exercise for Côte d'Ivoire between 26 and 29 percent of inequality in that country was due to differences in mean incomes across areas of residence (Glewwe, 1987a).

The conclusion from these numbers is that even though Accra has consumption levels almost two and one half times larger than those found in the rural savannah, only about one seventh of overall inequality is due to such inter-area differences. This implies that policies aimed at reducing inequality by trying to equalize mean welfare levels across areas of residence can at best reduce inequality by only about 15 percent. The lesson to draw is that efforts to reduce inequality should rather seriously consider ways of trying to reduce inequality within the different areas.

C. Inequality Decompositions by Education of Head of Household

In Section III it was seen that there are substantial differences in consumption expenditure levels of households across different educational levels. This suggests the possibility that a large amount of inequality in Ghana is generated by differences in mean expenditures across households grouped according to different level of education. In fact, Ghana's policy of reducing differences in wage rates between the private and the public sectors as well as within the public sector itself, may have, in effect, been an attempt at reducing inequality brought about by differences in educational levels. This hypothesis is examined in Table 15, which decomposes overall

TABLE 15: Consumption Expenditures Inequality-Decomposition by Education

Education of Head	% of Total Population	Mean Adjusted Exp. (cedis/yr.)	Theil T	Theil L	Log Variance
None	51.7	73,926	0.2162	0.2030	0.3924
Primary	8.9	86,580	0.1674	0.1660	0.3261
Middle	31.1	100,569	0.1556	0.1568	0.3166
Secondary	4.5	146,298	0.2910	0.2336	0.3700
Post-Secondary	3.9	122,520	0.1649	0.1576	0.2993
All Ghana		88,462	0.2141	0.2046	0.3998
Between-Group Component			0.0208	0.0196	0.0415
(%)			9.7%	9.6%	10.4%

Source: First year of data from GLSS.

inequality with reference to the educational level of heads of households.

Despite differences in education across household heads in Ghana, the data in Table 15 reveal that only about 10 percent of overall inequality is due to differences in mean incomes when households are grouped according to the head's level of education. This again is in sharp contrast with similar figures for Côte d'Ivoire, which assign between 26 and 36 percent (depending on the inequality index) of overall inequality to differences across education groups. One may think that this result for Ghana is due to the fact that over half of the population (51.7 percent) are found in one group (no education), since by definition all the inequality among this group is within-group

inequality. But in Côte d'Ivoire this is even more so the case; 65 percent of the Ivorian population belongs to households where the main earner (in most cases the head) had no education at all.

In Ghana it is sometimes argued that attempts to reduce wage differences, especially in terms of government salaries, have a negative effect because they result in skilled, well-educated workers leaving government jobs (and even the country). On the other hand, one could argue that there is a major benefit from reducing overall inequality, to the extent that this policy is reflected in small differences in welfare levels across different education groups (as classified by the head of household's education). The figures here suggest that it has been effective in reducing inequality, but they also indicate that a relaxation of this policy should not have a major effect on overall inequality since most of it is due to differences within education groups rather than between them.

D. Inequality Decompositions by Religious Affiliation

The figures in Section III revealed that Christian households were somewhat better off than Muslim households, which were in turn better off than households who adhered to traditional religious practices. Despite its diversity of faiths, Ghana has been remarkably stable in terms of the mutually respectful relations between different religious groups. Still, the question may arise whether differences in welfare levels across religious groups, in so far as they may come from different socio-economic backgrounds, constitute a substantial amount of overall inequality. The data in Table 16 provide some answers. To be brief, differences in welfare levels across the different religious groups constitute only between 5 and 7 percent of the overall

variation in welfare levels in Ghana. Perhaps this confirms that religion is not a decisive factor of the welfare levels of people in Ghana, and this may explain the lack of problems in the relations between the different religious groups.

TABLE 16: Consumption Expenditures Inequality—Decomposition by Religion

Religion of Head	% of Total Population	Mean Adjusted Exp. (Cedis/yr.)	Theil T	Theil L	Log Variance
Christian	59.3	91,348	0.1992	0.1857	0.3542
Muslim	15.5	80,388	0.2383	0.2190	0.4063
Traditional	18.7	63,970	0.1871	0.1916	0.3961
Other	6.5	93,008	0.1868	0.1846	0.3691
All Ghana		88,462	0.2141	0.2046	0.3998
Between-Group Component			0.0119	0.0127	0.0287
(%)			5.6%	6.2%	7.2%

Source: First year of data from GLSS.

VI. SUMMARY, POLICY IMPLICATIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

It is obvious from the analyses of the last three sections that there is a substantial amount of poverty and inequality in Ghana. One also now has a fairly good idea of the poorer groups in the society. This last section now examines the policy implications of the findings, makes some recommendations for policy interventions, and finally suggests possible areas of future research.

A. Summary of Findings

There is a sizeable amount of inequality in the distribution of welfare in Ghana. The wealthiest 20 percent of the population account for over two-fifths (42-43 percent) of total consumption, while the poorest 40 percent account for less than a fifth (19 percent). Irrespective of welfare level or area of residence, about 60 percent of total expenditure is on food. This means that there is only 40 percent left for other needs of the household, much less for savings and investment.

How is welfare distributed in Ghana? In terms of area of residence, Accra, the capital, is the wealthiest, and rural savannah is the poorest. Urban areas generally are better off than rural areas, and the savannah area (urban and rural) has much lower levels of welfare than the rest of Ghana. There are no significant differences in welfare levels between male- and female-headed households; indeed, average consumption levels are slightly higher in female-headed households. Also, Christian households are better off than Muslim households, which are in turn better off than households where the heads are followers of traditional African religions.

The effect of education on household welfare appears quite strong. Households whose head has no education are among the poorest in society while those in which the head has a university or other type of higher education are disproportionately found among the top two quintiles. The implication for encouraging the attainment of basic education for all Ghanaian children is therefore obvious. However, people who live in households headed by someone with a teacher training education are only slightly better off than those in households headed by people with only a primary school education. This is an indication that teachers are among the lowest paid workers in Ghana. This has serious implications for the quality of education, because well-qualified, talented teachers may leave the classroom, leaving behind the less qualified and the less motivated. If this is allowed to continue, Ghana's educational system may be turning out people who have several years of schooling but who are almost as illiterate as those with no education at all.

The correlation between economic activity and household welfare is also strong. Households where the head is a paid worker, whether in the government or the private sector, are among the better off in society, while households headed by self-employed workers, mainly in farming and fishing, are generally the poorest. This suggests that the national minimum wage is irrelevant to most of the poorest households. Indeed, persons living in households where the head is unemployed or retired are slightly better off than the self-employed; unemployment is neither concentrated among the poor nor is it a major cause of poverty. This underscores the fact that it is not lack of a job but rather low returns to labor that is the cause of most of the poverty in Ghana. But not all selfemployment is lowly rewarded. Indeed,

households where the head is a worker in the sales/services sector are as well-off as households where the head is a white-collar worker. On the other hand, households where the head is self-employed in farming, including cocoa, are among the poorest.

Even though there is some inequality in the distribution of welfare in Ghana an important finding of this study is that geography, more than welfare level, determines access to many social services and even some consumer goods. For instance, differences in school attendance among the different welfare groups are not unusually large. In contrast, Accra, and urban areas generally, have attendance rates that are much higher than rural areas especially the rural savannah area. Again, even though housing amenities such as good drinking water, decent toilet facilities and use of electricity are generally underdeveloped in Ghana, the more significant differences exist not in terms of welfare levels, but in terms of geographic location. With ownership of durable goods, there are little or no differences either between welfare levels or between areas of residence in the ownership of those items that come in both manual and power-generated form (by battery or electricity). On the other hand, items that only use electricity (but not batteries) show clear differences across welfare levels, and even more across geographic areas. For example, only 10 percent of the poor have access to pipe-borne water, and electricity and modern toilet facilities are virtually unknown among the poor. But this simply reflects the fact that most poor households are in rural areas where the availability of these facilities to all households is limited.

The lack of access to social services in the rural areas, and therefore to the poor, is also demonstrated in the health status of the population. Poorer groups report being ill or injured less frequently than the average Ghanaian. This is certainly not an indication of better health, but probably of differences in personal definitions of ill health. For instance, someone who is used to frequent bouts of colds or a running nose may come to see these illnesses as normal and not report himself as being sick. The poor also are less likely to seek medical assistance when they are sick and, if they do, are less likely to consult a doctor. This reflects the fact that good quality modern medicine is not truly available or accessible in many of the rural areas where the poor live. It could also reflect the fact that employees can have free medical attention and still not lose leave and wage benefits, while the poor, who are mainly self-employed, see consultations in terms of time and money lost. On the other hand, the finding that malnutrition among poor children is not much higher than that of the average Ghanaian child indicates that food habits and health status among the poor are not dramatically different from those among the non-poor.

Poorer households have an average size of 7 persons as against 5 for the average Ghanaian household. Yet poverty does not result from how many children and/or how many old and retired persons a household has. Poorer households have slightly fewer young children (0-6 years) and slightly more adult workers than the average household. What this means is that certain groups of the Ghanaian population are poor, not for want of trying, but because they are engaged in economic activities that yield low incomes.

Finally, although Ghana has a substantial level of inequality in the distribution of welfare, one should keep in mind that there is greater equality in the distribution of welfare in Ghana than in some other developing countries, including its neighbor Côte d'Ivoire. Further, no single household characteristic, except area of residence, accounts for more than 10 percent of the overall inequality found in Ghana.

B. Policy Interventions to Reduce Inequality and Poverty

Although there are differences in mean welfare levels between households of different characteristics, the results of the analysis in Section V indicate that policy interventions may have to be directed elsewhere. For instance, only about 15-17 percent of the overall inequality is explained by differences in mean expenditure levels between areas of residence. The implication of this for policy is that only limited success can be achieved by way of reducing overall inequality in Ghana by policies designed to reduce differences in mean expenditures between these areas of residence. It will be more effective if policies were aimed at reducing inequality within different areas of residence. This will involve identifying the sources of inequality within each area and attacking these separately rather than globally. Even educational levels are limited in their contribution to inequality. The results of Section V indicate that only about 10 percent of overall inequality is due to differences in mean expenditure levels of households grouped according to the educational level of household heads. This implies that any policy that aims at reducing wage differences across different education groups is not likely to be as effective in reducing

overall inequality as a policy that is directed at reducing differences within education groups.

How can differences within groups be reduced? Direct government intervention to ensure a more equitable distribution of income may entail a cost in terms of reduced economic growth (which is needed to improve the welfare of the people) because it could kill the initiative and motivation of the highly skilled to be productive. On the other hand, while a competitive market situation will promote efficiency in production and increased output, the results of increased output are unlikely to "trickle down" to every sector of society; the resultant income distribution may be socially unacceptable.

While this study is not sufficient for advocating a specific set of policies to reduce inequality and raise the living standards of the poor, several principles can be outlined regarding the formulation of specific policies. First, policies to assist the poorer groups in Ghana must focus on rural areas and on the northern savannah, since the poor are disproportionately found in these areas. Second, it does not seem that female-headed households need particular attention as they are about as well off as male-headed households. Third, poverty measures must focus on self-employed farmers, not on government, parastatal or private sector workers, and perhaps not even on the unemployed. Fourth, efforts to raise school attendance and provide modern household amenities (electricity, piped water. etc.) need to focus more on regional disparities than on household welfare levels. Fifth, efforts to promote the availability of doctors to Ghanaians miss the poor since only a small number of them see doctors when they are ill. Sixth, efforts to decrease malnutrition among Ghanaian children need to focus not so

much on income levels of households but on other factors, such as education of
mothers and heads of households.

C. Suggested Areas for Future Research

There are several promising areas for future research on Ghana's
economy and society using the GLSS data. This sub-section will give a few
examples of the more interesting topics.

A comparative study of inequality in Ghana and the Côte d'Ivoire
would be quite interesting. The latter has been lauded as a success story in
terms of economic growth and higher living standards, in contrast to the
fluctuating economic performance in Ghana. On the other hand, Côte d'Ivoire
has a much more unequal distribution of welfare than is found in Ghana. Data
from a very similar survey in Côte d'Ivoire (the Côte d'Ivoire Living
Standards Survey) provide an opportunity to evaluate the effectiveness of the
different economic and social policies adopted in these two neighboring
countries since the early 1960's.

For policy purposes, perhaps the most urgent need is for a study on
the determinants of poverty in Ghana, especially focusing on the reasons for
lower living standards in rural areas and the savannah. The GLSS data provide
a rich source for such a study. In particular, a second year of GLSS data has
been collected which reinterviewed half (about 1600) of the households
interviewed in the first year while the other half of the sample consisted of
newly selected households. This gives a very good opportunity to look at the
dynamics of poverty, investigating such questions as: 1. What happens to
public sector workers and private sector employees who are "redeployed" in

their jobs as a result of the Economic Recovery Program?; 2. Are the same households poor every year or is there a substantial variation in poverty from year to year?; and 3. How quickly do households respond to changes in incentives in various economic activities?

Another area for further research is the influence of religion on welfare levels. There are considerable differences in the welfare levels of Christians, Muslims and adherents of traditional religions, but this appears to be more the influence of area of residence than anything else. However, because religious ethics can influence attitudes toward work and the accumulation of material wealth, there is the need for further research in order to disentangle the effects of religion on household welfare from the effects of other factors.

A final topic of research is in the quality of education in Ghana. Given the relatively low pay of teachers in Ghana, the question arises whether Ghanaian schools are indeed educating children adequately. Questions have also been raised in the African context regarding the usefulness of education for the population, especially those in rural areas. The GLSS data offer a unique opportunity to examine issues of education.

Appendix A: **DESCRIPTION OF THE GHANA LIVING STANDARDS SURVEY**

Introduction

The first phase of the Ghana Living Standards Survey (GLSS), a nationwide household survey, was carried out by the Government of Ghana (through the Statistical Service of Ghana) as an integral part of the Structural Adjustment Program. It is a component of the broader Ghana Household Survey Program, whose primary long-term objective is to establish a source of household and community data to support in-depth research in several crucial policy areas. This phase of the GLSS had technical support from the World Bank (Welfare and Human Resources Division) and was funded through an IDA loan from the World Bank and a grant from USAID. The survey will be continued, in the next phase, as part of the Social Dimensions of Adjustment (SDA) project of the World Bank, with financial support from the USAID, ODA (UK), the Federal Republic of Germany, the Government of Switzerland and the World Bank.

The GLSS takes a comprehensive view of the living conditions of households in the sense that it looks at the whole range of indicators that affect the standards of living in one multi-purpose survey instrument. The main objective of the survey is to provide individual, household and community data for the measurement of the living standards of the population and for monitoring changes in such living standards. The GLSS is designed to collect data on various aspects of the economic and social activities of Ghanaian households and the interrelationships between these activities. The data are collected at three levels: the individual level, the household level, and the

community level. Data on individual household members include demographic and social (age, sex, marital status, religion, nationality, relation to head of household), education, health, employment and time use, migration, and anthropometric (weight and height) information. Household data cover dwelling characteristics and expenses, household businesses and assets, income and savings, expenditures, agricultural activities and indebtedness. Data at the individual and household levels are collected through the household questionnaire.

Data at the community level include demographic and social (religion, ethnic groups, population size, migration), economic (main activities, marketing and extension services, labor market, co-operatives, sharecropping, irrigation), and public infrastructure (transportation and communication, education, health) information, as well as food and non-food prices in local markets. These community level data are collected using two questionnaires: a community questionnaire and a price questionnaire. The first is filled out only for rural areas while the other is filled out for both urban and rural areas. Information collected by the price questionnaire is to allow for price comparisons between communities.

Information gathered on the wide range of indicators of living standards is expected to support in-depth analyses of the interrelationships among the indicators and therefore inform decision making. The major beneficiaries are expected to be policy makers, planners and researchers. Other users will include private entrepreneurs, donors, District Assemblies and even households. For example, it should assist policy makers to identify the vulnerable groups.

The first phase of the GLSS, which was launched as a two-year program in September 1987, is currently planned to be extended by four more years. This extended time period ensures that a steady flow of household and community data will be available to enable the government to monitor the impact of the Economic Recovery Program (including PAMSCAD) on living conditions of households over time. Such time series data will also assist in the design and follow-up of action programs to raise the living standards of identified target groups and areas. This way, the poor and disadvantaged groups in society will have their opportunities for participation in the development process improved.

Methodology of the Survey

The methodology, in all its aspects, was designed to achieve the objectives of the survey. A nationally representative sample of 3,200 households (excluding diplomatic households) in Ghana was selected for the survey for every year for the first two years of the survey. (Depending on the special focus of the survey, beginning in the third year, the GLSS questionnaire will be reduced to a core of questions on relevant issues, and the sample will vary between 4,000 and 6,000 households). A two-stage self-weighting stratified sample design, with an in-built procedure for replacement of non-responding households, was used. The stratification criteria adopted followed rough agro-ecological zones and population size of localities, two factors that greatly influence living conditions of people.

The country was divided into three agro-ecological zones, namely, the Coastal plain, the middle semi-equitorial Forest and the northern Savannah.

These zones did not exactly coincide with the natural vegetation of the country, because it was felt desirable to arrive at a sample that would lead to a more even distribution of workloads. Thus, the south-western equitorial rainforest zone, for instance, was included in the Coastal zone and parts of the forest belt were included in the Savannah zone. About 13,000 enumeration areas (EAs) in the three zones were stratified further into urban (5,000 or more people), semi-urban (1,500-4,999) and rural (less than 1,500 persons). At this stage, 200 EAs were selected with probability proportional to the number of households, as recorded in the 1984 population census. Households within the selected EAs were listed and compared with the number listed in the census operation. Using the relative growth of the EAs in terms of number of households as a factor, 200 workloads were allocated among the 200 selected EAs. The process resulted in most EAs having one workload, some EAs being assigned more than one workload, and a few others having none (see Scott and Amenuvegbe, 1989, for details). Sixteen (16) households, with additional four (4) as possible replacements, were then selected randomly from the listed households in the assigned EAs to constitute the workload(s).

Using the same households for each survey may lead to problems of respondent fatigue, but has the advantage of facilitating the matching of household data from one survey year to another. The GLSS was intended to retain the advantages of a continuous canvassing of the sampling units while at the same time avoiding its associated problems. This was resolved by adopting the system of panel sample rotation, by which half of the sample was retained each year while the other half was replaced with about an equal number of households. This method ensured that changes in the living

standards of the retained households over a 12 month period could be captured, and also allowed for wider coverage of the country and therefore better representativeness of the data collected.

Organization of the Survey

The GLSS was administered by a Project Directorate, consisting of a Project Director, Assistant Project Director, three Project Managers (for field work, anthropometrics, and data entry and processing) and two Project Assistants (for administration and data preparation). It was the Directorate that ensured the smooth implementation of the survey, including purchases and making of all necessary contacts. The Directorate was based at the headquarters in Accra. The field survey was carried out by ten data collection and data entry teams. Each team consisted of a supervisor as team leader, two interviewers, an anthropometrist, a data entry operator (with a micro-computer) and a driver (with a landrover). The teams were based in eight regional offices of the Ghana Statistical Service; two teams each were based in Accra and Kumasi, with the others at Sekondi, Cape Coast, Koforidua, Ho, Sunyani and Tamale. The decentralized system of field organization was adopted, with guidelines from the center. The decentralization of data entry operation, which was the first in Ghana's survey history, was particularly important because it improved efficiency in the data collection and data processing aspects of the survey. To minimize some of the disadvantages of the decentralized system, all the ten teams were brought to the center periodically for refresher training sessions, during which experiences were shared to ensure that the teams worked towards the same objective.

Field Operations

Before the team arrived in a 'workload' for interviewing, the supervisor sent out letters to inform the heads of household of the team's date of arrival in the community and possible date of visit to the household. These letters were usually sent about a week or two before the team's arrival in the community. Such letters were sent to heads of selected households in urban areas, but in rural areas, it was sufficient to send one to the local chief or regent. When the team finally arrived in a rural community during the weekend before the start of the survey, the supervisor, accompanied by the other team members, paid a courtesy call on the chief/regent and other prominent members of the community to explain the objectives of the survey, introduce the team members and discuss the survey schedule for the week. The supervisor could use the occasion to administer the community questionnaire.

After this meeting, interviewers contacted the selected households to introduce themselves, explain the purposes of the survey and to make appointments for interviews. These preparations did not apply to urban communities, because heads of households would already have received visits and letters from the supervisor. These pre-survey field preparations were necessary in ensuring that all the selected households could be easily located when the interviews started and that the necessary rapport had been established with the households. If a particular household could not be traced or a household refused to co-operate, this afforded the supervisor enough time to try, with the help of knowledgeable community leaders, to gather the needed information or try to persuade the selected household to
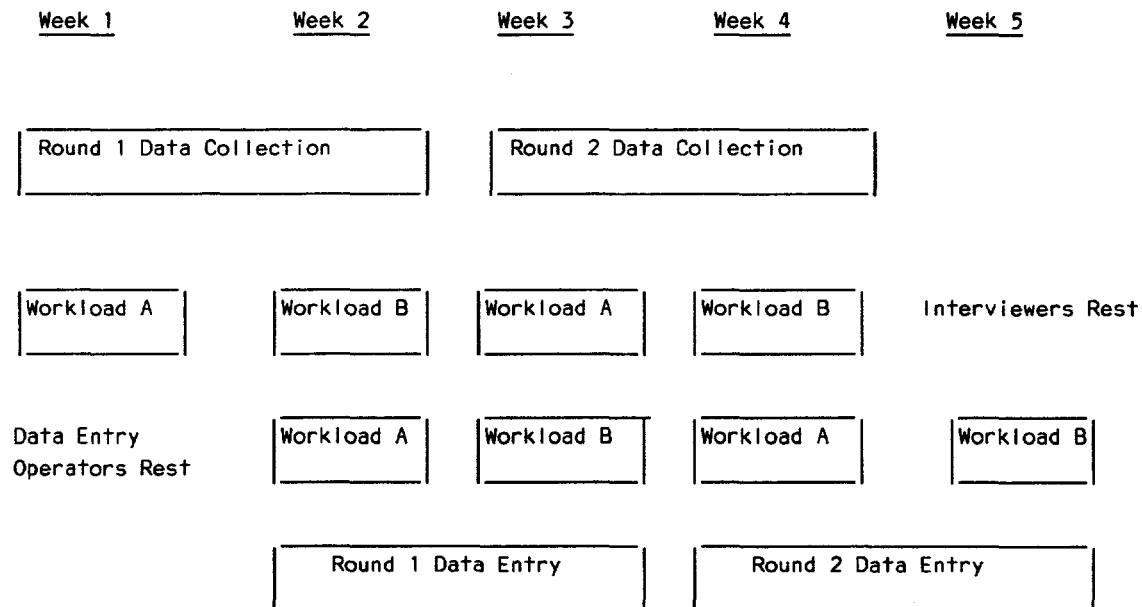
cooperate. If all failed, then the supervisor could replace that household
with one of the four replacement households. Only one household refused to
participate in the survey and a further 123 were either not at home or
otherwise could not be located; thus about 4 percent of households had to be
replaced out of 3200 during the first year of GLSS data collection.

The actual data collection and data entry operations were organized
in two rounds. During the first round, interviewers collected data on
household composition, housing characteristics, education, health, economic
activities, migration, and the height and weight of all household members; in
addition, the members of the household best informed about the various
subjects of the remaining sections were identified. Data collected during the
second round included agro-pastoral activities, non-farm household businesses,
food and non-food expenditures, fertility, other sources of incomes, loans,
savings and assets; in addition, measurements of height and weight of
computer-selected household members were taken and errors from the first round
were corrected.

After Round One interviews, the team left to interview households in
another workload before returning to conduct Round Two interviews. Attempts
were made to have households interviewed during the second round in the same
order as during the first round. This way, the two rounds of interviews for
each household within a particular workload took place two weeks apart; this
then established a precise reference for the income and expenditure data
collected during the second round. Data entry operation for each round of
interviews occurred during the following week. The anthropometric
measurements were always taken after the interviews for a household for any

round had been completed. Each team completed the two rounds for thirty-two

households in about one month, and did this ten times during the year; the

remaining weeks were devoted to refresher training, servicing of equipment and

rest for team members. Each team's monthly data collection and data entry

operations are illustrated in Chart A.1.

Chart A.1   Schedule of Monthly Data Collection and Data Entry Operations

Week 1	Week 2	Week 3	Week 4	Week 5

Round 1 Data Collection		Round 2 Data Collection		
Workload A	Workload B	Workload A	Workload B	Interviewers Rest
Data Entry Operators Rest	Workload A	Workload B	Workload A	Workload B
	Round 1 Data Entry		Round 2 Data Entry	

One disadvantage with a multi-purpose survey is that the survey

instrument tends to become rather bulky and therefore costly to implement if

the sample is large. The GLSS attempted to minimize costs by keeping the

sample to the manageable size of 3,200. It was also quite important that non-

sampling error should be kept to a minimum by ensuring that the data collected

were of acceptable quality. Certain precautions were taken to ensure this. The first was that all the questionnaires were almost entirely pre-coded to eliminate the coding process, which is often a source of various types of error. Secondly, each team had a micro-computer installed at the regional office, where completed questionnaires were sent weekly for data entry. The data entry program was designed to check the data for inconsistencies and errors, so that the interviewers could correct them before leaving the field. Thirdly, supervision was close; the supervisor randomly revisited 25 percent of the households already interviewed to verify answers to some key questions and sat in some of the interviews to satisfy himself that the interviewers followed the right procedures. Finally, periodic unannounced visits were undertaken by the Directorate to assess the work of the field staff.

Survey Instruments

Three types of questionnaires were developed as the main survey instruments for collecting data on living standards: a household questionnaire (including an anthropometric component); a community questionnaire; and a price questionnaire (see Chart A.2). The household questionnaire, designed to collect individual level and household level data, is made up of 16 sections covering all the various indicators of living standards; it was administered in two rounds of interviewing, two weeks apart. The community questionnaire and price questionnaire were designed to collect community level data; the first was filled out only for rural workloads, while the second was completed for all workloads. Administering the community questionnaire was the task of the supervisor, while the anthropometrist filled out the price

questionnaire. These were filled out only once, during either the first round or the second round. Data from these questionnaires were entered at Headquarters, not at the regional centers, so the questionnaires were sent immediately to Accra after completion.

The community questionnaire was administered to a group of persons who were well informed about the activities, history and facilities of the community. The group mostly consisted of the chief, elders, teachers and others who had lived in the community for a long time. If there was more than one locality in the workload, the questionnaire was filled out for the two major localities in the community, with the identification numbers of the households falling in each locality recorded on their respective community questionnaires. The price questionnaire was completed on the basis of direct observation of market prices of several food and non-food items; three prices were collected for each item, after questioning three different retailers at different locations. If there was more than one locality in the workload, a questionnaire was completed for the market closest to each locality.

Chart A.2   Summary of Survey Instruments
(i) Household Questionnaire
(First Round)

Section	Information Sought	Preferred Respondent
1. Household Composition	Identification of household members. Basic demographic data on occupants. Information on the parents of household members. Information on non residential children of household members.	Head or Best Informed Member
2. Housing	Number and type of buildings occupied by household; tenancy status; housing expenses. Source of water and light, type of fuel used, other amenities.	Same as for Sec. 1
3. Education	Literacy, schooling, training, qualification and educational attainment of household members 5 years and older. Schooling expenses in the last 12 months.	Each Household Member (Parents to answer for younger children)
4. Health	Health condition of household members and type of health services and facilities received during the past 4 weeks. Health expenditures for the last illness/injury. Use of preventive medical services during the last 12 months.	Same as for Sec. 3
5. Economic Activities	Main and secondary activities of household members 7 years or older, in the last 7 days and in the last 12 months. Sector of activities, time devoted to activities, employment and working conditions. Search for additional work; unemployment spells; employment history. Domestic activities.	Each Household Member or Another Well Informed Member
6. Migration	Changes in residence of household members 7 years or older. Reasons for migration.	Same as for Sec. 5
7. Respondents for Second Round	Identification of household members that must be interviewed for various Sections during the second round.	Best Informed of Household Activities
8. Housing Characteristics	Construction materials and dimensions of the living quarters.	Head or Best Informed Member
16A. Anthropometry	Height and weight measurement of all household members.	Each Household Member

Household Questionnaire
(Second Round)

Section	Information Sought	Preferred Respondent
9. Agro-Pastoral Activities	Area of land utilized, purchased and/or sold in the last 12 months. Harvest and disposition of crops. Age of perennials. Farm inputs. Income and expenditures of farm activities that transform farm products. Inventory, purchases and sales of livestock during the last 12 months. Income from sales of animal products. Mutual aid. Farm equipment and tools. Sharecropping.	Best informed of Agricultural Activities of Household
10. Non-Farm Self-Employment	Income, expenditure, capital good for the three main non-farm enterprises of the household.	Best Informed of Each of Household Busineses
11. Expenditures and Inventory	Daily non-food expenditures in the last two weeks and the last 12 months. Inventory of durable goods owned by household members. Expenditures on family support (remittances).	Best Informed of Outlays on Non-Food Goods
12. Food Expenses and Home Production of Food	Food expenditures in the last two weeks. Value of food items produced and consumed by the household in the last 12 months.	Best Informed of Food Expenditures
13. Fertility	Number of children, number of pregnancies, and utilization of maternity services during the last pregnancy. Data on use of birth control methods.	Female aged between 15 and 50 randomly selected in Sec. 7
14. Other Income	Income from family support and other income not yet accounted for in Sections 5, 9, and 10.	Best Informed of Other Income Sources of Members
15. Credit and	Evaluation of indebtedness and savings of household.	Same Person as for Sec. 14
16B. Antropometry	Measurement of height and weight of selected household members.	Each Selected Member

(ii) Community Questionnaire

	Subject Section	Information Sought	Preferred Respondent
1.	Demography	Population; religion; ethnic groups; migration.	Group of Persons Well Informed of Activities Events, History and Infrastructure of the Community
2.	Economy and Infrastructure	Main economic activities; economic trends; transportation and communication; markets; other socio-economic infrastructures; seasonal labor market.	
3.	Education	Characteristics and distance to closest primary and secondary schools; literacy programs.	
4.	Health	Health facilities and personnel available; distances to nearest health services. Problems of health services.	
5.	Agriculture	Marketing and distribution; extension services co-operatives; community equipment; irrigation; agricultural wages; share-cropping.	

(iii) Price Questionnaire

	Subject Section	Information Sought	Preferred Respondent
I.	Food Items	Prices of most common food items such as: cassava, plantain, oranges, groundnut oil, sugar.	Three Independent Retailers of each Food and Non-Food Item.
II.	Pharmaceutical Items	Prices of most common pharmaceutical items: Aspirin, Paracetamol, Nivaquine, Other anti-malaria tablets, Andrew's liver salt, milk of magnesia.	
III.	Other Non-Food Items	Prices of other most common items: Kerosene, firewood, dry cell battery, coal-pot, hurricane lamp, matches, charcoal, soap, local cloth, wax, cutlass, fertilizer, metal bucket, plastic bucket.	

Appendix B: **CONSTRUCTION OF PRICES INDICES USING GLSS PRICE QUESTIONNAIRE**

As explained in Section II of the text, a price index is needed to correct for the fact that households in different areas and at different times experience different prices. Thus, there are two ways in which prices vary in Ghana, over time and by area of residence. In this appendix we show how price indices have been constructed to adjust nominal expenditure figures for differences in prices experienced by different households in different areas and at different times.

The variation over time is corrected by using the monthly price index prepared by the Ghana Statistical Service. The total as well as the food price indices are given in Table B.1.

TABLE B.1: **Monthly Price Indices for Ghana - September 1987-August 1988**

		Overall Price Index	Food Price Index
1987	September	1.000	1.000
	October	1.001	0.999
	November	1.018	1.019
	December	1.053	1.073
1988	January	1.097	1.125
	February	1.143	1.184
	March	1.195	1.250
	April	1.245	1.321
	May	1.298	1.388
	June	1.336	1.446
	July	1.323	1.394
	August	1.309	1.335

Source: Derived from monthly price indices published by the Ghana Statistical Service.

The area price indices are calculated using the data from the GLSS price questionnaire. It collected local market prices on 28 food items and 19 non-food items (see Appendix A). Of the food prices, 25 can be directly matched with expenditure categories from the food expenditure section of the household questionnaire. These items account for 73 percent of food expenditures reported by households in the GLSS. Of the non-food prices, 15 can be matched to non-food expenditure categories in section 11 of the household questionnaire. These account for 37 percent of non-food expenditures recorded in the GLSS. Using these price data, average prices were calculated for each of the 7 subregions in Ghana (Accra City, Urban Coast, Rural Coast, Urban Forest, Rural Forest, Urban Savannah and Rural Savannah), and for Ghana as a whole. The price index (PI) for any area r is then calculated as:

$$PI_r = \sum_{i=1}^{n} w_i \frac{P_{ir}}{P_{ig}}$$

where w_i is the fraction of total nominal expenditures spent on item i by the average household in the GLSS,[1] P_{ir} is the average price of good i in area r and P_{ig} is the average price of the good in all of Ghana. The area price indices, both total and for food alone, are given in Table B.2:

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[1] These weights are adjusted upwards (proportionately) to account for the fact that food (non-food) prices accounted for only 73 percent and 37 percent of total food and total non-food expenditures, respectively, as recorded in the GLSS.

Table B.2 : **Area Price Indices for Ghana: 1987-88**

	Overall Index	Food Index
Accra	0.952	1.012
Other Urban Coast	0.971	0.961
Rural Coast	1.000	0.996
Urban Forest	0.999	0.993
Urban Savannah	0.997	0.972
Rural Forest	1.009	1.002
Rural Savannah	1.023	1.017
All Ghana	1.000	1.000

Source: GLSS price data.

It turns out that area price variation is not very substantial in Ghana, which

is somewhat surprising. With both sets of deflators, real expenditure levels

as given in the text were obtained by dividing nominal expenditures twice,

once by the time deflator and a second time by the area deflator.

Appendix C: MEASUREMENT OF INEQUALITY

Given a measure of welfare of individuals, an aggregate statistic which records the level of inequality among these individuals can be selected. Perhaps the best strategy is to specify characteristics which one would like an inequality measure to have and then use all proposed measures which satisfy those criteria. There are four characteristics[1] which are highly desirable: 1. Mean Independence - inequality is unaffected by equi-proportionate changes in everyone's income; 2. Population-Size Independence - the same distribution of income over a larger or smaller population does not affect measured inequality; 3. Symmetry - exchanging income levels among different people does not affect inequality; and 4. Pigou-Dalton Transfer Sensitivity - a transfer of income from a wealthy person to a poor person reduces measured inequality. Virtually all proposed inequality measures are population-size independent and symmetric and most are mean-independent (though variance is not) and sensitive to Pigou-Dalton transfers (though variance of the logarithm of income is not for high incomes). For detailed discussions of measurement of inequality see Sen (1973), Shorrocks (1980, 1982, 1984) and the references cited by both authors.

Many suggested measures are eliminated by the following characteristics which are desirable, but not necessary, for a measure of inequality: 5. Decomposability - total inequality can be additively broken

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[1] Although these properties are described in terms of income, their essential nature is unchanged when expenditure data (adjusted or unadjusted) are used to measure the distribution of welfare.

down by population groups or income sources; 6. <u>Statistical Testability</u> - one can test whether differences in inequality over time or between groups are statistically significant. It turns out that decomposability by income sources (where total inequality is assumed to be a covariance-weighted sum of measured inequality from each income source) is, given generally acceptable axioms, independent of the measure of inequality chosen (Shorrocks, 1982), so that income source decomposability does not reduce one's choice of inequality measures as long as they meet the first four criteria. Further, recent research on the statistical properties of inequality indicators has overcome many of the barriers to statistical testing (cf. Kakwani, 1989; and Cowell, 1989). However, group decomposability (where total inequality is the weighted sum of inequality measured within each group plus inequality between the mean incomes of the different groups) limits one to the two entropy measures proposed by Theil (Shorrocks, 1980, 1984), which are based on information theory (Theil, 1967)[2/] The variance of the logarithm of income is also group decomposable but unfortunately it does not satisfy Pigou-Dalton transfer sensitivity for large incomes.

Confining the analysis to the distribution of expenditure, and not income, means that income source decompositions cannot be used. This puts more weight on judicious use of group-decomposable measures of inequality for interpreting overall levels of inequality. Given the above discussion on the ability of inequality measures to meet particular axioms, we will use the

_____

[2/] Entropy can be thought of as a measure of variation or "disorder." The concept is often associated with thermodynamics (e.g. increasing heat to a volume of gas will lead to increased entropy).

three group-decomposable measures. The Gini coefficient will also be calculated for comparability with inequality studies of other countries. The three group decomposable measures are defined as follows:

1) Theil $(T) = \sum\limits_{i=1}^{N} \frac{Y_i}{Y} \ln \left\{\frac{Y_i N}{Y}\right\} = \sum\limits_{j} \left\{\frac{Y_j}{Y}\right\} T_j + \sum\limits_{j} \left\{\frac{Y_j}{Y}\right\} \ln \left\{\frac{Y_j/Y}{N_j/N}\right\}$

2) Theil $(L) = \sum\limits_{i=1}^{N} \frac{1}{N} \ln \left\{\frac{Y}{Y_i N}\right\} = \sum\limits_{j} \left(\frac{N_j}{N}\right) L_j + \sum\limits_{j} \frac{N_j}{N} \ln \left(\frac{N_j/N}{Y_j/Y}\right)$

3) Log Variance $(LV) = \sum\limits_{i=1}^{N} \left[\ln (Y_i) - \overline{\ln Y}\right]^2 = \sum\limits_{j} \left\{\frac{N_j}{N}\right\} LV_j + \sum\limits_{j} \frac{N_j}{N} \left[\overline{\ln Y_j} - \overline{\ln Y}\right]^2$

where Y = total income of the population, Y_i = income of individual i, Y_j = total income of group j, N_j = number of people in group j, N = total population, $\overline{\ln Y}$ = mean of $\ln (Y_i)$ over the entire population, and $\overline{\ln Y_j}$ = mean of $\ln (Y_i)$ over the population in group j. The terms to the right of the inequality sign in each formula depict the decomposable properties of the respective measures - the first term is a weighted average of the inequality found <u>within</u> each group (henceforth referred to as the within-group component) and the second term is the level of inequality that would prevail if each individual had the mean income (or mean of the log income in the case of the LV measure) of his or her respective group (the between-group component).

The Gini coefficient can be graphically depicted as the area lying above the Lorenz curve as a proportion of the entire area in the Lorenz diagram. In the diagram below the Gini coefficient equals the area X divided by the area X+Y, that is, $G = X/(X + Y)$. Its mathematical formula is:

$$\text{Gini (G)} = \frac{1}{2NY} \; \sum_{i_1} \; \sum_{i_2} \; \left| Y_{i_1} - Y_{i_2} \right|$$

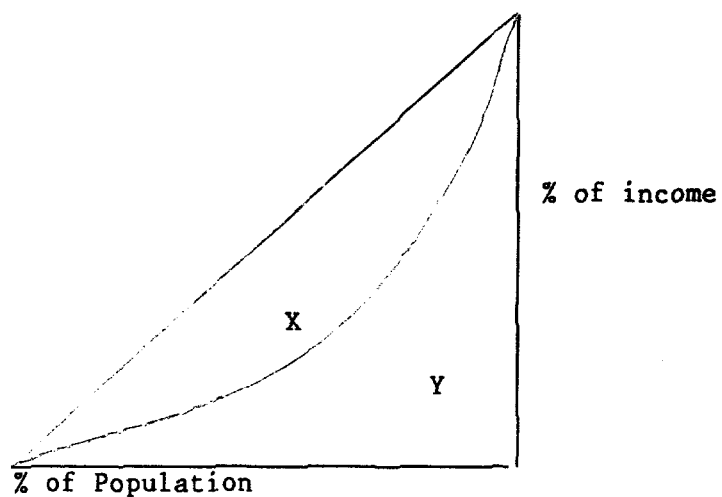where i_1 and i_2 simply correspond to the respective summation signs.

Diagram 1

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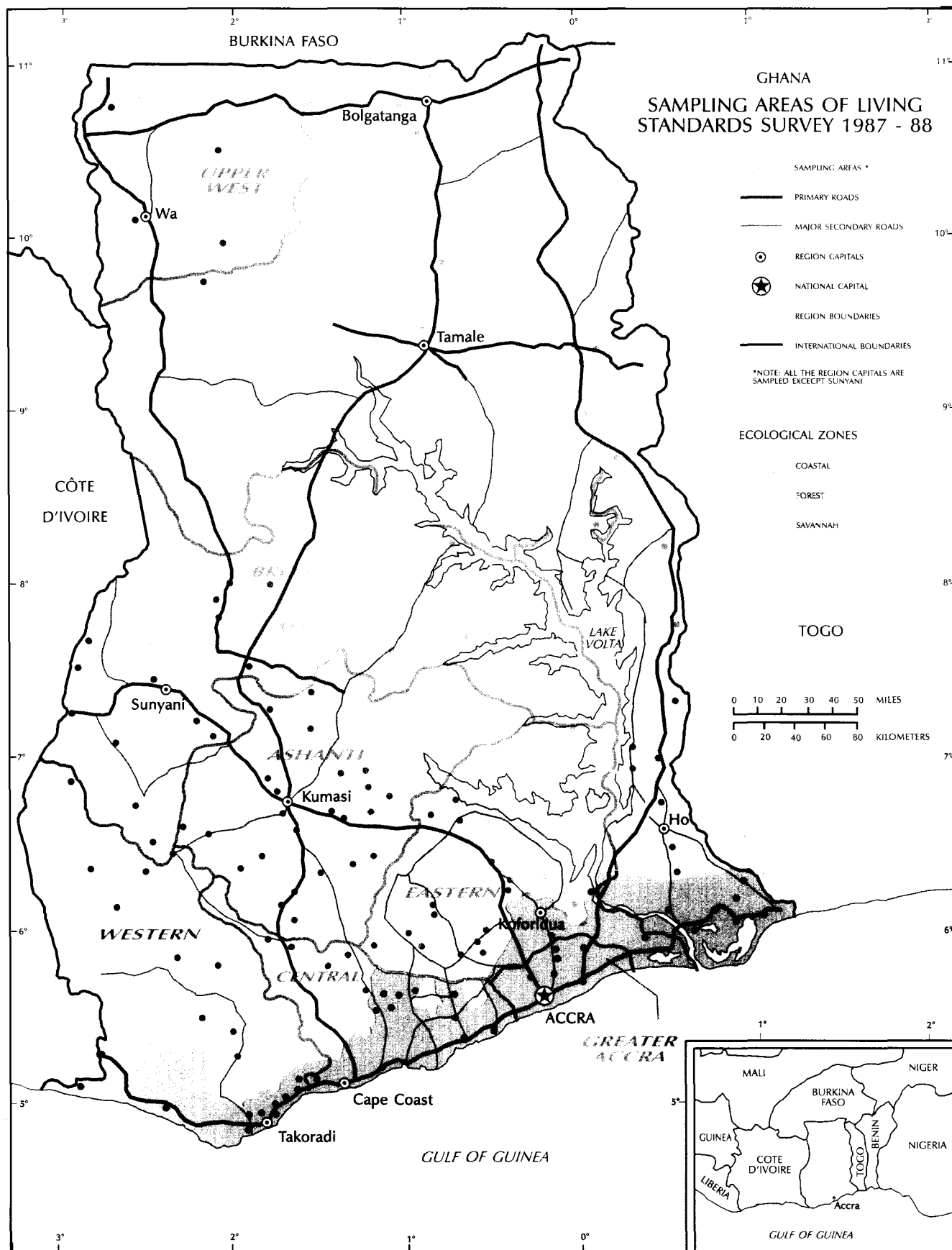Central Department Store
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