

# Evolution of Poverty and Welfare in Ghana in the 1990s:

## *Achievements and Challenges*

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### Abstract

**T**his paper traces Ghana's economic transition in the 1990s with special focus on its social welfare and poverty dynamics. Ghana returned to a slow but steady rate of economic growth, even though the world prices of its two main export commodities, gold and cocoa, declined. Poverty fell from just more than 50 percent to less than 40 percent between 1992-1998. However, this decrease in poverty has not been uniform across the country - most of the improvements in living standards have taken place in the southern parts of Ghana; the three northern regions, Northern, Upper West and Upper East Ghana, have experienced virtually no improvements and have even seen some increases in poverty.

This paper is a response to the renewed effort in Ghana by many stakeholders to understand the distribution and determinants of poverty. Rural

poverty is still a pervasive phenomena, with Savannah region benefiting little from Ghana's economic growth and poverty reduction experience of the 1990s. Export farmers have seen the greatest gains, while food crop farmers have been less fortunate. The analysis of determinants of poverty highlight the need to diversify exports and step up private sector growth as prerequisites for economic growth, employment generation and poverty reduction. In addition, the paper argues that infrastructure and access to financial and physical markets are important for poverty reduction. The paper also demonstrates that investments in social sectors need to give focused attention to developing a skilled labor force and post primary education, in addition to raising the social welfare of the poor.

### Author's Affiliation and Sponsorship

**Sudharshan Canagarajah**, Sr. Country Economist,  
AFTP2, The World Bank  
Email: [scanagarajah@worldbank.org](mailto:scanagarajah@worldbank.org)

**Claus C. Pörtner**, Associate Professor,  
Department of Economics, University of Washington Seattle, WA.  
Email: [cportner@u.washington.edu](mailto:cportner@u.washington.edu)

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**The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s), they do not necessarily represent the views of the World Bank Group, its Executive Directors, or the countries they represent and should not be attributed to them.**

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\* [scanagarajah@worldbank.org](mailto:scanagarajah@worldbank.org)

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**W**e very much appreciate the technical guidance and comments we have received from various people in both the government and the World Bank. On the government side, we are grateful for the support we received from Angela Farhart (NDPC) and Dr. Twum Baah (GSS). We are also grateful for the many Ghanaians who participated in workshops and discussions during preparation of the GPRS and CAS who enabled us to better understand and interpret the results. On the World Bank side, we are grateful for the discussion with the country team and specially to Theresa Jones (Country Program Manager, Ghana) and Lionel Demery (Lead Poverty Specialist, Africa Region) who provided support and comments to this work as it evolved. The results and interpretations in the following pages are our own and should not be attributed to any of the agencies or individuals who provided comments and guided this process.

**W**e sincerely hope this discussion paper will enrich the ongoing debate on Ghana's prospects for economic growth and poverty reduction.

Thank you  
Sudharshan Canagarajah

## PREFACE

**D**uring the 1990s Ghana experienced a variety of economic and political changes. The country returned to a slow but steady rate of economic growth, even though the world prices of its two main export commodities, gold and cocoa, declined. Poverty fell from just more than 50 percent to less than 40 percent (Ghana Statistical Service (2000a)). This decrease in poverty has not been uniform across the country, however: most of the improvements in living standards have taken place in the southern parts of Ghana; the three northern regions, Northern, Upper West and Upper East Ghana, have experienced virtually no improvements and have even seen some increases in poverty. In the political arena, Ghana in December 2000 held its third democratic election, which resulted in a peaceful change of government from the ruling party of National Democratic Congress (NDC) to the National Patriotic Party (NPP). Ghana also joined in 2001 the heavily indebted poor countries (HIPC) initiative.

**T**here has been in Ghana a renewed effort to understand the distribution and determinants of poverty. Without a good understanding of how the situation is changing and what determines who is and is not poor we cannot hope to design appropriate policies to address poverty. The purpose of this discussion paper is to analyze the developments in poverty and welfare that Ghana experienced during the 1990s. This work is intended to fill a gap in the literature, because there is relatively little recent work on poverty in Ghana. It is directed mainly towards people working either directly or indirectly with poverty-related issues in Ghana, including the government, civil servants, nongovernmental organizations (NGOs), international organizations, and civil society.

**T**his paper focuses on the consumption of individuals and of households. It does not attempt to address the social and political exclusion that is an important part of poverty. Consumption poverty tends to transmit itself from generation to generation: children who grow up in poor households are more likely to suffer poor health and lack of access to schooling and as a result have greater difficulty generating income when they are adults. While only one of many important aspects of poverty, consumption poverty nonetheless provides a good starting point for designing policies to alleviate poverty.

**C**hapter 1 examines the macroeconomic performance of Ghana during the 1990s and discuss the structure of the Ghanaian economy. Chapter 2 provides an overview of developments in the social sectors, specifically health and education. The chapter synthesizes the results from benefit incidence analysis and tracking studies carried out in health and education sectors to understand the achievements and challenges. Chapter 3 outlines the changes in Ghana's poverty profile during the 1990s, with special focus on how the different regions fared. Within each region the changes in poverty for important groups are analyzed. Chapter 4 is devoted to an econometric analysis of the determinants of poverty. Finally, Chapter 5 draws together the main results and discusses ways of using these results to inform viable and effective policies.

# **1. AN OVERVIEW OF GHANA'S MACROECONOMIC PERFORMANCE IN THE 1990S**

## **MACROECONOMIC OVERVIEW**

Ghana's economy showed unsystematic growth in the 1990s. Real per capita growth went from 0.2 percent per annum in 1990 to 1.3 percent in 2000, but gross domestic product (GDP) per capita twice peaked at 2.0 percent, in 1993 and 1998. The average GDP growth rate for 1992–98 was around 4.2 percent (see Table 1). While broad macroeconomic performance was unstable, it was at least not negative. Per capita GDP grew by 10 percent between 1992 and 1998, from US\$363 to US\$399, indicating an overall improvement in welfare.

The structure of GDP also has undergone changes since 1983 and the beginning of an economic reform program. Agriculture, which in 1985 accounted for 45 percent of GDP, in 1988 accounted for 36 percent. The industrial sector picked up the corresponding share of GDP, changing from 16 to 25 percent; the service sector was more or less unchanged (see Table 2). Within the industrial sector, mining and construction saw the largest growth.

## **SECTORAL PERFORMANCE OF THE GHANAIAN ECONOMY**

### **Agriculture**

Ghana's agricultural sector is dominated by cereals, which account for about 20 percent of the sector's overall contribution to GDP. Maize accounts for 60 percent, and guinea corn, rice, and millet account for the much of the remainder. Other crops include cassava, yams, cashew nuts, sunflowers, and pineapples. Since the agricultural reform program of the mid-1980s the area under cultivation has increased substantially, but in terms of economic output the agricultural sector grew on average by just 2.7 per annum between 1988 and 1998. This is the lowest growth among the three main sectors, and in per capita terms there has been virtually no growth at all. The removal of the fertilizer subsidy is cited by some as dampening the sector's prospects, but there are many other constraints that also are obstructing the growth of the sector.

In addition to the staple crops, cocoa contributes 3 percent of value added and is one of the main sources of foreign exchange. Cocoa production has revived since the mid-1980s through a rehabilitation program that has seen trees replanted and maintained and that has seen higher prices paid to farmers. It is expected that in a few years Ghana will return to its production levels of the mid-1960s, when the country was the world's largest cocoa producer.

Fishing also has been growing rapidly, and has become the backbone of nontraditional exports. This is especially true of tuna. Environmental concerns, however, are placing new limits on the potential of this sector.

## Industry

The contribution that the industrial sector makes to GDP has increased steadily over the last few years. In 1985, the sector's share of GDP was around 16 percent; by 1998 this had risen to 25 percent (see Table 2). Between 1992 and 1998, however, industrial sector GDP grew at just 1.8 percent—the lowest growth rate of the three main sectors.

Manufacturing is the largest sub-sector, accounting for more than 40 percent of industrial value, but in recent years construction and mining have become increasingly important, rising in 1985–98 from 20 to 35 percent and from 6 to 20 percent of industrial value, respectively. The government's divestiture of the iron sector saw a six fold increase in output volume in the period 1990–96, and divestiture and reform measures in the mining sector produced a 150 percent increase in output in the same period. The growth of the construction industry, which in the last two decades has increased its share of industrial value by more than 60 percent, has led to a fixed capital formation. A major constraint on industrial growth is that electricity production has not kept up with population growth and consumption demands.

## Services

The service sector, which grew through the mid-1970s to the mid-1980s, started contracting in the 1990s. The sector's share of GDP is today around 39 percent. Between 1992 and 1998 the service sector grew at 4.8 percent, the highest growth rate among the three main sectors (see Table 2). Government services continue to dominate the service sector, with trade (wholesale and retail) and financial services next in importance, in terms of value added. The major constraint on the growth of this sector—and a constraint also on the other sectors—has been transport, which has more or less stagnated since 1975.

**Table 1. Basic Macroeconomic Indicators 1992–2000**

Table 1: Ghana Basic Macroeconomic Indicators

	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
GDP at constant prices (annual % change)	3.9	4.8	3.4	4.0	4.6	4.2	4.7	4.4	3.7	4.0
Inflation rate (average, %)	10.1	25.0	24.9	59.5	46.6	27.9	14.6	12.4	25.2	27.0
Domestic savings/GDP (%)	1.3	6.0	12.5	11.6	21.2	4.2	10.2	3.7	3.3	8.0
Total investment /GDP (%)	12.8	22.2	24.0	20.0	29.2	24.8	23.1	21.0	23.7	22.0
Average interest rate	1.8	3.1	4.2	3.3	2.9	2.5	4	2.5	3.7	3.0
Current account deficit/ GDI	-5.9	-9.4	-4.7	-2.2	-4.7	-8.0	-5.9	-12.1	-8.3	-6.0
Official exchange rate (cedis)	437	649	957	1200	1637	2050	2314	2669	5455	1929.0

*Source:* Derived from IMF staff estimates and World Bank Regional African Database

## Investment

Investments in Ghana remarkably recovered from around 10 percent of GDP in the 1970s to about 29 percent by 1996. Investment productivity in Ghana, at about 15–20 percent, is comparable to levels in Sub-Saharan Africa (SSA) but is not as high as international standards. An interesting development of the last few decades has been the declining role of the public sector and the



**Table 2. Sectoral Share and Growth of GDP**

	1992	1993	1994	1995	1996	1997	1998	Average, 1990-2000		
Agriculture as share of GDP (%)	44.8	36.9	37.8	38.8	38.6	35.5	36.0	38.3		
Industry as share of GDP (%)	17.4	24.8	24.9	24.3	23.4	25.4	25.3	23.6		
Services as share of GDP (%)	37.8	38.3	37.3	36.9	38.0	39.1	38.7	38.0		
Value added, agriculture	-1.2	2.3	1.9	3.7	5.2	4.3	5.1	-4.9	5.1	2.4
Value added, industry	6.2	-12.3	3.5	4.0	4.7	6.4	3.2	-3.1	3.2	1.8
Value added, services	8.7	7.5	10.4	4.3	4.0	3.5	4.7	-4.5	4.7	4.8

Source: World Bank Regional African Database

increasing importance of private investments to economic growth in Ghana. More than 60 percent of gross investments are from the private sector. Aid, as a percentage of investment, is 55 percent—almost double the SSA average.

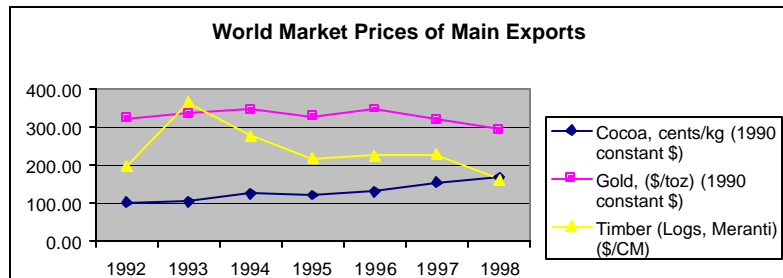
### Savings

Domestic savings have fluctuated dramatically since the 1970s, broadly deteriorating from around 13 percent of GDP to an average over the 1992–2000 period of 8.2 percent (see Table 1). By SSA standards, savings are very low, in part due to the deterioration in Ghana’s fiscal position. Despite this, the concessional lending rates from external sources have meant that there are substantial savings in terms of debt servicing. More than half of gross national savings furthermore comes from private sources, which are gradually increasing overall savings.

### Current account

Ghana’s current account deficit has consistently been on the negative, and has moved from bad to worse (see Table 2). The average deficit for 1992–2000 was around 6.8 percent of GDP, excluding grants. Export receipts from cocoa, gold, and timber have a significant impact on Ghana’s external balance, as they constitute about 80–90 percent of export revenues (see Figure 1). Ghana’s dependence on these primary items exposes it to substantial price risks in international markets that can only be addressed by diversifying the export portfolio. Between the early 1990s and 1998, nontraditional exports as a share of total exports more than doubled from less than 10 percent to more than 20 percent.

**Figure 1. Prices of Major Exports 1992-98**



**Table 3. Before-and-After Analysis of Key Macroeconomic Indicators**

	Annual Average 1990–92	Annual Average 1992–98	Annual Average 1998–2000	Average/Growth 1990–2000 (%)
Real GDP growth (%)	4.2	4.2	4.4	4.2
Balance of payments (US\$ million)				
Exports	960.3	1488.4	2098.7	133.0
Imports	-1310.2	-2097.5	-2997.2	148.1
Net exports/trade account	-349.9	-609.1	-898.4	200.5
Current acc. (incl. official transfers)	-265.4	-416.6	-464.3	67.1
Current acc. (excl. official transfers)	-475.9	-643.0	-673.8	24.1
Overall (BOP) balance	71.5	23.2	2.0	-89.4
Overall (fiscal) balance	-99.4	-789.7	-1830.0	7029.5
Overall (fiscal) balance/GDP (narrow fiscal deficit as % of GDP)	-1.3	-8.9	-4.8	-6.3
Broad money (M2) growth	30.9	38.4	25.6	32.7
Inflation (CPI)	21.8	30.5	15.5	26.9
Gross fixed capital formation/GDP	NA	19.5	8.2	22.8

Source: Derived from IMF staff estimates.

Notes: For the overall (fiscal) balance, the series start in 1991; the gross fixed capital formation series starts in 1993 and ends in 1998. The last column shows growth rates over the period, except for real GDP growth, overall fiscal balance/GDP, money growth, inflation, and gross fixed capital formation, for which annual averages over the period are shown.

### Nontraditional exports

Being a small, open economy, Ghana faces increasing uncertainty in its macroeconomic adjustment due to its reliance on exports whose prices are determined on the international market. Economic reforms undertaken in 1983 have seen a gradual diversification of exports, with the result that the share of total exports held by non traditional items have increased from 3 percent in 1986 to almost 20 percent in 1998. If this trend is continued it will progressively reduce Ghana's exposure to terms -of-trade shock. In 2000 the terms of trade worsened by more than 20 percent due to a decline in the international prices cocoa and other major exportable goods. In contrast to the high price volatility of traditional exports, the prices commanded by manufactured goods have consistently shown an upward trend: clearly, the greater Ghana's diversification of exports the lower the exposure of the economy to destabilizing macroeconomic factors. Between 1986 and 1998, nontraditional exports grew annually at 27 percent: by 1998, the value of Ghana's nontraditional exports was more than US\$400 million, compared to US\$60 million in 1990. Since the early 1990s, processed and semiprocessed goods—primarily canned tuna, palm oil, processed cocoa products, and wood products, including furniture—have more than doubled the share they hold of nontraditional exports from around 30 percent to almost 80 percent. The EU is the major destination for Ghana's nontraditional exports, accounting for 68 percent, followed by Economic Commission for the West African States (ECOWAS), which takes 15 percent. To maintain this momentum, the government must support private entrepreneurs with incentives to engage in and increase the production of nontraditional exports. Between 1992 and 1998, Ghana has run a 70 percent trade account deficit: this must be addressed with intensive export diversification and by harnessing the local production of importables.

### **Exchange rate**

The nominal exchange rate declined consistently through the 1990s, moving more than 12 times between 1990 and 2000. Between 1992 and 1998 alone the rate fell from 437 cedis to the U.S. dollar to 2,314 cedis to the dollar (see Table 1). In the mid 1990s due to high rates of inflation and large capital inflows the real value of cedi was volatile, which had to be addressed by interventions by Bank of Ghana (Aryeetey and Harrigan, 2000).

### **Interest rates**

Interest rates are high in Ghana—lending rates have since the mid-1990s been around 40 percent—and are the major constraint on private sector growth. The main factors keeping upward pressure on interest rates are high inflation, depreciation of the cedi, a lack of policy consistency, and the country's narrow financial and economic base.

### **Monetary policy**

Monetary policy in the 1970s and 1980s was characterized by indiscipline, and the government has continued to appropriate a large share of domestic credit: 90 percent, for example, in 1983. Given the constraints on trade, the growth in money supply affected inflation rather than terms of trade, leading to double- and even triple-digit inflation. The government's failure to adjust the nominal interest rates furthermore meant that real interest rates were mostly negative, resulting in the substantial erosion of domestic savings. The measures taken to resolve this situation have been largely ineffective, leading to parallel markets, rent-seeking behavior, and corruption.

In the mid-1980s the government put in place programs to liberalize the banking sector and establish a stock exchange. The persistent high inflation undermined efforts to reduce real interest rates, however, with the dismal monetary performance evidenced in the mid-1990s by 50 percent growth in money supply and 60 percent inflation. Between 1992 and 1998 broad money supply grew on average by 38 percent, compared to an average annual inflation rate of 30 percent (see Table 3). The gross fixed capital formation more than doubled between 1984 and 1994, but this was in large part due to the contribution of the government: there was little positive response from the private sector to monetary policy. High rates of domestic inflation and the depreciation of cedi discouraged private investment, and the wide spread between deposit and lending rates discouraged savings and investments and inhibited financial intermediation.

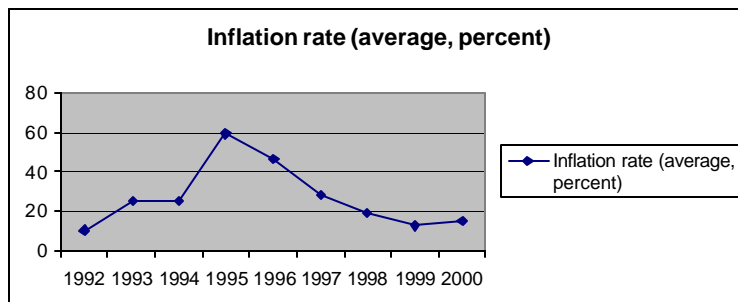
Monetary policy in more recent years has remained inconsistent. The stop-go policies undertaken by the monetary authorities have been largely ineffective, and the financial status of the Ghanaian economy remains in disorder (see Table 3).

### **Inflation**

Inflation continues to be a problem for Ghana, and was characterized during the 1990s by wild fluctuations that over the course of the decade saw prices increased more than ten times (see Figure 2). Inflation declined from 37 percent in 1990 to 10 percent in 1992, before climbing to 24 percent in 1994. In 1995 it shot up to 59 percent before declining to 14 percent in 1999; it then shot up again in 2000 to 40.5 percent. This movement speaks volumes about macroeconomic stability.

Inadequate monetary and fiscal adjustments and currency depreciation contributed to this inflation, and it is clear that if it is to curb inflation and realize steady growth Ghana must first achieve macroeconomic stability. The country must adopt prudent monetary and fiscal policies and pursue them in a consistent and coordinated manner: any continuation of the pattern of interrupted policy performance would cause the loss of many growth opportunities.

Figure 2. Average Inflation in Ghana 1992–98

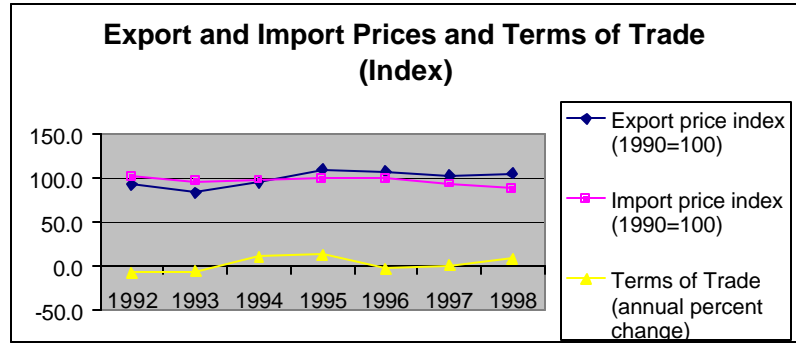


### Fiscal deficit

Prior to the mid-1980s, the government had for a decade run a fiscal deficit of almost 10 percent of GDP. This pattern has persisted because the revenue base has been weak and because Ghana has a low marginal propensity to tax (Dordunoo, 1994). Between 1992 and 1998 the fiscal deficit averaged 9 percent, and currently it is around 10 percent of GDP (see Table 3). Fiscal policy has, however, improved: tax increases have helped generate revenues and limits have been placed on budgetary expenditures.

Fiscal policy during the 1980s succeeded in producing a slight budget surplus, enabling the government to retire some of the deficit. This was short-lived. The 1992 election process saw new fiscal indiscipline set in: civil service pay was increased 80 percent, a poor cocoa harvest produced a shortfall in tax revenue, and election pressures pushed up rural development expenditure. The deficit returned to 10 percent of GDP. The 1996 election again raised fiscal pressures, leading to heavy government borrowing from the Bank of Ghana and high inflation rates. The high fiscal deficit crowded out the private sector.

Figure 3. Indices of Export and Import Prices and Terms of Trade



### Revenues and expenditures

Revenue has been hovering around 20 percent of GDP; excluding grants, it has been around 16–17 percent. Expenditures, however, has been in the range of 30–38 percent, including recurrent expenditures of 16–18 percent of GDP. The overall fiscal deficit thus has been around 8–10 percent of GDP. The stock of domestic debt rose from around 10 percent to almost 30 percent in the 1990s.

### Terms of trade

Ghana's terms of trade are at the mercy of international market forces. Cocoa and gold, on the export side, and oil, on the import side, mostly determine the terms of trade. The movement in the price of these commodities has resulted in a terms-of-trade deterioration of 20 percent: equivalent to almost 7 percent of Ghana's GDP. The price movements furthermore have been erratic (see Figure 3); the price of cocoa, for example, declined to US\$950 per ton in 1993 but partially recovered before plunging to an historic low in 1999. Naturally, this harmed Ghana's macroeconomic stability and the socioeconomic welfare of Ghanaians.

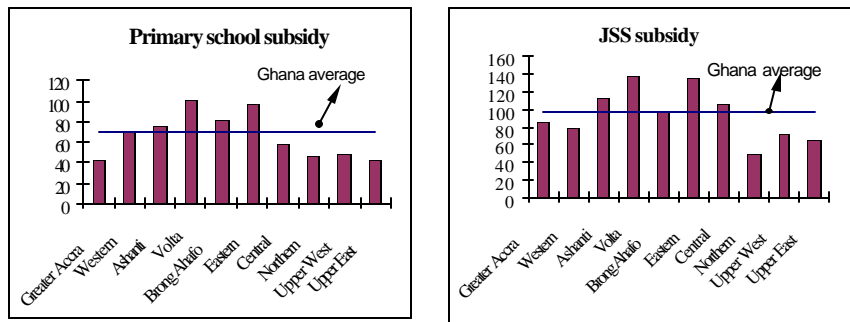
## 2. AN OVERVIEW OF GHANA'S SOCIAL SECTOR PERFORMANCE IN THE 1990S

Ghana's social indicators show that substantial progress was made in the 1990s. Between 1992 and 1998, life expectancy increased from 58 to 60 years, primary school enrolment increased from 75 to 79 percent, and infant mortality declined from 85 to 57 per 1,000 live births. These outcomes are a result of sectorwide reforms pursued by Ghana since the early 1990s in health and education.

### EDUCATION

Total expenditure on education decreased by almost 10 percent between 1992 and 1998, but enrolment rates at primary and secondary level increased slightly. This is in part due to a significant increase in enrolment at private schools: despite a decline in unit subsidy across all levels, overall (public plus private) expenditures have increased. The gender disparity has narrowed, notably at primary level but also at secondary level, although there remains a persistent high drop-out rate of secondary school girls. The pupil-teacher ratio at primary level increased from 30 to 36, and at secondary level increased from 19 to 20.

Unit subsidies per school-aged child and enrolment figures clearly show that the three northern regions of Ghana are greatly disadvantaged. Figure 4 shows the unit subsidy per school-aged child by region. (The regions are ordered on the horizontal axis according to each region's incidence of poverty, from lowest to highest.) For both primary and Junior Secondary School (JSS) education, the poorest three or four regions receive the lowest subsidy per school-age child. Accra is an exception, but in Accra an active private education sector meets a large proportion of educational needs.



**Figure 4. Primary and Secondary School Subsidies per Child, by Region**

The benefit incidence analysis in Table 4 shows that for primary school enrolment in 1992–98, the subsidies captured by the bottom per capita expenditure quintile (quintile 1) fell from 21.8 to 20.4 percent of the total available subsidies, while the percentage captured by the top quintile rose from 14 to 17 percent. This indicates both the regressive nature of public spending and the inefficiency in the targeting of subsidies for primary schooling. In the case of secondary education, the top and bottom quintiles gained while the middle ones lost out.

**Table 4. Benefit Incidence of Education 1989–98**

<i>Percentage of subsidies captured</i>				<i>Share of subsidy to share of children</i>		
<i>(%)</i>						
	<i>1989</i>	<i>1992</i>	<i>1998</i>	<i>1992</i>	<i>1998</i>	
<b>Primary education</b>						
<i>Quintile</i>				<i>Quintile</i>		
<i>1</i>	21.2	21.8	20.4	<i>1</i>	<b>94</b>	<b>90</b>
<i>2</i>	22.1	23.6	20.8	<i>2</i>	<b>104</b>	<b>103</b>
<i>3</i>	22.2	21.7	20.9	<i>3</i>	<b>105</b>	<b>103</b>
<i>4</i>	20.3	18.8	20.9	<i>4</i>	<b>104</b>	<b>105</b>
<i>5</i>	14.3	14.0	17.0	<i>5</i>	<b>92</b>	<b>101</b>
<i>Total</i>	100.0	100.0	100.0			
<i>of which:</i>				<i>of which:</i>		
<i>Accra</i>	6.3	5.3	7.4	<i>Accra</i>	<b>74</b>	<b>82</b>
<i>Other urban</i>	23.1	24.6	17.8	<i>Other urban</i>	<b>102</b>	<b>101</b>
<i>Rural</i>	70.6	70.1	74.8	<i>Rural</i>	<b>102</b>	<b>102</b>
<b>Secondary education</b>						
<i>Quintile</i>				<i>Quintile</i>	<i>1992</i>	<i>1998</i>
<i>1</i>	16.8	14.9	18.8	<i>1</i>	<b>67</b>	<b>83</b>
<i>2</i>	18.0	21.8	18.8	<i>2</i>	<b>103</b>	<b>97</b>
<i>3</i>	21.8	21.1	19.0	<i>3</i>	<b>97</b>	<b>98</b>
<i>4</i>	23.4	23.5	20.9	<i>4</i>	<b>121</b>	<b>101</b>
<i>5</i>	19.9	18.6	22.5	<i>5</i>	<b>121</b>	<b>124</b>
<i>Total</i>	100.0	100.0	100.0	<i>Total</i>		
<i>of which:</i>				<i>of which:</i>		
<i>Accra</i>	11.1	12.0	14.9	<i>Accra</i>	<b>135</b>	<b>121</b>
<i>Other urban</i>	23.3	30.1	25.2	<i>Other urban</i>	<b>110</b>	<b>119</b>
<i>Rural</i>	65.6	57.8	59.9	<i>Rural</i>	<b>91</b>	<b>90</b>

*Source:* 1989 and 1992 calculated by Demery et al.(1995); 1998 calculated by Canagarajah and Ye (2001). Unit subsidies in 1998 are as shown in Table 3 in Canagarajah and Ye (2001)

## HEALTH

Ghana in 1992–98 made some progress in terms of reducing infant mortality and mortality of children aged five and under, and in improving life expectancy. The AIDS epidemic, however, is a serious threat to the health system in Ghana: 3 percent of the population reported positive in 1998 compared to 1 percent in 1990.

The distribution of health facilities varies widely across the 10 regions (see Table 5). Urban residents in general have easy access to health facilities: except in the Northern and Upper East regions, more than 75 percent of the urban population is less than 30 minutes from the nearest health facility. Volta, which has an exceptionally high number of health facilities, does not have a high access rate probably because of its complex terrain.

**Table 5. Distribution of and Access to Health Facilities by Region**

	District and other hospitals	Subdistrict health centers/clinics	Number of health facilities	% of population with access to health services*		Poverty incidence
				Urban	Rural	
<b>Greater Accra</b>	22	249	271	94	63	7.3
<b>Western</b>	19	180	199	85	31	24.9
<b>Ashanti</b>	64	226	290	75	48	35.7
<b>Volta</b>	26	450	476	75	51	37.4
<b>Brong Ahafo</b>	23	179	202	76	38	38.8
<b>Eastern</b>	25	128	153	76	45	48.4
<b>Central</b>	14	104	118	75	42	49.7
<b>Northern</b>	13	116	129	50	16	69.1
<b>Upper West</b>	4	51	55	83	14	88.3
<b>Upper East</b>	5	75	80	22	16	89.3
<b>Ghana</b>	215	1758	1973	80	37	42.1

Sources: GSS (2000) CWIQ survey; GSS (2000a); Canagarajah and Ye (2001)

\* "Access" here defined as being within 30 minutes of the nearest health facility

Given the low population density of rural areas, it is unsurprising that the access rate of these areas is lower than that of urban areas. Nonetheless, with the exception of the poorest Northern, Upper West, and Upper East regions, more than 30 percent of the rural population is close to a health facility. Future investments for the construction of new health facilities clearly need to be targeted to those regions with the greatest need.

Between 1992 and 1998 there was a 40 percent increase in the number of people in the poorest quintile reporting illness; in the richest quintile, there was a 5 percent decline (see Table 6). This indicates a generally growing demand for health services, particularly on the part of the poor.

**Table 6. Frequency of Reported Illness by Expenditure Quintiles**

Expenditure quintile	Percentage of people who reported illness			Percentage change 1989-98
	1989	1992	1998	
1 - the poorest	31.8	32.6	45.8	40.5
2	36.7	37.4	47.7	27.6
3	39.8	45.2	48.0	6.2
4	43.8	46.6	48.2	3.5
5 - the richest	45.7	57.6	54.6	-5.2
Urban	38.9	42.9	43.4	1.2
Rural	39.8	44.4	50.4	13.5
Total	39.5	43.9	48.4	10.3

Sources: Canagarajah and Ye (2001); Demery et al.(1995); and staff calculations from GLSS 4 data (GSS 2000a)



The regional disparity in the distribution of health facilities, together with the greater demand from poorer regions for health services, indicates the need for Ghana to better target its public health system to benefit the poorer segments of the population. The low quality of public health services has seen a more than 25 percent decline in their use by the poorest. In contrast to the situation in education, the benefit incidence in health at least has moved in the right direction. As shown in Table 7, the poorest quintile received 12.5 percent of total public health subsidies in 1998 compared to 11.6 in 1992; the richest quintile received 31 percent of subsidies in 1998 compared to 32.9 percent in 1992. Much more nonetheless needs to be done.

**Table 7. A Comparison of Benefit Incidence of the Public Health Subsidies**

	<i>1989</i>	<i>1992</i>	<i>1998</i>
<i>1 - poorest</i>	12.3	11.6	12.5
<i>2</i>	13.3	15.5	12.1
<i>3</i>	17.2	18.7	25.7
<i>4</i>	26.7	21.4	18.8
<i>5 - richest</i>	30.6	32.9	31.0
<i>Urban</i>	42.0	48.7	38.8
<i>Rural</i>	58.0	51.3	61.2

Sources: 1989 and 1992 data from Demery et al. (1995); 1998 figures are based on Canagarajah and Ye (2001).

### CONCLUSION

Ghana has made some macroeconomic progress and some progress in the social sectors, but these advances are fragile. In the areas of inflation, interest rates, current account, and terms of trade volatility, Ghana's performance has been depressing. In terms of access to health and education, there is a clear need to achieve a more equitable benefit incidence for the poor if public expenditures in these areas are to fully contribute to poverty reduction. The next chapters will show that Ghana has made some progress toward reducing poverty, but without macroeconomic stability these gains can be easily eroded. The key challenge facing the government, however, is how to continue poverty reduction and how to improve the welfare of all Ghanaians.

### 3. AN OVERVIEW OF CHANGES IN GHANA'S POVERTY IN THE 1990S

This section examines some of the overall trends in poverty during the 1990s. It draws primarily on the Ghana Statistical Service (2000b) and Pörtner and Canagarajah (2001). Two types of poverty are defined: poverty and extreme poverty. This report identifies poverty as the consumption per annum per person of 900,000 cedis or less and extreme poverty as the consumption of 700,000 cedis or less.<sup>1</sup> All of the figures quoted on poverty refer to population rather than households, the size of the population being calculated by multiplying the number of households with the number of adult equivalents in the household. The number of households is included to identify the sample size, since it provides an indication of reliability. Generally, rural households tend to be larger than urban ones and male-headed households larger than female-headed ones.

#### OVERALL POVERTY RESULTS

Figure 5 shows that for Ghana as a whole poverty decreased from close to 52 percent in 1991/92 to less than 40 percent in 1998/99. Extreme poverty fell from 36.5 to 26.8 percent over the same period (Figure 6). The rural population experienced a larger absolute decline in poverty than did the urban population, but poverty continues to be more widespread in rural than in urban areas: rural poverty fell from 63.6 to 49.5 percent and urban poverty from 27.7 to 19.4 percent. Extreme poverty essentially followed the same pattern.

People living in female-headed households are generally less poor than those in male-headed households, although the reduction in poverty was greater for male- than for female-headed households. Poverty for female-headed households fell from 43.2 percent in 1991/92 to 33.2 percent in 1998/99, and for male-headed households fell from 56.6 to 43.1 percent. With respect to extreme poverty the reduction for male-headed households was almost double that for female-headed households. Extreme poverty, at 29.6 percent, nonetheless remains significantly higher for male-headed households than for female-headed households (22.1 percent). Between the two surveys the percentage of households that are female-headed rose slightly from 39.4 to 41.3 percent.

The incidences of poverty and extreme poverty by agro-climatic zones are shown in Figures 7 and 8. The reductions in poverty were concentrated in Accra and the forest zones, both urban and rural. With the exception of urban savannah, where the incidence of poverty increased, urban and rural poverty otherwise fell only modestly. The main reductions in extreme poverty also took place in Accra and the forest zones, although the reduction for the urban forest population was modest.

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<sup>1</sup> Consumption above the upper poverty line means that one is able to meet one's nutritional requirements and basic nonfood needs. The lower poverty line is the level at which an individual is no longer able to meet his minimum nutrition requirements, even if he allocates his entire budget to food. Children are "converted" into adult equivalents when calculating poverty. Ghana Statistical Service (2000b) contains a more thorough discussion of the poverty lines.

For the rest there was little change and in some cases (for example, the rural and urban savannah and rural coastal regions) even an increase in extreme poverty.

Figure 5. Poverty in Ghana 1992-98 (%)

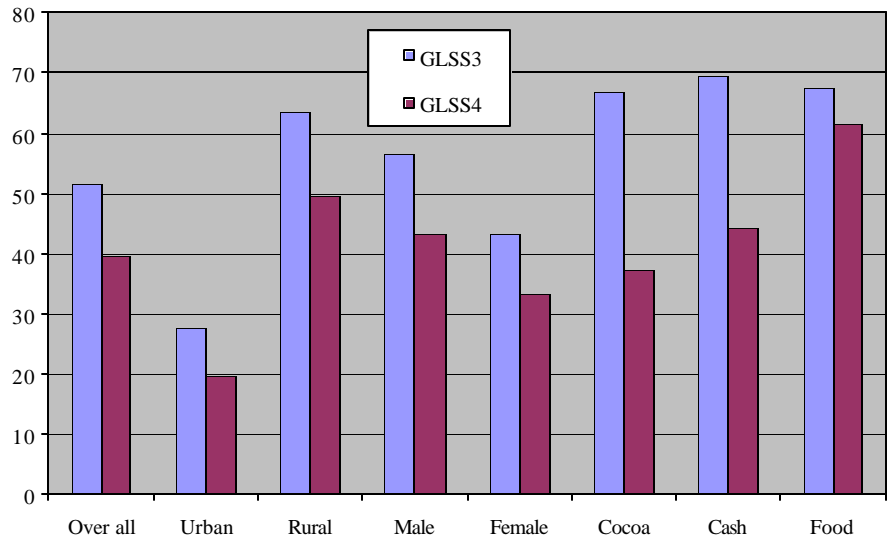


Figure 6. Extreme Poverty in Ghana 1992-98 (%)

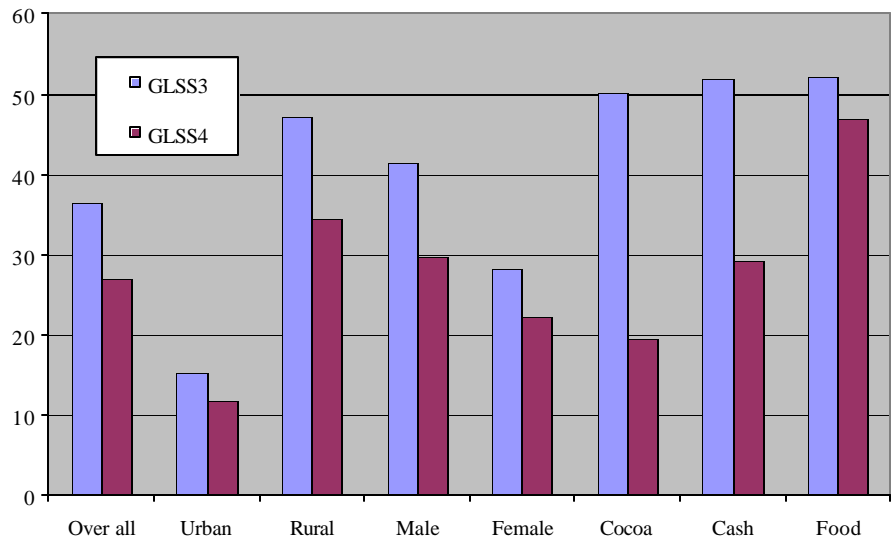


Figure 7. Poverty by Agro-Climatic Zone in Ghana 1992-98 (%)

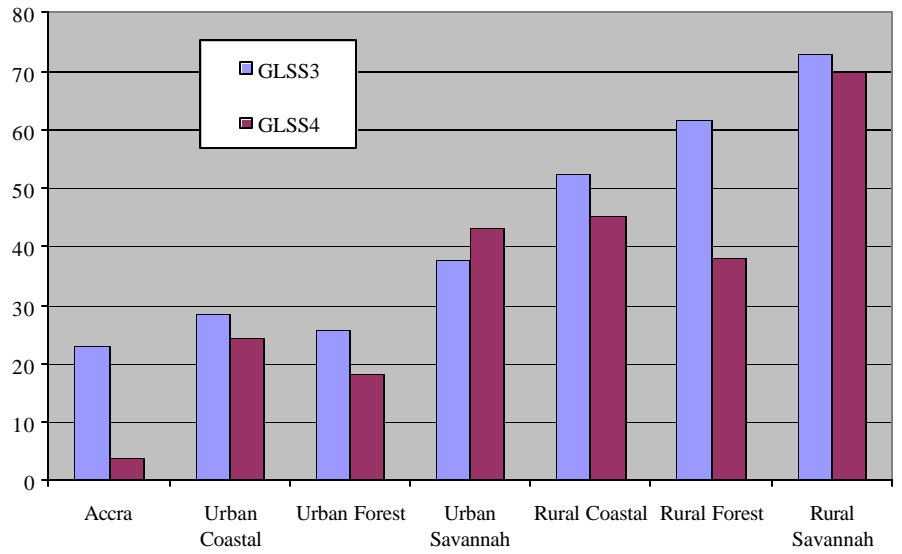
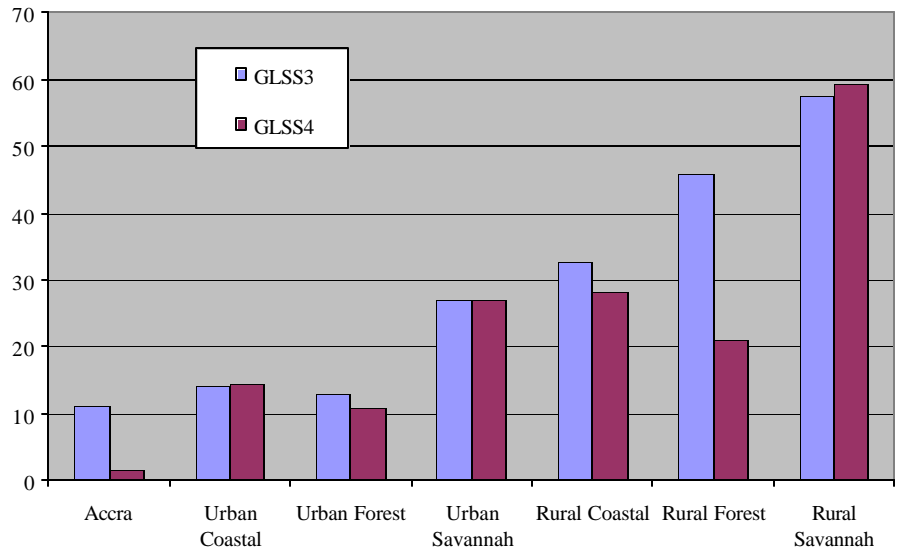


Figure 8. Extreme Poverty by Agro-Climatic Zone in Ghana 1992-98 (%)



Poverty can also be analyzed by the main crop types produced by agricultural households. There are three household crop groupings: food, cash, and cocoa.<sup>2</sup> The three types of households showed remarkable similar poverty levels in 1991/92, but there were large differences in the reductions in poverty between this and the 1998/99 survey. Cocoa-producing households experienced the largest decrease in poverty, of almost 30 percentage points to an incidence of poverty in 1998/99 of 37.3 percent. Poverty among cash crop producers fell by slightly more than 25 percentage points, to 44.1 percent. There was very little improvement in the incidence of poverty among food crop farmers: a reduction only of 6.1 percentage points, to 61.4 percent. The changes in extreme poverty were similar, with approximately the same starting points and the highest reduction in extreme poverty occurring among cocoa crop producers, then cash crop producers, and finally food crop producing households.

#### **REGIONAL DEVELOPMENTS IN POVERTY**

Of the 10 regions in Ghana, seven experienced a decrease in both poverty and extreme poverty between the two surveys. For the remaining three regions—the Upper East, Northern, and Central regions—both poverty and extreme poverty increased. The Upper East and Northern regions, together with the Upper West, are substantially poorer than the rest of Ghana. Close to 90 percent of the population of the Upper East region is poor, together with 84 percent of the Upper West and almost 70 percent of the Northern region. The Central region, where less than half of the population is poor, is the fourth poorest region.

The sampling methods used in the third and fourth rounds of the Ghana Living Standards Survey (GLSS 3 and GLSS 4) were based on the agro-climatic zones (GSS 2000a). When the surveys are used to analyze patterns not based on these zones it is important that the results be interpreted with care. Where the GLSS sampling is not directly compatible for this reason with this paper's analysis of poverty within a region, this incompatibility is indicated in the text.

#### **Upper West Region**

When the GLSS 3 was conducted in 1991/92, the Upper West region was by far the poorest region in Ghana, with almost 90 percent of the population surviving below the upper poverty line and three-quarters defined as extremely poor. The findings of GLSS 4 indicated a decline by 1998/99 in both poverty (4.5 percentage points) and extreme poverty (6 percentage points), leaving 84 percent of the population below the poverty line and 68 percent extremely poor (see Figure 9 and Figure 10).

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<sup>2</sup> Obviously, a household may produce more than one type of crop. The categorization here is made according to the main crop type.

Figure 9. Poverty in the Upper West Region 1992-98 (%)

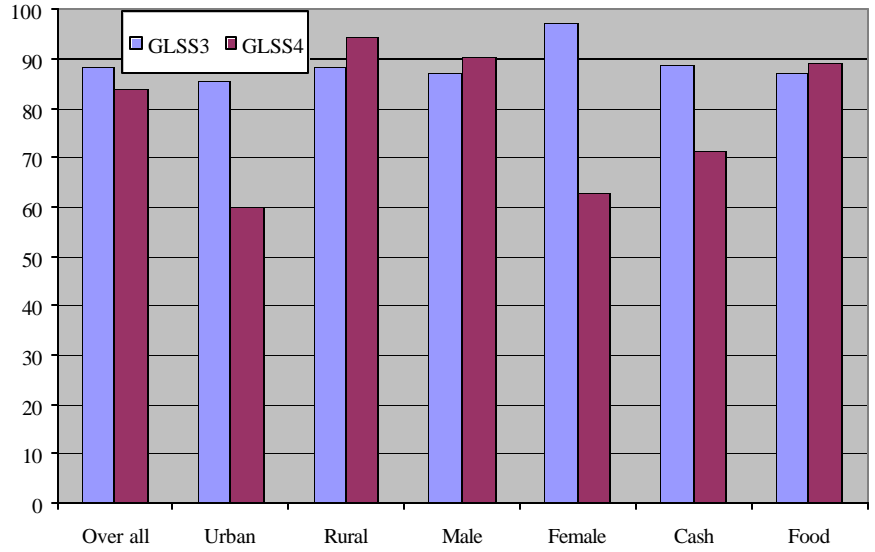
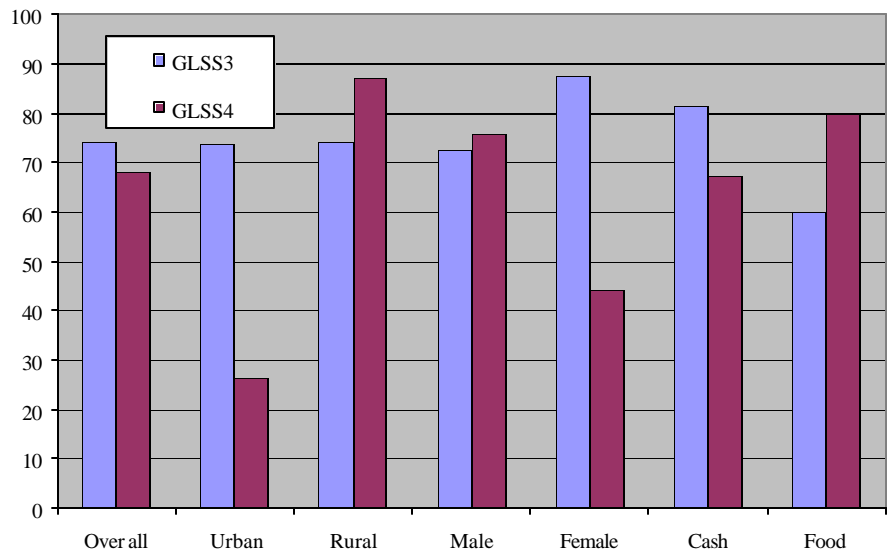


Figure 10. Extreme Poverty in the Upper West Region 1992-98 (%)



The overall trend for the Upper West thus was positive, but it was not universal across the region. There are significant differences between urban and rural households, for example. Among rural households, which accounted for 90 percent of all households in 1991/92 and 83 percent in 1998/99, the incidence of poverty and extreme poverty increased significantly. Almost 95 percent of rural households were poor in 1998/99, up from 89 percent in 1991/92. The spread of extreme poverty was even worse, increasing almost 13 percentage points from 74.3 to 87.1 percent.<sup>3</sup>

The breakdown by the gender of the household head is similar. For male-headed households, both poverty and extreme poverty increased by 3.1 percentage points, to the level that nine out of 10 people living in male-headed households were poor in 1998/99. The shortage of female-headed households in the survey means that meaningful conclusions cannot be drawn.<sup>4</sup>

The third subcategory is the main crop type produced. Due to the dry and warm climate of the northern savannah cocoa is not produced in any of the three northern regions. Among food crop farmers there was little change in the incidence of poverty, but extreme poverty rose by almost 20 percentage points.<sup>5</sup> Cash crop farmers, in contrast, experienced significant falls in both poverty and extreme poverty.<sup>5</sup>

While the overall picture for the Upper West region appears to be encouraging, the outcomes for the main groups for which reliable results can be obtained are less optimistic. All of the major groups—rural households, male-headed households, and food crop producers—experienced a rise in poverty between the two surveys. The correct picture of the Upper West region may be closer to that of the other two northern regions, which suffered significant reductions in standards of living during the 1990s.

### **Upper East Region**

The Upper East region experienced the largest absolute increase in both poverty and extreme poverty between the two surveys and is now the poorest region in Ghana. Poverty increased by 21 percentage points and extreme poverty by 26 percentage points. Almost 90 percent of the population of the region is now poor and almost 80 percent extremely poor. These developments in poverty and extreme poverty are shown in Figure 11 and Figure 12 .

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<sup>3</sup> The sample is too small to draw any meaningful conclusions about urban households. Even though the number of urban households surveyed doubled between the two surveys, there still were only 20 urban households in GLSS 4.

<sup>4</sup> In GLSS 3 there were only 14 female-headed households. This increased to 28 in GLSS 4, but these figures correspond only to 13 and 23 percent of the total number of households surveyed, respectively.

<sup>5</sup> Again, there is a problem with sample size. Only 15 cash crop households were included in GLSS 4, down from 38 in GLSS 3. Whether this decline is representative of a trend, and why households should shift away from cash crops if they thus can be associated with a decrease in poverty, are questions worth asking.

Figure 11. Poverty in the Upper East Region 1992-98 (%)

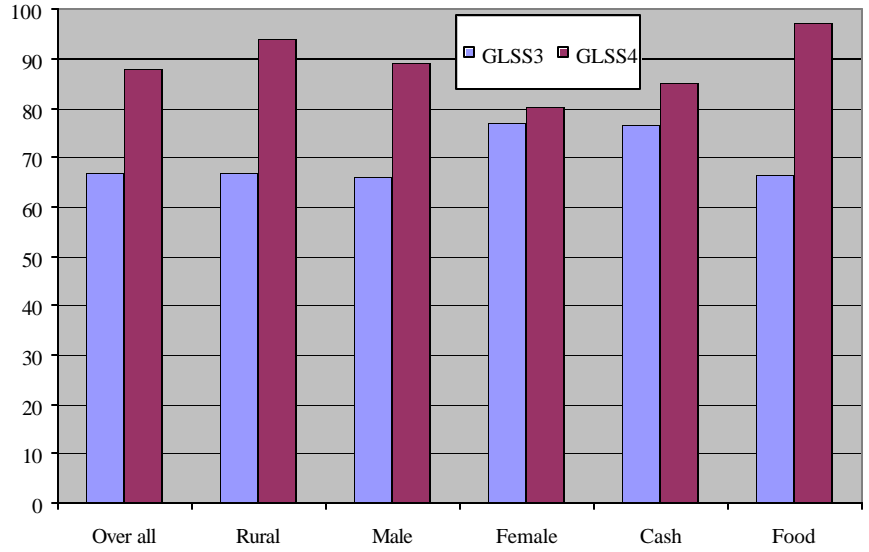
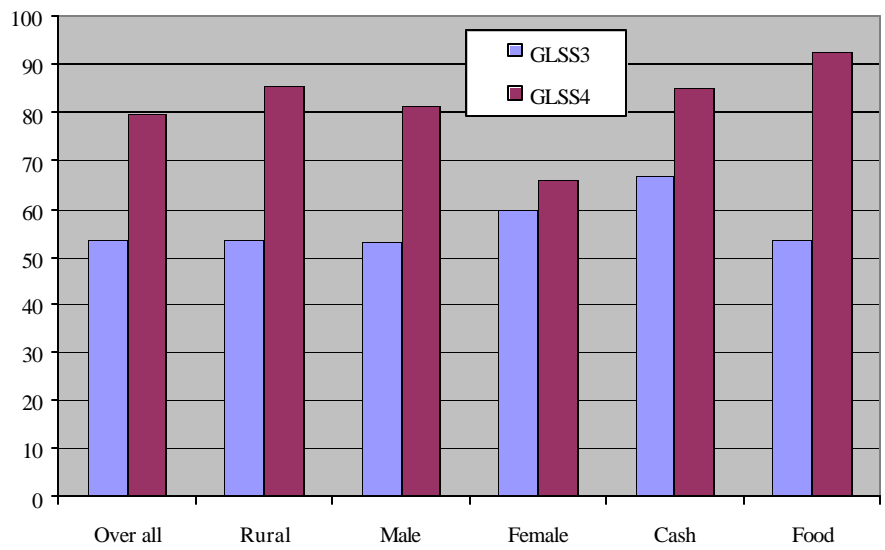


Figure 12. Extreme Poverty in the Upper East Region 1992-98 (%)





The small sample size of urban households means that it is not possible to determine how they performed compared to rural households.<sup>6</sup> The number of observations for female-headed households allows general conclusions to be drawn, but again they should be treated with caution. While in 1991/92 people living in female-headed households were more likely to be poor than those in male-headed households, the reverse was the case in 1998/99; the same is the case for extreme poverty. For GLSS 4 the incidence of poverty among male-headed households was 89.3 percent and for female-headed households was 80.5 percent; the incidences of extreme poverty were 81.5 and 65.9 percent, respectively.

A large majority of the agricultural households surveyed were food crop producers (GLSS 4 has information only on five cash crop producers (3.4 percent) and GLSS 3 on 32 (19.9 percent)). Food crop producers constitute more than half of all households surveyed in the Upper East. For people living in food crop producing households poverty increased to the point where almost all (97.3 percent) were classified in 1998/99 as being poor, up from about two-thirds in 1991/92. The absolute increase in extreme poverty was even greater, rising from 53.6 percent in 1991/92 to 92.7 percent in 1998/99. Not only has the number of poor people increased, but those that are poor have become even poorer.

While the Ghanaian economy generally has grown, the people of the two upper regions, and especially the food crop farmers, have been left behind and are actually worse off than at the beginning of the decade.

### **Northern Region**

The Northern region is one of the three regions that experienced an increase in poverty between the two surveys, and is now the third-poorest region. During the period 1991/92 to 1998/99 the incidence of poverty in the Northern region increased by 5.8 percentage points; it is now close to 70 percent. Extreme poverty also increased and is now close to 60 percent (see Figure 13 and Figure 14).

Sufficient observations were collected in the Northern regions in GLSS 3 and GLSS 4 to enable close study of the changing patterns of poverty. Overall, there was no change in poverty for the rural population, but poverty among the urban population increased by 3.7 percentage points. Extreme poverty for both the urban and the rural populations fell by about 1.5 percentage points, and now stands at about one-third and two-thirds of the population, respectively. The apparent inconsistency in these figures is due to the fact that the ratio of rural to urban households in the sample has increased.<sup>7</sup> It is unclear whether this is due to the sampling or if it reflects a true change in the locations of households.

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<sup>6</sup> There were no urban households surveyed in GLSS 3 and only 20 such households in GLSS 4.

<sup>7</sup> GLSS 3 surveyed 229 rural and 109 urban households, and GLSS 4 260 rural and 100 urban households.

Figure 13. Poverty in the Northern Region 1992–98 (%)

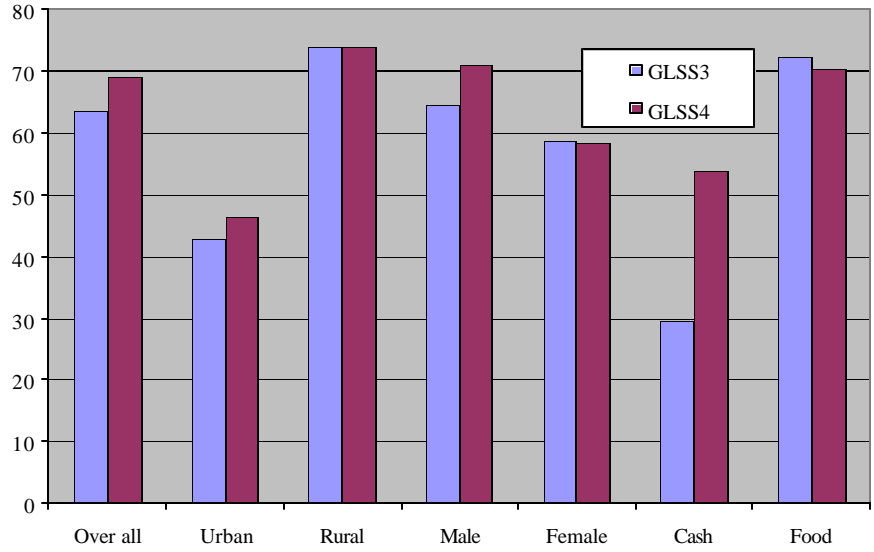


Figure 14. Extreme Poverty in the Northern Region 1992–98 (%)



There was little change in poverty for those in female-headed households, but a significant increase in the incidence of poverty for those in male-headed households. For extreme poverty the

difference is even sharper: there was a significant decline in extreme poverty among female-headed households and a significant increase among male-headed households. (The ratio of male- to female-headed households changed little between the two surveys, male-headed households accounting for 81 percent of the GLSS 3 sample and 83 percent of the GLSS 4 sample.)

As in the Upper East Region, the surveys permit a meaningful examination only of food crop producers, which experienced slight reductions in both poverty and extreme poverty. Overall, about 70 percent of these farmers could be classified poor and 60 percent extremely poor—figures that are close to the regional averages. The food farmers of the Northern region, however, are the only food farmers of the three savannah regions that have seen an improvement in their standard of living.

### **Volta Region**

The Volta region experienced substantial declines in both poverty and extreme poverty during the 1990s, with the proportion of the population in each group falling about 20 percentage points (see 15 and Figure 16. Extreme poverty more than halved, to stand at just more than 20 percent.

Analysis of the survey results reveals significant differences in the experiences of urban and rural households. While rural households saw a marked improvement in their living standards the situation for urban households deteriorated. Among rural households, the incidence of poverty fell 25 percentage points between 1991/92 and 1998/99, and the incidence of extreme poverty by almost 30 percentage points. Urban households, in contrast, saw increases of 7.8 and 13.8 percentage points for poverty and extreme poverty, respectively. The result of these changes is that the incidence of poverty among both urban and rural households became roughly equivalent, at about 38 percent. In terms of extreme poverty, rural households fared better than urban ones, the incidence of extreme poverty among each becoming 18.6 and 27.5 percent respectively.

The improvement in the plight of the poorest of the poor in Volta thus is mainly due to the improvement in rural areas.<sup>8</sup> The large differences in the changes experienced by urban and rural households cannot be found when comparing households according to the gender of the household head, for example. The figures produced by GLSS 3 and GLSS 4 show little difference in the incidence of poverty between male- and female-headed households. If anything, female-headed households tend to do slightly better than male-headed ones with respect to poverty, with the reverse true for extreme poverty.

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<sup>8</sup> The number of urban households sampled for GLSS 4 is substantially higher than of the number sampled by GLSS 3, for which only 70 households were interviewed. This means that the GLSS 3 figures are subject to a significant uncertainty. The GLSS 4 data should, however, be reasonably reliable.

Figure 15. Poverty in the Volta Region 1992-98 (%)

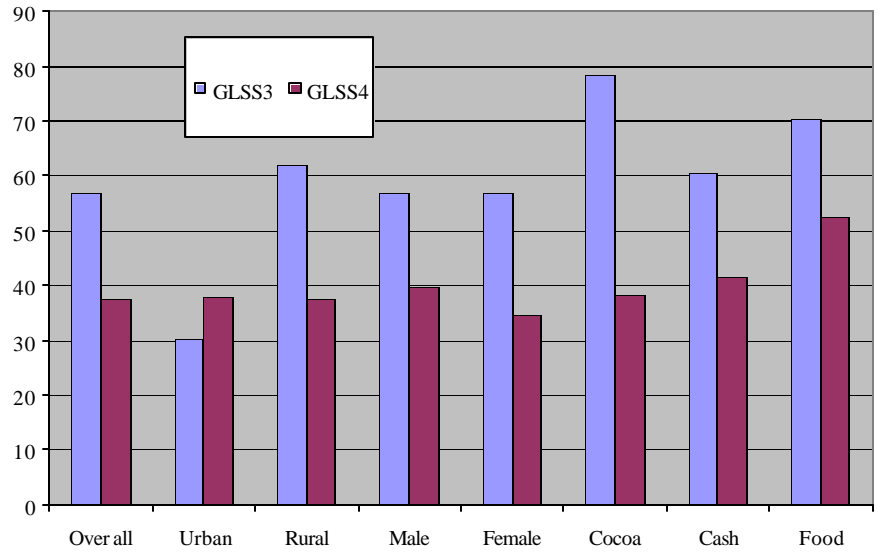


Figure 16. Extreme Poverty in the Volta Region 1992-98 (%)

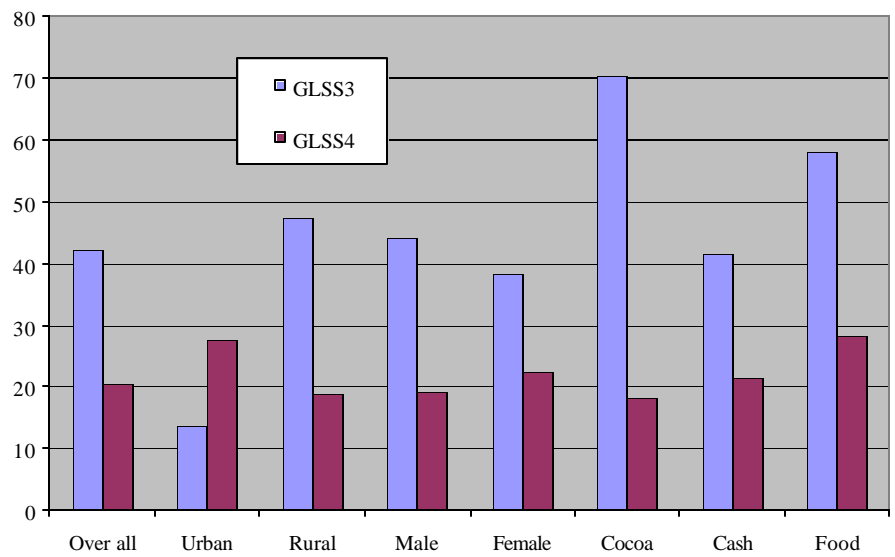


Figure 17. Poverty by Agro-Climatic Zone in the Volta Region 1992-98 (%)

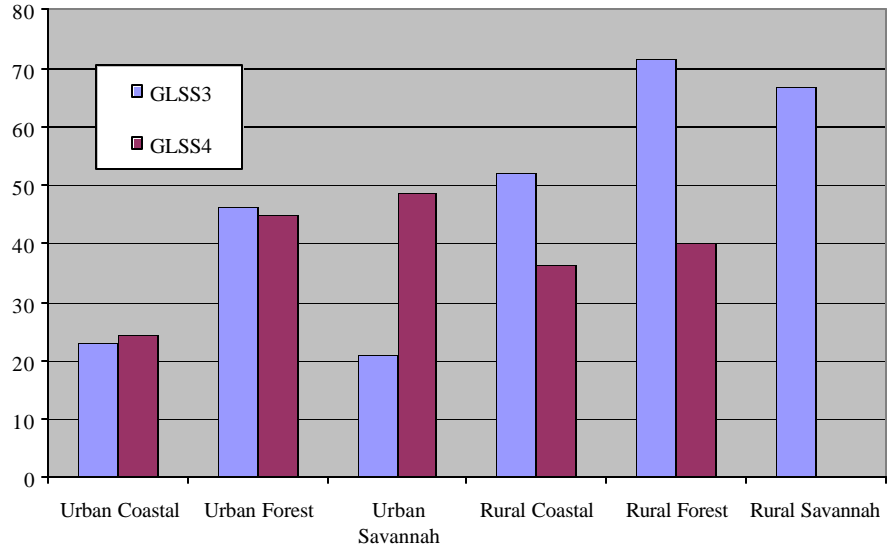
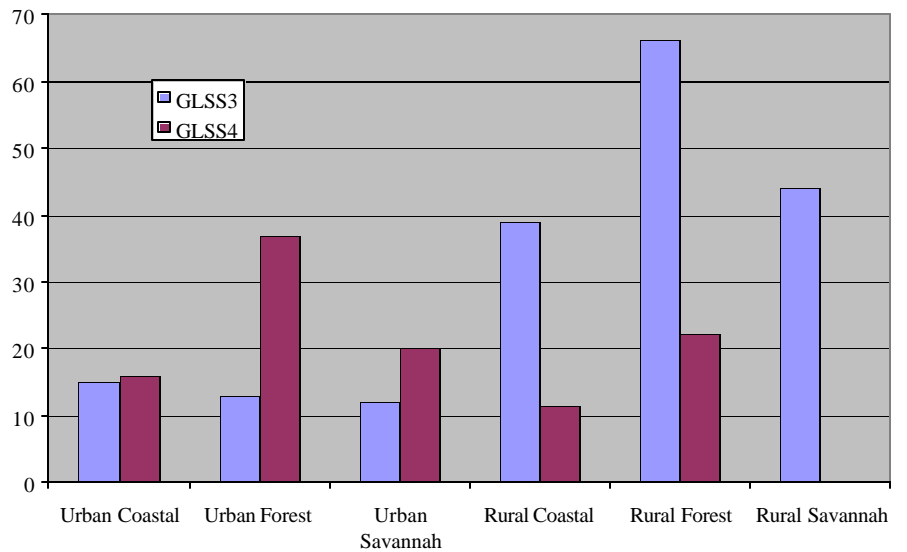


Figure 18. Extreme Poverty by Agro-Climatic Zone in the Volta Region 1992-98 (%)



The Volta region is one of only two regions in Ghana (the other being the Eastern region) that spans the three agro-climatic zones: the forest, savannah, and coast. The GLSS data do not,

however, permit reliable analysis by agro-climatic zone within the Volta region, as the distribution of households sampled in the three zones changed dramatically between the two surveys. The available data are presented graphically in Figure 17 and Figure 18 but little significance can be attached to them.

In contrast to those of the three northern regions, the food crop producing households of the Volta region saw a marked decrease in poverty between 1991/92 and 1998/99. Poverty fell by 18 percentage points between the two surveys and extreme poverty by 30 percentage points, with the result that by 1998/99 just more than half the population living in a food-producing household was poor and less than 30 percent extremely poor. GLSS 3 provides too few observations on cocoa producing households to provide reliable results, but the results for cash crop producing households are more reliable: as with most other regions, there is a lower incidence of poverty and extreme poverty among cash and crop producing households than among food producing households. For cocoa producers the figures are 38.5 poor and 18.3 percent extremely poor, and for cash crop producers they are 41.5 percent and 21.4 percent respectively.

### Brong Ahafo Region

The Brong Ahafo region, together with the Western region, showed the greatest improvement during the 1990s. Overall poverty in the region fell almost 30 percentage points and extreme poverty 27 percentage points. These large reductions moved the region from eighth to fourth in Ghana in terms of the number of nonpoor people living in Brong Ahafo: poverty now stands at 35.8 percent and extreme poverty at 18.8 percent. The only region that has experienced larger absolute decreases in poverty and extreme poverty is the Western region (see Figure 19 and Figure 20).

Figure 19. Poverty in the Brong Ahafo Region 1992-98 (%)

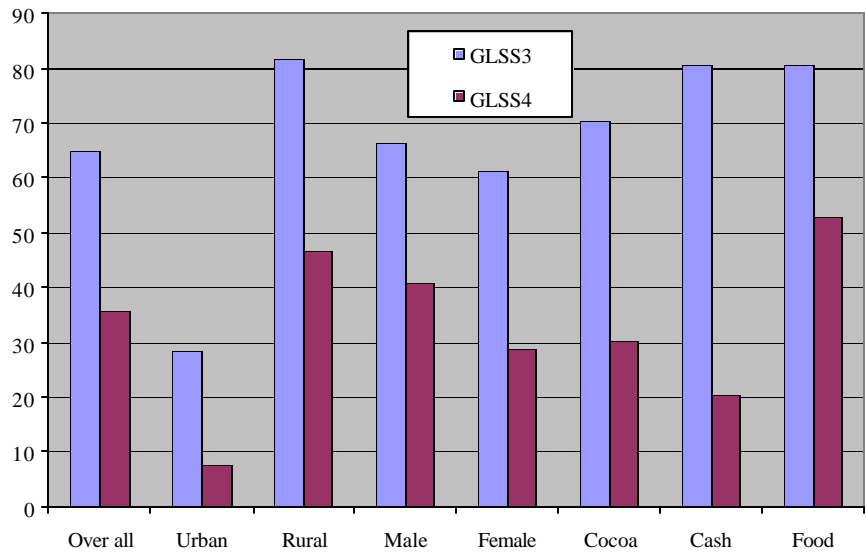


Figure 20. Extreme Poverty in the Brong Ahafo Region 1992-98 (%)

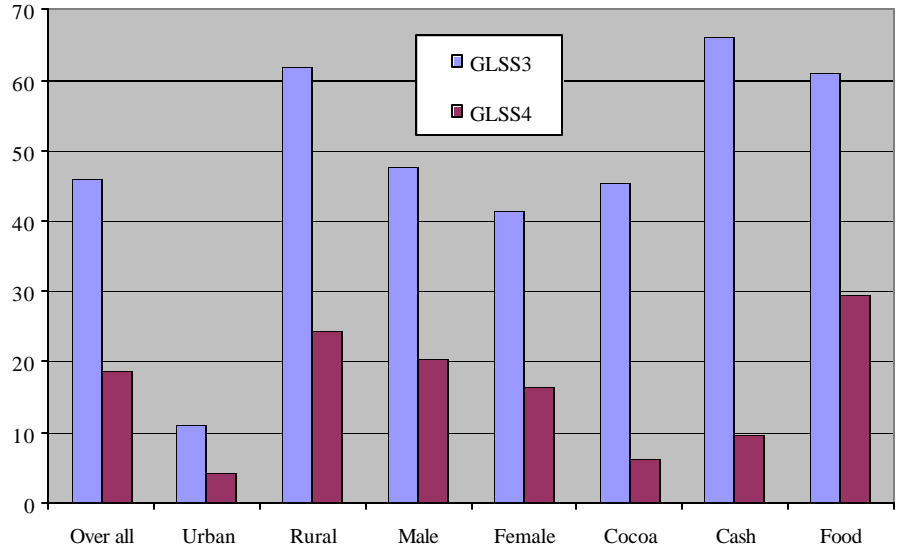


Figure 21. Poverty by Agro-Climatic Zone in the Brong Ahafo Region 1992-98 (%)

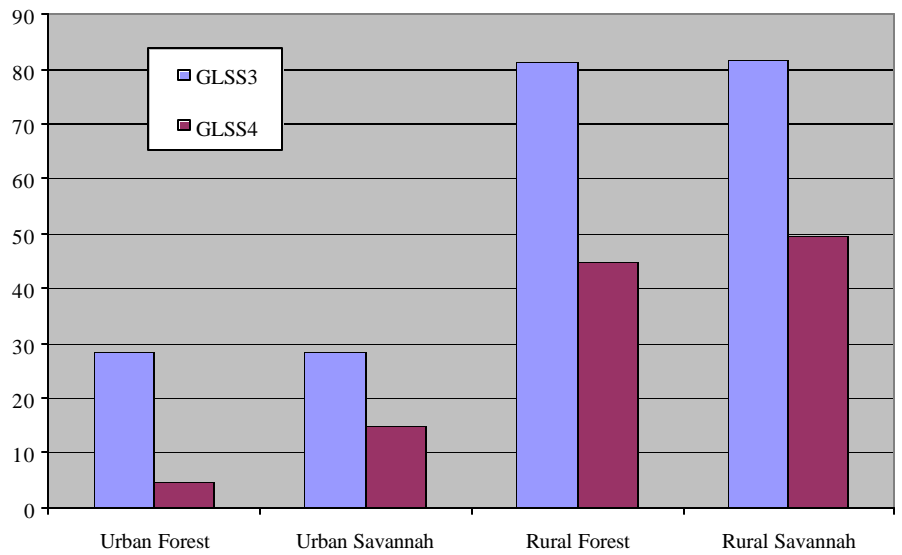
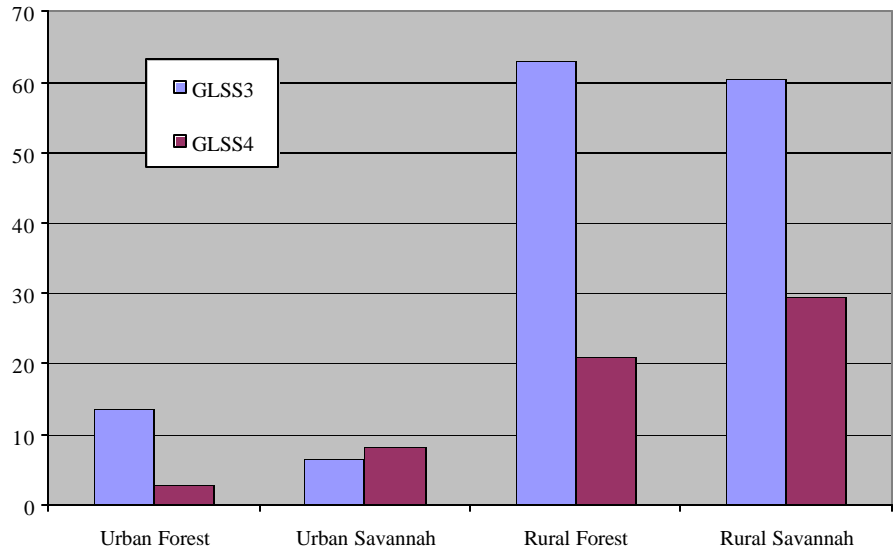


Figure 22. Extreme Poverty by Agro-Climatic Zone in the Brong Ahafo Region 1992–98 (%)



Both urban and rural households have experienced significant decreases in poverty and extreme poverty. There are, however, still large differences between the two groups. Among the population living in rural households the incidence of poverty fell from 81.6 percent in 1991/92 to 46.5 percent in 1998/99, and extreme poverty fell from 61.8 to 24.3 percent. During the same period the urban population saw a decrease in poverty from 28.6 to 7.6 percent and in extreme poverty from 11.0 to 4.3 percent. The large reduction in extreme poverty for rural households suggests that the improvement in living standards has affected all of the poor, not just those close to the upper poverty line.

People living in female-headed households experienced a greater reduction in poverty than those in male-headed households. As the incidence of poverty among female-headed households in 1991/92 was less than that among male-headed ones, the gap between the two has widened. The picture is different in the case of extreme poverty, where the two groups have converged somewhat: the incidence of extreme poverty among male-headed households declined from 47.6 to 20.5 percent, while that among female-headed households fell from 41.5 to 16.3 percent.<sup>9</sup>

In terms of agro-climatic zone, there was little difference between the forest and the savannah zones either in the levels or the changes in poverty (see Figure 21 and Figure 22). Poverty in both the rural forest and the rural savannah zones fell from around 80 percent to less than 50 percent. Poverty among urban households in both zones in 1991/92 was around 28 percent; by 1989/99 poverty in the urban forest had declined to less than 5 percent and among urban savannah households to 14.9 percent.

<sup>9</sup> The percentage of female-headed households surveyed increased between the two surveys from 30.2 to 46.7 percent. Whether this is representative of a real development or due to sampling problems is unclear.



The Brong Ahafo region followed the national pattern for changes in poverty among agricultural households. Cash crop producers showed the largest reduction in poverty, followed by cocoa producers and food producers the largest. For both food and cash crop producers the incidence of poverty in 1991/92 was greater than 80 percent; for cocoa producers it was about 70 percent. By 1998/99 poverty had fallen to 53.0 percent for food producers, 20.5 percent for cash crop producers, and 30.1 percent for cocoa producers.

### Ashanti Region

The Ashanti region returned a reasonable reduction in poverty, albeit not as spectacular as the achievements of the Western, Brong Ahafo, and Greater Accra regions. Between GLSS 3 and GLSS 4 poverty overall declined from 41.2 to 27.7 percent, and extreme poverty from 25.5 to 16.4 percent (see Figure 23 and Figure 24). This decline was due mainly to a reduction in poverty and extreme poverty among the rural population, which accounted for about two-thirds of the households sampled in the two surveys. The incidence of poverty for the rural population fell 17.1 percentage points to 35.9 percent, but for the urban population fell just 4.3 points to 14.7 percent. There was a slight increase in extreme poverty among urban households, to 7.8 percent. For rural households, in contrast, extreme poverty fell 13.1 percentage points to 21.8 percent. These findings suggest that there may be a core of poverty in urban areas that was not touched by the general improvement in Ghana during the 1990s.

Figure 23. Poverty in the Ashanti Region 1992–98 (%)

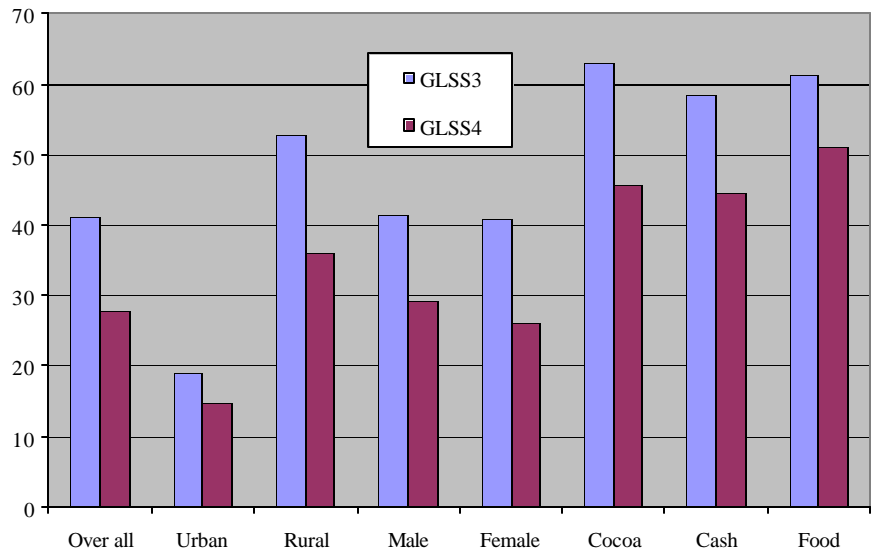
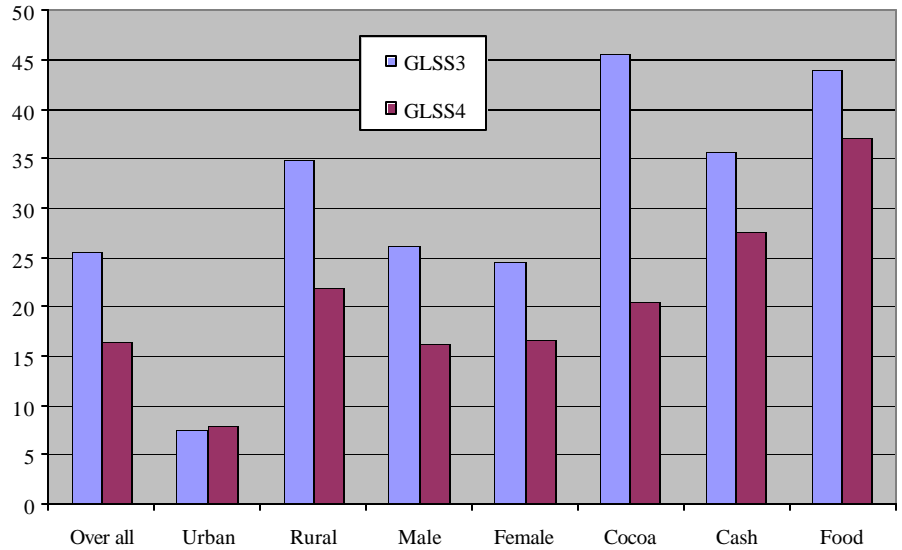


Figure 24. Extreme Poverty in the Ashanti Region 1992–98 (%)



The data show virtually no difference between female- and male-headed households, and the Ashanti region consists exclusively of forest zone. For a more detailed breakdown of the poverty figures it is therefore most useful to look at sectoral differences as defined by the crop choice of agricultural households. Cash crop and cocoa producing households each constitute about one-quarter of the agricultural population, according to the surveys, with food crop producing households accounting for the remaining 50 percent. The three groups were at about the same level of poverty, around 60 percent, in 1991/92, but the cash crop and cocoa producers advanced farther than the food crop producers by 1998/99. The incidence of poverty as reported by GLSS 4 for cash crop and cocoa producers was around 45 percent, while slightly more than half of the population in food crop producing households was poor.

The picture is more mixed when looking at extreme poverty. Extreme poverty in 1991/92 was greatest among cocoa producers, at 45.6 percent; among food crop producers it was 44.1 percent, and among cash crop producer households it was 35.7 percent. By 1998/99 extreme poverty among food crop producers and cash crop producers had fallen to 37.1 and 27.6 percent respectively; among cocoa producers, however, it had more than halved to 20.4 percent.

### Western Region

The Western region is the region that has seen the largest improvement in living standards (see Figure 25 and Figure 26). In 1991/92 close to 60 percent of the region's population lived in poverty, but by 1998/99 that figure had fallen to 27.3 percent—an improvement of more than 30 percentage points. For extreme poverty the picture was almost identical, with a reduction of almost 30 percentage points to 13.6 percent. This improvement saw the Western region move from having the sixth lowest number of poor to second of Ghana's regions.

This improvement was demonstrated among both the urban and the rural populations. Poverty affected more than two-thirds of the population according to GLSS 3, but by the time of GLSS 4 had declined to 31.9 percent. Urban poverty in 1991/92 was 36.5 percent, but by 1998/99 fell to 9.6 percent. Extreme poverty among the rural population fell from 48.9 to 16.2 percent and among the urban population from 21.2 to 3.8 percent.

People in male-headed households fared markedly better than those in female-headed households. The incidence of poverty for male-headed households fell from 66.3 to 25.5 percent, as compared to a decline from 47.5 to 30.8 percent for female-headed households. Extreme poverty among male-headed households declined from 46.1 to 12.8 percent and among female-headed households from 34.5 to 15.3 percent. From a position in 1991/92 in which they trailed female-headed households, the population living in male-headed households had by the end of the period surpassed them.

Figure 25. Poverty in the Western Region 1992-98 (%)

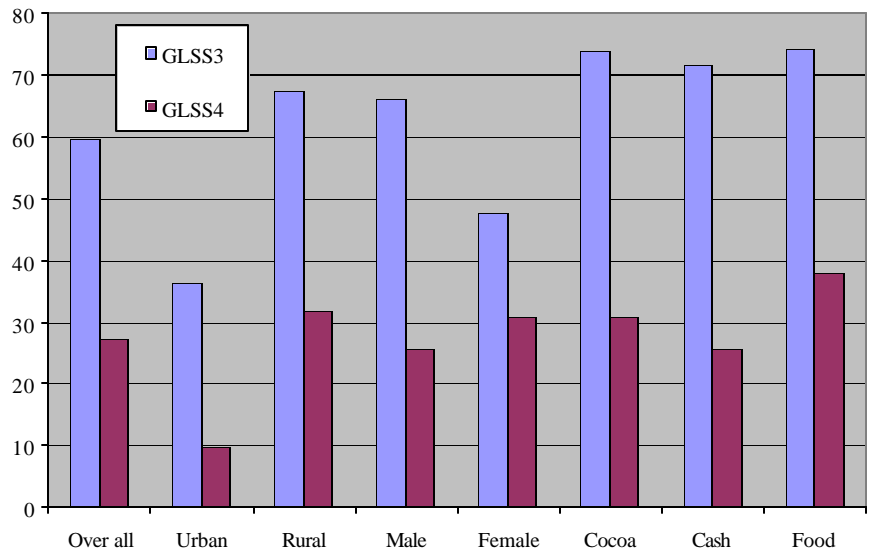


Figure 26. Extreme Poverty in the Western Region 1992-98 (%)

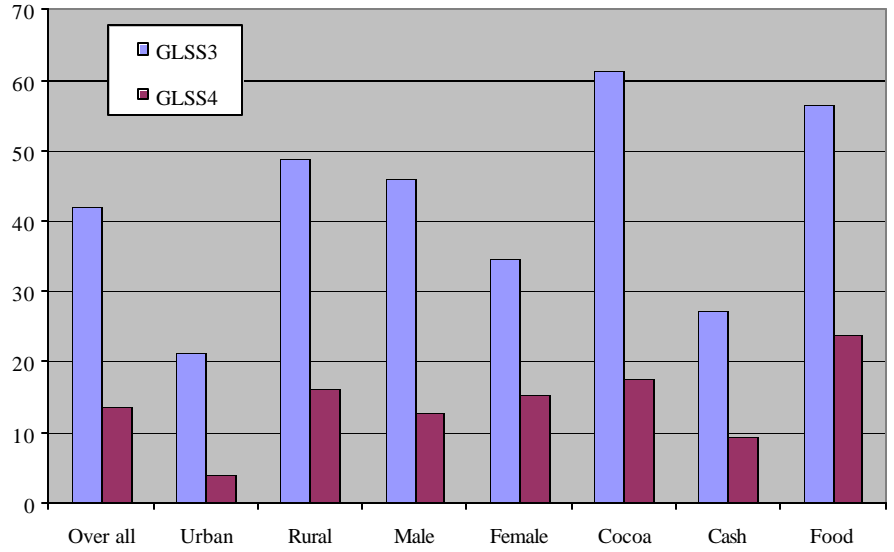


Figure 27. Poverty by Agro-Climatic Zone in the Western Region 1992-98 (%)

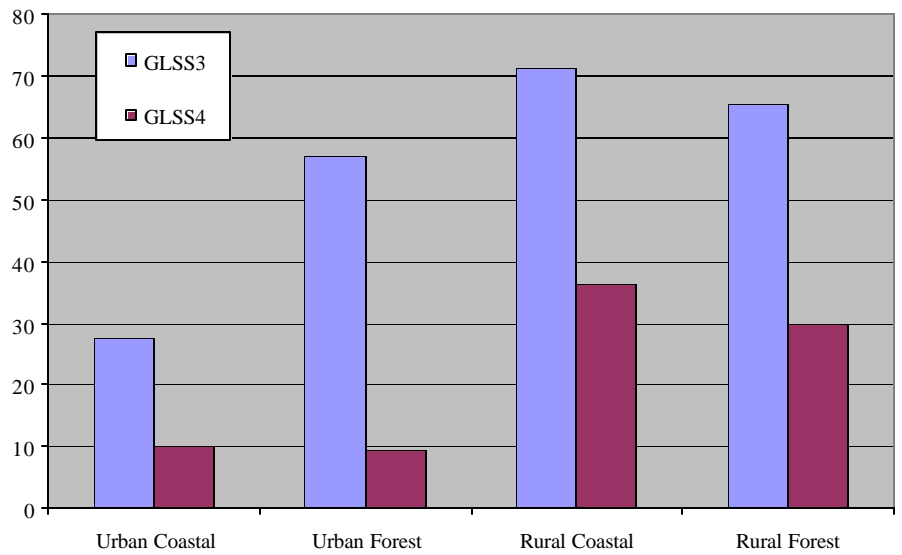
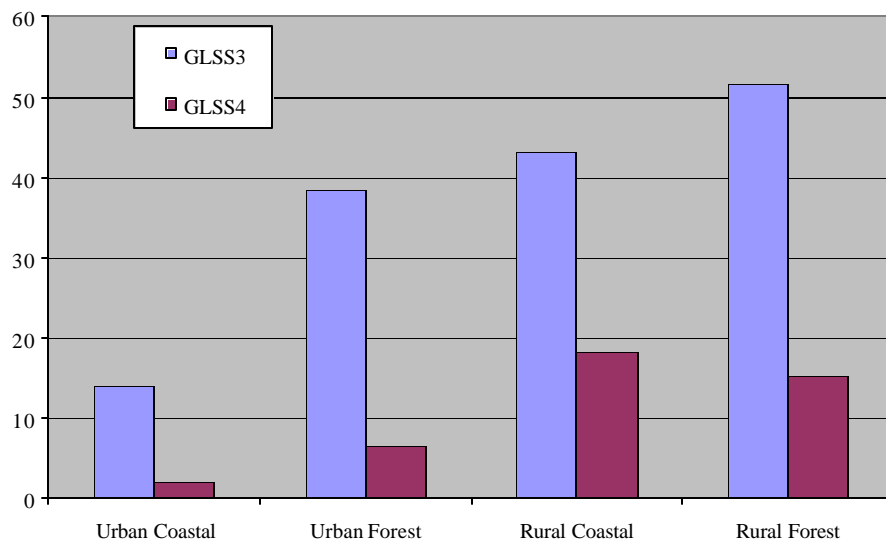


Figure 28. Extreme Poverty by Agro-Climatic Zone in the Western Region 1992–98 (%)



The Western region encompasses both coastal and forest zones, for which the incidences of poverty and extreme poverty are shown in Figure 27 and Figure 28. Poverty within the urban areas of both forest and coastal zones was by 1998/99 recorded at just less than 10 percent, in stark contrast to the 60 percent incidence of poverty in the forest zone that was recorded by GLSS 3.<sup>10</sup> The urban coastal population also experienced a significant reduction in poverty, to less than 30 percent, and the almost total reduction of extreme poverty to 2 percent.

The reduction in poverty among rural households in the coastal and the forest areas was around 35 percentage points, to poverty levels of 36.5 percent and 30.0 percent for the coastal and forest zones, respectively. In terms of extreme poverty, the rural forest population experienced a much larger reduction than the rural coastal one, with the result that in 1998/99 the incidence of extreme poverty was lower in the rural forest than in the rural coastal areas.

In contrast to most other regions, food producing households are not in the majority in the Western region. Only 21 percent of farming households identify food crops as their main crop type, with slightly fewer producing cash crops. The biggest group in the Western region is that of cocoa producers, which comprise 60 percent of all agricultural producers. Poverty among cocoa producers in 1991/92 was 74.1 percent, but by 1998/99 this figure had fallen to 30.7 percent. Food crop farmers also fared well, and generally better in the Western region than in other regions: the incidence of poverty fell from 74.3 to 38.1 percent during the period. The people living in cash crop producing households, however, saw the greatest improvement: in this subsector the incidence of poverty fell from 71.6 to 25.7 percent.

<sup>10</sup> It should be noted that the sample is not very large, and that the result for the urban forest should be interpreted with caution.

Extreme poverty among food farmers halved between the two surveys, from 56.6 to 23.7 percent. The population living in cocoa and cash crop producing households fared even better, with the incidence of extreme poverty among both groups falling to a third or less of its 1991/92 level by 1998/99. Extreme poverty among cocoa producers fell from 61.2 to 17.7 percent, and among cash crop households from 27.1 to 9.2 percent.

### Central Region

The Central region is one of the three regions that experienced increases in both poverty and extreme poverty during the 1990s. Poverty increased from 44.3 percent as reported by GLSS 3 to 48.4 percent under GLSS 4, and extreme poverty from 24.1 to 31.5 percent (see Figure 29 and Figure 30). Between the two surveys the Central region went from being second in terms of living standards to seventh nationwide.

Both the rural and urban populations experienced an increase in poverty, with the urban population faring the worse of the two. Among rural households the incidence of poverty rose from 47.4 to 50.8 percent, and among urban households it rose from 36.0 to 42.7 percent. The increases in extreme poverty were even greater: extreme poverty increased by 9.7 percentage points among urban households and by 6.8 percentage points among rural households.

Figure 29. Poverty in the Central Region 1992-98 (%)

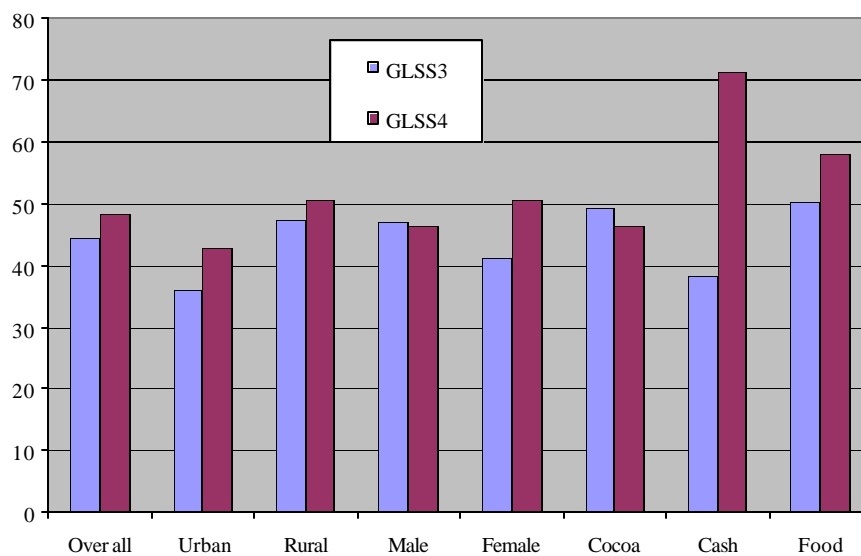


Figure 30. Extreme Poverty in the Central Region 1992-98 (%)

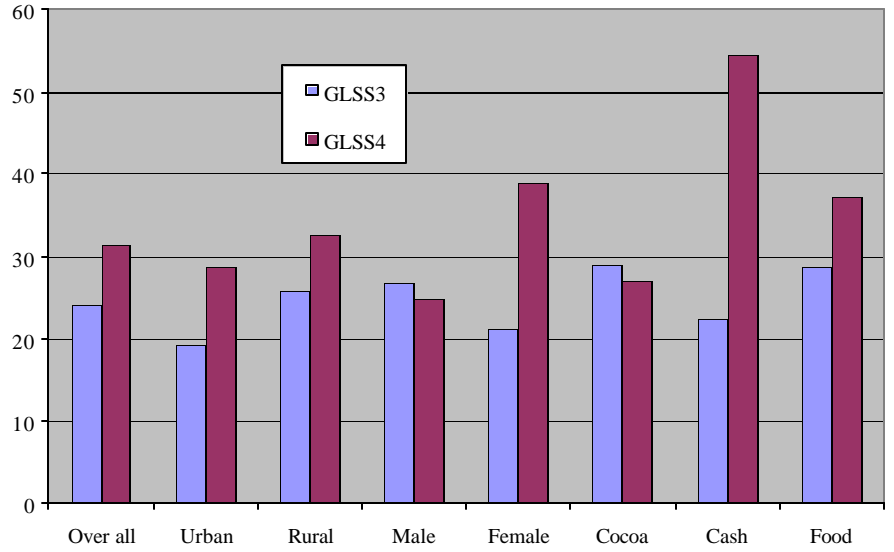


Figure 31. Poverty by Agro-Climatic Zone in the Central Region 1992-98 (%)

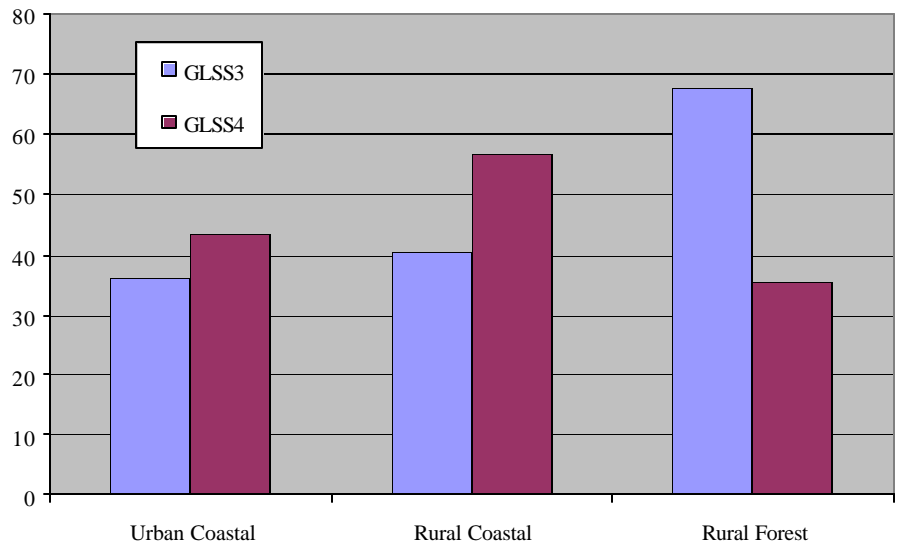
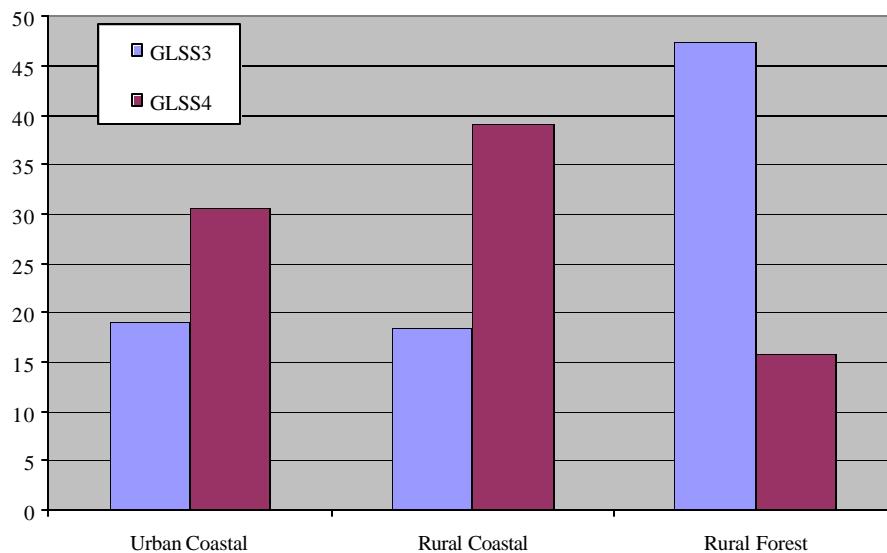


Figure 32. Extreme Poverty by Agro-Climatic Zone in the Central Region 1992–98 (%)



The Central region is the only region for which the surveys report a higher number of female-headed households than male-headed households. The population in male-headed households experienced a slight improvement in poverty, but those in female-headed households had an increase in poverty of close to 10 percentage points. The incidence of poverty for male- and female-headed households was by 1998/99 46.3 and 50.7 percent, respectively. For extreme poverty the picture is even more grim: among female-headed households, extreme poverty increased by 17.5 percentage points, and among male-headed households there was a decrease of about 2 percentage points. The 1998/99 survey indicated extreme poverty levels of 24.7 and 38.8 percent for male and female-headed households, respectively.

The Central region includes both forest and coastal zones (see Figure 31 and Figure 32). As in the Western region the rural forest areas of the Central region have seen large improvements: from 1991/92 to 1998/99 poverty fell from 67.5 to 35.4 percent among the rural forest population. The reduction in extreme poverty was of a similar magnitude, falling from 47.4 to 15.8 percent. (There was no information on urban forest areas in GLSS 3.)

With respect to its coastal areas the Central region saw a very different development from that of the Western region, with both poverty and extreme poverty increasing significantly during the 1990s. This was especially the case for the rural coastal population, among which poverty rose from 40.3 to 56.8 percent and extreme poverty from 18.4 to 39.2 percent. The urban coastal population saw smaller increases: urban poverty increased from 36.0 to 43.6 percent and extreme poverty from 19.1 to 30.6 percent.

Overall, the increase in poverty that the Central region experienced can be construed to be a result of adverse development in the coastal areas, in which were situated around 80 percent of the households sampled for the two surveys.



The GLSS 3 data provide too little information on cocoa and cash crop producers to permit meaningful analysis of the changes that may have occurred between 1991/92 and 1998/99. The GLSS 4 data, however provide a valuable insight into the conditions existing among these groups in 1998/99. Data on food crop farmers was adequate in both surveys. Poverty among this group increased from 50.3 to 58.1 percent over the period, and extreme poverty increased by 8.7 percentage points to a level of 37 percent. By 1998/99, the incidence of poverty among cash crop farmers was 71.4 percent and that of extreme poverty 54.5 percent. GLSS 4 reported cocoa producers as having the lowest incidence of poverty among the agricultural population, with poverty at 46.5 percent and extreme poverty at 27.1 percent.<sup>11</sup>

### **Eastern Region**

The Eastern region experienced a small reduction in poverty between 1991/92 and 1998/99: poverty fell from 48.0 to 43.7 percent and extreme poverty from 34.8 to 30.4 percent (see Figure 33 and Figure 34). Eastern is the only one of the 10 regions of Ghana for which fewer households were interviewed for GLSS 4 than for GLSS 3, but whether or not this reflects a real change in the population size of the region can only be established by using the census.

The experience of urban households is a mirror image of that of rural households. Among urban households poverty increased by 12 percentage points; among rural households it fell by the same amount. Poverty, at 35.3 percent, nonetheless remained less widespread among the urban population in 1998/99 than among the rural population (46.0 percent). It is worth noting that the ratio of urban to rural households surveyed decreased from GLSS 3 to GLSS 4; 27.3 percent of the households surveyed in GLSS 3 were urban, compared with 21.9 percent in GLSS 4. Absent this change, the overall experience reported for the Eastern region may have been an increase in poverty.

Male- and female-headed households showed similar levels of poverty and extreme poverty in 1998/99, at around 43 percent and 30 percent respectively. Their starting points in 1991/92 were different, however: among female-headed households, poverty and extreme poverty increased to 1998/99 by 4.5 and 3.1 percentage points respectively; among male-headed households poverty fell by 10.9 percentage points and extreme poverty by 10.0 percentage points.

The Volta region and the Eastern region are the only regions that span all three agro-climatic zones. Due to the relatively low number of households surveyed in the Eastern region, the results for the urban forest and urban savannah should, however, be interpreted with caution. As can be seen from Figure 35 and 36, all three urban zones experienced increases in poverty and, with the exception of the urban forest zone, extreme poverty. Among the rural zones, the coastal and savannah zones saw large decreases in poverty and the rural forest a slight increase. With the exception of the savannah zone, all of the rural zones have poverty levels that are much worse than those of the urban zones.

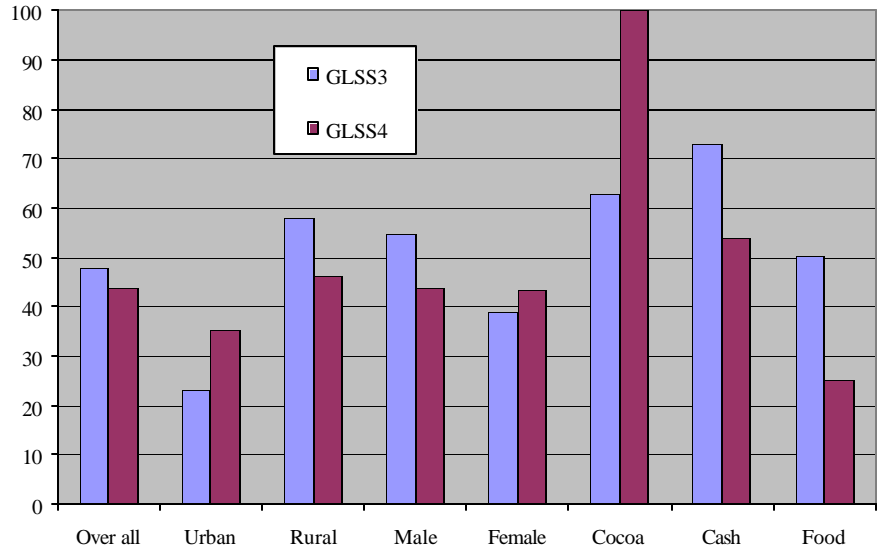
Broken down by crop type produced, the sampling of households changed significantly from GLSS 3 to GLSS 4. The number of households producing agricultural goods decreased from 288 to 138 between the two surveys, despite an increase in the number of rural households

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<sup>11</sup> During consultations with local NGOs and government officials it was suggested that poor rainfall in 1998/99 might be partly to blame for these adverse developments. Another possibility is worse conditions for fishing, but unfortunately there is little information on fishing in either GLSS 3 or GLSS 4.

surveyed. The number of cocoa producing households fell from 67 to just three, making meaningful analysis of the poverty change for this group impossible. Both food and cash crop producers experienced decreases in poverty: among cash crop producing households poverty fell from 73.0 to 54.0 percent,<sup>12</sup> and among food crop producers it fell from 50.3 to 25.3 percent. The incidence of extreme poverty among both groups also fell.

Figure 33. Poverty in the Eastern Region 1992-98 (%)



<sup>12</sup> Note that the number of households in this category also decreased, from 65 to 35, making comparison difficult.

Figure 34. Extreme Poverty in the Eastern Region 1992-98 (%)

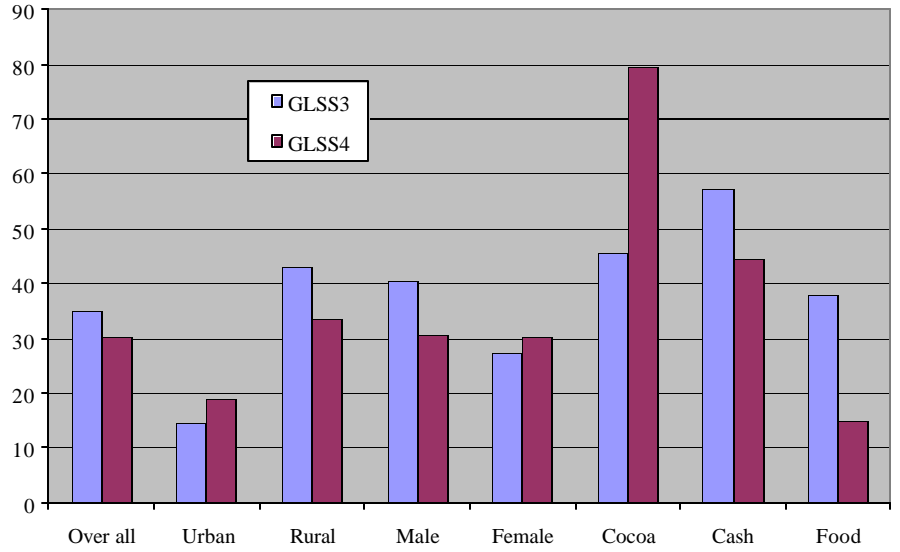


Figure 35. Poverty by Agro-Climatic Zone in the Eastern Region 1992-98 (%)

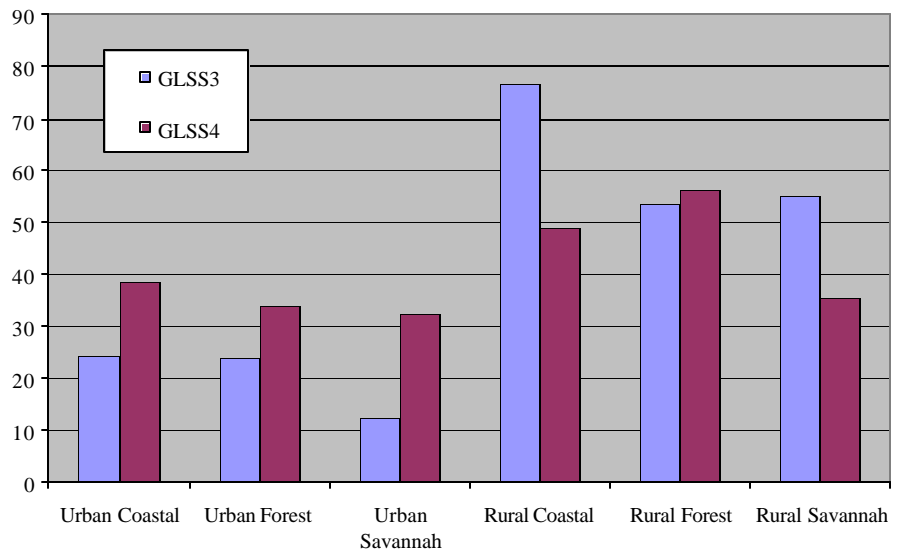
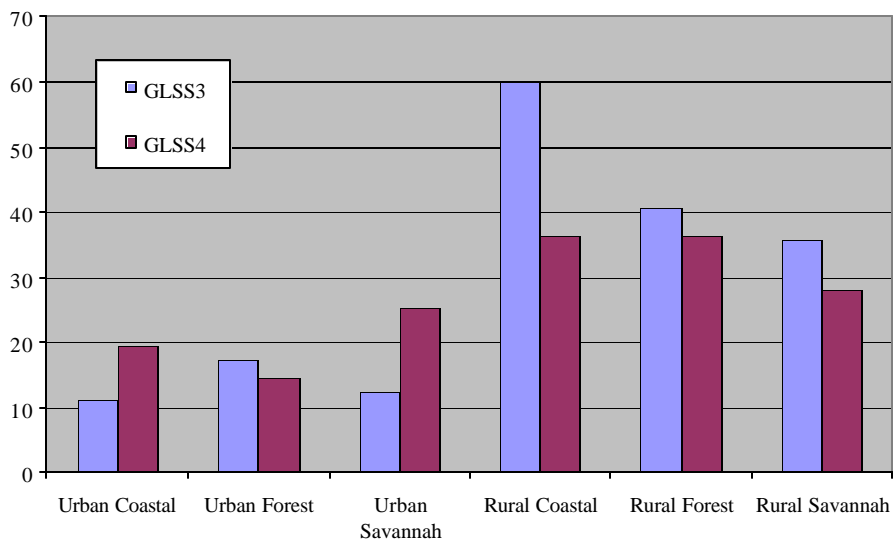


Figure 36. Extreme Poverty by Agro-Climatic Zone in the Eastern Region 1992–98 (%)



### Greater Accra Region

Among the 10 regions, and for both surveys, it was the Greater Accra region that had the lowest incidence of poverty. Poverty was at 25.8 percent in 1991/92 and just 5.2 percent in 1998/99, and extreme poverty fell from 13.4 to 2.4 percent. The Western region, which had the second lowest incidence of poverty, in 1998/99 had about five times the proportion of poor that the Greater Accra region had. The patterns of poverty and extreme poverty for the Greater Accra region are depicted in Figure 37 and 38.

In addition to the city of Accra, the region also encompasses rural areas: about 14 percent of the households sampled were rural households. The incidence of poverty fell during the 1990s for both urban and rural households. The degree of change was greater in rural areas than in the urban areas, but at 17.8 percent in 1998/99 remained substantially higher than in urban parts (4.2 percent).

Poverty among both female- and male-headed households also fell from 1991/92 to 1998/99, but the reduction benefited the population in male-headed households more than it did those in female-headed households. By GLSS 4 the incidence of poverty was higher for female-headed households than for male-headed households—the reverse of the situation reported by GLSS 3. The same is the case for extreme poverty.

Figure 37. Poverty in the Greater Accra Region 1992-98 (%)

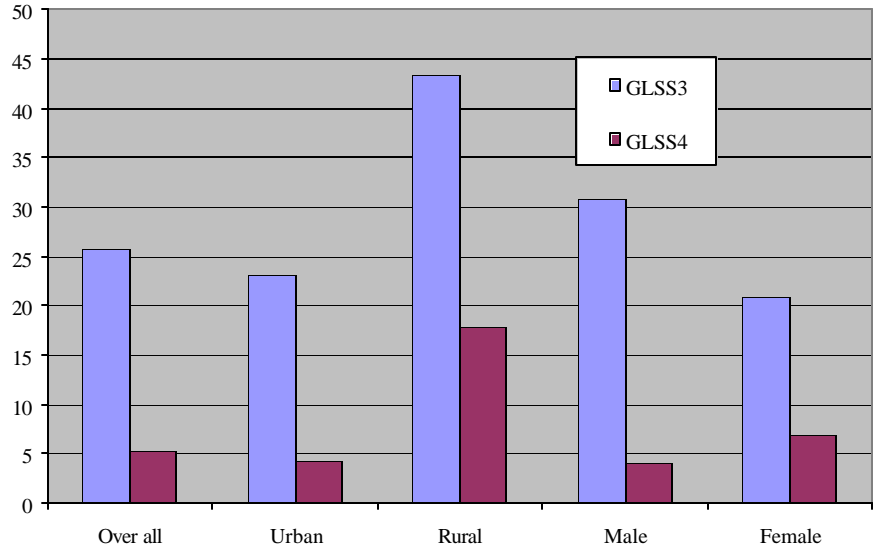


Figure 38. Extreme Poverty in the Greater Accra Region 1992-98 (%)

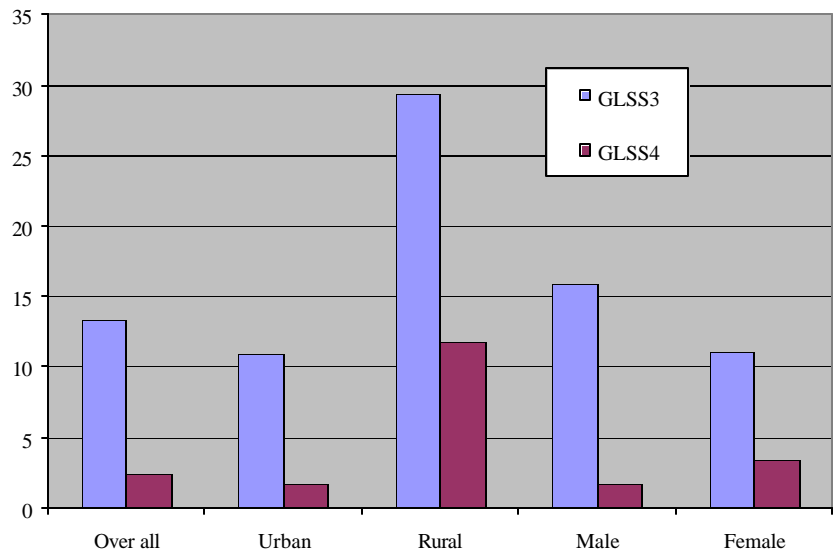


Figure 39. Poverty by Agro-Climatic Zone in the Greater Accra Region 1992-98 (%)

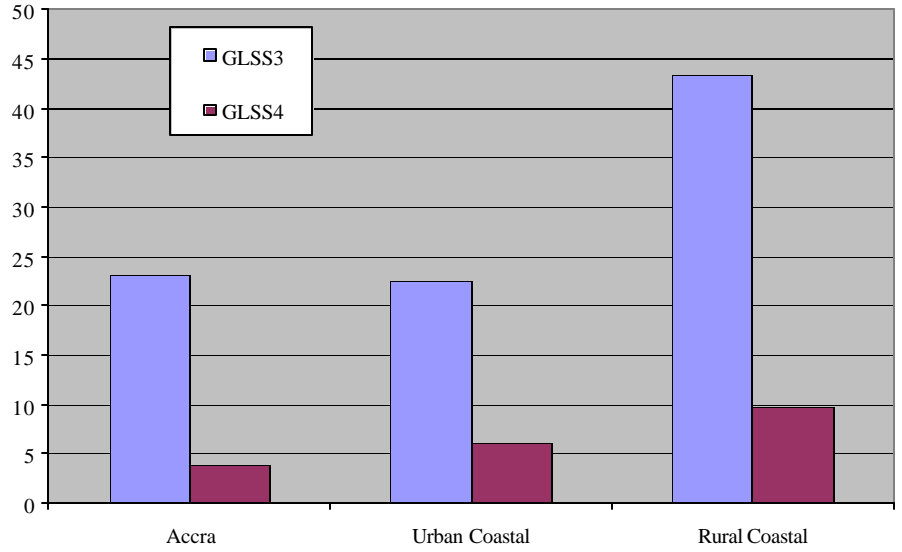
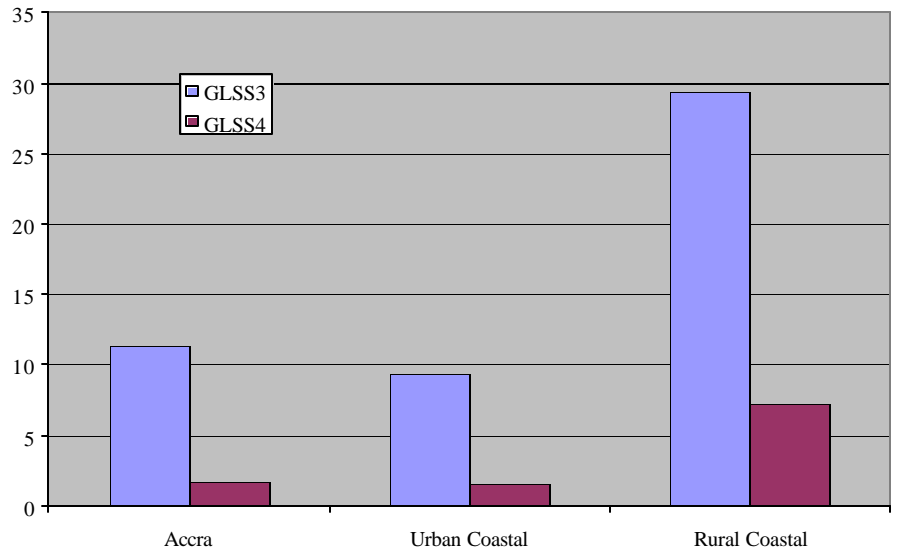


Figure 40. Extreme Poverty by Agro-Climatic Zone in the Greater Accra Region 1992-98 (%)



## 4. AN ANALYSIS OF THE DETERMINANTS OF GHANA'S POVERTY IN THE 1990S

### THEORETICAL ASPECTS OF POVERTY

In spite of the large differences in poverty that exist in Ghana little is known about what causes poverty in general and in Ghana specifically. Without a good understanding of the causes of poverty it is difficult to design policies to combat it. The purpose of this chapter is to examine the determinants of poverty in Ghana, to help formulate policies against it. While there is a large amount of literature on poverty much of it relies on simple tabulations of the type presented in Chapter 3 or ignores the host of problems that can arise when estimating the determinants of welfare and poverty. There is relatively little recent work on poverty in Ghana, and with the country's third democratic election, a peaceful change of government from the ruling NDC party to the NPP, and the decision to join the highly indebted poor countries (HIPC), it is even more important to understand exactly what determines who is poor and who is not.

Many poverty analyses use tabulation to examine poverty and its relation to various factors of interest. While a regression approach cannot explain what can be done to improve welfare, it can by helping explain changes and differences in welfare over time and between regions be valuable when developing an initial understanding of poverty. The first part of this chapter therefore is devoted to a discussion of such estimations.

Despite the large literature on poverty and analysis of the determinants of poverty, there has been relatively little on the subject published in academic journals. Studies in this genre include Glewwe (1991), Coulombe and McKay (1996), and Grootaert (1997). Recent studies of the determinants of poverty include Alwang and Mills (2001) and Dercon (2001). Dercon especially is interesting since it is one of the few attempts to understand the movements in and out of poverty in developing countries and to understand what causes these movements. The study is a good example of the potential benefits to be gained by moving beyond the Living Standards Measurement Survey framework and collecting longitudinal data.<sup>13</sup>

One of the earliest studies specifically of Ghana is Kyereme and Thorbecke (1991), which focuses on food poverty. A number of papers focusing on Ghana subsequently drew on the data sets produced by the third Ghana Living Standards Survey (GLSS 3); Ghana Statistical Service (2000b) and this paper are the first studies to use the GLSS 4 data.

This chapter proceeds in Section 5.2 by discussing the theoretical aspects of poverty and welfare and their implications for estimation, especially when it comes to choice of variables. Section 5.3 describes the data used and Section 5.4 outlines the various possible estimation strategies. Section 5.5 defines the variables used in the estimation and discusses their expected effects on welfare; it also presents the descriptive statistics for the variables. Section 5.6 presents

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<sup>13</sup> The limitations of cross-sectional data sets are discussed in more detail below.

the results of the estimation, and Section 5.7 sums up the main results and their implications for policies and suggests potential areas for future research.

## THEORETICAL ASPECTS OF POVERTY

Few of the papers that study the determinants of poverty make clear what the theoretical basis is for their study. A notable exception is Glewwe (1991), which comprehensively examines the implication of economic theory on the appropriate methods of analyzing household welfare and poverty. This section outlines a simple model of household behavior under uncertainty and discusses what the implications are for the analysis presented here, especially with respect to the choice of variables.

A note on the terminology used here is in order. The purpose of this monograph primarily is to make an examination of poverty, but the main focus of this chapter is welfare. The standard microeconomic model of individual behavior is based on the concept of utility. Although utility is unobservable and not directly comparable across individuals it is possible, under a number of assumptions, to express the decisions made by the individual and his corresponding utility in terms of an expenditure function.<sup>14</sup> This expenditure function, which in our case is the observed monetary value of consumption, is referred to as welfare. While welfare can be directly related to the utility of the household, poverty is a more difficult concept. The main problem with measuring and explaining poverty is that there is no explicit theory for it. Poverty lines and measures are to a certain extent arbitrary constructs and economic theory provides little guidance for their choice, although it is possible to assess empirically the extent to which the results are dependent on the exact specification of the poverty lines. The use of poverty constructs furthermore has led a number of researchers to ignore the underlying consumption theory on which economic measures of poverty ultimately are based. This chapter thus will focus mostly on the welfare side.

One of arguably the most important, and often overlooked, aspects of the economic conditions facing households in developing countries is the uncertainty of future income. This can, for example, be uncertainty arising from weather conditions, from the possibility of a disabling illness afflicting the breadwinner, or from recession resulting in job loss or declining prices for goods produced by the household. Most households in the industrial world are insured against these uncertainties either through a state-financed system or through private insurance. This option rarely is available for the households of the developing world: the state seldom is capable of setting up a system of universal coverage and there are few companies that offer suitable insurance, especially in rural areas. The remaining part of this section presents a simple model of decision-making under uncertainty and discusses the model's implications for our estimation strategy.

Consider a household which in each period  $t$  derives utility from a composite consumption good  $X_t$ . From its creation the household is faced with a decision on how to allocate its resources over the time horizon  $t = 1, \dots, T$ . The household's utility is assumed to be additively separable and time invariant with a discount factor of  $\alpha$ , and is given by:

$$U((X_t)_{t=1}^{t=T}) = \sum_{t=1}^{t=T} \alpha^t u(X_t).$$

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<sup>14</sup> See Glewwe (1991) for a more in-depth discussion.



The utility function is assumed to have the standard properties, especially that the marginal utility of consumption approaches infinity as consumption approaches zero (or some other minimum consumption).

Before each period  $t$  the household decides how to allocate its available asset between consumption,  $X_t$ , production inputs,  $I_t$ , and a liquid asset,  $A_t$ . The liquid asset is assumed to have a zero rate of return and could, for example, be cash or other assets that may be converted easily to cash if needed.<sup>15</sup> Other than these liquid assets and the production inputs it is assumed that there are no ways of transferring assets from one period to the next, and especially it is assumed that borrowing is impossible. The production function, which relates production inputs committed in period  $t$  to output in period  $t+1$ ,  $O_{t+1}$ , for the household is

$$O_{t+1} = F(I_t; \mathbf{e}_{t+1}, E_{t+1}),$$

where  $\mathbf{e}_{t+1}$  is a random variable that captures the risk associated with the production and whose outcome is unknown in period  $t$ , and  $E_t$  represents exogenous factors influencing the production process.<sup>16</sup> If there is a risk of the output falling below the threshold for minimum consumption the household will decide both to invest in production and hold the liquid asset.

In addition to the production function the household faces a budget constraint. The maximization problem of the household can be solved using dynamic programming, but as the reason for including the model here is to provide a framework for a discussion of poverty and the estimation of the determinants of poverty, we will not pursue it here. What is important is that decisions made in previous periods will affect the household and the decisions it makes now (in this case through the level of assets available). The implications of this are discussed below.

In the model outlined above the household has no way to influence the outcome of the random variable. However, even without this possibility open there are a number of strategies that the household can follow to mitigate the effects of the random variable on the output. One such strategy is diversification. Because different crops respond differently to weather conditions, an agricultural household may choose to plant more than one crop. Many Ghanaian households, for example, plant both cassava and a higher yielding crop. The return on cassava is low, but it also has a relative low variation in output: should the primary crop be lost, the household thus may be able to harvest cassava. The choice of crop as a response to risk is relatively under-researched, but Roe and Graham-Tomasi (1986) present a model of crop choice under risk and demonstrate that not taking account of the uncertainty can seriously bias the estimation results. Besides choosing more than one crop the household also may decide to hold a mix of livestock, as examined by Rosenzweig and Wolpin (1993) and Kurosaki (1995).

The choice and combination of crops and livestock influence the production process of the household. There are also other avenues open for insuring the household against shortfalls in income. As indicated in the model, the household can transfer wealth from one period to another in nonproductive liquid assets. Jalan and Ravallion (2001) however, found that only a relatively small percentage of the liquid assets held by Chinese households are held for insurance purposes. An

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<sup>15</sup> The return could be—and in the case of cash often is—negative. Even in this case the household is likely to hold at least some of its wealth in such assets.

<sup>16</sup> While it may be most natural to think of this an agricultural production process the framework is not limited to such a process. The framework could represent any business owned by the household or the participation in the labor market of an individual from the household. In the latter case the inputs would be the time worked and the human capital of the worker.

alternative means for transferring wealth is to save, although this often requires that money be committed for a long period and that it therefore is not as liquid as, for example, cash.<sup>17</sup>

The household also can make structural changes to secure its consumption. Through its children, for example, a household can transfer assets from one period to another; children also can serve as an insurance against low income.<sup>18</sup> The household can also use migration to reduce the impact of risk. A rural household may, for example, have one or more household members migrate to urban areas in search of employment, to either remit money on a regular basis or when needed. There is a substantial literature on this means of insuring against risk: examples include Stark (1991 and 1995), Lucas and Stark (1985), and Lucas (1997). Another means of insuring against the poverty risk is the land tenure arrangements of the household. The seminal theoretical analysis of this is Stiglitz (1975); an example of empirical analysis is Sadoulet et al. (1994). The household may also rely on people that are not directly related, such as neighbors, to insure against shortfalls in income (as discussed in Townsend (1994)).<sup>19</sup>

Finally, it is worth mentioning at least one way in which households can affect the risk associated with production: namely, the risk of disabling illness. For households with members working in the labor force as well as those that work their own land there is a risk of contracting an illness that may prevent work. The household may be able to mitigate the risk of illness through, for example, diet and preventive health care inputs. This idea is put forward by Pitt et al. (1990), who analyzed the distribution of food within the household in the context of minimizing the risk of illness that could lead to a significant fall in income.

### **Implication for Analysis**

Even the fairly simple model presented above can provide a valuable guide for empirical analysis. The choice of which specific variables should be included in the analysis is discussed in Section 5.5, but some general issues first are addressed here. Specifically, this section looks at potential endogeneity problems when choosing variables and at the different types of variables that are relevant to this analysis.

There are (at least) two reasons for not including endogenous variables as explanatory variables. First, since the endogenous variables are likely to be correlated with the error term the estimation results will be biased. This is not just the case of the variable in question; introducing an endogenous variable can potentially bias all the other estimated parameters. Second, even if there is no discernible bias in the results the estimation will be conditional on the endogenous variable. This means that the results will only hold for families that have made those choices selected for the analysis. For other households the results will not necessarily provide a correct picture of the effects of changing the exogenous variables. This is a problem if we are ultimately interested in policies to combat poverty across the entire population, rather than just the sample used for the analysis.

A case in point is the number of children that belong to a household. If the number of children adjusts to changing economic conditions, and especially the risk environment of the household, including the number of children (or more generally, the household composition) would

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<sup>17</sup> See, for example, Deaton and Muellbauer (1980) and Deaton (1992 and 1997).

<sup>18</sup> For a further discussion of this and a number of relevant references see Pörtner (2001).

<sup>19</sup> See also Deaton (1997, Chapter 6.2).

mean that the results are conditioned on the number of children. If we were to change the risk environment we therefore would only know how households with a given number of children behave. For families that are not yet complete or households that have not yet reached the number of children that they would have under the old risk environment, the analysis effectively would ignore the impact on their situation that would be due to any change of plans regarding the number of children that they have. This means that we could end up discounting policies that could be effective and beneficial because our estimates, when including the endogenous variables, would not be a true reflection of what would happen for the entire population.

These strategies provide us with an idea of which variables it would be imprudent to include. An important aspect of the model presented above is its dynamic nature: decisions made in the previous period affect the outcome of the current one. This implies that one can divide the variables that influence the outcome into three categories: exogenous, predetermined endogenous, and directly endogenous. Since the predetermined endogenous variables reflect a decision made by the household as a response to its information and expectations about a future period they cannot be used as explanatory variables. Variables that reflect a household's choice of crop combination, life stocks, savings, number of children, household composition (due to migration), land tenure, and health therefore cannot be used to explain its poverty status—exactly because these variables also reflect the household strategy for avoiding poverty. We can, however, include variables that can safely be assumed to be not under the direct control of the household. These could include, for example, educational attainment, since that variable would be fixed by the time the household is formed.<sup>20</sup>

This brings us to the different types of variables that can be used in the estimation. These may be divided into three groups: household characteristics, community variables, and general variables. The household characteristics are variables such as educational attainment that are essentially fixed when the household is formed and directly related to that household. Community variables reflect the characteristics of the area in which the household lives and generally can be affected by policies or interventions. They correspond to the  $E$  in the production function above. In addition to those variables that are directly influenced by policies, community variables can also include variables that reflect the choices made by the households in the community; such as, for example, the ratio of males to females of a productive age. The reason that we can use these variables but not the composition of individual households is that the community variable is not directly related to each household choice, but rather reflects the environment in which all the households in the area exist.<sup>21</sup> The final category is general variables. These include characteristics such as the risk environment of the household—for example, the variability of rainfall—and other relevant information for the analysis that is important to control for which is not necessarily of direct interest.

## DATA

The third and fourth rounds of the Ghana Living Standards Survey (GLSS) were collected in 1991/92 and 1998/99 respectively. Both rounds comprised three parts, covering households, prices, and community characteristics. All of these followed the standard model of the Living

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<sup>20</sup> This obviously ignores the role that household formation plays in reducing the effects of risk. See, for example, Rosenzweig and Stark (1989) for a discussion of the choice of marriage partner as an insurance strategy.

<sup>21</sup> The ratio of males to females may, for example, be a good indicator of whether it is possible to find steady and well-paid employment in an area or whether certain household members must migrate in search of employment.

Standards Measurement Survey and collected detailed information on a variety of topics, including the demographic characteristics of households, education, health, employment, time use, migration, housing conditions, agriculture, and nonfarm businesses. The main advantage of using the two GLSS data sets is that the surveys employed almost identical questionnaires, thus aiding the comparison of welfare and poverty between the two surveys.<sup>22</sup> The second and third rounds of the GLSS used very different questionnaires, creating great difficulty for anyone seeking to analyze the changes in poverty between the two surveys.

Both surveys used here are nationally representative samples of households, collected over a 12-month period. The sample selection was identical for the two surveys, and consisted of a two-stage sampling procedure. In the first stage enumeration areas were selected with probabilities proportional to the number of households in the enumeration areas in the 1984 population census. For the second stage 20 households were selected from each enumeration area chosen in the first stage. Since the first stage for both GLSS 3 and GLSS 4 was based on the 1984 Population Census and since different enumeration areas are likely to grow at different rates this procedure generally would not provide a self-weighted sample (where the probability of inclusion is equal for each household). While it was possible to amend the procedure for GLSS 3 to provide a self-weighted sample this was not done for GLSS 4. A set of weights instead was computed based on the 2000 Population Census, held in March to April 2000.<sup>23</sup> These weights are used for all estimations involving GLSS 4.

Both of the surveys included a community questionnaire. This was, however, only collected for rural communities, presumably under the assumption that most of the questions were relevant primarily for rural communities. This means that we do not have information for urban households on, for example, access to health facilities and services, distance to markets, or other infrastructure characteristics. Most of these services are likely to be available in most urban areas, but there are likely to be large differences in accessibility for different households. The questions for rural communities were divided into five areas: demographic information, economy and infrastructure, education, health, and agriculture. A significant problem with the community questionnaire (beside the fact that it does not extend to urban communities) is that for GLSS 4 there are a large number of enumeration areas that span more than one community, but there is no way of matching households to their specific community. Many of these communities within the same enumeration area furthermore vary significantly in their characteristics.

Another major limitation of the GLSS is that it is not a panel data set. The main advantage of a panel data set is that it permits the analyst to follow individual households and hence examine what determines who moves into and out of poverty; it also would enable us to control for unobservable household heterogeneity, which may bias cross-section results if endogenous variables are included. To the authors' knowledge, only Dercon (2001), in a study of poverty in Ethiopia, has used panel data for analyzing movement in and out of poverty in a developing country.

In the absence of a longitudinal data set for poverty analysis, it may be advantageous to use some form of repeated cross-section approach. So far there is relatively little poverty literature using this approach, although there have been a number of applications looking at topics such as consumption and inequality for more developed countries. For developing countries, two of the

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<sup>22</sup> Neither the income nor the expenditure modules used were modified between the two surveys.

<sup>23</sup> The exact procedures are described in Ghana Statistical Service (2000a, Appendix 1) and Ghana Statistical Service (2000b, Appendix 4).

very few studies that use repeated cross-sections are Wodon (1993) and Bourguignon et al. (2001). In his analysis of poverty in Bangladesh, Wodon used districts as the unit of analysis for a number of comparable household surveys, thereby creating a longitudinal data set of districts.

While the GLSS is a relatively comprehensive data set there are a number of aspects that it does not cover satisfactorily. So far the only alternative data source used is the rainfall data from Ghana Metrological Service. Unfortunately the data collection points for rainfall do not correspond to the enumeration areas used for GLSS 3 and 4. The rainfall data—a combination of monthly rainfall data and annual averages—therefore were aggregated into agro-climatic zones and regions. Where a region comprised more than one agro-climatic zone the level of aggregation would be the agro-climatic zone. Ideally, the rainfall data would be matchable to individual districts. There are two reasons why this was not done. First, the Ghana Statistical Service did not identify for GLSS 3 in which of the 110 districts each household was located (this information was available for GLSS 4). Second, it is difficult to match rainfall to specific districts, since many of these do not have a weather station. Attempting to do so would make the process even more arbitrary. These challenges placed obvious constraints on the analysis of poverty dynamics carried out here.

### ESTIMATION STRATEGY

This section discusses the estimation strategy used and some of the potential econometric problems. One of these potential problems is the inclusion of endogenous variables. (Section 5.5 offers a discussion of the variables used and their likely effect.) Another potential problem is that there are likely to be a number of unobservable characteristics of the households that may affect their poverty status. If these unobservable characteristics are correlated with the explanatory variables this may bias the estimation results, since the standard assumption about the error terms could no longer be assumed to hold. The standard way to deal with this problem is to use either instrumental variables or a fixed effects approach. The latter is not possible here since we have only one observation available for each household, while the instrumental variable approach requires the identification of suitable instruments. Here the problem with correlation between the error term and explanatory variable is likely to be small—provided that we do not include endogenous variables.

There are essentially two possible approaches to estimating the determinants of poverty.<sup>24</sup> The first, which has in the past been a relative popular method,<sup>25</sup> entails using a discrete representation of the poverty status of the household. The analyst can then use either a probit or a logit model to estimate the probability that a household with a given set of characteristics will be poor. It is also possible to divide the households into more than two categories (for example, extremely poor, poor, and not poor) and, using a multinomial or ordered probit or logit, estimate the probability of a specific household being in any of these groups. There are two major drawbacks to using the discrete representation. First, since the poverty status of a household is in this case based on the consumption of the household, not all the available information is being used. Second, the estimates are more likely to be biased when using a categorical method than when using linear regressions.

The second approach uses the consumption of the household in one form or another, as in Glewwe (1991) and Coulombe and McKay (1996). Since the relationship between the explanatory variables and consumption is likely to be nonlinear, a log transformation of consumption is often

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<sup>24</sup> See also the discussion in Ravallion (1996).

<sup>25</sup> See, for example, Rodriguez and Smith (1994) and Grootaert (1997)

used. Using the continuous approach means that the relevant information is used and there is less likelihood of biased regression results. This approach is the one used here.

Most studies of poverty in developing countries have divided their samples into at least two categories. At a minimum, the households analyzed are divided into those in urban and those in rural areas.<sup>26</sup> This division is chosen for two reasons: not only are the factors influencing poverty likely to be significantly different in urban compared to rural areas, but GLSS 3 and 4 provide different information for urban and rural households. The community questionnaires were, for example, only distributed in rural areas. The main problem with dividing the sample into urban and rural is the potential for selectivity bias. It may be that households with certain characteristics are more likely to migrate from one to the other area. If this is the case and the problem is widespread, estimations that do not take account of this selectivity may be biased. (The newly released census data in fact points to a significant migration from north to south, as can be seen from the relatively low population growth rate in the north, despite its high fertility.)

## VARIABLES

As discussed above, the variables of interest can be divided into three categories: household, community, and general. This section describes the different variables and their likely effect on the welfare of the household. For many of the variables there is a variety of possible definitions. Most of these, however, have almost the same interpretation and the same likely effect on poverty.

### Household Characteristics

Ideally the focus of this paper would be individual welfare, but the nature of the available data obliges us instead to look at households. This gives rise to some problems in selecting the relevant explanatory variables within the household. A standard approach is to use the characteristics of the household head as a proxy for the characteristics of the entire household, but this raises the question of who to designate as household head. One can use the respondent's information or identify as household head the individual that contributes most to the household in terms of income and/or hours worked<sup>27</sup>—or alternatively, as practiced by Glewwe (1991) and done here, avoid the problem altogether by identifying as head the individual that has the maximum adult educational attainment. There are two advantages to this approach. First, since the household member with the highest education is also likely to be the main breadwinner, this choice will hopefully better capture the effects of education on poverty. Second, by using the maximum education for males and females from those household members over 17 years of age this approach enables us to capture the possible different effects of female and male education. For both, a higher level of education should be expected to lead to a higher level of welfare for the household. For this report we additionally have included the age of the two household members with the highest education. Where there is more than one member, we use the member with the lowest

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<sup>26</sup> A household is considered urban if it resides in a build-up area of more than 5,000 inhabitants; otherwise the household is a rural household. This definition of rural and urban is the standard one used by the Ghana Statistical Service.

<sup>27</sup> A possible solution is to use the average number of years of schooling for the adults in the household. Unfortunately this approach cannot be used here since the data specify only that the individual in question has progressed to a certain level of schooling (for example, primary or middle school).

household number. Since the age is unlikely to have a linear effect (younger and older persons are expected to be worse off than those in their prime working years), we include the square of age as well.

In rural areas, access to land may be an important factor in determining income. To capture access to land one can either use the land area under cultivation by the household, possibly subcategorized as owned, leased, or sharecropped, or the value of the land owned by the household. Since the questionnaires for GLSS 3 and GLSS 4 do not include any information on the quality of land the latter may be the best choice as it implicitly accounts for quality. This means that we do not capture any effects on income from land leased or rented, however, the value of the land is expected to improve the welfare of the household.

Related to land access is crops grown. Knowing how the crop choices of a household influence that household's welfare would in theory assist the development of policies to reduce poverty, but in practice establishing this information is difficult. The crop choice is endogenous to the income generation of the household. It is likely to be determined by climate, land quality, access to markets, the knowledge of the farmer, risk aversion, the availability of buffers (both monetary and food), and, of course, prices. From an estimation perspective, climate and the risk aversion of the household are especially important. The same crop cannot necessarily be grown in all areas of Ghana, and if it can may have significantly different yields, dependent on climate, soil, and topography. Cocoa, for example, may be associated with better welfare for its growers, but it could not be recommended as a crop for savannah farmers as the agro-climatic conditions in which they work are simply not appropriate to cocoa. Even for households residing under the same agro-climatic conditions there is a problem of endogeneity of crop choice. Two households, for example, might decide to grow different crops depending on their risk aversion or access to capital. The more risk-averse of the two would choose a crop or combination of crops that show relatively less susceptibility to a failure of the rains but also a lower potential return than the crops selected by the less risk-averse household. Which household fares better would thus depend on the actual rainfall experienced.<sup>28</sup>

### **Community Variables**

Household variables are interesting determinants of welfare, but of them only education can easily be influenced by policymakers. Community variables, however, are generally much more easily affected by policies. Within a community the explanatory variables can be divided into services, infrastructure, health, and demographic.

Services include the existence in the community of a market, either daily or periodic, and the presence of agricultural extension services and a bank. Access to a market should have a positive effect on rural household welfare, since it provides the agricultural household with an opportunity to sell its produce and thereby generate income. Hypothetically, extension services also help agricultural households increase their return from their land, although in practice it likely is the case that extension services are placed in the neediest areas; failure to take this into account would tend to decrease the apparent effectiveness of such services. The presence of a bank also should

<sup>28</sup> There are a number of other problems related to the inclusion of crop choice. The first is what to do with landless rural households. Second, while prices could be used as instruments for crop choice, the prices from the questionnaire reflect actual variation in rainfall and demand, not the anticipated outcomes. Finally, it is not clear which crops to include, since we do not know how land is devoted to any specific crop. Simply including those that return the highest revenue suffers from the same problem as using prices, as they reflect actual outcomes of labor input, rainfall, pests, and so on.

increase welfare, since it provides households with both access to credit and returns on their savings. In practice, however, it is usual that (privately owned) banks are present only in places that are better off to begin with. Even when a bank is present in the community, there often are barriers to its use that can deny poorer households access to its services. Community questionnaires unfortunately do not provide information as to the type of the bank present.

Infrastructure variables include the access of the community to a motorable road, whether or not this road is ever impassable, and whether or not the community has access to public transport. Access to a motorable road and public transport are expected to have the same effect as the presence of a market, in that they enable households to sell either their produce or labor (in this case, to other communities). Should the road be impassable for vehicles during the rainy season, for example, this fact would be expected to have a depressing effect on welfare.

The first of the health variables is the absence of major health problems. This is captured by including a dummy for whether malaria is not one of the four major health problems facing the households in the community. The dummy is hypothesized to have a positive impact. The same is the case for whether the community has a clinic or health post. The final health variable is a dummy for whether the community has had an anti-malaria campaign within the last five years. This is also assumed to have a positive impact on welfare of the community.

There are two demographic variables. The first is the ratio of men to women in the age group 20–45. This variable captures migration from areas with poor employment prospects and low expected income from agricultural activities. Communities with a low ratio of men to women typically may be identified as being worse off than those with a more equal distribution, for the reason that they may be perceived as experiencing a migration of laborers, and such migrants are more likely to be male. Finally there is the provider burden, which is measured as the ratio of people aged 16–64 to those outside this grouping. A high provider burden is likely to have a negative impact.

Two other variables worth mentioning are the size of the community and the cropping pattern and means of sale of agricultural produce. Unfortunately, the GLSS 3 and GLSS 4 data sets do not provide sufficient information to enable inclusion of these variables.

## General

The explanatory variables included in the general category are variables that are not directly related to either the household or the community. There are three such variables: agro-climatic zone, rainfall, and time of survey. Ghana encompasses three agro-climatic zones: the coastal, forest, and savannah zones.<sup>29</sup> Rainfall is problematic. First, the rainfall data are aggregated into region and agro-climatic zones, with the result that they do not reflect the weather conditions of specific households with precision. Second, deciding on a specification for the effects of rainfall is difficult. While one might expect households to do better if rainfall amounts are normal or higher than normal, this is not necessarily the case. If rainfall is significantly above normal amounts seed plantings may fail, plants may be destroyed, or the harvest may fail. The specifications used here are mean rainfall, the deviation from the mean divided by the mean (the “ratio”), and the squared of the ratio. This should capture the fact that households in areas with abundant rainfall generally have favorable farming conditions while also accounting for an inverse, U-shaped “production” function between rainfall and agricultural output. Actual rainfall has a direct impact on poverty both for

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<sup>29</sup> The poverty patterns for the three agro-climatic zones are discussed in Section 3.



farmers and for landless households, although it is not clear who is most affected by deviations from the mean.

The final general variable is the month of the survey. Since the consumption of a household is likely to vary over the year, this analysis includes dummies for which month the household was surveyed. The GLSS 3 and GLSS 4 surveys were conducted almost evenly over the course of a year, but the dummies can help control for the potential bias that could arise should households of a particular characteristic, for example, have been surveyed primarily at one time of the year. The dummies furthermore can potentially provide information on when the welfare of households is most at risk, and by interacting with agro-climatic zones also support examination of whether for specific household types there is more variation in consumption at one time of the year than another. (The results of the monthly dummies nonetheless are suppressed here to support the primary focus on policy-relevant variables. Tables for the distribution by month of household interviews are provided in the Appendix.)

### **Descriptive Statistics**

Table 8 shows descriptive statistics for the rural and urban sample, divided by survey. As expected, the average consumption per adult equivalent is higher in urban than in rural areas and has increased between the two surveys. There additionally is some evidence of an improvement in the educational levels of both men and women between the two surveys, mainly in the post-middle school level. Interestingly, the average value of land decreased between the two surveys for both rural and urban households. This may be due to the sampling framework used.

The access to infrastructure and services, except for the presence of a daily market, generally has increased over time. There have, however, been marked declines in the number of households that live in areas where malaria is not a major health issue and where there has been an antimalaria campaign within the last five years. Urban households have seen improvements in access to safe drinking water and toilet facilities (although the increase in the latter seems excessively large). The ratio of men to women in the productive age group is relatively stable. There appears to have been a decline in the provider burden in both rural and urban areas, possibly the result of declining fertility rates.

The rainfall data show that for GLSS 3 the coastal and savannah zones experienced rainfall that was 18 and 12 percent below the average. For GLSS 4 rainfall in the coastal zone was 17 percent above the norm. The two other areas saw almost normal rainfall.

**Table 8. Descriptive Statistic**

Variable	Rural		Urban	
	GLSS 3	GLSS 4	GLSS 3	GLSS 4
Consumption (log)	13.7035 (0.6450)	13.8760 (0.7192)	14.2864 (0.6539)	14.4659 (0.6866)
Primary (male) <sup>a</sup>	0.0861 (0.2805)	0.0894 (0.2853)	0.0507 (0.2195)	0.0605 (0.2385)
Middle (male) <sup>a</sup>	0.3179 (0.4657)	0.3014 (0.4589)	0.3247 (0.4684)	0.2933 (0.4554)
Post middle (male) <sup>a</sup>	0.0720 (0.2585)	0.1100 (0.3129)	0.1972 (0.3980)	0.2527 (0.4347)
No education information (male) <sup>a</sup>	0.2381 (0.4260)	0.2318 (0.4221)	0.3063 (0.4611)	0.2705 (0.4443)
Age of male with highest education <sup>a</sup>	40.3216 (14.1850)	40.7803 (13.3453)	39.0494 (11.7559)	39.9569 (13.0902)
Age <sup>2</sup> of male with highest education <sup>a</sup>	18.2697 (13.4799)	18.4108 (12.5252)	16.6297 (10.4925)	17.6783 (12.4849)
Primary (female) <sup>b</sup>	0.1180 (0.3226)	0.1218 (0.3271)	0.0774 (0.2672)	0.1105 (0.3136)
Middle (female) <sup>b</sup>	0.2188 (0.4135)	0.2117 (0.4086)	0.3849 (0.4867)	0.3000 (0.4583)
Post middle (female) <sup>b</sup>	0.0185 (0.1349)	0.0302 (0.1712)	0.1218 (0.3271)	0.1507 (0.3578)
No education information (female) <sup>b</sup>	0.1358 (0.3426)	0.1078 (0.3102)	0.1706 (0.3763)	0.1824 (0.3863)
Age of female with highest education <sup>b</sup>	38.1404 (14.2466)	38.2715 (13.5657)	35.9678 (11.7892)	37.4693 (12.7740)
Age <sup>2</sup> of female with highest education <sup>b</sup>	16.5758 (13.3231)	16.4869 (12.4489)	14.3258 (10.4179)	15.6705 (11.5644)
Value of land owned (log)	5.8185 (7.0144)	4.6017 (6.9645)	1.4951 (4.3429)	1.2020 (4.0224)
Bank in community	0.0915 (0.2884)	0.1457 (0.3528)	.	.
Daily (permanent) market in community	0.2250 (0.4176)	0.1848 (0.3882)	.	.
Motorable road all year	0.3832 (0.4863)	0.4455 (0.4971)	.	.
Extension service	0.1145 (0.3185)	0.2097 (0.4071)	.	.
Malaria not a major health problem	0.1405 (0.3475)	0.0107 (0.1029)	.	.
Clinic or health post in community	0.2468 (0.4313)	0.3545 (0.4784)	.	.
Antimalaria campaign within 5 years	0.6038 (0.4892)	0.5556 (0.4970)	.	.
Major source of drinking water safe	.	.	0.9056 (0.2925)	0.9396 (0.2383)
Toilet facilities	.	.	0.2484 (0.4322)	0.6507 (0.4769)
Men/women, 20–45	0.7702 (0.1136)	0.7781 (0.0908)	0.7490 (0.1153)	0.7776 (0.1249)

	Rural		Urban	
Provider burden	1.1233 (0.0968)	1.0304 (0.0631)	0.8828 (0.1350)	0.7881 (0.1335)
Rainfall (mean) – coastal	1174.2479 (227.7119)	1251.2246 (237.8666)	984.7099 (272.2059)	954.7009 (259.0429)
Rainfall (mean) – forest	1307.9401 (142.0892)	1330.6527 (140.1444)	1289.3795 (118.5197)	1311.4307 (102.4577)
Rainfall (mean) – savannah	1131.6345 (142.8781)	1110.8986 (117.0802)	1171.9988 (120.9270)	1135.9907 (135.9957)
Rainfall (ratio) <sup>c</sup> – coastal	-0.1895 (0.1874)	0.1703 (0.2336)	-0.2474 (0.0863)	0.3901 (0.2031)
Rainfall (ratio) – forest	-0.0218 (0.1062)	0.0241 (0.0712)	-0.0455 (0.1040)	0.0244 (0.0698)
Rainfall (ratio) – savannah	-0.1289 (0.0612)	0.0391 (0.1001)	-0.1121 (0.0477)	0.0663 (0.1171)
Rainfall (ratio <sup>2</sup> ) – coastal	0.0710 (0.0347)	0.0835 (0.0954)	0.0687 (0.0247)	0.1934 (0.0964)
Rainfall (ratio <sup>2</sup> ) – forest	0.0117 (0.0093)	0.0057 (0.0080)	0.0129 (0.0084)	0.0055 (0.0080)
Rainfall (ratio <sup>2</sup> ) – savannah	0.0204 (0.0147)	0.0115 (0.0192)	0.0148 (0.0114)	0.0181 (0.0262)
Rainfall (mean) x land	1083.5350 (433.6067)	1073.1918 (462.3197)	.	.
Rainfall (ratio) x land	-0.0805 (0.1316)	0.0504 (0.1339)	.	.
Rainfall (ratio <sup>2</sup> ) x land	0.0238 (0.0301)	0.0205 (0.0503)	.	.
Forest	0.4640 (0.4988)	0.4740 (0.4994)	0.3093 (0.4623)	0.3576 (0.4794)
Savannah	0.2961 (0.4566)	0.2826 (0.4503)	0.1229 (0.3285)	0.1225 (0.3280)
Number of observations	2696	3621	1577	2168
<sup>a</sup> Based on the male (18 or older) with highest education.				
<sup>b</sup> Based on the female (18 or older) with highest education.				
<sup>c</sup> (Rainfall in previous year - mean rainfall) / (mean rainfall).				

## RESULTS

This section presents the results of the estimation of the determinants of poverty. The estimation is presented separately for urban and rural households.

### Rural

Table 9 presents the results for the estimation of the determinants of poverty for rural households. The first column shows the results using the GLSS 3 data, the second column presents the results using the GLSS 4 data, and the last column shows the results of combining the two data sets. All estimations use the same set of explanatory variables, with the one exception that a dummy for GLSS4 survey is included in the last column.

**Table 9. Determinants of Rural Consumption**

	<b>GLSS 3</b>	<b>GLSS 4</b>	<b>Combined</b>
Primary (male) <sup>a</sup>	-0.0074 (0.17)	0.0017 (0.03)	0.0165 (0.47)
Middle (male) <sup>a</sup>	0.0459 (1.31)	0.0809 (2.34)	0.0829 (3.22)
Post middle (male) <sup>a</sup>	0.1396*** (2.89)	0.1786*** (3.39)	0.1753*** (4.50)
No education information (male) <sup>a</sup>	0.2619 (6.18)	0.2171 (5.10)	0.2618 (8.46)
Age of male with highest education <sup>a</sup>	0.0021 (0.55)	-0.0009 (0.23)	0.0005 (0.17)
Age <sup>2</sup> of male with highest education <sup>a</sup>	-0.0019 (0.46)	0.0008 (0.18)	-0.0008 (0.24)
Primary (female) <sup>b</sup>	0.0604* (1.70)	-0.0090 (0.25)	0.0304 (1.14)
Middle (female) <sup>b</sup>	0.0773** (2.38)	0.0402 (1.18)	0.0529** (2.15)
Post middle (female) <sup>b</sup>	0.1311 (1.57)	0.3152*** (4.45)	0.2503*** (4.38)
No education information (female) <sup>b</sup>	0.6717 (17.85)	0.5235 (10.72)	0.5884 (18.56)
Age of female with highest education <sup>b</sup>	-0.0177*** (4.67)	-0.0106** (2.53)	-0.0129*** (4.52)
Age <sup>2</sup> of female with highest education <sup>b</sup>	0.0197*** (4.82)	0.0136 (2.93)	0.0152 (4.90)
Value of land owned (log)	0.0028 (1.47)	0.0051*** (3.00)	0.0051*** (4.01)
Bank in community	-0.0136 (0.29)	0.1141 (2.39)	0.0176 (0.54)
Daily (permanent) market in community	0.0396 (1.18)	0.1620*** (3.89)	0.1169*** (4.54)
Motorable road all year	0.1197 (4.50)	0.0870 (2.98)	0.1311 (6.99)
Extension service	0.0726 (1.77)	-0.1637*** (3.88)	-0.0725** (2.53)
Malaria not a major health problem	0.0303 (0.75)	0.3039*** (2.60)	0.1520 (4.46)
Clinic or health post in community	0.0105 (0.31)	0.0590 (1.56)	0.0604* (2.51)
Antimalaria campaign within 5 years	0.0373 (1.29)	0.0827*** (3.07)	0.0598*** (3.36)
Men/women, 20-45	-0.0690 (0.16)	2.3186*** (6.44)	0.3185 (1.76)
Provider burden	-0.0333 (0.07)	-2.6649*** (3.81)	0.0508 (0.30)
Rainfall (mean)	-0.0004* (2.27)	-0.0011*** (2.67)	-0.0003* (2.36)
Rainfall (mean) x forest	0.0010 (5.16)	0.0016 (3.28)	0.0009 (5.77)
Rainfall (mean) x savannah	0.0014***	0.0026***	0.0015***

	<b>GLSS 3</b>	<b>GLSS 4</b>	<b>Combined</b>
Rainfall (ratio) <sup>c</sup>	(3.20) -0.3016	(6.30) 8.9002****	(8.12) -0.3192**
Rainfall (ratio) x forest	(0.76) -0.2829 (0.73)	(4.33) -9.2116*** (4.03)	(2.18) 0.3154* (1.93)
Rainfall (ratio) x savannah	-3.3321** (2.18)	-5.5683*** (3.16)	-0.9686*** (4.61)
Rainfall (ratio <sup>2</sup> )	-0.5631 (0.26)	-23.1005*** (4.45)	-0.2958 (0.54)
Rainfall (ratio <sup>2</sup> ) x forest	10.7156* (1.85)	21.7370*** (3.78)	4.0134* (1.85)
Rainfall (ratio <sup>2</sup> ) x savannah	-9.7745* (1.72)	6.3338 (1.26)	0.4663 (0.42)
Rainfall (mean) x land	-0.0001*** (2.89)	-0.0002*** (3.84)	-0.0002*** (6.47)
Rainfall (ratio) x land	0.4161 (1.26)	-2.4122*** (2.96)	-0.1173 (0.78)
Rainfall (ratio <sup>2</sup> ) x land	0.9082 (0.62)	5.6189*** (3.08)	0.5575 (1.18)
Forest	-1.5370*** (5.62)	-2.6935*** (3.82)	-1.1943*** (5.39)
Savannah	-2.1597*** (3.66)	-4.2152*** (6.92)	-2.0595*** (8.43)
GLSS 4			0.3410*** (9.56)
Constant	14.6288*** (14.08)	17.0242*** (12.50)	13.8245*** (33.04)
Month of interview x ecological zone	Yes	Yes	Yes
Observations	2696	3621	6317
R-squared	0.28	0.35	0.28

Notes: Robust t statistics in parentheses  
\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

<sup>a</sup> Based on the male (18 or older) with highest education.  
<sup>b</sup> Based on the female (18 or older) with highest education.  
<sup>c</sup> (Rainfall in previous year - mean rainfall) / (mean rainfall).

For both males and females, with the exception of there being a slightly significant effect for females as reported in GLSS 3, having some primary education makes no significant difference compared to not having any education at all. Middle school education demonstrates a positive and significant effect in GLSS 4 for men, and in GLSS 3 for women. In GLSS 4, post-middle school education is strongly significant for men and for women. While increased education appears to have a positive effect on welfare, it thus seems that a primary education is not itself sufficient. (This result may be partly due to the way that education is measured. A person is considered to have some primary education if he or she has enrolled in school. There may, therefore, be relatively little difference in human capital between those with no educational background and those that report having primary education.) The benefit gained from having some middle school education also is not large, which may suggest that the quality of the schooling system is poor. The strong positive effect of post-middle school education, in contrast, suggests clearly that this is useful in the fight against poverty.

For both men and women, the dummy for missing education information is significant and positive. This, together with the large number of households for which there was no education information for members of more than 17 years of age, is an indication that there may be serious problems with collection of the education data. This may be because when households were asked to name their members, the personal information of any member, including those that may have migrated away in search of work, that had not lived in the household for the last three months was omitted. It is, however, possible that the members that migrate are generally better educated, and that may explain the positive effect.

For GLSS 4, all of the infrastructure variables, except the extension service dummy, are positive and significant. There thus appears to be a significant positive effect of having access to services such as banks, a daily market, and good roads that are accessible year round. The negative and significant effect of extension services may be due to placement effects: if extension services are placed in area where income is lowest this may raise income, but not sufficiently to make the area better off than other areas.

With respect to the health variables, both the absence of malaria as a major health problem and the exercise of an antimalaria campaign within the last five years have significant and positive effects in GLSS 4. The presence of a clinic or health post does not seem to have any significant effect. None of the variables in GLSS 3 appear to have a significant effect.

The two demographic variables are significant and have the expected sign for GLSS 4, but both are insignificant in GLSS 3. While a greater provider burden tends to decrease welfare, increasing the ratio of men to women in the 20–45 age group has a positive effect, due to the fact that if income opportunities are missing in the community it is men that are most likely to migrate in search of work.

As described in Section 5.5, three different measures of rainfall were used, namely the mean rainfall over a year; the deviation of the previous year's rain from the mean, divided by the mean; and the square of this latter ratio. For the forest and the savannah zones higher mean rainfall has a positive impact on consumption. This is not the case for the coastal region, for which higher mean rainfall has a significant negative effect. A possible reason for this is the prevailing rain pattern in the coastal regions, where higher rainfall in a year in which the rainy season produces below-normal rain may imply damaging levels of off-season rain, resulting in erosion and crop damage.

While there is virtually no effect of the ratio and squared ratio for the forest zone, this is not the case for the coastal and savannah areas. In the coastal regions, a higher than expected rainfall has a positive effect on consumption: rainfall that is 10 percent higher than expected leads to an approximately 6 percent increase in consumption. This effect decreases as the rainfall gets further from the mean.<sup>30</sup> For the savannah areas the effect is smaller than for the coastal areas, but has the same direction.<sup>31</sup>

The effects of the interaction between land and the mean, ratio, and ratio squared show that households that own land are less affected, both negatively and positively, by variations in rainfall. One potential reason for this may be the possibility of self-insuring on the part of households that own land, through their including crops that are less prone to shortfalls in rain. Households that do not own land must depend on their ability to find work, and since most of the available work will

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<sup>30</sup> The effect becomes negative when the rainfall is 38.5 percent more than the norm

<sup>31</sup> Here the effect turns negative when the rainfall is more than 20 percent over the norm although due to the impression of the estimates this may occur with rainfall as little as 14 percent over the norm

be during the harvest season they will be harder hit if the rains fail. If the harvest is good, however, their potential earnings may rise.

Overall, the regional dummies indicate that households in the forest and savannah regions have a higher risk of poverty than those in the coastal zones.

### Urban

Table 10 presents the results for the estimation of the determinants of poverty for urban households. The major problem here is the lack of information on variables that can be influenced by policy. Community-level information was available for rural households, through the community questionnaire, but this is not the case for urban households, making it impossible to establish the effects of variables such as access to health services, markets, banks, and other infrastructure. We have instead used responses to the household questionnaire to calculate how many households have access to safe drinking water and adequate toilet facilities.

**Table 10. Determinants of Urban Consumption**

	<b>GLSS 3</b>	<b>GLSS 4</b>	<b>Combined</b>
Primary (male) <sup>a</sup>	-0.0301 (0.43)	0.0344 (0.47)	-0.0022 (0.04)
Middle (male)	0.0737 (1.27)	0.0763 (1.60)	0.0747** (2.01)
Post middle (male)	0.1719*** (2.60)	0.1956*** (3.91)	0.1779*** (4.46)
No education information (male)	0.3195*** (4.95)	0.3293*** (6.18)	0.3274*** (7.92)
Age of male with highest education	0.0165** (2.24)	0.0052 (1.16)	0.0103*** (2.72)
Age <sup>2</sup> of male with highest education	-0.0157* (1.81)	-0.0057 (1.15)	-0.0103** (2.39)
Primary (female) <sup>b</sup>	-0.0194 (0.32)	0.0860* (1.91)	0.0581 (1.57)
Middle (female)	0.1754*** (3.85)	0.0657* (1.72)	0.1216*** (4.15)
Post middle (female)	0.3313*** (5.67)	0.3895*** (8.34)	0.3701*** (9.98)
No education information (female)	0.6648*** (12.50)	0.5397*** (11.63)	0.6061*** (17.19)
Age of female with highest education	-0.0207*** (2.81)	-0.0108** (1.99)	-0.0152*** (3.41)
Age <sup>2</sup> of female with highest education	0.0263*** (2.96)	0.0115* (1.85)	0.0176*** (3.37)
Value of land owned (log)	-0.0064 (1.51)	-0.0036 (1.02)	-0.0057** (2.19)
Major source of drinking water safe	0.0996 (1.12)	0.3860*** (4.79)	0.2880*** (6.17)
Toilet facilities	0.0759* (1.69)	0.0784** (2.11)	0.0878*** (3.48)
Men/women, 20– 45	0.1321 (0.22)	1.1103 (0.84)	-0.1885 (1.29)
Provider burden	-0.5323 (0.22)	-3.1335*** (0.84)	-1.3379*** (1.29)

	<b>GLSS 3</b>	<b>GLSS 4</b>	<b>Combined</b>
	(1.33)	(8.26)	(10.23)
Rainfall (mean)	-0.0001	-0.0002	0.0003 ****
	(0.48)	(0.30)	(3.44)
Rainfall (mean) x forest	-0.0011 *	-0.0006	-0.0009 ***
	(1.79)	(1.15)	(3.79)
Rainfall (mean) x savannah	-0.0010	0.0004	0.0001
	(0.93)	(0.40)	(0.38)
Rainfall (ratio) <sup>c</sup>	0.1629	16.1604 **	-0.0423
	(0.31)	(2.37)	(0.39)
Rainfall (ratio) x forest	-1.3467 *	-17.7633 **	-0.6451 ****
	(1.75)	(2.22)	(2.61)
Rainfall (ratio) x savannah	1.4178	-18.2505 **	-0.4835
	(0.26)	(2.05)	(1.23)
Rainfall (ratio) <sup>2</sup>	2.8244	-33.0248 **	2.1045 ****
	(0.97)	(2.13)	(6.68)
Rainfall (ratio) <sup>2</sup> x forest	0.0341	22.2853	-11.5670 ****
	(0.00)	(1.37)	(3.65)
Rainfall (ratio) <sup>2</sup> x savannah	-12.4468	36.8451	-10.4559 ****
	(0.56)	(1.21)	(3.62)
Forest	1.4182 *	1.6012 **	1.9186 ****
	(1.77)	(2.03)	(5.36)
Savannah	2.0950	0.0000	0.5972
	(1.13)	(.)	(1.29)
GLSS 4			-0.1197 **
			(2.48)
Constant	14.1602 ****	15.3863 ****	14.4248 ****
	(18.40)	(28.65)	(59.31)
Month of interview x ecological zone	Yes	Yes	Yes
Observations	1577	2168	3745
R-squared	0.21	0.40	0.30

Notes: Robust t statistics in parentheses  
\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

<sup>a</sup> Based on the male (18 or older) with highest education.  
<sup>b</sup> Based on the female (18 or older) with highest education.  
<sup>c</sup> (Rainfall in previous year - mean rainfall) / (mean rainfall).

For males, there appears to be even less of a return to education in urban areas than in rural areas.<sup>32</sup> There is no significant effect of primary or middle education compared to no education at all. The effect of having a post-middle educational level is about the same as in the rural areas, however, and is highly significant. The dummy for missing educational information on all males in the household has a large and significant positive effect, the reason for which is discussed above.

For females, both primary and middle education return positive effects. There is almost no difference between the two estimates, indicating that most of the positive effect comes from finishing primary education. Post-middle school education has a large and significant positive effect; again, the dummy for missing educational information is even larger.

<sup>32</sup> This is again based on the male, 18 years or older, with the highest level of education in the household.



Not surprisingly there is no significant effect of the value of land ownership. Both the estimated parameters for safe drinking water and having adequate toilet facilities are positive and significant, especially as regards access to drinking water. It is difficult to explain this effect, since it is unclear which way the causality runs. Areas that are better off are also likely to have households that spend more on these types of facilities. That said, it is at least encouraging that the effects have the expected signs.

Interestingly, variations in the ratio of men to women in urban areas have no significant effect, despite the fact that this variable captures the migration that follows depression of a local economy. In contrast, the provider burden has a significant negative effect, indicating that households that live in areas with relatively high ratios of children and old people to those of working age have lower consumption. The effect is greater in urban areas than in rural areas, which may indicate the lesser role in urban areas of children as contributors to the household economy.

The mean level of rainfall has no significant effect on household consumption in any of the three ecological zones. The rainfall ratio has a positive and significant effect for coastal areas, but virtually no effect in the forest and savannah zones. The square of the ratio produces a large and significantly negative effect for coastal areas, and possibly for the two other zones.<sup>33</sup> The interpretation of the combined effect is that for coastal areas a higher than expected rainfall has a positive effect until the rainfall is about 50 percent more than the average, while for forest and savannah areas any change from the average has a negative effect.<sup>34</sup>

## CONCLUSION

An important result from the findings presented here is that there appears to be low return to having a primary education. This may, however, be due to the fact that the benefit incidence takes mainly into account the income returns and does not take into account other ancillary benefits from primary education in terms of health and social welfare of the household. Hence, from an income point of view returns from primary education are low. It is only education at the middle school or higher level that returns a significant difference from having no education at all. Likely reasons for this include a low quality of primary education and the teaching of an irrelevant curriculum. The cost to ordinary Ghanaians of getting to a level of education that has a significant effect on poverty is prohibitive, with the result that there is a very real danger of transferring poverty from one generation to the next. Poor households cannot afford middle or higher schooling for their children and therefore cannot afford to give them this opportunity to escape poverty.

Another factor that can be influenced by policy is the infrastructure available to the household. Access to financial services, a market, and good roads are important to a household's ability to escape poverty. These factors have been downplayed in recent development policies but the results presented here show that they are still important. Empowering the farmer or laborer has little effect if he cannot travel, has no means of selling his produce, and has no access to job opportunities. Households in areas with a high ratio of men to women in their most productive years (a variable that is included to capture the extent to which migration is necessary) are generally worse off than those where the ratio is low. Policies aimed at job creation in these areas thus could have an importance effect on welfare.

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<sup>33</sup> The small sample size for urban households in the savannah zone means that even though there appears to be a positive effect of the squared ratio this is not significant.

<sup>34</sup> Due to the small sample in urban savannah, this conclusion should be interpreted with caution.

What ultimately is important is to establish what determines whether a household escapes or falls into poverty. In the absence of panel data, a fallback solution is to use a repeated cross-section approach. This is not ideal, but potentially could provide valuable clues to what types of policies really matter in the effort to get people out of poverty.

## 5. SUMMARY AND RECOMMENDATIONS

Despite a somewhat buoyant economy and despite achieving an average growth of around 4 percent during the 1990s, poverty persists as an unresolved issue in Ghana. Unlike many other countries, for which the lack of information makes poverty and welfare questions difficult to answer, Ghana is relatively well endowed with relevant data. Most notably, the country has carried out four consecutive Ghana Living Standards Surveys (GLSS), based on the Living Standards Measurement Survey (LSMS) developed by the World Bank to assess the welfare impact on households of economic reforms. In addition, there are many other surveys, including the Demographic Health Survey, the Core Welfare Indicators Questionnaire, and other national surveys, that can assist an understanding of which Ghanaian households and communities benefited from the country's economic gains and which were the losers. This paper depends primarily on the two GLSS surveys that were conducted in the last decade: namely GLSS 3, in 1991/2, and GLSS 4, from 1998/9.

### Poverty in Ghana Today

Based on the GLSS 3 and GLSS 4 data sets a poverty profile has already been published by the Ghana Statistical Service (GSS 2000b). This profile describes in detail how the lines defining poverty and extreme poverty were derived. Based on these lines, the report states that in 1992, 52 percent of the population of Ghana was poor (subsisting on less than 900,000 cedis per person per annum). By 1999 this figure had fallen to 40 percent.<sup>35</sup> This decline was not consistent across the country. The major reduction in poverty was observed in Accra and the forest zones, both urban and rural. There were modest declines in poverty in most other parts of Ghana, but in urban savannah regions poverty in fact increased.

Since 1992 poverty thus has continued to be a major rural phenomenon, with rural poverty running three times as high as urban poverty. The savannah zone, however, has a heavy concentration of both urban and rural poverty, suggesting that this zone has seen very little of the benefits of Ghana's economic growth. Extreme poverty again is concentrated in the savannah zone, and in this instance also in the coastal zones, where extreme urban poverty has seen almost no change at all. It is also worth noting that although overall poverty has seen some decline, the depth of poverty has virtually remained stable. The depth of extreme poverty has in fact increased.

Regionally, the Western, Greater Accra, Volta, Ashanti, and Brong Ahafo regions have all experienced declines in poverty. The Central, Northern, and Upper East regions have experienced poverty increases, as has the Central region, where the increase is very much a reflection of the worsening welfare situation of female-headed households in that region. In the Eastern region, where poverty has fallen slightly, female poverty has increased. This clearly shows that women are vulnerable and tend to be the primary victims of poverty. In terms of agriculture, export farmers have enjoyed the greatest gains in their incomes, while food crop farmers have been less fortunate.

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<sup>35</sup> However, as can be seen in the appendix from the simulations on poverty, Ghana's fight against poverty is substantially dependent on stimulating economic growth rates. These recently have been sluggish.

In the Central region, cash crop and food crop farmers have experienced an increase in poverty but cocoa farmers have seen their welfare improve. Cash crop farmers in the Northern region have experienced large increases in poverty, but the same group in Brong Ahafo have seen the largest fall in poverty. In the Upper West, the extreme poverty of food crop farmers has intensified. These findings are evidence of the nonsystematic pattern of the linkage between agriculture and poverty in rural Ghana.

As a measure of welfare, ownership of durable goods has in general increased, but here again the rural-urban dichotomy is evident: few rural households own durable goods in any significant amount. Examination of other welfare indicators, such as accessibility to potable water and toilet facilities, show that there have been some improvements overall, but again there are differences in the relative changes for rural-urban areas and poor-nonpoor households. Although for the poorest three quintiles access to potable water fell slightly between 1992 and 1999, urban households on the whole saw an increase in access. In rural areas, access to potable water increased from one-half of the population to almost two-thirds, with the bottom quintiles showing the greatest gains. This progress is in part due to community water initiatives.

The large increase in Kumasi-type Ventilated Improved Pit (KVIP) toilets in urban and rural areas similarly has been due to initiatives by the government. However, here the rural-urban contrast is stark. Among households of comparable welfare levels, those in rural areas have less than half the access of those in urban areas. Access to KVIP also increases from the poorest to richer quintiles. The major gains in this area, in both rural and urban parts, have been realized by the richer quintiles.

Ghana is ninth among Sub-Saharan African countries in per capita public spending and has the third-lowest mortality rate for children under five years of age. It also has the third-highest life expectancy. However, these national statistics conceal the regional disparities in quality of service that pervade the health system in Ghana. Health expenditures are substantially pro-poor, but since 1992 they have become less so: the poorest 40 percent receive less than 25 percent of health benefits. The number of people who do not use doctors increased between 1991/92 and 1998/99, to the point where more than 75 percent of people do not consult a public health facility even when they are ill. This is true for all urban and rural households, except the wealthiest urban households. The government clearly must attend to this problem if its health services are to benefit the poor. Significantly also, recent tracking studies have indicated that health facilities do not get 20-40 percent of the resources allocated to them, indicating some leakage.

In education, Ghana ranks fourth among the 13 West African countries in terms of primary Gross Enrollment Ratio (GER), at 84 percent. Ghana is also third in secondary GER (43 percent), second in literacy (70 percent), and ninth in tertiary enrollment. The country also has made considerable strides in narrowing the gender gap in education. However, as in the health sector these national averages hide many of the regional disparities that exist. Gender disparities are large in rural areas, and the Northern, Upper East, and Upper West regions have less than 50 percent GER. These regions furthermore have low per capita expenditure per pupil at all levels and there is limited access to schools. While education expenditures at primary level are pro-poor, at secondary level they favor the nonpoor. In addition, there are marked quality differences in education between public and private institutions, despite the recent increase in public spending on education. Again as in the health sector, tracking studies in education indicate that 66 percent of nonsalary recurrents at primary level reach the schools, and overall around 30 percent of the resources that should reach schools do not.

On the positive side, between 1991/92 and 1998/99 enrollment rates in primary and secondary education increased sharply. More than four out of every five children in Ghana now attend primary school. Enrollment rates are growing much faster in the savannah zone than in other regions, but rural savannah still lags behind. There is clear gender disparity in net enrollments at secondary level, however, which means that girls are dropping out at an increasing rate between primary and secondary school. This is particularly true in rural areas when compared to urban areas.

Analysis of the determinants of poverty provides some useful clues as to what might be the most important policy interventions to address poverty. First and foremost, it is clear that there need to be more jobs for the poor. This requires that the government pursue policies that promote growth, especially in rural areas and especially in sectors that can offer employment opportunities to the poor. This underscores the importance of export diversification and private sector growth as prerequisites for economic growth and employment generation. The regression analysis additionally highlights the importance of infrastructure and other market variables such as access to financial markets, markets for products, and good roads. These are areas in which Ghana has only made modest progress in the last decade. Finally, investments in the social sectors, especially education, need to be more focused in order to produce a skilled labor force. There is a clear need for post-primary education as a way of growing out of poverty.

### **Conclusion**

The Government of Ghana has prepared a Poverty Reduction Strategy Paper (PRSP) as a basis for future development assistance from multilateral and bilateral donors. To augment the understanding of the policy challenges that beleaguer Ghana, the government also has undertaken to produce background papers on understanding the causes and consequences of poverty, on the benefit incidence of public expenditure, and on tracking public expenditure flows. These studies are becoming integral to the effort to attract donor support to address the critical challenges in Ghana's struggle against economic revival, growth, and poverty reduction. It is clear that substantial progress in health, education, and social services broadly is required to improve the welfare and living conditions of the poor throughout the country. In addition, Ghana needs to pursue policies that promote export diversification and private sector growth if it is to achieve the growth targets that are necessary for the country to attain the Millennium Development Goal (MDG) poverty targets.

## 6. APPENDIX

### Annex 1

#### Household Survey data (1992-1998)

Distribution of Interviewed Rural Households per Month						
	GLSS 3			GLSS 4		
	Coastal	Forest	Savannah	Coastal	Forest	Savannah
January	3.09	12.54	8.76	13.65	5.49	12.77
February	6.18	8.95	13.77	18.20	7.69	8.51
March	6.03	9.50	9.89	.	.	.
April	10.82	9.58	10.14	4.44	8.79	10.64
May	17.00	8.79	5.01	6.83	10.00	8.62
June	13.91	7.99	2.50	9.10	13.08	10.53
July	12.36	8.79	6.38	11.38	8.85	12.77
August	9.12	5.43	5.51	13.65	14.23	8.51
September	4.48	3.91	5.76	5.46	6.70	7.66
October	9.27	5.91	8.64	3.64	4.34	5.11
November	4.64	7.19	13.64	4.55	12.03	8.51
December	3.09	11.42	10.01	9.10	8.79	6.38

Distribution of Interviewed Urban Households per Month						
	GLSS 3			GLSS 4		
	Coastal	Forest	Savannah	Coastal	Forest	Savannah
January	9.93	6.15	7.73	13.57	12.82	.
February	10.04	11.07	.	10.18	5.13	16.67
March	9.93	8.20	7.73	.	.	.
April	10.04	9.22	.	16.96	10.26	8.33
May	10.04	9.22	.	5.09	17.95	16.67
June	10.94	13.32	5.15	6.79	7.69	16.67
July	11.05	9.22	.	5.09	12.82	8.33
August	11.38	5.94	.	5.09	5.13	16.67
September	2.12	1.02	5.15	6.11	4.62	5.00
October	4.58	2.05	27.84	4.07	3.08	3.33
November	5.02	10.25	30.93	13.57	7.69	.
December	4.91	14.34	15.46	13.49	12.82	8.33

## Annex 2:

### Projections of Poverty Trends in Ghana, 1998-2020

This annex presents the preliminary trends in income poverty forecast for Ghana for the next two decades.<sup>36</sup> These are conditional projections and are explicitly based on the growth path of the domestic economy. The main purpose of the exercise is to demonstrate that the pace at which income poverty reduction is achieved critically depends on the rate of growth and on the distribution of that growth in the economy. If household consumption levels grow at rates comparable to recent GDP growth rates, the proportion of the population in poverty will almost halve by 2020, but given the rate of population growth (taken to be 2.6 percent per annum) the absolute numbers in poverty will remain largely unchanged.

The approach adopted in preparing these projections is as follows. We begin with the observed distribution of household consumption from the 1998/99 Ghana Living Standards Survey (GLSS 4). Consumption is taken to be the measure of economic well-being. Total household consumption includes the consumption of self-produced food, and imputations for home ownership and consumer durables. Regional variations in prices are taken into account. To take into account different household needs, total household consumption is divided by the number of household members. The welfare measure that underpins these projections is therefore real total household consumption per capita.

Given the distribution of this welfare measure in the base year (1998/99), we then assume that all households experience the same rate of growth in their consumption. The projections that are prepared are therefore distributionally neutral. Poverty estimates are then obtained from these consumption distributions, based on an unchanging real poverty line of 684,500 cedis per person per annum (expressed in the prices of Accra, January 1999). This poverty line corresponds to the real poverty line of 900,000 cedis per adult equivalent.<sup>37</sup>

Table 1 reports the result of this exercise for three basic projections, all of which take the rate of population growth as 2.6 percent per annum throughout the projection period. (The Annex provides graphic illustrations of these projections.) Projection 1 is the medium case, with an assumed growth of total household consumption of 6 percent per annum, giving a growth of 3.3 percent per annum in consumption per capita. Projection 2 is the low case, with consumption growth assumed at just 4.3 percent per annum, which is roughly in line with recent experience. Under this scenario, per capita consumption is assumed to grow at 1.7 percent a year. Finally Projection 3, the high case, assumes that Ghana's growth accelerates and that total household consumption grows by 7 percent per annum (4.3 percent in per capita terms).

If historical trends continue into the future and if household consumption grows at 4.3 percent per annum, the proportion of the Ghanaian population living in poverty is projected to decline from its current level of 40 percent to 22 percent by 2020. Given the base-year distribution, the impact of such growth is projected to be greatest for the urban population, with poverty declining to just 9 percent. The rural consumption poverty headcount is projected to fall from about

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<sup>36</sup> This annex was done in collaboration with Xiao Ye.

<sup>37</sup> We cannot use poverty line per adult equivalent to project poverty, because we use GDP growth rates per capita to project poverty. The unit of poverty line must be consistent with the unit of growth rate.

50 percent in 1998 to less than one-third in 2020. Interestingly, the absolute numbers in poverty hardly changes under this scenario, declining from 7.29 to 7.26 million.

**Table 1. Consumption Poverty Projections under Alternative Distributionally Neutral Growth Scenarios**

	1998	2005	2010	2015	2020
<i>Projection 1 (consumption growth of 6% per annum)</i>					
<i>Consumption poverty headcount (%)</i>					
Urban	18.6	13.0	8.7	5.0	2.6
Rural	49.9	38.9	30.7	22.5	15.9
All Ghana	39.5	30.3	23.4	16.6	11.4
<i>Total poor population (million)</i>	7.29	6.70	5.87	4.76	3.72
<i>Projection 2 (consumption growth of 4.3% per annum)</i>					
<i>Consumption poverty headcount (%)</i>					
Urban	18.6	15.0	12.4	10.4	8.5
Rural	49.9	43.2	37.9	33.4	29.9
All Ghana	39.5	33.8	29.4	25.7	22.7
<i>Total poor population (million)</i>	7.29	7.45	7.33	7.26	7.26
<i>Projection 3 (consumption growth of 7% per annum)</i>					
<i>Consumption poverty headcount (%)</i>					
Urban	18.6	11.9	7.2	3.2	1.1
Rural	49.9	36.7	26.2	17.1	10.5
All Ghana	39.5	28.5	19.9	12.5	7.3
<i>Total poor population (million)</i>	7.29	6.27	4.96	3.52	2.34

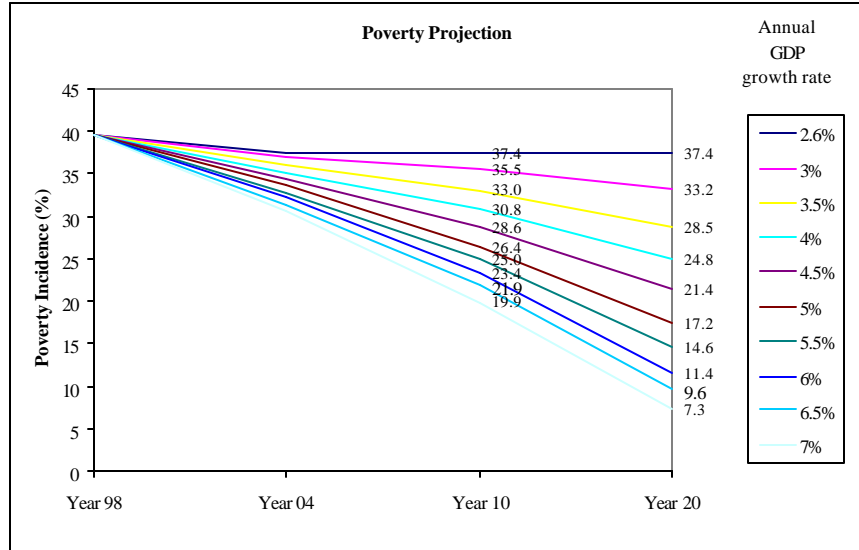
\*Source: World Bank staff calculation based on GLSS 4 data.

\*The growth rates from 1999 to 2001 are fixed, based on the Ghana Statistical Service estimates. They are 1.7, 1.2, and 1.4 percent per capita per annum for 1999, 2000, and 2001 respectively.

Given the structure of poverty in the base year, the pace of poverty decline is seen to be sensitive to the rate of growth in total consumption. At the high end, a growth rate of 7 percent per annum over the coming two decades would eradicate urban poverty and reduce rural poverty to just over 10 percent of the population. There also would be a sharp decline in the absolute numbers in poverty, to just 2.3 million. Although less dramatic, an acceleration in the growth of consumption to 6 percent per annum also would give sharply declining numbers in poverty. Figure 1 illustrates the poverty incidence in 2010 and 2020, given different growth rates.

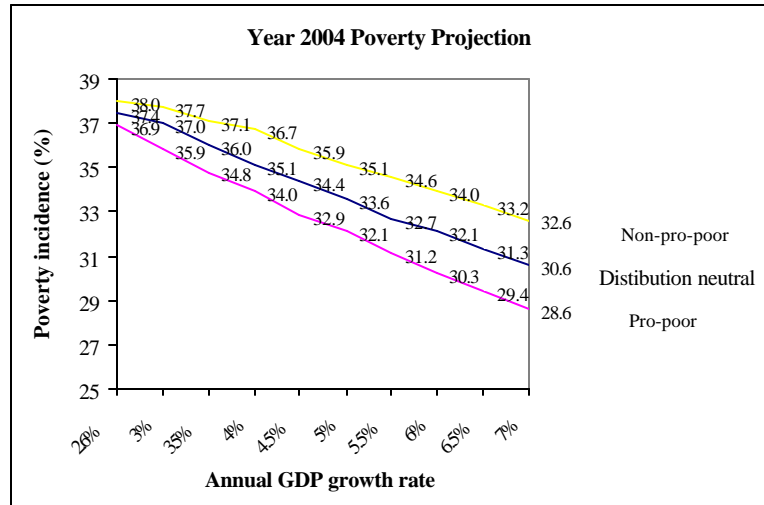


**Figure 1. Poverty Projections, Given Different Growth Possibilities  
(Distributional Neutral)**

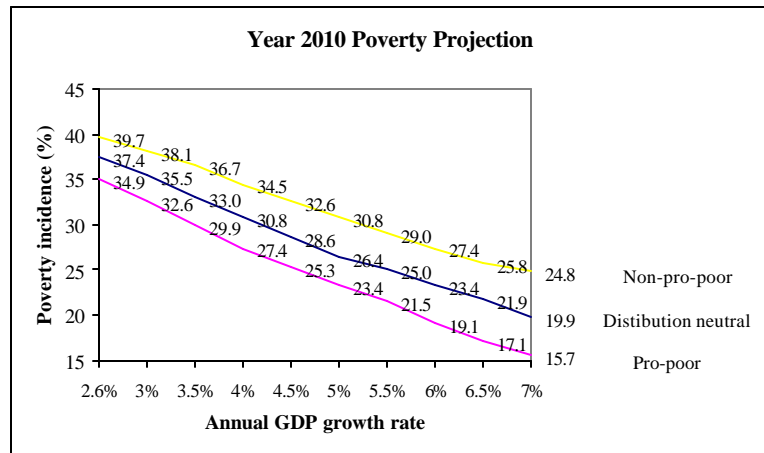


We also projected the poverty incidence assuming different growth rates in the agricultural, industrial, and service sectors. These sectoral projections are similar to the distributional neutral scenario presented above, thus they are omitted from the discussion. However, there are possibilities that the benefit of growth would not go to everyone equally. The poor may benefit more or less than the nonpoor from the economic growth. We found that poverty projection departs from the distributional neutral projection if the poor gain 20 percent more or less of growth. Figures 2 to 4 show the poverty projection for 2004, 2010, and 2020, respectively, based on the assumptions distributionally neutral, the poor gaining 20 percent more, and the poor gaining 20 percent less. For 2020, for example, if the poor were to continue to gain 20 percent more than the average growth rate, the poverty incidence would be 3 percent instead of 7 percent.

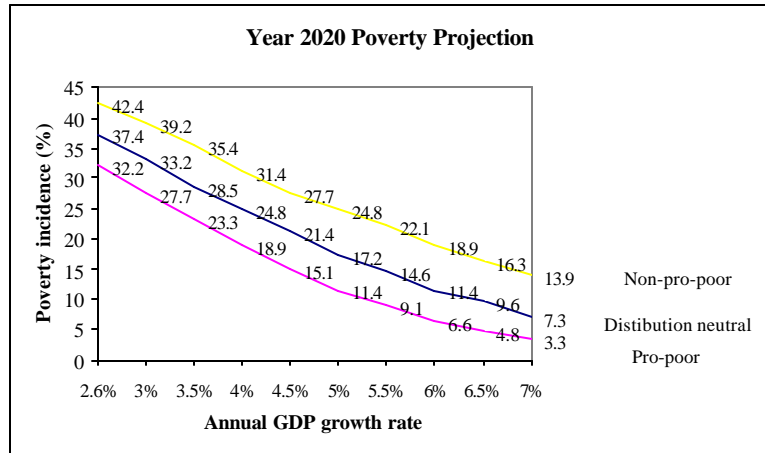
**Figure 2. Year 2004 Poverty Projection**



**Figure 3. Year 2010 Poverty Projection**



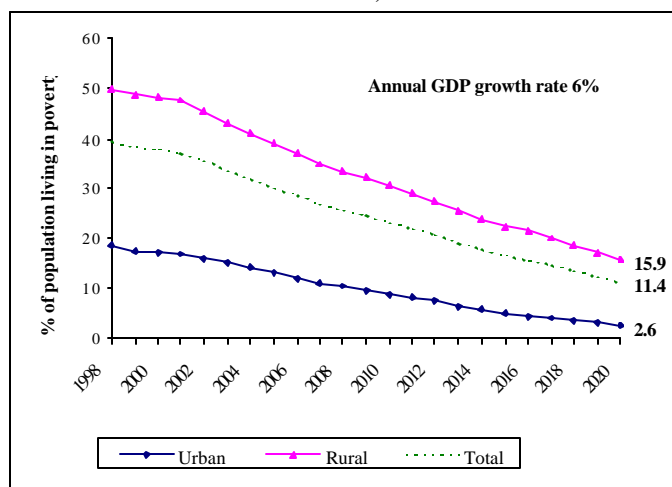
**Figure 4. Year 2020 Poverty Projection**



Although the pro-poor scenario does not seem to contribute significantly to poverty reduction, one must remember that past experiences tell us that it is unlikely that a highly unequal society would be able to sustain a healthy growth. Growth also depends on distribution. Our growth projection is conditioned on the current income distribution. If the inequality were to increase, it is likely that the growth would be lower and unsustainable in the future. The actual impact of the distribution of growth benefit is likely to be larger than illustrated here.

### Annex 3

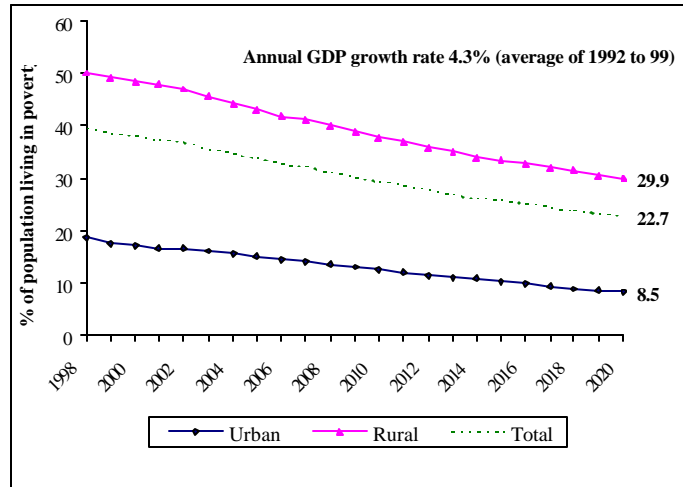
**Figure A1. Projection 1: Poverty Headcount by Rural and Urban Residence, 1998-2020**



**Table A1. Projection 1: 6 Percent GDP Growth Rate, Poverty Headcount by Rural and Urban Residence, 1998-2020**

	1998	1999	2000	2001	2002	2003	2004	2005
Urban	18.6	17.5	17.3	16.8	16.1	15.0	14.2	13.0
Rural	49.9	49.1	48.3	47.7	45.4	43.2	41.1	38.9
Total	39.5	38.6	38.0	37.4	35.7	33.8	32.1	30.3
Total population	18.46	18.95	19.45	19.95	20.47	21.00	21.55	22.11
Total number of poor (millions)	7.29	7.31	7.39	7.46	7.31	7.10	6.93	6.70
	2006	2007	2008	2009	2010	2011	2012	2013
Urban	12.0	11.2	10.5	9.7	8.7	8.2	7.6	6.5
Rural	37.0	35.0	33.5	32.2	30.7	29.2	27.5	25.6
Total	28.7	27.1	25.8	24.7	23.4	22.2	20.9	19.3
Total population	22.69	23.28	23.88	24.50	25.14	25.79	26.46	27.15
Total number of poor (millions)	6.51	6.31	6.16	6.05	5.87	5.74	5.53	5.23
	2014	2015	2016	2017	2018	2019	2020	
Urban	5.8	5.0	4.2	4.1	3.5	3.2	2.6	
Rural	24.0	22.5	21.7	20.2	18.7	17.1	15.9	
Total	17.9	16.6	15.9	14.9	13.7	12.5	11.4	
Total population	27.86	28.58	29.32	30.09	30.87	31.67	32.49	
Total number of poor (millions)	5.00	4.76	4.65	4.47	4.21	3.95	3.72	

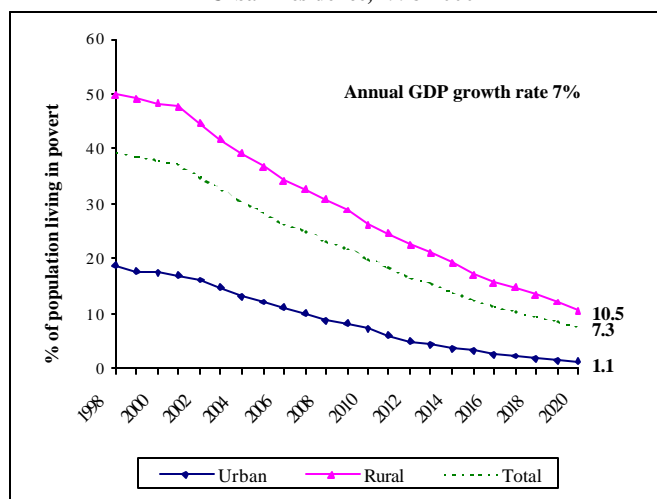
**Figure A2. Projection 2: Poverty Headcount by Rural and Urban Residence, 1998–2020**



**Table A2. Projection 2: 4.3 Percent GDP Growth Rate, Poverty Headcount by Rural and Urban Residence, 1998–2020**

	1998	1999	2000	2001	2002	2003	2004	2005
Urban	18.6	17.5	17.3	16.8	16.7	16.1	15.5	15.0
Rural	49.9	49.1	48.3	47.7	46.9	45.4	44.2	43.2
Total	39.5	38.6	38.0	37.4	36.8	35.7	34.7	33.8
Total population	18.46	18.95	19.45	19.95	20.45	20.96	21.49	22.02
Total number of poor (millions)	7.29	7.31	7.39	7.46	7.53	7.48	7.45	7.45
	2006	2007	2008	2009	2010	2011	2012	2013
Urban	14.5	14.1	13.5	13.0	12.4	12.0	11.4	11.1
Rural	41.8	41.1	40.0	38.9	37.9	36.9	35.9	35.0
Total	32.7	32.1	31.2	30.3	29.4	28.6	27.8	27.0
Total population	22.57	23.14	23.72	24.31	24.92	25.54	26.18	26.83
Total number of poor (millions)	7.39	7.43	7.39	7.36	7.33	7.31	7.28	7.25
	2014	2015	2016	2017	2018	2019	2020	
Urban	10.9	10.4	9.9	9.4	9.0	8.6	8.5	
Rural	33.9	33.4	32.8	32.0	31.5	30.6	29.9	
Total	26.2	25.7	25.2	24.5	24.0	23.3	22.7	
Total population	27.51	28.19	28.90	29.62	30.36	31.12	31.90	
Total number of poor (millions)	7.21	7.26	7.28	7.25	7.28	7.25	7.26	

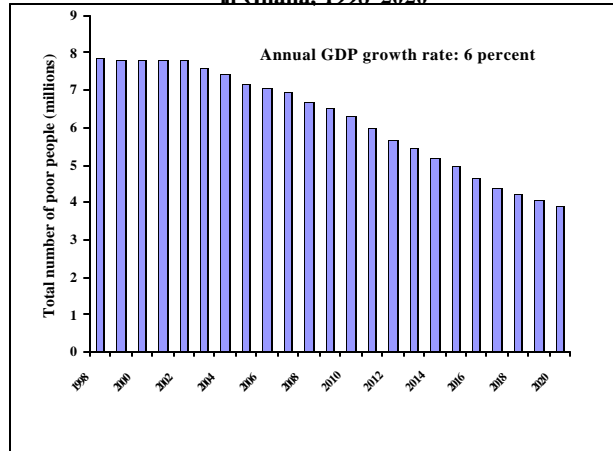
**Figure A3. Projection 3: Poverty Headcount by Rural and Urban Residence, 1998-2000**



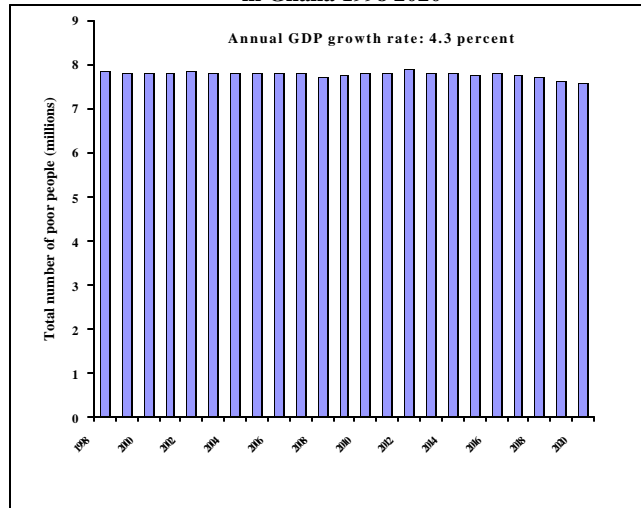
**Table A3. Projection 3: 7 Percent GDP Growth Rate, Poverty Headcount by Rural and Urban Residence, 1998-2020**

	1998	1999	2000	2001	2002	2003	2004	2005
Urban	18.6	17.5	17.3	16.8	15.9	14.5	13.0	11.9
Rural	49.9	49.1	48.3	47.7	44.6	41.7	39.3	36.7
Total	39.5	38.6	38.0	37.4	35.1	32.7	30.6	28.5
Total population	18.46	18.95	19.45	19.95	20.45	20.96	21.49	22.02
Total number of poor (millions)	7.29	7.31	7.39	7.46	7.17	6.85	6.57	6.27
	2006	2007	2008	2009	2010	2011	2012	2013
Urban	11.0	9.9	8.7	8.0	7.2	5.9	4.9	4.2
Rural	34.1	32.4	30.6	28.8	26.2	24.6	22.4	21.0
Total	26.4	25.0	23.3	21.9	19.9	18.4	16.6	15.4
Total population	22.57	23.14	23.72	24.31	24.92	25.54	26.18	26.83
Total number of poor (millions)	5.95	5.77	5.53	5.31	4.96	4.69	4.34	4.14
	2014	2015	2016	2017	2018	2019	2020	
Urban	3.6	3.2	2.3	2.0	1.6	1.3	1.1	
Rural	19.2	17.1	15.6	14.6	13.3	12.0	10.5	
Total	14.0	12.5	11.2	10.4	9.4	8.5	7.3	
Total population	27.51	28.19	28.90	29.62	30.36	31.12	31.90	
Total number of poor (millions)	3.84	3.52	3.22	3.08	2.86	2.64	2.34	

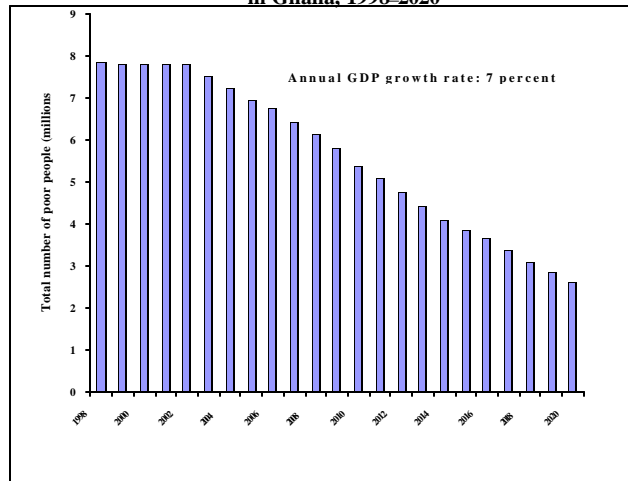
**Figure A4. Projection 1: Absolute Numbers in Poverty in Ghana, 1998–2020**



**Figure A5: Projections 2: Absolute Numbers in Poverty in Ghana 1998-2020**



**Figure A6. Projection 3: Absolute Numbers in Poverty in Ghana, 1998-2020**





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