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ABBREVIATIONS AND ACRONYMS

CPI	Consumer Price Index
DHS	Demographic Health Survey
EA	Enumeration Area
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GLSS	Ghana Living Standard Survey
ICT	Information and Communications Technology
IMF	International Monetary Fund
MDG	Millenium Development Goal
GSS	Ghana Statistical Service
PPP	Purchasing power parity
USAID	United States Agency for International Development
WB	World Bank

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Acknowledgments

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1. EXECUTIVE SUMMARY

Since 1991 the national poverty rate of Ghana has more than halved. This is a remarkable success for the country for two reasons. First, not many other Sub-Saharan countries managed to reduce poverty this fast and with these steady trends. Second, the fact that this result can be monitored using high quality and comparable GLSS surveys is a success in itself. Very few countries in the region can rely on four comparable poverty figures covering the last two decades to determine reliable poverty trends: in most cases observations are two or less and often only the 2000 decade is covered, and very little is known about the 90s.

The estimated national headcount poverty ratio fell by 31.2 percentage points from 52.6 percent in 1991 to 21.4¹ percent in 2012. Between survey years the highest poverty reduction is recorded between 1991 and 1998 where the national poverty reduced by 13 percentage points, compared to the periods between 1998-2005 and 2005-2013 where poverty decreased by 11 and 7.1 percentage points respectively. According to these estimates, the country seems on track to reduce the poverty rate by half in line with the Millennium Development Goal objective number 1

Heterogeneity of poverty outcomes is, however, high both across urban and rural areas and across regions. Two spatial trends have emerged. Compared to 1991, poverty remains a rural phenomenon and the North is increasingly where the lion's share of it is found. Rural poor accounted for about 80% of total poor in 1991 and their share remains unvaried in 2012. The concentration of the poor in the North is quite clear. While in 1991, 25% of the poor lived in the North, the share has increased to about 40% in 2012, this is even with the share of Northern population over the total stabilizing around 17%-18%.

The robustness of these poverty trends is checked with trends of five correlates: urbanization and rural-urban migration, remittances, asset growth, labor market transformations and agricultural productivity growth. Some preliminary results on drivers of poverty reduction from ongoing researches are presented.

Urbanization turns out to be highly correlated with poverty reduction. Regions that were relatively more urbanized and experienced fast urbanization in the last two decades were also those more successful in reducing poverty. This despite the fact that their population massively increased. This increase is the direct result of the accelerated rural-urban migration of the last decade. 'Endogenous' increase of urban population and the reclassification of peri-urban rural areas into urban can explain part of the recent increase in urban population yet the main explanation remains the mass migration from rural to urban areas. Also related to migration,

¹ As explained later, this is not the official rate. This is the rate obtained using the old 1999 poverty line comparable over 4 rounds.

there is an overall a correlation between remittances inflow and poverty reduction. Households in Southern and Central regions are more likely to receive remittances and the peak in remittance inflows also coincide with fast poverty reduction in these regions. A more in depth analysis is however needed to evaluate whether these had an impact on poverty.

Ghana is undergoing a slowly emerging labor market transformation. The shift out of agriculture translated into an increase in the non- agricultural self-employment and to a minor extent into wage jobs. Only in highly urbanized areas like Accra does wage (formal) sector represent a relevant source of employment for the labor force; in the rest of the country wage employment represents barely 20% of the employed labor force. Furthermore, important changes are taking place in the general education levels of the labor force. Compared to 1991, Ghanaian labor force has accrued higher levels of education and workers without any schooling are becoming a tiny minority in most of regions. The majority of workers in Southern and Central regions have completed junior secondary and about 20% possess a senior secondary degree or tertiary. However, in Northern regions, although there is a clear improvements, education attainment still lags behind. In 2012 in these regions, 50% of workers don't have any education and about 70% have primary education or less.

Poverty trends and asset index trends turn out to follow a similar pattern in both urban and rural areas and by regions: asset index increase where poverty decreases. In the last decade, variations in consumption preceded the variation in the asset index; the big increase in consumption –and reduction in poverty- registered between 1998 and 2005 is followed by a fast accumulation in assets between 2005 and 2012 as if households invested revenues from previous growth into durable goods and in capital.

In the report we try to understand the drivers of recent decrease in poverty in northern regions. We focus our attention on two different aspects, the agricultural productivity growth and the inflation patterns. Although very preliminary, we observe in northern regions a generalized increase in production of main food crops and an increase in productivity. Northern regions were also less affected by the generalized increase of inflation registered in the country between 2012 and 2013. This because their market connectivity with rest of the country is limited and the price shock was mainly affected the non-food component which in these regions accounts for less than 40% of the total budget.

To test the contribution of most of these drivers to poverty reduction, we estimated unconditional quintile regressions over the 20th, 40th and 60th percentiles and decomposed the results using the Oaxaca Blinder method. Three results are noteworthy. First, households in higher percentiles managed over the years to accumulate more assets, human capital, job opportunities than lower percentiles. Conversely, the variation in the covariates returns, with the notable exception of the period 1991-1998, is very similar across percentiles. Second, there is a relevant price effect occurring between 1998 and 2005. Returns on scarce inputs such as skills,

capital and infrastructures grew very fast. This as we will see in the inequality section, had a strong distributional impact: this is the period when disparities between North and the rest of the country accentuate. Finally the growth in consumption between 2005 and 2012 is mainly driven by endowments and relative to the previous period seems smaller and more egalitarian. The stagnation in the returns on covariates and the increase in endowments, seems to suggest that the high returns obtained in the previous period encouraged households to invest in assets and human capital. This clearly reduced their scarcity but at the same time returns declined. Lower returns meant that those with these inputs experienced a relative stagnation in their revenues.

To further strengthen the spatial analysis of poverty we constructed a new poverty map based on GLSS 6 (conducted in 2012/13) in combination with the 2010 census, which was then compared with the 2000 map. Compared to the one constructed in 2000, it confirms the big achievements in poverty reduction obtained by the country. A big area comprising Western region, Ashanti, Eastern region, southern Brong Ahafo, Greater Accra and coastal Volta shows poverty rates below 20% when in 2000 it used to show poverty rates between 20 and 40%. The Central belt that used to register poverty rates above 40%, in most of its districts, now registers poverty rates below 40%. Also Northern regions, although not uniformly, experienced important improvements. If we exclude Upper West, poverty has declined below 60% and in certain district in Northern region even below 40%.

The final section of this profile focuses on inequalities seen from three different perspectives: consumption inequality, inequalities of opportunities and polarization. The analysis of consumption inequality suggests that inequality has increased over the period considered. The spatial divide in the form of North-South gap and Accra vs rest of the country gap are clearly relevant contributors. The multivariate analysis was used to identify other drivers of inequality that played and will continue to play an important role. Education of the head, assets ownership, access to remittances play an important role in explaining consumption differences among households. Age is also found to play a role. There is rising consumption inequality over the life-cycle, particularly among urban households. All this suggests that inequality in Ghana is multifaceted and needs to be analyzed from different angles.

The calculation of the Human Opportunity Index sheds light on another dimension of inequality often disregarded, that of opportunities. Ghanaian children confront considerable disparities of access to different opportunities for basic human development. The biggest challenges for Ghanaian children correspond to five opportunities: expanding access to adequate cooking fuel, access to Internet and water, school grade on time for adolescent, and sanitation.

The urban-rural disparities are also reflected in the HOI. Compared to urban children, rural children face a disproportionate opportunity gap. Their extreme level of deprivation is illustrated by the fact that nearly half of rural children – roughly 3.1 million- have access to two opportunities or less -out of a total of seven.

Between 2012 and 2005, as seen also in the inequality in consumption analysis, there is a modest narrowing of urban-rural opportunity gap between 2005 and 2013. This was helped by the poor urban performance. The urban-rural opportunity gap dropped for all aggregate and specific HOIs, thanks to a much better performance –higher average annual rates of growth- of all specific HOIs in rural areas and relative poor performance of five urban HOIs during the same period. Regarding the opportunity gaps across regions Ghana experienced moderate convergence, but inter-regional rankings remains basically unchanged. But across ecological zones opportunities are diverging.

Finally, we analyzed the trends of polarization in Ghana. Whereas inequality is the overall dispersion of the distribution, referring to the distance of every individual from the median or mean income, polarization is the combination of divergence from global and convergence on local mean incomes. The country represents an interesting case for such analysis. First, because differently from other countries in the area, the levels of inequality would not suggest that so significant distributional changes have taken place. In fact, the analysis of polarization shows quite the opposite. Net of the consumption per adult equivalent increase, a clear rise in polarization is detected, meaning that the distributional movements observed in the last two decades (1991-2012) hollowed out the middle of the Ghanaian household consumption distribution and increased concentration of the mass toward highest and lowest deciles.

The time trend is also of particular interest. Likewise inequality, polarization in Ghana started to increase in the late 90's, accelerated in 2005 and finally kept growing in 2012 but at a slower pace. Finally, as preliminary results are showing, the polarization process is highly heterogeneous². In Greater Accra, the overall shift to the right of the household expenditure distribution masks a significant polarization in both the lower and upper tails, while in the poorest regions (as the country as a whole) the growth of polarization is mainly due to a downgrading of lower consumption expenditures.

² See 'Polarization and its Discontents': the case of Ghana

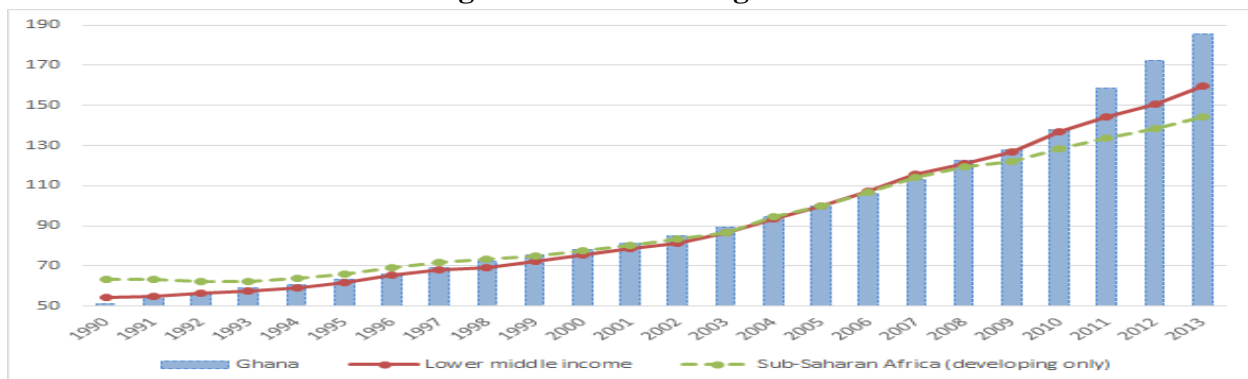
2. POVERTY TRENDS

MACROECONOMIC CONTEXT

In Ghana, after a decade of slow growth in the 1990s, growth started to increase in the early 2000s and then accelerated to unprecedented levels after 2010. Ghana attained middle income status in 2010 following the discovery of oil. The country has managed to post relatively strong growth rates over the past five years despite facing external shocks such as reduced trade revenues and oil and food price increases. Economic activity remained strong after the rapid revival of the growth of gross domestic product (GDP) after the 2009 financial crisis. Economic growth had been robust and steady since early 2000s, showing strong resilience to the global economic crisis.

Since the 2009 financial crisis, Ghana has been growing more quickly than other Sub-Saharan countries and, starting in 2011, more quickly than the average lower-middle-income country (figure 1.1). Compared with other developing countries, per capita GDP in Ghana was the sixth most rapidly growing.

Figure 1.1: Real GDP growth

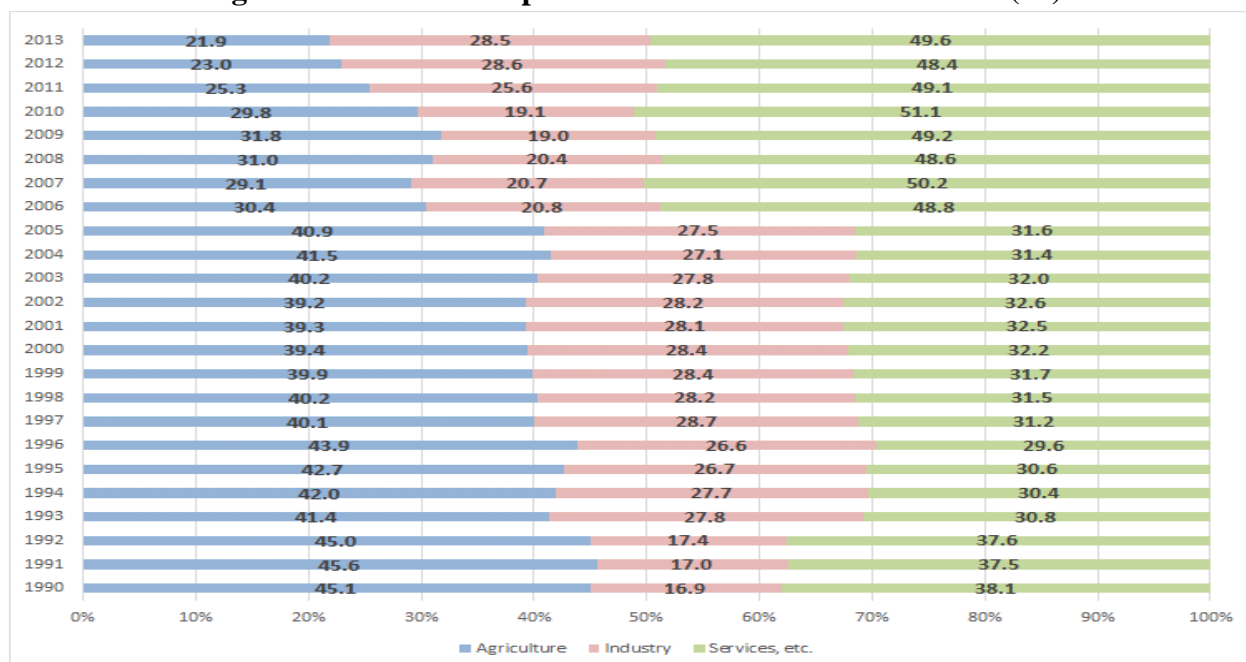


Source: World Development Indicators database.

The largest contributor to GDP in 1990–2005 was agriculture, even though the service sector was expanding more quickly (figure 1.2). This changed beginning in 2006 when services became the largest contributor to GDP, with an average annual growth of about 13.2 percent in 2007–13. In contrast, the rate of growth of the labor-intensive agriculture sector, which employs more than half the workforce, was only 3.7 percent in 2007–13, far lower than average growth. The agriculture sector has continued to underperform compared with the rest of the economy. Agriculture has been shrinking as a share of GDP, falling from 29.1 percent in 2007 to 21.9 percent in 2013. Agriculture is dominated by smallholders who account for about 80 percent of domestic production, with an average farm size of 1.2 hectares and low use of

improved technology. The top 5 most widely produced commodities are cassava, yams, plantains, coco-yams, and oil palm fruit.

Figure 1.2: Sector Composition of Gross Domestic Growth (%)



Source: World Development Indicators database.

The most competitive cash crop is cocoa beans, of which Ghana controls, on average, 14.5 percent of the world market and is the third largest producer. Nonetheless, the average yield per hectare is extremely low compared with the top 2 cocoa producers. On average, in 2005–12, had the lowest yield per hectare relative to the top 2 producers: 431.0 kg/ha in Ghana, 576.0 kg/ha in Indonesia, and 595.7 kg/ha in Côte d’Ivoire. Other cash crops include cotton, rubber and tobacco, which, in Ghana, account for low world shares. While the volume of major crops has increased in recent years, large amounts of produce never reach the market. Poor pricing and unreliable cash flow to farmers continue to inhibit growth in the agricultural sector.

By mid-2000, the service sector had overtaken agriculture as the largest sector in the economy. The boom in the service sector derived from a number of different factors. One was the rapid growth of high value added services such as information and communications technology (ICT), finance and insurance, and real estate. This growth took place mainly in Accra, which, in the last decade, saw a massive inflow of capital, but also a surge in real estate prices. The other service component is represented by those activities, borderline between formal and informal, that characterize West African towns: retail activities, construction, transport, and so on. One must also take into account the rapid growth of public service delivery such as education and health care. Employment in these sectors and in public administration expanded substantially during these years. The manufacturing sector has also increased relative to

agriculture, and, in 2011, for the first time since independence, its share in total GDP was larger than that of agriculture. The main contributor, besides, gold was crude oil production.

Recent trends

Ghana undertook its first oil and gas production in the first quarter of 2011. However, by the end of 2012, the targeted productivity revenues had declined. The capital inflow from crude oil and gas production into the economy is expected to continue to increase. However, one of the main challenges is turning this oil windfall into lasting development. Oil rents—the difference between the value of crude oil production at world prices and the total costs of production—continue to increase, peaking at 6.5 percent in 2013. Oil and gas exploration is ongoing, and the fields are expanding. Overall, energy production rose by 50.2 percent in 2011. The 2011 Petroleum Revenue Management Act has guaranteed that the payments and details on what the government does with its share of royalties are made public.³ The act allows 30 percent of the receipts to be set aside as savings, and the use of the remainder depends on the key priorities set by the Ministry of Finance every three years. Ghana is a member of the Extractive Industry Transparency Initiative (EITI) and is compliant.⁴

Ghana has suffered a number of serious macroeconomic shocks, both external and domestic, since 2012. Major external shocks included the rupture of the West African gas pipeline in 2012 and the highly volatile prices of gold exports. The pipeline supplies Benin, Ghana, and Togo with natural gas from Nigeria. Ghana was then forced to increase oil imports to generate electricity, causing the import bill to rise dramatically, to approximately US\$27 million a month.⁵

The increase in imports was partially offset by rising export prices for gold. However, by 2014, global gold prices had tumbled and could not offset the increase in oil imports. Furthermore, the rising oil imports pushed the current account deficit to an average of 11.5 percent of GDP in 2012–13, and it remained high at 9.2 percent in 2014. Currency exchange rates depreciated the cedi by 35 percent against the U.S. dollar on the official interbank market and by 43 percent on the Forex Bureau market.

The escalating cost of the public sector wage bill and the energy-rationing regime adopted in response to the gas supply disruption and the liquidity constraints associated with the purchase of oil exacerbated imbalances. These two shocks were interrelated and impacted

³ Government of Ghana Act 815.

⁴ A country is designated compliant if it meets all EITI requirements. Compliant countries must undergo validation every three years or upon the request of the EITI Board. EITI compliance does not mean a country's extractive sector is fully transparent, but that there are reasonable levels of disclosure and openness in the management of natural resources, as well as a functioning process to oversee and improve disclosure.

⁵ Oil imports rose in value from US\$2.9 billion in 2012 to US\$3.7 billion in 2014; see World Bank (2014).

negatively both public finances and the supply side of the economy. Between 2010 and 2013, public sector employment grew at an average rate of over 6 percent a year, more than double the rate of private formal sector employment in 2000–10. The growth of the wage bill not only contributed to inflationary pressures through demand-side effects, but also distorted the labor market by establishing a public sector wage premium.⁶

Expansionary fiscal policies increased inflationary pressures. Overall inflation rose sharply, from 8.8 percent in 2012 to 17.0 percent in 2014, and nonfood inflation increased from 11.6 percent to 23.9 percent. The producer price index (PPI) climbed by around 17.1 percent in 2012 before jumping to 35.8 percent in 2014. The inflationary impact of central bank financing was aggravated by rising public sector wages, pass-through effects from rising fuel and utility prices, and the depreciation of the cedi, which effectively boosted import prices.

In an effort to stabilize the economy, the government prepared and adopted a multiyear plan aimed at reducing the fiscal deficit. The government took a number of important steps to address fiscal imbalances, including the elimination of subsidies on fuel products and utilities. In 2013, as crude oil prices rose and the cedi depreciated, the government began to pass a larger share of the higher cost of energy production on to consumers, which severed the link between commodity price volatility and fiscal accounts. In February 2013, administratively set gasoline and diesel prices increased by 20 percent, and, by December 2014, gasoline and diesel prices had risen by 100 percent, while liquefied petroleum gas prices rose by 128 percent over the same period. Median electricity prices shot up by 160 percent between October 2013 and December 2014, and water prices increased by 80 percent.

This adjustment, combined with the rapid increase in inflation and the depreciation of the cedi had a strong impact on household consumption in urban areas other than Accra and, in general, in southern Ghana (see below). The northern regions, characterized by less market connectivity and a more autarchic economy, suffered less from the macroeconomic shock and managed to grow relatively more quickly than most of the coastal areas (see map in Appendix).

2.1 POVERTY PATTERNS, 1991–2012

Six rounds of Ghana Living Standard Survey (GLSS) data have been collected since 1987/88, thereby providing over 20 years of comparable data. However, only the last four rounds, from GLSS 3 to GLSS 6, were based on the same questionnaire and are thus fully comparable. GLSS collects sufficient information to estimate the total consumption of each household. This covers the consumption of both food and nonfood items (including housing). Food and nonfood consumption commodities may be explicitly purchased by households or

⁶ The preliminary results of an analysis of compensation determinants and returns to education in Ghana show that government workers enjoyed a wage premium of 24 percent relative to their private sector counterparts and that this premium increased significantly between 2006 and 2013. See Beegle, Herrera, and Awanzam (2015).

acquired through other means (own production activities or receipts). The household consumption measure takes into account all these sources in the different modules of the questionnaires.

<i>Data set</i>	<i>Collection period</i>	<i>Sample size</i>	<i>Representativeness</i>	<i>Comparability</i>
GLSS 1	Sept. 1987–Aug. 1988	3,172	National, urban and rural	GLSS 1 and 2 comparable
GLSS 2	Oct. 1988–Aug. 1989	3,194	National, urban and rural	GLSS 1 and 2 comparable
GLSS 3	Sept. 1991–Aug. 1992	4,523	National, urban and rural	Comparable
GLSS 4	Apr. 1998–Mar. 1999	5,998	National, urban and rural	Comparable
GLSS 5	Sept. 2005–Aug. 2006	8,687	National, urban and rural	Comparable
GLSS 6	Oct. 2012–Oct. 2013	16,772	National, urban and rural	Comparable

The availability of surveys beginning in 1991 allows an updated and detailed analysis of the poverty situation in Ghana. The surveys have improved in quality over the years and collected both monetary and nonmonetary dimensions of welfare, thereby permitting an accurate analysis of poverty and inequality over time. The GLSS has emerged as one of the most important tools for the welfare monitoring system in Ghana. It provides not only the basis for official welfare measures and analysis, but also for detailed information on several socioeconomic and demographic characteristics, the household consumption of purchased and home-produced goods, asset ownership, and remittances.

The GLSS is based on a two-stage (nonstratified) sample design. Therefore, in data analysis, sampling weights are used to account for the survey design. Observations with zero values for consumption are omitted to prevent them from leading to inconsistent and biased estimates. To enhance the comparability of consumption data over the four waves, all expenditures are deflated across both space and time and expressed in 2005 constant prices and are converted, if necessary, from Ghanaian second cedi to Ghanaian third cedi, that is, for GLSS-3 to GLSS-5.

Each of the waves is organized in four modules, which are stored in the individual, labor force, household, and household expenditure files. The GLSS is also part of the Survey-Based Harmonized Indicators Program, which is run by the World Bank to combine and harmonize household surveys for various Sub-Saharan countries, including Burkina Faso, Cameroon, Ethiopia, Gambia, Ghana, Kenya, Madagascar, Malawi, and Zambia. The program involves verification for internal and external consistency and harmonization of a common set of variables.

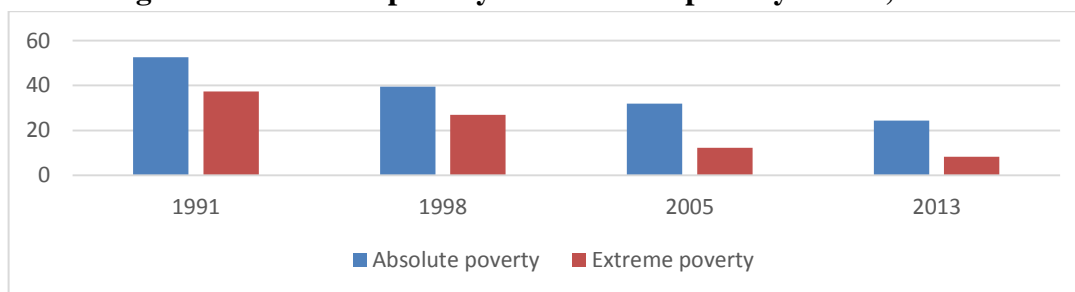
In GLSS rounds 3, 4, and 5, the same poverty line constructed in 1999 was used. In 2013, however, the Ghana Statistical Service revised the poverty line and modified the basket to take into account the significant changes that had occurred in the consumption basket (see appendix I). Official poverty figures for 2012 were then computed using the new poverty line. The presence of two different poverty lines based on different baskets poses a serious problem of comparability across poverty figures.

Given that this report compares poverty trends over 20 years and identifies the drivers of poverty reduction, it seems reasonable to use one poverty line (the one of 1999) and deflate nominal consumption using 2005 as a baseline. Although, for 2012, we do not use the officially rebased poverty line, the poverty rate computed using the old line is not so different. Using the deflated old poverty line, the poverty rate in Ghana would be 21.4 percent compared with the official 24.3 percent. Likewise, using the new line and re-computing the poverty figures for 2005, the rate would increase to 31.9 percent against the official 28.5 percent, which is not a substantial variation.

Poverty over time, 1991–2012

Consumption measures of poverty indicate Ghana recorded a large reduction in poverty in the last two decades. The estimated national headcount poverty ratio fell by 31.2 percent, from 52.6 percent in 1991 to 21.4 percent in 2012. Between survey years, the highest poverty reduction was recorded between 1991 and 1998, when the decline was 13.0 percent, compared with 1998–2005 and 2005–13, when the poverty rate was reduced by 11.0 and 7.1 percent, respectively. This is despite the fact that average GDP per capita growth was lower between 1991 and 1998 and between 2005 and 2012 (2.2 and 5.3 percent, respectively; see figure 1.1). Between 1991 and 2012, the poverty rate, irrespective of the line used, fell by more than half. According to official 2012 estimates, the country seems on track to reduce the poverty rate by half in line with Millennium Development Goal 1.

Figure 2.1. National poverty and Extreme poverty trends, 1991–2012

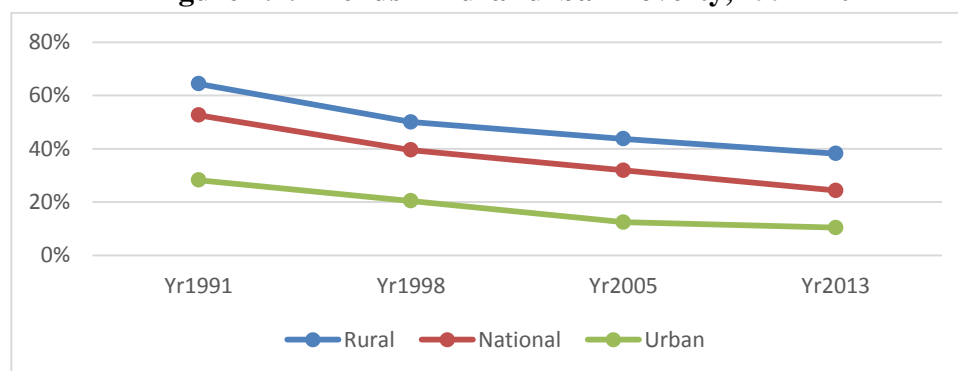


Source: Calculations based on GLSS 3–6.

Extreme poverty has also declined, but at a slightly more rapid rate (see figure 2.1). The extreme poor are those people who cannot satisfy basic minimum food needs even if they allocate all their income to food. This is the food-insecure population. The share of the population with consumption below the food poverty line in Ghana declined from 37.3 percent in 1991 to 8.4 percent in 2013, falling by nearly 80 percent (figure 2.1).

Poverty is still predominantly rural. Rural areas are less well off in all poverty indicators. Overall poverty trends show that the share of the population living in poverty in 2013 was 22.1 percent nationwide, 38.2 percent in rural areas, and 10.4 percent in urban areas (figure 2.2). The gains had been substantial, though a bit smaller than in previous years, especially between 1991 and 1998, when the poverty rate fell by 13.1 percent. For every one poor person in urban areas, there were nearly four poor people in rural areas in 2005 and 2012, unlike 1991 and 1998, when the ratio was 1: 2.

Figure 2.2. Trends in rural-urban Poverty, 1991–2012

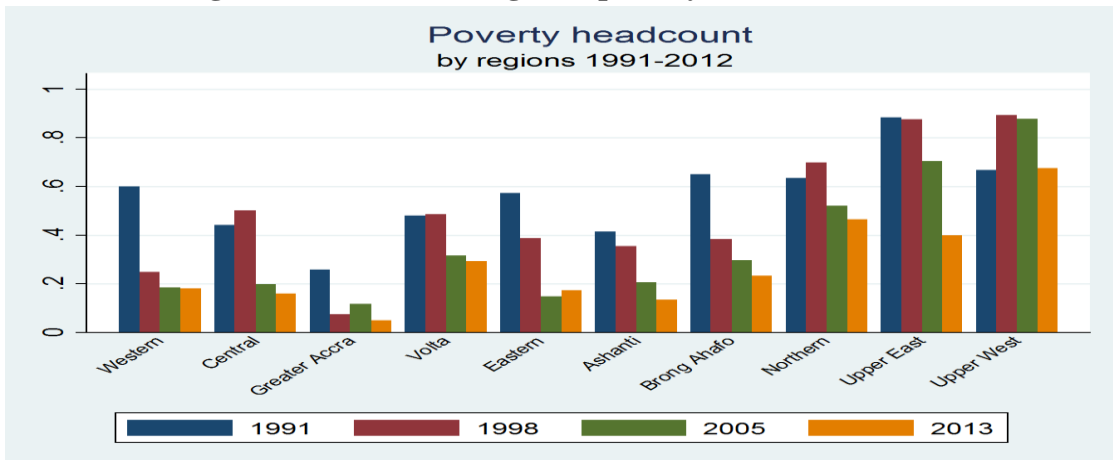


Source: Calculations based on GLSS 3–6.

The contribution of various demographic groups to the incidence of poverty varied across the groups. In 2012/13, the rural population comprised 50 percent of the population of Ghana; yet, it accounted for 78 percent of those living in poverty. This was not much different from previous GLSS rounds. In both 1998 and 2005, above 80 percent of the total population living below the poverty line was in rural areas. Among rural localities where poverty is prominent, the incidence of poverty is much greater among people living in the rural savannah. Notably, this contributes more than 40 percent to the overall poverty rate.

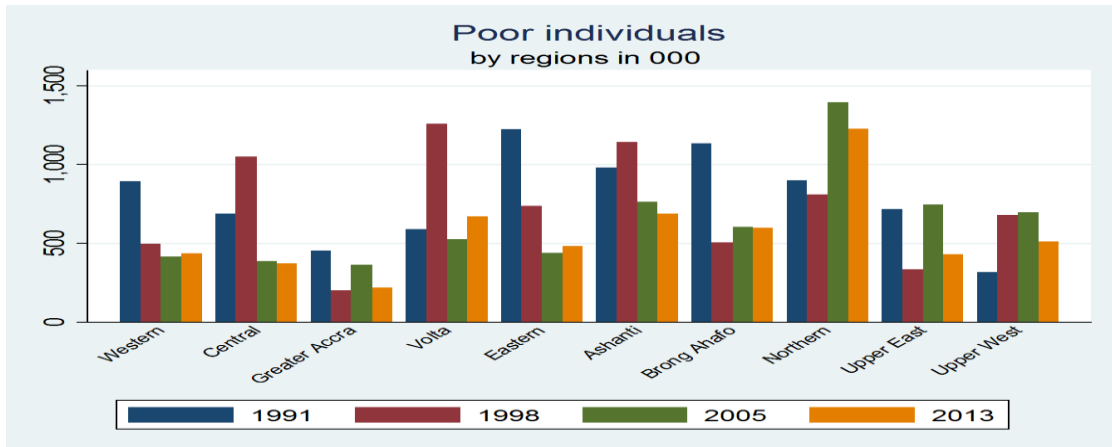
The regional breakdown also exhibits various trends. Figures 2.3 and 2.4 show poverty rates and the number of the poor by region. The Upper East, Northern, and Upper West regions compose northern Ghana, which is principally savannah. Because of less favorable climatic conditions, distance from the sea, and lack of infrastructure, northern Ghana has traditionally been the least developed part of the country. From trends in poverty over the last 20 years, it appears rather evident that the rest of the country—southern and central Ghana—contributed the most to the fall in poverty registered between 1992 and 2012.

Figure 2.3: Trends in regional poverty headcounts, 1991–12



Source: Calculations based on GLSS 3–6.

Figure 2.4. Trends in the regional number of poor, 1991-2012



Source: Calculations based on GLSS 3–6.

In 1991, poverty headcounts were already favoring southern Ghana compared with the north. However, because the south is more heavily populated than the north, the number of poor people was three times greater in the south: 6 million compared with 1.9 million (see figure 2.4). The decline in poverty starting in the 1990s completely reversed this picture. Whereas southern and central Ghana reduced poverty both as a population share and in absolute numbers, northern Ghana reduced poverty only as a percent rate, while, in absolute numbers, it faced a slight surge (figure 2.4). Within the north, this result was mainly driven by the

performance of the relatively more populated Northern Region; the less highly populated Upper East and Upper West regions faced a decline in the number of the poor.

Beginning in 2005, poverty increasingly became a northern phenomenon. While, in 1991 and 1998, the three northern regions accounted for 25 percent of all poor people in the country, they constituted only 18 percent of the total population. In 2005, because of the massive reduction in poverty in southern and central Ghana, the northern share of the poor jumped to 44 percent: almost 1 poor person in 2 in the country was living in the north. But, at the same time, only 17 percent of the population was living there. In 2012, because of the good performance of the northern regions, the share of the poor fell to 40 percent.

The widening divide between the northern regions and the central and southern region originated from the different patterns of urbanization, but also from the different performance of rural areas (see below). In 1992 relative to 1991, there were 3.2 million more poor people in the rural coast and forest than in the rural north. However, between 1991 and 2005, the number of the poor dropped by 2.0 million in the rural southern and central regions, but rose by 0.9 million in the rural north. Thus, both areas were comparable in terms of the absolute number of poor in 2005 (2.6 million and 2.8 million, respectively). In the southern and central regions, rural poverty alleviation was probably the result of combined rural development (the proportion of the poor dropped by 32 percent, while the population grew by 2.0 million) and urbanization (see below). In the north, in contrast, there was no significant urbanization between 1992 and 2006, and the share of the rural poor only dropped by 6 percent.

The main justification for the rural development between 1991 and 2005 is that the rural belts in the southern and central regions enjoyed substantial growth in the agricultural sector, while this did not take place in the north. The expansion in cocoa production and a steady increase in the share of (rising) world prices passed on to producers pushed revenues up. In the southern forest where cocoa is produced, aggregate data suggest that, through the 1990s, households active in cocoa farming, timber (predominantly export-oriented activities), and other commercial activities experienced improvements in living conditions relative to food-crop farmers.⁷ Surveys conducted in 1991, 1999, and 2005 indicate that poverty among cocoa-producing households fell to 23.9 percent in 2005, down from 60.1 percent at the beginning of the 1990s.

In addition, in southern and central regions, the cultivated area expanded into cleared forest, where soil fertility was naturally high. Although cocoa remains the mainstay of the agricultural export economy and accounts alone for 15 percent of agricultural GDP, Ghana has also enjoyed substantial growth in horticulture, fruit, rubber, and cotton exports.⁸ Most

⁷ Mckay.

⁸ LSE.

production takes place in the southern and central regions and market-accessible areas where postharvest handling requirements are favored by proximity to airports and seaports.

Between 2005 and 2012, unlike previous periods, poverty declined relatively more quickly in the northern regions; poverty rates in these regions remained, nonetheless, extremely high. The decline was driven by the increase in crop productivity and was not offset by the spike in inflation that hit most of the other regions (see below). Between 2005 and 2009, the Northern Region showed the highest total agricultural productivity growth in the country, followed by the Eastern and Upper West regions.⁹ The relative backwardness and limited integration of the north protected it, at least in the short run, from the consequences of the high inflation that hit most of the rest of the country.

There is, however, a lot of heterogeneity also within each regional group. For example, Greater Accra had the lowest poverty rate among the regions of the country in 1992; then faced an increase in both the share and the number of the poor in 2005, likely because of mass migration from the surrounding poorer areas; and finally managed to reduce poverty again in 2012. Greater Accra is the only region that reduced both the poverty headcount and the number of the poor among all coastal and forest regions. From 2005 to 2012, Greater Accra cut the poverty rate by half notwithstanding the influx of residents, more than a million new urban dwellers.¹⁰ The capital metropolitan area seems to generate many opportunities to escape poverty.

Ashanti, the most heavily populated and the second-most urbanized region in the country, experienced a more stable pattern of poverty reduction over the last 20 years: the poverty rate continued to decline, and the decline accelerated between 1998 and 2005. After a sharp drop during this period, the number of the poor started to grow between 2005 and 2012. Ashanti was the only region that saw a more rapid increase in both the urban and rural population (see below). Unlike Accra, where the rural areas have always been marginal in size, Ashanti's rural areas were inhabited by about half the regional population. Together with Greater Accra, the Ashanti Region attracted more than half of all internal migrants, and migrants make up a substantial share of the population in these regions. Migrants account for more than 10 percent of the population of Ashanti and more than 18 percent of the population of Accra.

Between 1991 and 2012, the Brong Ahafo and Western regions enjoyed the most rapid poverty reduction in the country: the poverty rate dropped from about 60 percent to less than 25 percent. A big driver of this outcome was the boom in cocoa production; most of the cocoa production in Ghana is located in these regions. In both regions, the decline in poverty

⁹ Mohan and Matsuda (2010).

¹⁰ However, we have to exclude from this group a meaningful number of residents close to the border between Greater Accra and the Eastern Region that, in 2006, were wrongly counted in the Eastern Region and that, in 2012, were reassigned to Greater Accra. Further research is needed to establish the exact number of people affected.

stagnated in 2012. In the Western Region, after a long positive trend, the fall in the poverty headcount halted, and the absolute number of the poor started to rise; this was despite the expected positive spillovers from the discovery of oil in the region. In Brong Ahafo, the situation was less worrisome. The poverty rate there continued to decline, but the number of the poor saw no variation relative to 2005. The urban-rural divide remains large in both regions. Whereas in the urban areas of Western and Brong Ahafo regions, poverty rates were at around 10 percent, the rates in rural areas rose to 20 and 30 percent, respectively.

All regions bordering Accra (the Central, Eastern, and Volta regions), but, especially, the Central and Eastern regions benefited from the quick expansion of the capital; a large share of the population of the latter two regions works in Greater Accra. In Central and Eastern regions, the poverty rate and the absolute number of the poor fell by more than half between 1998 and 2005. In the subsequent period, poverty reduction stagnated, and, in the Eastern Region, in particular, the absolute number of the poor began to rise, although marginally. The Volta Region, meanwhile, showed a more puzzling trend. In terms of the share of the poor, the region followed the predominant pattern of a rapid reduction between 1998 and 2005 and then stagnation between 2005 and 2012. Not entirely clear is the trend in absolute numbers. In 1998, there was a surge in the regional population and in the absolute number of the poor that was somehow absorbed by 2005, when the rural population declined to the levels of 1991 (see figure 2.10). Further investigation is clearly needed, but this pattern looks rather artificial and might be caused by problems in the sampling weights.

The poverty rate in the northern regions was stubbornly high; the 2005–12 performance suggests, however, that there was an inversion in the trend. Between 1998 and 2005, while poverty rates declined, the rapidly growing population offset most of the gains, and the number of the poor grew in all three regions (see figure 2.4). In 2012, both the poverty rate and the absolute number of the poor declined across the three regions. In the Upper East Region, the share was cut by almost half. Nonetheless, the poverty rate was still high. More than 4 people in 10 were poor in the Upper East Region (44.4 percent), increasing to 5 in 10 in the Northern Region (50.4 percent), and 7 in 10 in the Upper West Region (70.7 percent).

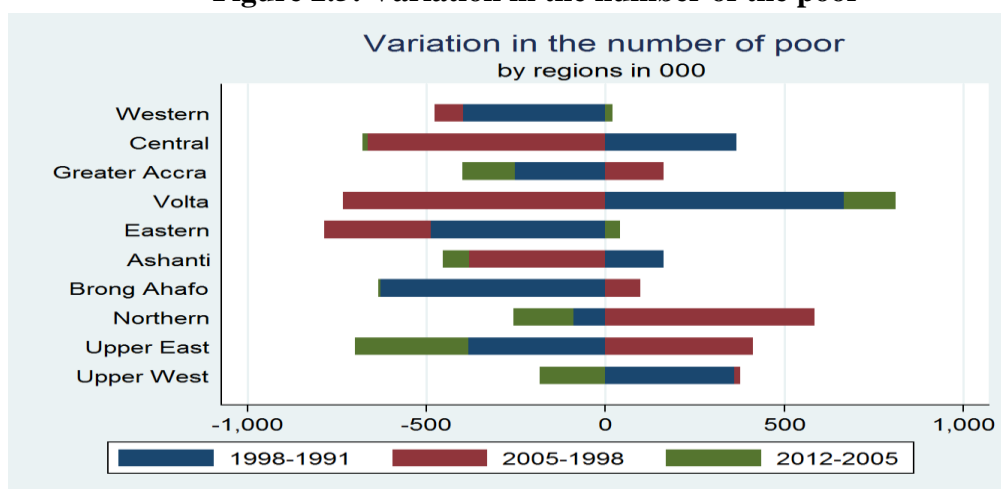
It is worth mentioning that while the poverty rate in the Upper West is highest in the country, the region with the highest number of poor is Northern. Upper West contributes less than 10 percent to the national poverty rate because it is the smallest region in terms of population. Of the 5.7 million people who are poor in Ghana, only 0.5 million are in the Upper West Region, while the Northern Region, with poverty incidence of 50.4 percent, accounts for one-fifth (20.8 percent) or 1.3 million of the poor in Ghana, making this region the highest single contributor to the level of poverty nationwide.¹¹ This pattern does not seem any different from

¹¹ Poverty Profile in Ghana GLSS 6.

the situation in 2005 because the Northern Region was the most significant contributor to national poverty then, too (see figures 2.3 and 2.4).

Figure 2.5 plots the variations in the number of the poor across regions. The bars on the left indicate a reduction in the number of the poor, to the right, an increase. Variations are subdivided across three subperiods. Between 1991 and 1998, there is no clear regional pattern. The number of the poor rises in Volta, Central, and Upper West regions. The pattern in 1998–2005 was clearer. Excluding Accra, all southern and central regions saw a decrease in the number of poor people. Ashanti, Central, and Eastern regions contributed, together, to a reduction in the absolute number of the poor by about one million individuals. The northern regions, including parts of Brong Ahafo in the savannah (the upper portion) all saw an increase in the number of the poor. Accra represented an exception (see above). The 2006 Poverty Report explained the increase in poverty by way of the mass influx of poor people from rural and periurban areas. This, according to the report, could have caused a temporary rise in poverty rates.

Figure 2.5: Variation in the number of the poor



Source: Calculations based on GLSS 3–6.

In 2005–2012, the pace of poverty reduction slowed in all regions that had witnessed considerable poverty reduction in previous periods. Unlike 1998–2005, when poverty reduction was clearly driven by the southern and central regions, the three northern regions, plus Accra drove most of the variation between 2005 and 2012. In the southern and central regions, poverty rates slightly declined, but the influx of people from poorer areas offset this reduction, and the net effect was a slight increase in the number of the poor or no variation at all.

Accra moved in the opposite direction in 2005–12. The number of the poor was reduced in the capital, although, during the period, the population expanded by 25 percent. According to the 2010 Population and Housing Census, the Greater Accra Region had a net gain of 66.4 percent of internal migrants. Nonetheless, the real surprise was the performance of the northern regions, for

a long time untouched by the general improvements in the country. Most of the poverty reduction in this period derived from these three regions, although, in overall terms, the incidence of poverty was still greater relative to other regions.

Poverty reduction was steady in Ghana from 1991 to 2012; the national poverty rate fell by more than half. If the country maintains this momentum, it will have reached the first Millennium Development Goal by 2015. This is a remarkable success for two reasons. First, not many other Sub-Saharan countries have managed to reduce poverty this quickly and through such steady trends. Second, that this result can be monitored using high-quality, comparable GLSS surveys is a success in itself. Few countries in the region can boast of four comparable poverty data sets covering the last two decades that can be used to determine reliable poverty trends. In most cases, there are one or two observations, often only the 2000s are covered, and little is known about the 1990s.

This result masks, however, the substantial heterogeneity in poverty outcomes across urban and rural areas and across regions. Two spatial trends are evident. Compared with 1991, poverty remains a rural phenomenon, and the north is responsible for the lion's share. The rural poor accounted for about 80 percent of all the poor in 1991, and their share was the same in 2012. The concentration of the poor in the north is quite clear. While, in 1991, 25 percent of the poor were living in the north, the share had increased to about 40 percent by 2012, this despite the stabilization in the population share of the north at around 17–18 percent.

Important differences in poverty reduction also exist across the 1991–98, 1998–2005, and 2005–12. 1991-1998 and 1998-2005 are rather similar; most of southern and central regions experienced rapid poverty reduction in shares and absolute numbers. The northern regions, meanwhile, saw an increase in absolute number of poor people. Thus, poverty accentuated its northern characteristic in this period. The 2005–12 period showed a different pattern. Most of the gains in poverty reduction were accounted for by regions that, during the previous period, did not experience positive outcomes. The Greater Accra Region, despite the rapid influx of migrants, reduced the poverty rate to the lowest level in the country. The northern regions also performed rather well, though poverty rates remained relatively high.

Modifications in the distribution of consumption, 1991–2012

An analysis based only on poverty levels presents the clear disadvantage of focusing solely on one aspect of welfare measure. As such, one might miss important underlying, policy-relevant issues. Changes in the distribution of consumption, if they took place, might also have been important. To this end, in this section, we examine two indicators: the cumulative distribution of consumption and growth incidence curves.

The construction of cumulative curves of consumption offers the possibility to compare distributions in terms of welfare and establish, at the same time, the level of welfare characteristic of a certain percentile of the population. Any distribution appearing to the right of another in such a curve is statistically dominant and can be considered a welfare improvement. The cumulative distribution curves we use have been rescaled using the poverty lines. The horizontal axis represents revised consumption measured as a percentage of the poverty line. The vertical axis represents the percent of the population. In this manner, each point on the distribution function shows the share of the population below a certain percentage level of the poverty line.

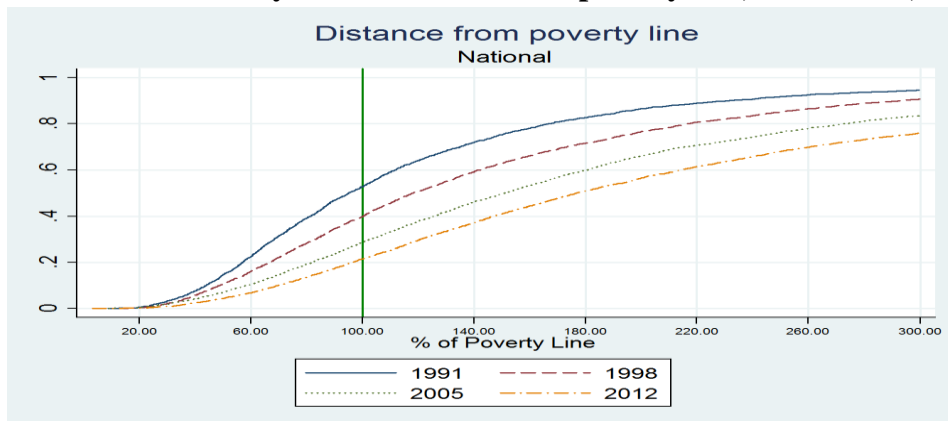
The poverty levels in each survey year can be read from the distribution functions at the point where the functions cross the vertical line that indicates 100 percent of the poverty line. The cumulative distributions so constructed can also be used as measures of vulnerability and the depth of poverty. For example, 140 percent or 180 percent of the poverty lines are thresholds below which households are considered vulnerable because a loss of less than US\$0.50 a day—the poverty line in Ghana is around US\$1.30 a day—can push individuals below the poverty line. Likewise, the proportion of people below a certain share of the poverty line (80 percent or 60 percent) gives an idea of the depth of poverty and what is needed to push these people back above the line.

A good measure of pro-poor growth can be readily derived from growth incidence curves. These give rates of growth by quantiles of the income distribution. Growth incidence curves are also of interest in their own right as a means of describing how the gains from growth are distributed. Our growth incidence curves were computed at the national level, by urban and rural area and by region. To economize on space, we present only the results for 2005–12.

We notice first that a significant number of Ghanaians live close to the poverty line, although the number has substantially declined since 1991 (figure 2.6). Compared with 1991, when the share of the population living under 140 percent of the poverty line was around 73 percent and the share living under 180 percent of the poverty line was 82 percent, the shares have declined to 39 and 51 percent, respectively. In both cases, this drop is slightly greater than the reduction in poverty (around 30 percent). The reduction in the number of the vulnerable was particularly significant between 1991–98 and 1998–2005. Between 2005 and 2012, the pace slowed, but the welfare improvement was still substantial; the 2012 curve is clearly to the right of the 2005 curve. Despite the improvements Ghana experienced in the last decade, about 40 percent of the population is still living below 140 percent of the poverty line. This means that a minimal shock can easily send them back into poverty. To have a sense of the magnitude, if we convert the value into purchasing power parity (PPP) U.S. dollars, 40 percent of Ghanaians live on less than US\$2 a day.¹²

¹² The poverty line is set at ₵ 3.6 per capita per day: $3.6 \times (1 + 0.4) = ₵ 5.4$ per adult equivalent per day. Converting

Figure 2.6: Vulnerability as distance from the poverty line, nationwide, 1991–2012



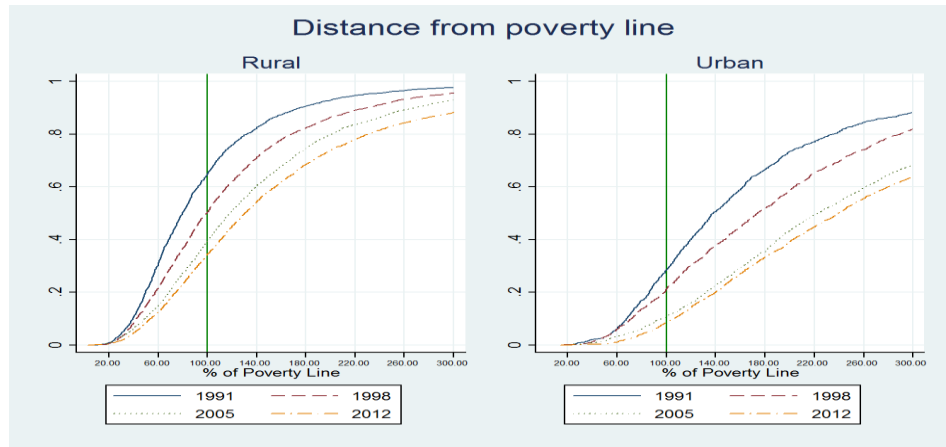
Source: Calculations based on GLSS 3–6.

Improvements below the poverty line are also visible. For instance, 80 percent of the poverty line almost coincides with the food poverty line used to calculate extreme poverty (see figure 2.1). The share of the population below this line dropped from about 40 percent in 1991 to around 9 percent in 2012. Overall, figure 2.6 shows that the share of people living far below the poverty line is diminishing. This occurs much more slowly than the reduction in the share of people living only slightly below the poverty line (the distance from the 1991 curve is greater around the poverty line), but it is occurring.

The divide between rural and urban areas suggests another interesting distributional pattern (figure 2.7). Welfare improvements in urban and rural areas do not appear to be at par. The big welfare improvement in urban areas occurs in 1991–98 and, especially, in 1998–2005. In 2005–12, the shift is limited, and the curves almost overlap. By contrast, in rural areas, the progress is more evenly distributed over the period. We do not observe the big shift in 1998–2005 observed in urban areas. However, we do not see a dramatic slowdown in 2012 either.

Figure 2.7: Vulnerability as distance from the poverty line: Rural-Urban, 1991–2012

this into percent per capita and in 2010 PPP U.S. dollars, this approximately reaches US\$2 per capita per day PPP.

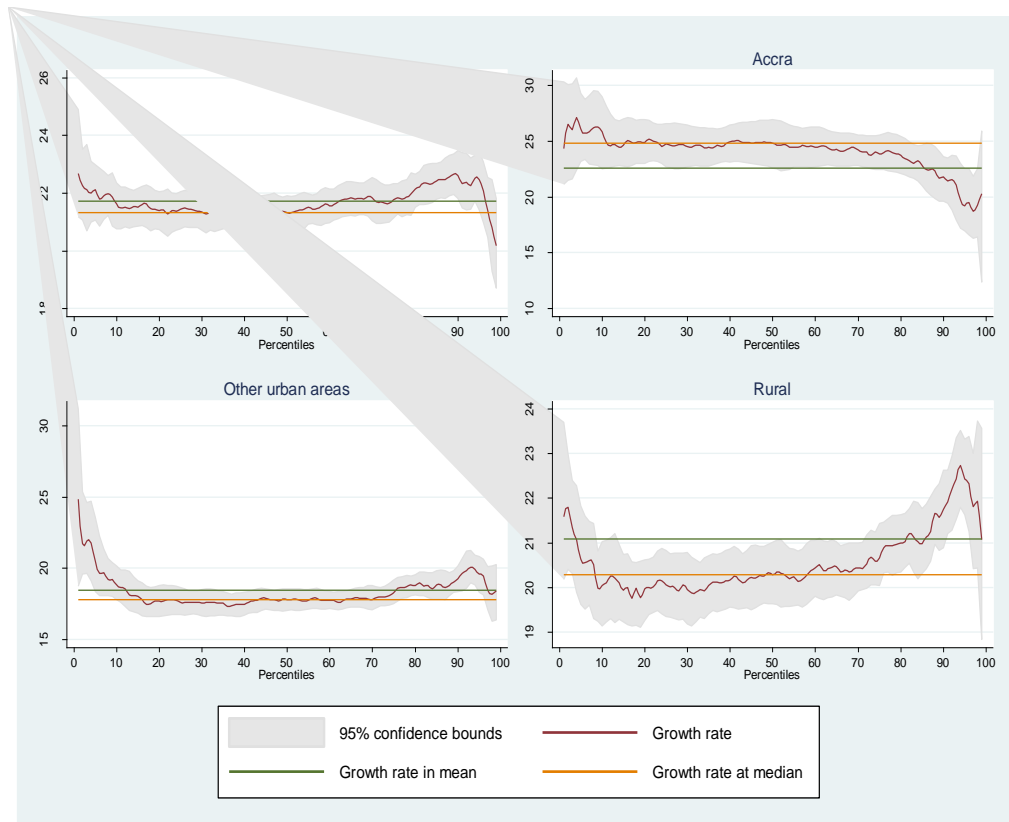


Source: Calculations based on GLSS 3–6.

Vulnerability is still substantial in rural areas. If we use the two proposed measures of vulnerability (140 percent and 180 percent of the poverty line), we see that more than 50 percent of rural households are vulnerable, while this is true only of a much smaller share in urban areas. The rural population, notwithstanding the clear improvements achieved, still appears to be prone to shocks, and a bad harvest or a particularly dry growing season could easily push a vast majority of rural households back into poverty. Urban households look less vulnerable: only 40 percent are living below the 180 percent line, and about 20 percent are living below the 140 percent line.

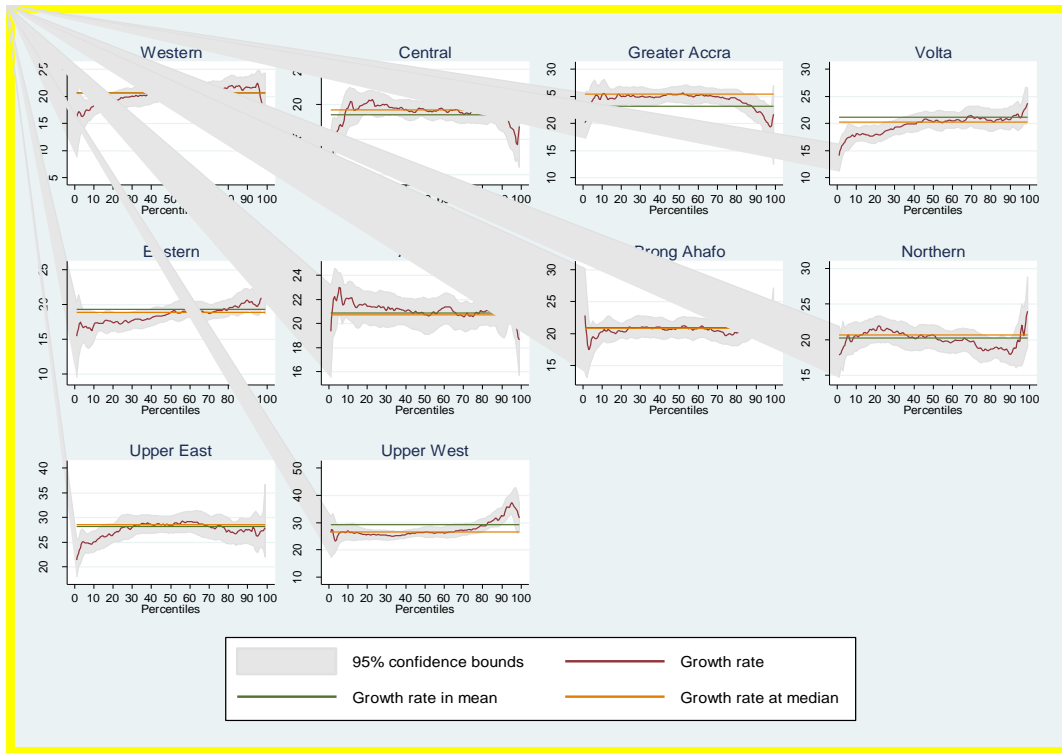
Figures 2.8 and 2.9 plot the growth incidence curves for 2005–12. At the national level, the upper percentiles clearly benefitted from a greater growth in consumption than the rest of the distribution. At the top of the distribution (the 98th percentile), one may detect a decline, but the standard deviation is too high and the confidence interval too broad to consider this conclusive evidence. Below the 70th percentile, the rate of growth is rather homogenous at around 20–22 percent. In the lower part of the distribution, there is a little peak, but the standard deviation is again too high for this to be considered conclusive.

Figure 2.8 Growth Incidence Curves, 2005–12



Source: Calculations based on GLSS 5–6.

Figure 2.9 Growth Incidence Curves, by region, 2005–12



Source: Calculations based on GLSS 5–6.

Consumption grew much more quickly in Greater Accra than in the rest of the country; there, overall consumption increased more than the national average (figure 2.8, top-right quadrant). The hump we detect in the nationwide curve is partially generated by households in Accra. Their consumption is greater, and they experienced relatively greater consumption growth. Urban areas outside Accra show a variation lower than the national average (figure 2.8, bottom-left quadrant). Rural areas show the opposite effect (figure 2.8, bottom-right quadrant). This suggests that, if one excludes Accra, there is a little reduction in the rural-urban divide. This is a consequence of the peak in the inflation registered after the removal of fuel subsidies that predominantly affected urban dwellers not living in Accra (see below).

For the sake of our analysis, we can subdivide regions into three subgroups. The first comprises the Western, Eastern, Volta, and Central regions. Consumption growth was comparatively less in this group than in the rest of the country, and growth was significantly less among the lower percentiles than among other percentiles. In the Western, Eastern, and Volta regions, inequality increased because consumption among the upper percentiles grew more quickly than the mean. In these regions, the poverty rates did not decline, and the number of the poor rose. In the Central Region, the pattern was slightly different because consumption grew less among the upper percentiles than among the rest of the population. In this group, only the Central Region experienced a moderate reduction in poverty.

Consumption grew relatively more quickly in Greater Accra, Ashanti, and the two upper northern regions than in the rest of the country. Ashanti and Accra showed a more egalitarian variation because consumption grew more quickly among the lower percentiles there than among the mean, and the growth rate declined at around the 90th percentile of the distribution. In the Upper East Region, consumption among both the upper and lower percentiles grew less than the mean, while, in the Upper West Region, although marginal, there were signs of widening inequality: consumption grew 3-4 percent more among the percentiles above the 80th percentile than among the rest.

The Brong Ahafo and Northern regions form the last subgroup. They both show an inverted S-shaped trend. Consumption among the lower percentile grew less than the mean, while it grew among the central percentiles at a rate close to the mean. Starting from the 80th percentile, there was a fall in the rate of growth, while consumption grew more quickly at the very top of the distribution than elsewhere. In both regions, this translated into a marginal reduction in the poverty rate. However, because the Northern region has the highest concentration of poor people in the country, even this marginal variation resulted in a reduction in poverty of about 100,000 individuals.

Results from the cumulative and growth incidence curves confirm the results obtained in the analysis of poverty and enable a broader picture of distributional changes to emerge. The rapid reduction in poverty was accompanied by significant improvements throughout the consumption distribution. Looking at the distribution above and below the poverty line, we notice a significant reduction in the number of people vulnerable to poverty (below 140 percent of the poverty line) and at risk of food poverty (80 percent of the poverty line). Improvements were more rapid in urban areas, and this widened the divide with rural areas. Nonetheless, rural areas also enjoyed significant growth at every level of the distribution.

The situation in 2005–12 presents interesting specificities. First, while the stochastic dominance of the 2005 curve over the 1998 curve is straightforward and indicates a clear welfare improvement, the gap is much smaller between 2005 and 2012, particularly in urban areas. Thus, in 2005–12, the data suggest there was a relative slowdown in household consumption growth. The growth incidence curves, in addition, show a clear increase in inequality because consumption tends to grow more quickly among the higher percentiles (beginning with the 80th percentile) than among the rest of the distribution.

A further decomposition by urban and rural areas and by regions indicates that this effect is partially driven by the relatively better performance of the Greater Accra Region. This is the richest region in the country, and, between 2005 and 2012, consumption grew at a much more rapid pace there than in other regions. There seems to have been also some good news in the northern regions. The rate of growth of real consumption was, for the first time, higher than

the national average, although from a much lower level. This translated into a sustained reduction in poverty, particularly in the Upper East Region and in absolute numbers in the Northern Region, which, since 2005, is the region with the highest number of poor in the country.

At first glance, these results seem promising. If we exclude Accra, there were signs of regional convergence because consumption in poorer regions grew more quickly than the national average. Furthermore, for the first time, one may see a significant reduction in poverty rates also in the north.

How robust are these trends?

We first compare the poverty trends with the correlates of poverty reduction. At this stage, this involves merely a visual comparison aimed at ascertaining whether the poverty trends appear robust. We will then undertake a more rigorous analysis to estimate the impact of the drivers on poverty reduction.

The results discussed hereafter are preliminary outcomes from research papers that will be completed during the next fiscal year. We identify five relevant correlates of poverty reduction: urbanization and rural-urban migration, remittances, asset growth, labor market transformations, and agricultural productivity growth. We also discuss the impact of the recent peak in inflation on household well-being.

On urbanization and rural-urban migration, we present results from ongoing research involving analysis of trends in internal migration and their impact on poverty reduction. Using census and survey data, the research investigates the drivers of migration and outlines a profile of the typical migrant by educational attainment, skills, and household characteristics. This helps clarify the determinants of the decision to migrate and allows an examination of whether certain migrant profiles tend to be more successful than others. Likewise, labor market transformations are the topic of a multisectorial diagnostic of the jobs landscape in Ghana. The jobs diagnostic provides an overview of job issues and informs the definition of a job creation strategy for the country. In this report, we present few statistics about labor market transformations

Remittances and productivity in agriculture are the topics of two separate papers planned for the next fiscal year. Both topics are of particular interest in identifying the drivers of poverty reduction. Using previous rounds of the GLSS, a number of studies have looked at these two topics in relation to poverty reduction. However, most of these studies analyze one period without exploiting the data comparability to analyze a wider time span. In this report, we present some basic statistics and some evidence from other analytical research. In the agriculture sector, we focus on the performance of the northern regions in 2005–12 to determine if it is possible to

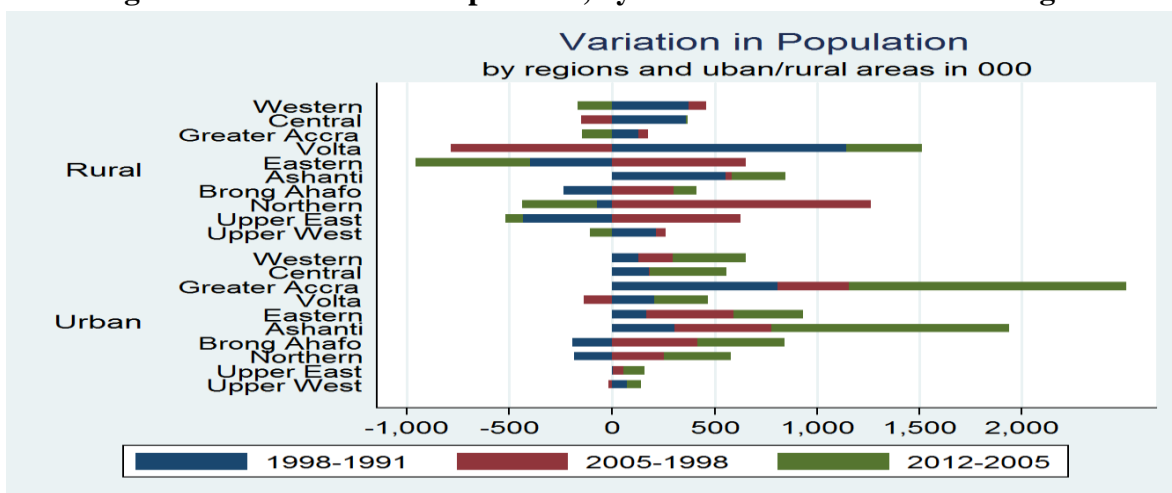
explain part of the poverty decline in the north by way of an increase in agricultural productivity and production.

Finally, the impact of inflation on household well-being is discussed in depth in the note on the recent removal of fuel subsidies.¹³ Simulations show that household losses can average 5 percent of total household expenditure. A look at the distribution of the shocks reveals that the impact can be moderately progressive because the more well off lost a larger share than the poor given that they consumed more before the price increase. In this report, we show the variation in inflation by region and try to explain why the negative impact was asymmetric and hit mainly urban and southern households the most.

Urbanization and rural-urban migration

In urban areas, population increased rapidly: urban areas experienced a population expansion of about 1.5 million people in 1991–98, 1.9 million in 1998–2005, and 4.7 million in 2005–12 (figure 2.10). Urban areas, which accounted for about 36 percent of the total population in 2005 and around 30 percent in the 1990s, came to account for about 50 percent. Accra and Ashanti showed the largest increase. Over the two decades, the expansion in the urban populations of these two regions accounted for more than 40 percent of the overall increase. The peak was in 1991–98, when 50 percent of total urban population growth took place in Accra, and 23 percent in Ashanti. In absolute numbers since 1991, Accra gained about 2.4 million inhabitants, while urban areas in Ashanti grew by about 2 million. The increase in the last decade was particularly striking: Accra gained 1.3 million inhabitants and Ashanti urban areas almost a million.

Figure 2.10 Variation in Population, by rural and urban areas and region



Source: Calculations based on GLSS 3–6.

Whereas the urban population grew steadily over the three subperiods, the rural population followed a different pattern, which ultimately led, however, to a similar

¹³ PSIA on fuel and electricity subsidies removal.

population share. At the national level, the rural population experienced an expansion of about 3.7 million between 1991 and 2005, although the Northern and Brong Ahafo regions lost rural population in 1991–98, as did the Volta Region in 1998–2005. In 2005–12, there was a real structural break: for the first time, the population declined in the majority of rural areas, and the total effect was a drop by about 700,000 rural residents.

There are two possible explanations for these changes. First was a rapid process of migration, whereby people were leaving rural areas to find better opportunities in urban areas because jobs were becoming scarcer in rural areas given the demographic pressures. Second, the concentration of the population in periurban areas classified as rural in 2006 was growing. The 2010 census, upon which the GLSS 6 sampling was based, took stock of these changes and reclassified these areas as urban. As a result, urban areas, particular Accra, recorded a net increase in population share and in absolute population, while rural areas saw a progressive reduction in shares and in absolute numbers.

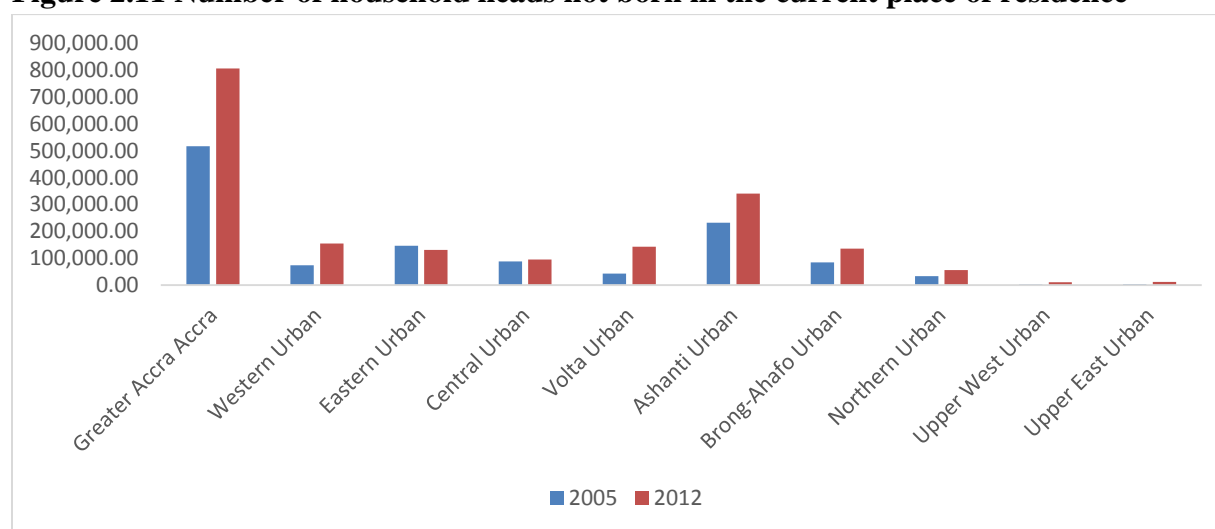
Can rural-urban migration completely explain the rapid expansion in urban population? One might argue that the increase in urban population can be explained by endogenous causes such as higher fertility in urban areas. There are three arguments in favor of the prominence of rural-urban migration among all the factors.

First, fertility rates are higher in rural areas than in urban areas, especially in the northern regions and less so in the coastal regions. According to the 2015 Demographic and Health Survey report, the total fertility rate in rural areas (5.2 births per woman) is considerably higher than the rate in urban areas (3.4 births per woman). Moreover, there is substantial variation in fertility by region, ranging from a rate of 2.5 births in Greater Accra to 6.8 births in the Northern Region. Thus, women in the Northern Region have more than twice as many children as women in the Greater Accra Region. This suggests that, without migration, one would have seen a much more rapid rise in rural populations; in fact, quite the opposite was the case. It would also mean that we would witness slower population growth in Greater Accra, which is not the case.

Second, dependency ratios are much lower in urban areas than in rural areas. This supports the evidence of higher fertility rates in rural areas and also indicates that household composition is quite different in rural and urban areas, which also fits well with the migration argument. In rural areas, 50 percent (or more) of household members are children under 14 and adults above 65. By contrast, in urban areas, the average share of household members not in the labor force is 40 percent or less (in Accra). This difference in household composition looks like the typical outcome of a rural-urban migration process. Young people of working age moved to urban areas seeking better opportunities, while younger and older people were left behind in rural areas.

In the GLSS 5 and 6, one may gather information on the birthplace of household heads, especially whether they were born in the same place they now reside. Thus, of around 1.2 million household heads living in urban Greater Accra in 2012, about 800,000 declared they had been born elsewhere (figure 2.11). This may be the outcome of a former period of migration. However, if we compare data on 2005 and 2012, the increase in the number of household heads not born in Accra turns out to be considerable: about 300,000 people. Moreover, if we multiply this result by the average urban Accra household size, we find that 70 percent of the population expansion occurred between 2005 and 2012. The increase in urban areas in Ashanti is more moderate, but still considerable: more than 100,000 new household heads declared they had been born outside urban Ashanti. These responses support the rural-urban migration argument; the migration to urban Accra between 2005 and 2012 was quite remarkable.

Figure 2.11 Number of household heads not born in the current place of residence



Source: Calculations based on GLSS 5–6.

These are preliminary results that need to be checked by means of multivariate analysis. Nonetheless, they already suggest useful insights. First, urbanization turns out to be highly correlated with poverty reduction. Regions that were relatively more urbanized and experienced rapid urbanization over the two decades were also more successful in reducing poverty. This despite the fact their populations expanded appreciably. For example, Accra saw a reduction in the poverty headcount of 5 percent, in combination with an increase of about 25 percent in the urban population.

Second, the growing share of the urban population is the direct result of accelerated rural-urban migration over the last decade. The endogenous expansion of the urban population and the reclassification of periurban rural areas into urban areas can explain part of the increase in urban population. Yet, the main explanation remains the mass migration from rural to urban areas. Young, relatively more well educated household members moved to urban areas seeking

opportunities that were better than agricultural jobs. It follows that urbanization is intertwined with the process of the structural transformation of labor markets, which is a driver of poverty reduction (see below).

Urbanization is also linked to another important driver of poverty reduction: the transformation in household composition. Urban households show lower fertility rates than rural households (3.1 and 4.9 births per woman, respectively, in 2008), and fertility rates are higher in the Northern Region and in the Upper West Region, where poverty rates are higher relative to other regions. Urban households also have a much more sustainable structure: the share of individuals of working age is normally higher than the share of dependents. Indeed, the decline in household size and the demographic transition—more labor force participants than dependents—had a significant impact on household well-being (see below).

Remittances

Several studies have underlined the importance of remittances in explaining the rapid increase in household consumption in Ghana. We treat remittances separately from the overall discussion on internal rural-urban migration because, as has been pointed out by various authors, international remittances are the largest source of remittances and the most effective in reducing poverty.¹⁴ Recent research based on GLSS 5 find that the receipt of remittances greatly reduced the likelihood of household poverty in Ghana: internal remittances by 17 percent and international remittances by a large 97 percent.¹⁵ Other research confirms that the size of poverty reduction depends on the origin of the remittances received. In general, international remittances have a greater impact than internal remittances in reducing poverty.

How much of the remittances represent transfers from overseas to urban locations. The Ghana Trans-Net research program, which followed the flow of cash transfers throughout Ghanaian migrant networks, found that many overseas transfers were received in urban areas and were then redistributed to other locations in Ghana.¹⁶ Another important national resource are the transfers that are received directly by households in towns and villages, where they are redistributed. This indicates that locally based social networks are still important in Ghana.

At the national level, the share of households receiving remittances was around 36 percent until 2005, when it started dropping, reaching 30 percent in 2012 (figure 2.12). Remittances have been always unevenly distributed, and the pattern does not seem to change in 2012. The Ashanti, Eastern, Brong Ahafo, and Greater Accra regions received the most remittances from both domestic and foreign sources (right quadrant, figure 2.12). In terms of shares, however, households in Accra are not among the most important recipients (left quadrant, figure 2.12). The northern regions receive a

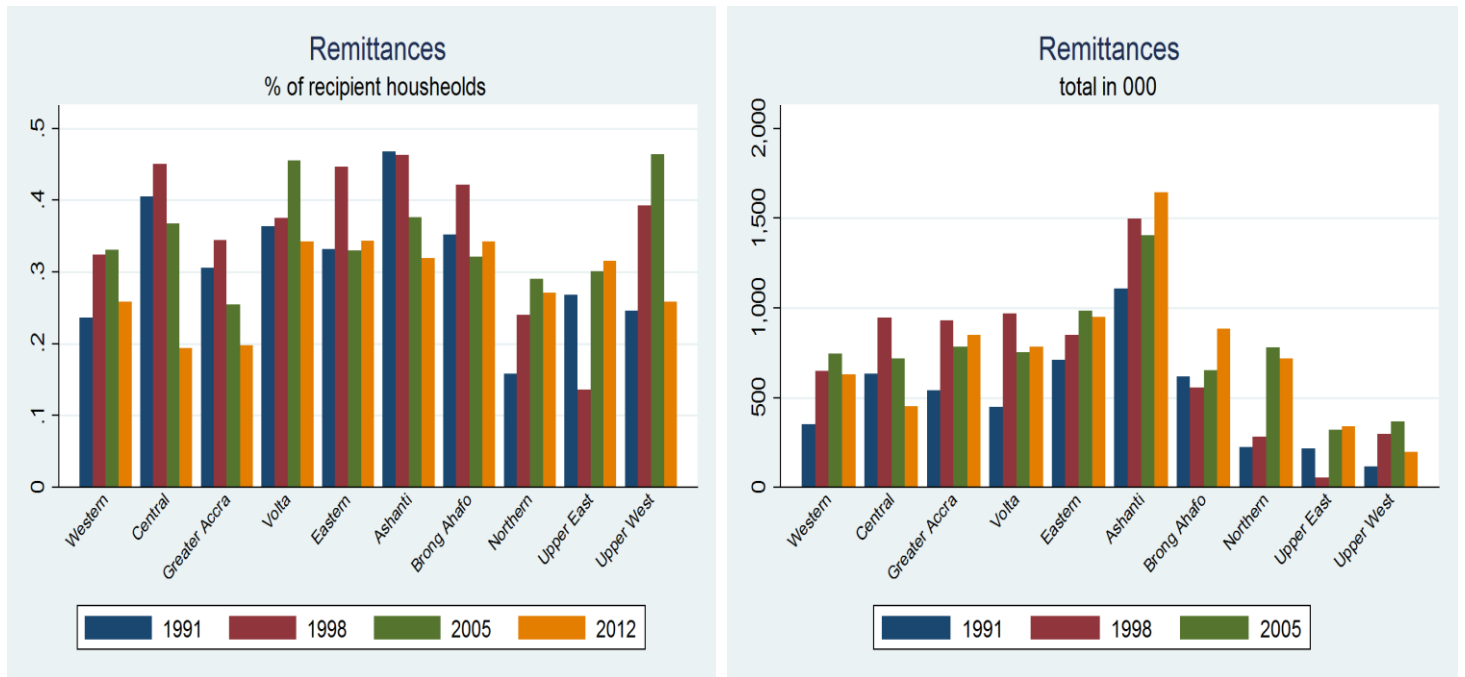
¹⁴ John Page paper, Mazzuccato.

¹⁵ Adams (2013).

¹⁶ Van den Boom Mazzuccato.

relatively lower share of transfers. Many transfers to households come from locations within Ghana. In particular, transfers from urban locations constitute an important source of transfers, especially transfers from Accra.

Figure 2.12: Households receiving remittances



Source: Calculations based on GLSS 3–6.

Figure 2.12 offers a good snapshot of the trends over time. In most regions, the peak in the reception of remittances was reached in 1998; then, the share of recipients in regions such as Ashanti was about 45 percent of total households. We observe a decline in the share of recipients in most of the regions from 2005 onward. For example, in the Central Region, it dropped from about 43 to 37 percent, and, in Greater Accra, from 33 to 25 percent. The decline in shares translated into a decline in the number of recipient families. In 2012, the descending trend in remittances continued; some regions, such as the Central Region and Greater Accra, faced a sharp decline.

These preliminary results show an overall correlation between remittance inflows and poverty reduction. Households in the southern and central regions were more likely to receive remittances, and the peak in remittance inflows also coincided with rapid poverty reduction in these regions. A more in-depth analysis is, however, needed to evaluate the precise impact of remittances on poverty. Also, understanding the causes of the recent overall decline in remittances is also important. For example, it may be that, in the towns in the Greater Accra Region and elsewhere, the number of households receiving remittances is outpaced by the number of new migrants who are sending remittances to their families in rural areas. The net

effect would thus be a decline in the share of recipients. This may be a valid explanation in a number of regions that attracted many migrants such as the Accra and Ashanti regions and, to some extent, the Western Region. Explaining the decline in the Central and Volta regions would be a bit more complicated.

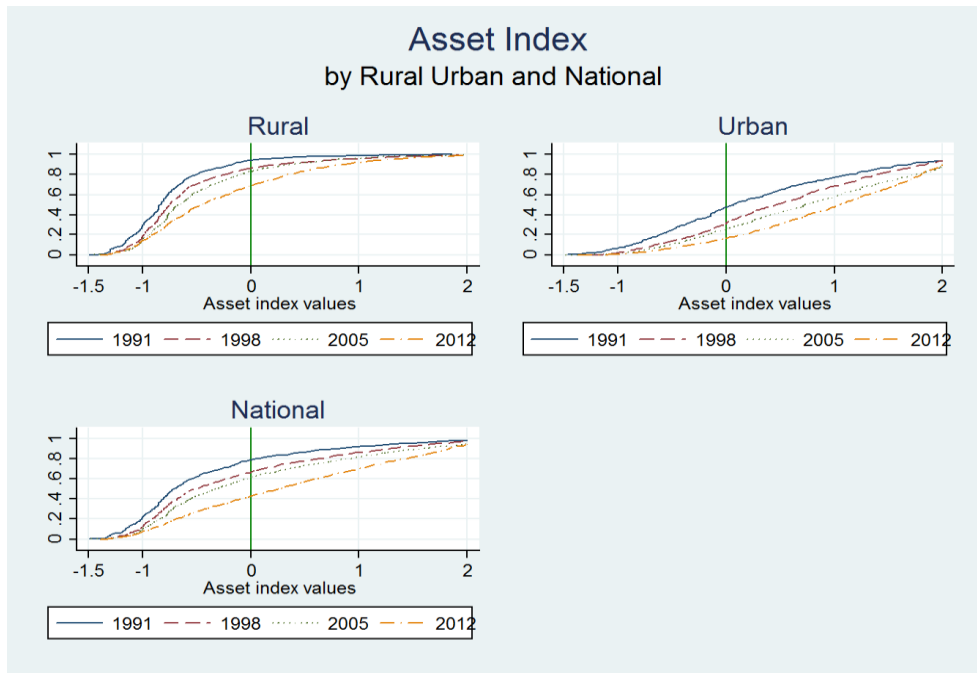
Variations in the asset index

Another useful comparator of poverty trends is the asset index. The asset index serves as a proxy for the long-run economic status of households and is valuable in defining the level of household welfare (Filmer and Pritchett 2001). Similarly, the welfare index is a proxy for the consumption accumulated over a period of years and may be used as a sort of relative measure of household capital. The ownership of means of transport and of radios or televisions and the access to basic infrastructure such as electricity and tap water, and good housing conditions can all be used to describe the wealth accumulated by a household over the years, but also the potential available to a household to expand its welfare over time.

The asset index for Ghana is constructed using principal component analysis of a variety of variables, including household assets, housing quality, and access to basic utilities. In an attempt to characterize trends over time, the wealth index was similarly constructed for Ghana across years using the same index weights. The index weights were derived using the pooled data from survey rounds (1991–2012) and then applied to the data in each of the years. While the wealth index measures can be quite informative in distributional analysis, it is not equivalent to measures based on consumption, and cannot yield poverty rates or other types of measures of poverty comparable with trends or the situation described through consumption estimates. The asset index ranges from -1.5 to about 3, where 3 represents the wealthiest household in terms of assets.

Figure 2.13 plots the cumulative distribution of the asset index and compares the variations across four rounds of the GLSS in rural and urban areas and nationwide. The stochastically dominant curve, that is, the one associated with higher welfare (a higher value in the asset index), lies to the right of the other curves and should not overlap if it is better from a welfare point of view.

Figure 2.13 Asset Index at Rural Urban and National level (1991-2012)



Source: Calculations based on GLSS 3–6.

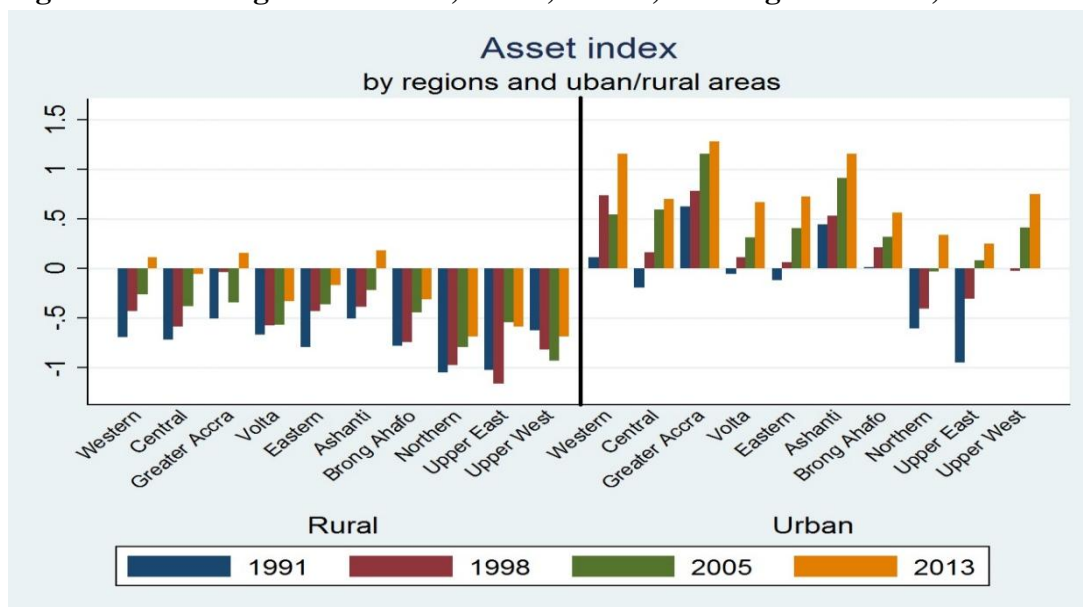
The improvements in asset accumulation are remarkable and seem consistent with the rapid rate of poverty reduction in Ghana. Over the years, the pace of asset accumulation has increased along the entire population distribution. For example, because of shifts in the distribution, while the value of the index was relatively low among most of the population in rural areas in 1991 (90 percent of the rural population was below the 0 value), about 60 percent of the rural population fell below that threshold in 2012 (figure 2.13, top-left chart). The improvements below the 0 value are also visible. Thus, the share of the population associated with low values was rapidly declining, particularly between 2005 and 2012.

Urban areas clearly start from relatively higher levels of the asset index: in 1991, around 50 percent of the urban population showed a negative value (figure 2.13, top-right chart). The share had dropped to less than 20 in 2012 after a rapid acceleration between 2005 and 2012. The comparison between urban and rural areas confirms the large divide between the two areas. The urban distribution, no matter the year selected, is always to the right of the rural distribution, and the probability density is always much higher above 0 than below 0. In rural areas, despite the improvements, the situation is quite the opposite: most of the probability density lies among negative values.

The nationwide distributions average the two results and confirm the trends. The stochastic dominance of the 2012 curve relative to the 2005 curve is particularly clear. Between 2005 and 2012, assets were accumulated rapidly: electricity, access to proper sanitation, better housing conditions, and, in general, the availability of durable goods for households all showed a boost.

Figure 2.14 decomposes the outcomes of the asset index between regions and between rural and urban areas additionally. To have a synthetic snapshot of the results, we have averaged the values of the wealth index; the construction of cumulative distributions would have produced too many figures of difficult interpretation. The results confirm the overall improvement in the asset index and the big rural-urban divide that seems to grow over the years. Furthermore, they give us additional insights on regional performance. Only a few rural areas show a positive asset index and only in 2012 (figure 2.14, left chart). The correlation with poverty rates is striking. The lowest poverty rates in rural areas are registered in the Greater Accra, Ashanti, and Western regions. The same pattern is observable in the asset index: the three regions enjoy the only positive values in the asset index in rural areas.

Figure 2.14 Average Asset Index, Rural, Urban, and Regional levels, 1991–2012



Source: Calculations based on GLSS 3–6.

Overall, the trend in rural areas is toward an increase in the asset index. Even in the relatively less well developed northern regions, there has been substantial improvement in rural areas, but, especially, in urban areas (figure 2.14, right chart). Although the population is still comparatively small, the positive trend in rural areas appears promising and correlates well with what has been observed in poverty reduction.

The reduction in poverty and the rise in the asset index follow the same positive pattern in urban and rural areas and by region, but, at least in this quick overview, do appear concurrent. Variations in consumption precede the variation in the asset index. Thus, the big increase in consumption and reduction in poverty registered between 1998 and 2005 was followed by a rapid accumulation of assets between 2005 and 2012 as if households gained revenues from growth and, subsequently, invested in durable goods and capital.

Likewise, the 2005–12 period was characterized by sustained public sector spending on infrastructure, including roads, electricity grids, and better sanitation. This contributed to the positive variation in the asset index because households started to have access to services and public goods that had previously been out of their reach. The better infrastructure also contributed to lowering transport costs and allowing a growing number of households to afford durable goods. Capital and assets, including human capital, were accumulated rapidly in 2005–12, but this was followed by a decline in the associated returns (see below).

Labor market transformation

To determine the structure of employment and the extent of labor force participation, we use a broader definition specific to the Sub-Saharan African context because over 80 percent of employment activities take place in the informal sector. Studying labor participation in Tanzania, Bardasi et al. (2010) find that, because of poor questionnaire design, many unpaid family workers underreported their economic activities, especially women who reported domestic duties as their main activity. These individuals inevitably undertake some unpaid economic activities such as cultivation, raising livestock, fetching water, and collecting wood. (The preparation of family meals and caring for one’s own children are not defined as economic activities by the International Labour Organization.)

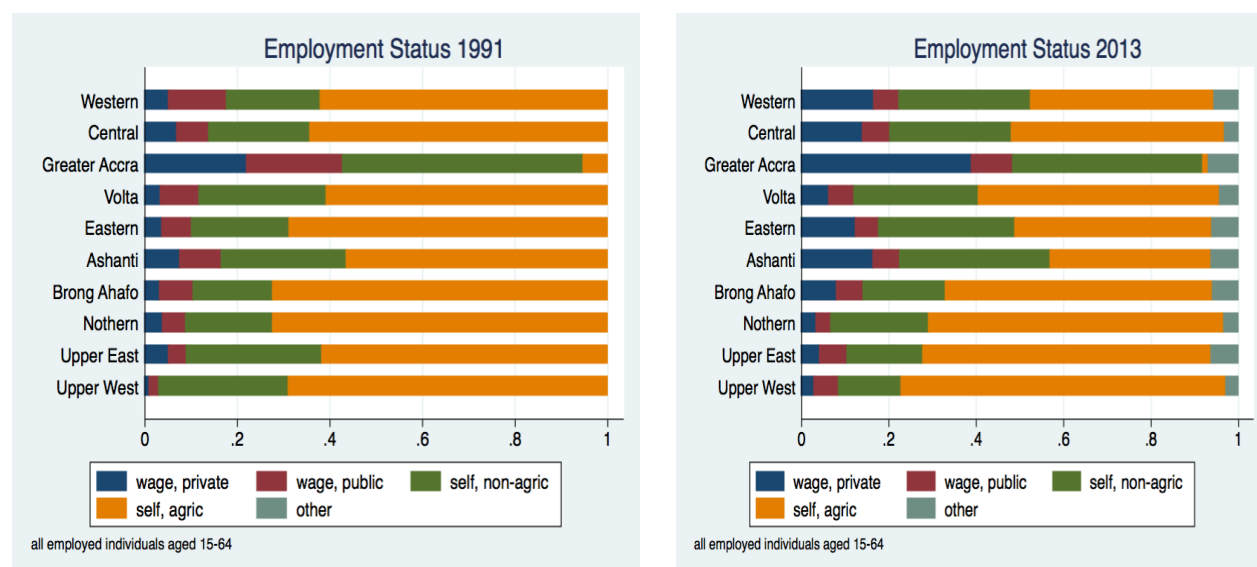
Using a method developed through the standardized Survey-Based Harmonized Indicators Program, we capture these underreported economic activities. Additionally, because informal economic activities are so common, there are often missing values in responses on the sector of employment. We therefore classified the employment status of those individuals who claim household duties as their main activity as employed rather than inactive.¹⁷

In Ghana, a large share of the workforce relies on farming for employment and income, even in periurban areas. In most regions of Ghana, agriculture still represents the main activity of the labor force (figure 2.15). Nonetheless, there have been significant changes. In all of the southern and central regions, the share of households employed in agriculture has declined. In addition, the regions in which poverty has been reduced most rapidly are also those with the lowest share of the workforce employed in agriculture: Ashanti and Greater Accra. The situation

¹⁷ See Bardasi, Beegle, Dillon, and Serneels 2010, “Do Labor Statistics Depend on How and to Whom the Questions Are Asked,” Policy Research Working Paper 5192, World Bank, Washington, DC.

in the northern regions is less clear. Despite the decline in poverty, the share of people employed in agriculture in 2012 had, in fact, increased relative to 1991. Whereas, in the other regions, the share of the employed in agriculture had fallen below 70 percent, it is consistently around 80 percent in these three regions.

Figure 2.15: Employment structure, 1991–2012



Source: Calculations based on GLSS 3–6.

While jobs in farming remain important, a declining share of adults are engaged in farming. Most jobs outside agriculture still involve nonfarm self-employment (see figure 2.15). These activities are typically based on the household, provide complementary income to rural farm-based households, and are the most important economic activities in urban areas. Despite their generally low income-generating capacity, they offer a first opportunity to leave agriculture among low-skilled youth and adults who, like a majority of Ghanaians, live in areas where medium- or large-size private sector firms do not exist and who may not have adequate skills or experience to fill wage jobs. Although the majority of these household self-employment activities are limited, there is a great deal of variation in income-generating capacity.

Wage employment has been growing; yet, it still accounts for a small share of the employed labor force. In Greater Accra, the most advanced region in the country, it accounts for less than 50 percent of the employed labor force. However, in the southern and central regions, wage employment grew more quickly than self-employment. Informality thus appears normal in the context of Ghana and is currently the biggest driver of poverty reduction through the transformation of the labor market. Notwithstanding the rapid rate of urbanization, agriculture

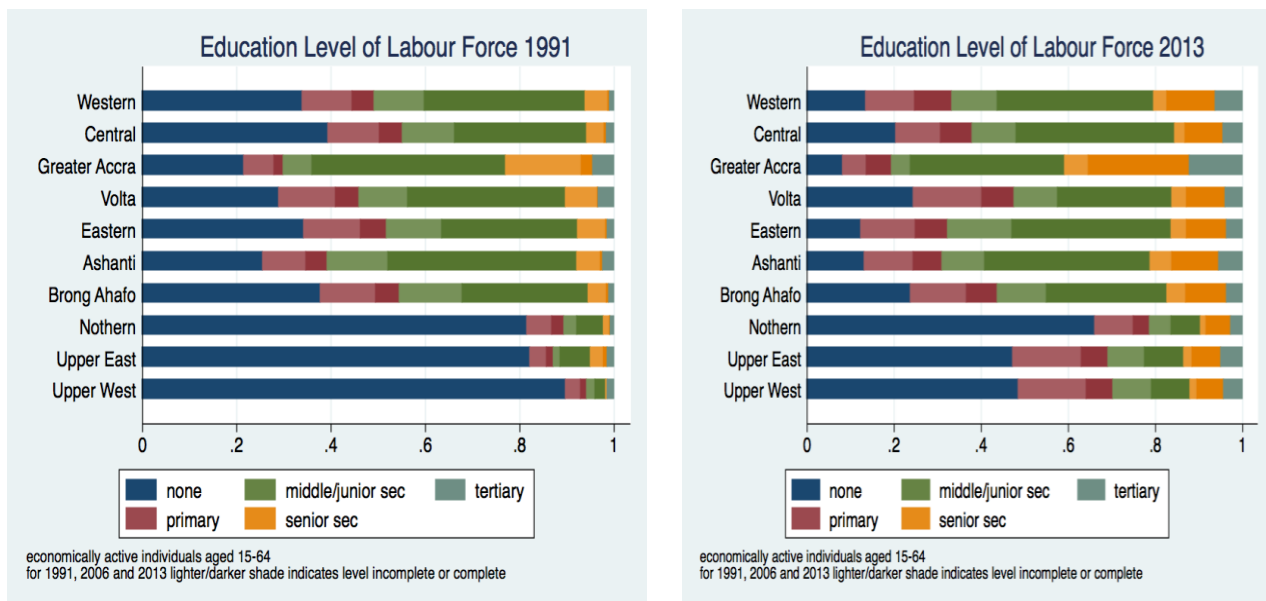
and small nonfarm household enterprises in rural and urban areas will account for the bulk of new jobs in the foreseeable future. The wage sector, where earnings are generally highest, remains modest, at 17 percent of all economic activities in 2012, of which nearly 6 percentage points are in the public sector. The announced cuts in public sector employment will limit the expansion in this area of employment and affect the demand for private wage jobs. The combination of the small base for wage employment and the large size of the informal labor force implies that the share of wage employment will need to rise significantly. Even in the case of unprecedented high and sustained growth in the nonagricultural sector, the wage sector will not account for most jobs because it is expanding from a small base.

Many factors, including skills, affect employment productivity and the upward mobility of workers. Building a skilled workforce is a cumulative and time-consuming process that depends on many years of good-quality schooling. Good-quality basic education is a fundamental requirement for skills development. Skills that are relevant to labor markets are not synonymous with education. Skill is the ability to perform some function (or specific job) because of one's knowledge (which can be acquired through education), but also practice and aptitude. Yet, basic education is—ideally—an important stepping-stone to acquiring most types of job skills because it develops foundational skills such as like literacy and numeracy, builds non-cognitive skills, and familiarizes students with learning situations.¹⁸

Important changes were taking place in general educational attainment among the labor force (figure 2.16). Relative to 1991, the labor force was accruing higher levels of education, and workers without any schooling were becoming a tiny minority in most regions. In the southern and central regions, a majority of workers had completed junior secondary school, and about 20 percent (in Accra, 30 percent) possessed a senior secondary or tertiary degree. The northern regions, although they experienced clear improvements, were still lagging. In 2012, 50 percent of the labor force did not have any education, and about 70 percent had primary education or less. Nonetheless, while, in 1991, more than 80 percent of the labor force was illiterate in the north; by 2012, the share of the illiterate had declined to 50 percent in the Upper East and Upper West regions and to 60 percent in the Northern Region.

Figure 2.16 : Educational attainment among the labor force

¹⁸ Adams, Johansson de Silva, and Razmara (2013).



Source: Calculations based on GLSS 3–6.

The share of workers with, at most, middle or junior secondary education changed substantially only in the north. In the rest of the country, the share remained unvaried or declined such as in the Ashanti, Greater Accra, and Volta regions. The big change occurs in senior secondary education and, to some extent, tertiary education. An increasing number of workers reached levels of education that allowed them to fill complex jobs such as office worker, technician, primary-school teacher, medical staff, and so forth. The size of the workforce with tertiary education, which was practically nonexistent in 1991, is slowly expanding, particularly in Accra; it now accounts for about 12 percent of the total labor force.

Ghana is undergoing a slow, but incessant labor market transformation; between 1991 and 2012, the share of agricultural employment in most of the southern and central regions fell from 75 percent to less than 55 percent. The shift out of agriculture translated into an expansion of nonagricultural self-employment and, to a minor extent, wage (formal sector) jobs. In highly urbanized areas such as Accra, wage jobs represented a relevant source of employment in the labor force; in the rest of the country, wage jobs accounted for barely 20 percent of the employed labor force. Only in the northern regions did the situation appear less dynamic. It is difficult to detect any significant change in the structure of the labor market there. Agriculture was still predominant, and nonagricultural self-employment was still residual.

Labor market transformation and the general increase in educational attainment among the labor force appear to fit with the trends in poverty reduction. Regions that saw a decline in agricultural employment, an increase in self-employment, and, in some cases, also a rise in the share of wage workers, all registered a decline in poverty. Likewise, higher levels of education enabled a growing number of workers to leave traditional activities and seek better job

opportunities. More productive jobs translated into higher household income and a greater chance to escape poverty. The regional trends in education thus match the trends in poverty.

Agriculture in the north, 2005–12

Ghana’s agriculture sector is mainly rainfed and is the dominant economic activity among rural households, which are 87–89 percent active in agriculture, particularly crop production.¹⁹ In general, agricultural productivity growth has been limited in many parts of the country mainly because of the use of traditional farming methods and the volatility in rainfall.²⁰ Nonetheless, in terms of GDP share, agriculture was the principal sector in the economy until 2005. About 50 percent of the labor force is employed in agriculture, mainly as small landholders (see figure 2.16). Moreover, all export duties paid on agricultural commodities are a major source of government revenue (Seini 2002).

For the purposes of this report, the performance of agricultural productivity in the north in the last 10 years is particularly important. The poverty decline so far has occurred in parallel with an expansion in urbanization, an increase in human capital, and an improvement in asset ownership. However, because most of the labor force is employed in agriculture (80 percent), the trend in poverty reduction must derive from an increase in agricultural productivity. In the following section, we also discuss the impact of inflation, but the truth of the matter is that consumption in nominal terms did increase, and the most likely source of this increase was the relatively better performance of agriculture in the north.

Analytical work on agriculture in 2005–12 is limited. No specific analysis of household agricultural productivity is available. A 2012 Ministry of Food and Agriculture report and a recent paper of Mohan and Matsuda based on data of the Food and Agriculture Organization of the United Nations suggest that, since 2005, the northern regions have experienced an increase in aggregate production and in productivity.²¹

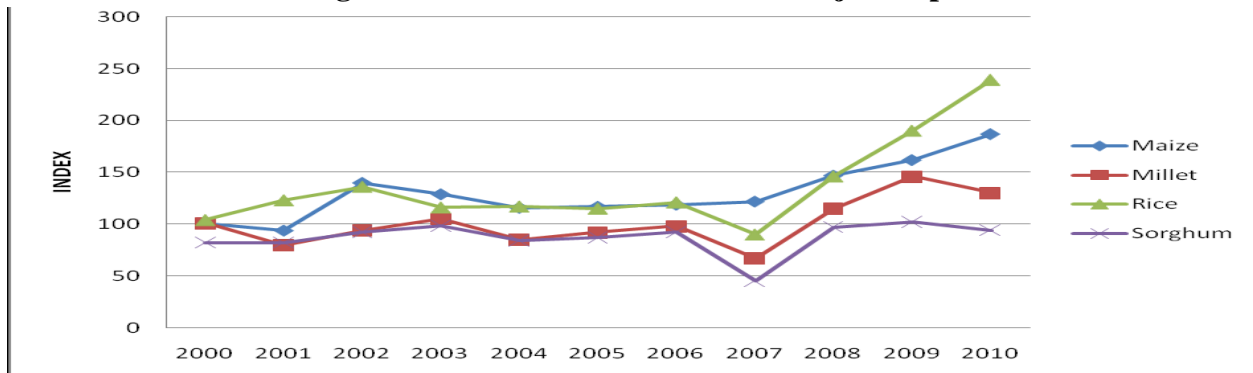
Figure 2.17 shows production growth in a number of key food crops between 2000 and 2010 using 2000 as a base year. Data disaggregated at the regional level are not available in the ministry report, but two elements suggest that the northern regions benefited from the growth in production.

¹⁹ The country is divided in three agroecological zones: savannah (in the north), forest (the central belt), and the coastal area and the bordering inland areas. In the Savannah, the main food crops are cassava, cocoyam, yam, maize, rice, millet, and sorghum, while the main cash crops are typically cotton and tobacco. In the forest zone, industrial crops such as cocoa, oil palm, coconut, coffee, cotton, kola, and rubber are particularly important; the food crops are mainly intercropped mixtures of cassava, cocoyam, yam, maize, and plantain. The coastal and inland belt is suitable for mixed cropping of maize, cocoyam, and legumes. See also Xinshen Diao (2010).

²⁰ Molini et al. (2010).

²¹ Mohan and Matsuda (2013); <http://mofa.gov.gh/site/wp-content/uploads/2011/10/AGRICULTURE-IN-GHANA-FF-2010.pdf>.

Figure 2.17 : Production indexes of major crops



Source: Ministry of Agriculture 2012.

First, the northern regions account for 100 percent of the total area planted with millet, 67 percent of the area planted with rice, and 20 percent of the area planted with maize. After a long stagnation that lasted until 2008, the production of these crops started to expand extremely quickly. Relative to 2000, the production index of rice was 2.5 times larger, of millet 1.5 times larger, and of maize almost 2.0 times larger. Other food crops typically cultivated in the north, but also elsewhere in the country, such as yams, groundnuts, soybeans, and cassava also saw a rapid rise in production.

Second, reported at the regional level, rainfall offers another useful lens to read the results. In a rainfed agriculture with low inputs, rainfall is a good predictor of production increases. Between 2008 and 2010, the average precipitation in the Northern and Upper West regions was above the 30-year regional averages. During the same period, rainfall either decreased or stayed around the respective 30-year averages in the rest of the country.

Production may have increased in the north, but this may also be the effect of using more land. Mohan and Matsuda calculate the productivity growth for a number of food crops using FAO and government statistics. They find that the total productivity growth rate was higher in the Northern Region, followed by the Eastern and Upper West regions and that this result is a combination of efficiency gains (the Northern Region) and technical change (the Upper West Region).

This is clearly preliminary evidence that needs to be verified. We observe a generalized increase in the production of the main food crops and a rise in productivity, but has yet to be demonstrated that these determined the reduction in poverty we observe in the Northern regions. In the second stage of our analytical work program, we will explicitly address this issue by looking at household productivity gains and their overall impact on household well-being.

In 2012-2013, among the regions rapidly reducing poverty were the lightly populated Upper East and Upper West regions and the heavily populated Northern Region. Poverty rates there fell from high levels, and they were still higher than in the rest of the country; yet, the decline was remarkable. How robust are these findings?

There were some improvements in these northern regions that suggest the decline in poverty was consistent with trends among other socioeconomic indicators. There are also other good reasons to believe that poverty may have decreased. First are the efforts of the government, the donor community, and nongovernmental organizations focused on these areas. Important gains were certainly achieved. Second, the targeted resources spent on such a tiny population must have had an impact; for example, the public works program was mainly concentrated in northern districts. Third, given the high poverty rate, even marginal improvements would have significantly affected a big part of the population. Therefore, the decline can likely be partly attributed to a combination of targeted policies, gains from general improvements in the national economy, and an initial movement toward urbanization.

This is only one part of the explanation, however; the other has to do, paradoxically, with the relatively limited economic development of these regions and their poor connection to national markets. When survey data were collected, households were facing a sharp fuel price rise and, as a consequence of high inflation and capital outflows, a strong cedi devaluation.²² The combination of higher fuel prices and devaluating currency hit particularly hard those households spending a larger share of their budgets on fuel and imported items. Moreover, because the fuel price increase affected the cost of many other items, including food, net food consumers were likewise especially affected.

It follows that living standards in rural areas and in the north might have been more resilient to these short-term macroeconomic cycles.²³ This resilience may be one reason why poverty continued to decline in the north even though many people throughout the country were being affected by shocks. Urban middle- and upper-class households were more vulnerable to short-run macroeconomic events, as they consume more imported food and fuel and use the formal banking system.

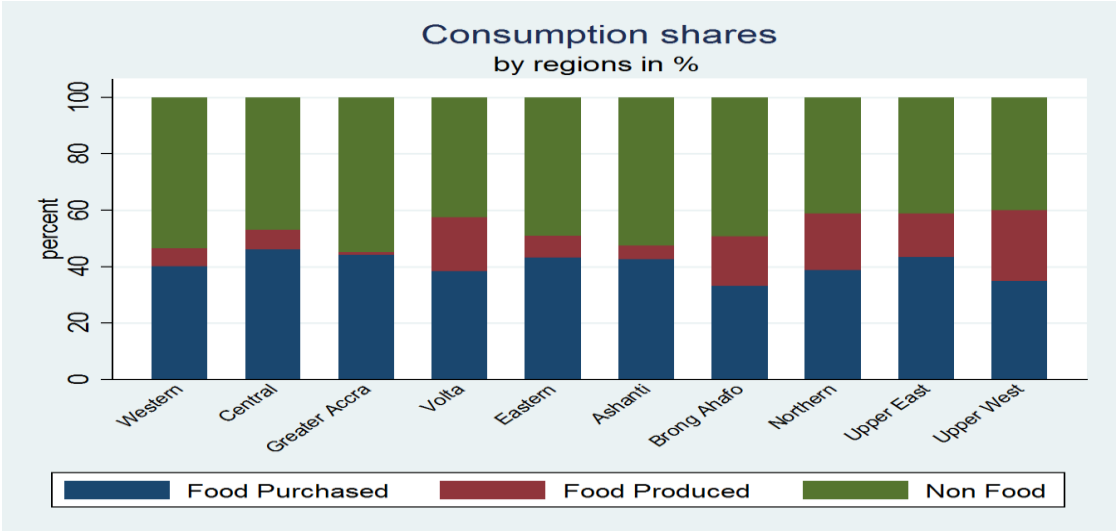
The breakdown of regional consumption seems to support this hypothesis. Figure 2.18 shows, by region, the consumption shares of own-produced food, purchased food, and nonfood items. In the

²² See also PSIA in Ghana.

²³ See Fox (2015).

north, which is predominantly rural, a big component of household food consumption is self-produced (about 20 percent), and the nonfood component represents around 60 percent of consumption. In all other regions, except Volta, own-production accounts for much less than 20 percent of total consumption, while the nonfood component accounts for about 50 percent. One might object that, since data after February 17 2013 were collected after the shock, the shares of nonfood consumption in urban areas might have gone up, thereby biasing the results. We have checked this hypothesis by comparing food shares before and after February, and the differences were not significant. Hence, the shares presented in figure 2.18 provide a reliable snapshot of regional consumption patterns.

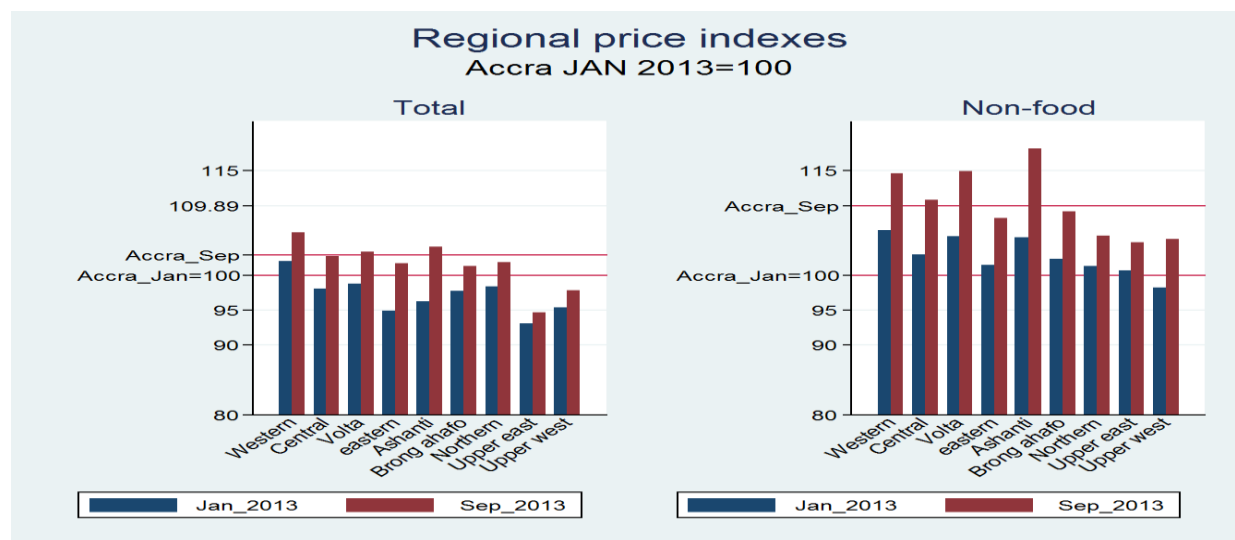
Figure 2.18: Consumption, by region: food purchased or self-produced and nonfood items



Source: Calculations based on GLSS 6.

Between January and September 2013, nonfood prices varied the most, suggesting that households with a higher component of nonfood items in consumption were hit the hardest. Figure 2.19 compares the baseline prices in Accra in January 2013 (Accra January = 100) with prices in other regions in January and September 2013. The left chart plots combined food and nonfood prices, while the right chart plots only nonfood prices. Two trends are worth mentioning as regards the combined index.

Figure 2.19: Regional price indexes: total and nonfood



Source: Calculations based on CPI prices.

First, the prices in Accra in January 2013 were the second highest in the country; only the Western Region showed a slightly higher level. In September 2013, while the prices in Accra rose by 3 percent, the prices in most other regions rose much more quickly. The prices realigned or even overtook the Accra prices, but starting from a lower level. Second, the only regions where prices did not rise substantially were the Upper East and the Upper North; the distance from Accra prices remained the same, and there was no convergence effect.

Nonfood prices showed a much larger variation, irrespective of the region. Compared with Accra, nonetheless, the prices in other regions were already higher likely because of transport costs. Accra is the main producer of several durable goods and is the port of entry for most imports into the country. The price increase either maintained the distance with Accra prices or, in the case of Volta and Ashanti regions, the price change accentuated it. Also, in this case, the increase in prices in the two upper regions was slower than the increase in Accra prices, confirming, at least in the short run, the limited connectivity of these markets with the rest of the country.

The comparison between the data in figures 2.18 and 2.19 and regional patterns in poverty reduction in 2012 suggests a clear correlation (see figure 2.3). Only five regions experienced substantial poverty reduction. Three are located in the north, and this, in the short term, represented for resident households a sort of advantage for three main reasons. First, because their connectivity with the rest of the country was limited, the overall price shock was rather marginal. Both price indexes register a variation far below that in all the other regions. Second, the price shock mainly affected the nonfood component, which, in these regions, accounts for less than 40 percent of the total household budget. Third, the relatively high share of self-produced food (around 20 percent) sheltered these households from the impact of the fuel price variations on food.

It seems that Greater Accra and Ashanti, although affected by high inflation, managed to cope. Nominal consumption was greater than in the rest of the country, and, at least in the short run, the purchasing power of households continued to rise even among the poorest households. In the remaining six regions, the stagnation in poverty reduction may be imputed to a rapid price rise, in some cases, higher than in Accra and, likely, a slow increase in nominal consumption.

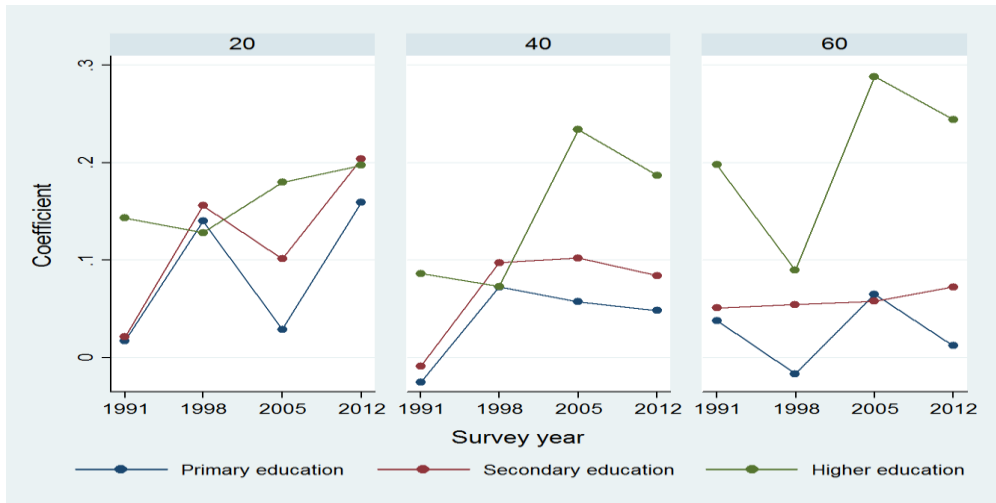
Quantile regression and Oaxaca-Blinder decomposition

In this section, we look at the drivers of poverty reduction in 1991–2012. Our strategy is to first estimate the unconditional quintile regressions (Firpo et al.) on the 20th, 40th, and 60th percentiles of the distribution in the four survey rounds. This enables us to understand the key determinants of consumption and how they vary across quintiles. The choice of the percentiles is not casual.

In 1991, around 53 percent of the population was poor. (Thus, our choice of the 60th percentile.) Between 1998 and 2005, the poor belonged to the 40th percentile and below, and, in 2012, the poor floated around the 20th or 30th percentile. (To keep the same interval, we chose the 20th percentile.) The model is the same across quintiles and includes standard household level consumption covariates such as household size, household composition, the sex, age, educational attainment, and the occupation of the household head, residence (urban or rural), and regions. We also included an asset index aggregating information on household ownership of durable goods, housing conditions, and access to key utilities such as tap water, toilet, and electricity (Filmer and Pritchett 2001).

We graphically analyze the results of the quantile regression by blocks. The regression results are reported in the appendix. Figure 2.20 shows data on the educational attainment of household heads across percentiles; the baseline is no education. Compared with no education, the coefficients are positive and, in most cases, significant. Two interesting trends are worth mentioning. First, higher levels of education have, almost always, comparatively higher returns. This holds for almost every round and percentile under analysis. Primary-school education always has lower coefficients than secondary-school education, and tertiary education has the highest returns.

Figure 2.20: Education coefficients, by quintile and year

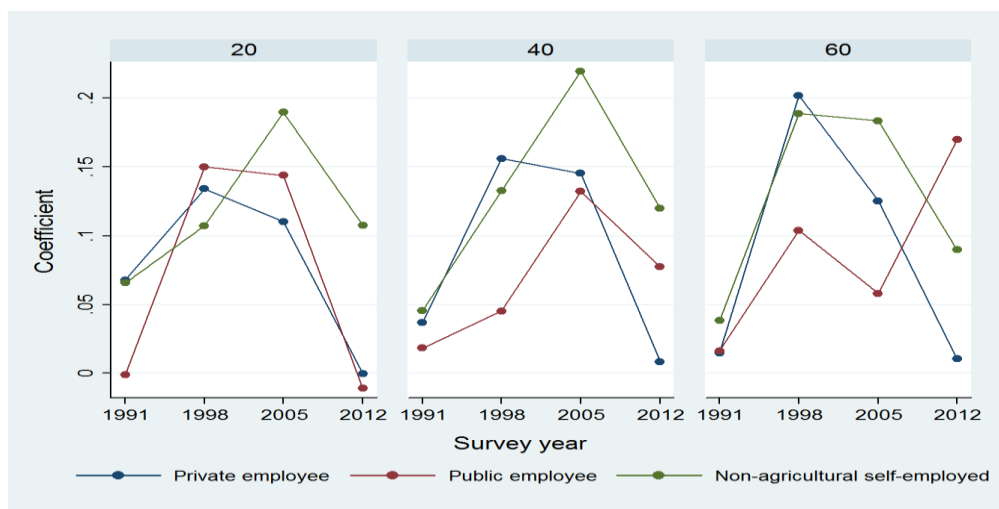


Source: Calculations based on GLSS 3–6.

Second, the divide between tertiary education and the other levels grows substantially for the 40th and 60th percentiles, while, for the 20th percentile, the divides widen at the same pace. The combined effect suggests the rising importance of tertiary educational attainment, which is still relatively scarce among these percentiles compared with secondary- and primary-school attainment. At the same time, there is relative stability in the returns to the latter two. From the 20th percentile onward, the share of people with primary- or secondary-school attainment increased over time, and, particularly in the last year, the returns to primary education slowly declined. Meanwhile, among the 20th percentile and below, educational attainment is still limited, and the returns to education all increased beginning in 2005.

We report results on the sector of employment among household heads, by private and public sector wage employment and nonagricultural self-employment (figure 2.21). (The omitted category is unemployed. The results on agricultural employment are shown in the appendix.) Formal and informal employment outside agriculture always has a positive impact on income. Compared with 1991, when household heads were predominantly working in agriculture, the returns were increasing significantly across all percentiles by 1998. The returns to these occupations started to decline first among the 60th percentile between 1998 and 2005 and, afterward, among lower percentiles starting in 2005. Between 2005 and 2012, the returns to employment categories fell, and most became insignificant. One possible interpretation involves the mass migration from rural to urban areas that took place mainly between 2005 and 2012, as well as the diversification in the household portfolio of activities.

Figure 2.21: Sector of employment coefficients, by quintile and year



Source: Calculations based on GLSS 3–6.

Among the lower percentiles, the high returns to nonagricultural activities clearly encouraged many households to shift progressively from agriculture to nonfarm activities, or, as testified by the massive increase in the urban population (from 37 to 50 percent), to move to urban areas. The increase in supply clearly determined, in the long run, the decline in the returns. Ideally, some informal workers could have succeeded in obtaining better jobs in the formal sector if this sector had been sufficiently dynamic to absorb them. However, there appear to have been binding constraints on the demand side. Employees in the formal private sector in 2012 accounted for no more than 17 percent of the total labor force, and the rise had been limited since 2005.

Whereas the private sector and self-employment show a declining trend between 2005 and 2012, the public sector coefficient of the 60th increased significantly. This suggests the existence of a public wage premium that tended to benefit the higher percentiles of the population and, thus, turned out to be regressive. Poor households are barely employed in the public sector (only 7 percent have jobs in the public sector), and, if employed there, they have low-skill, low-wage jobs such as guards or cleaners. Wage bill expenditures are not only not pro-poor, they are also extremely burdensome. Beginning in 2005, the public sector wage bill rose steadily and is now considered one of the key expenditure cuts on which the government and the International Monetary Fund recently agreed to intervene (IMF 2015).

In figure 2.22, we report the block of demographic variables. Over the last 20 years, Ghana has gone through a slow demographic transition. The average household size declined from 4.5 (1991) to 4.3 (2012). The household size variable was consistently negatively correlated with consumption across years and percentiles. The share of working-age adults in household composition had a positive impact on consumption across years. Its impact on percentiles was rising because of higher employability. Adult men and women in the higher percentiles are likely more well educated and have better access to remunerative jobs. This effect is stronger among

women, suggesting that better opportunities in education, health care, nutrition, and so on among women enable them to contribute more to household well-being.

Figure 2.22: Demographic coefficients, by quintile and year

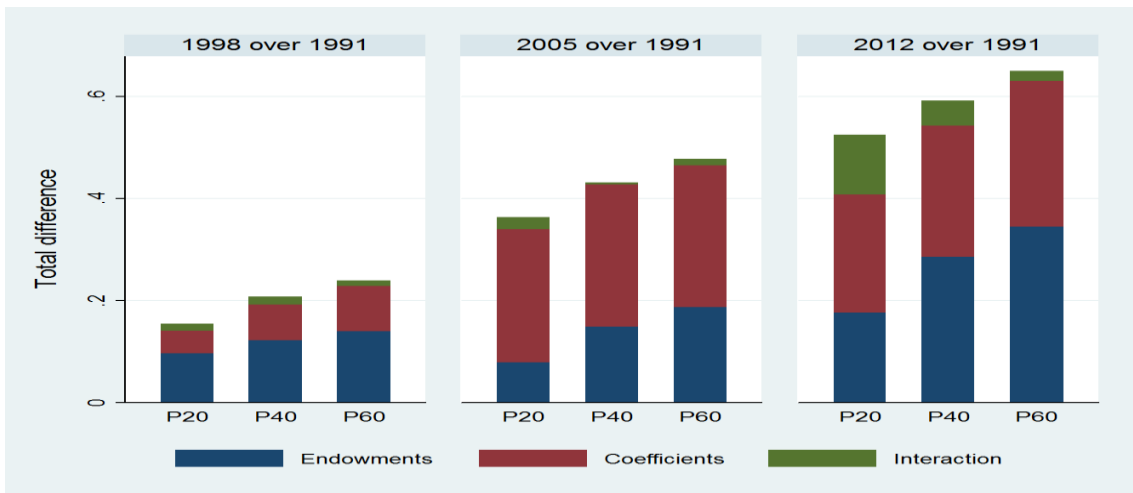


Source: Calculations based on GLSS 3–6.

From a geographical point of view, data confirm the relevance of regional heterogeneity (see the appendix). Using one of the poorest regions in the country, the Upper West Region, as the baseline, we find that all other regions tended to perform consistently better across the period. Overall, the coastal regions and Ashanti fared better than the northern regions (see below). The coastal regions are also the most highly urbanized, and the urban area coefficient becomes positive and significant in 1998 across all percentiles and stays positive and often significant in the following survey rounds.

We use the estimated parameters that measure the impact on every quantile of the distribution in a standard Oaxaca-Blinder decomposition that sets the 1991 consumption data as a baseline. We decompose the real consumption variations across 1991–98, 1991–2005, and 1991–2012 into coefficients or returns on variables, endowment variation (variation in the quantile-level mean of the covariates), and the interaction effect, a sort of unexplained residual. Figure 2.23 presents the aggregate results, while, in the appendix, we show the disaggregated results. We compare variations from 1991; however, the variation between subperiods—for example, 1998–2005, can be easily calculated by subtracting the 1991–98 variation from the 1998–2005 variation.

Figure 2.23: Oaxaca-Blinder Decomposition, by quintile and year



Source: Calculations based on GLSS 3–6.

The decomposition of the consumption variation provides insights on the drivers of the changes in consumption. First, higher percentiles, among which consumption clearly grows more quickly than among lower percentiles, benefited from a much larger variation in endowments. Higher percentiles managed to accumulate more assets, human capital, and job opportunities than lower percentiles over the years. Conversely, the variation of the returns to covariates, with the notable exception of the period 1991–98, was similar across percentiles.

There was a big variation in the returns to variables between 1998 and 2005. This coincided with a boom in cocoa production and exports. Cocoa accounted for about 28 percent of agricultural exports. The cocoa boom generated, in the western and coastal areas, a high demand for the workforce, but also for capital and infrastructure, and the skills of the workforce and the rise in revenues even at lower levels translated into a higher demand for capital, infrastructure and skills.²⁴ These resources were relatively scarce, and the price effect and variation in returns was, thus, substantial. In these areas, the cocoa boom had a positive impact on poverty, but it accentuated the gap with the northern regions, which were barely affected by the boom.

The variation in consumption that occurred between 2005 and 2012 looks to be of a different nature. It was mainly driven by endowments and, relative to the previous period, was smaller and more egalitarian. The stagnation in the returns on covariates and the increase in endowments seems to suggest that the high returns obtained in the previous period encouraged households to invest in assets and human capital. This clearly reduced their scarcity, but, at the same time, returns massively declined. The greater availability of people in the nonfarm sector who had low levels of educational attainment (typically primary school) determined a clear decline in their relative returns.

²⁴ Vigneri (2005).

A look at the disaggregated results of the decomposition reveals that, in terms of coefficients, five covariates play a key role in explaining the variation in consumption. (See the appendix for the results.) First, the household size coefficient declined across almost all periods and percentiles, indicating that birth control and declining fertility were substantially improving household living conditions. Second, the coefficient for assets started at a high level in 1991, testifying to their initial scarcity. Across years, the coefficient remained highly positive, but continued to decline the more assets were accumulated. A similar pattern can be seen in urban area dummies: the returns on urbanization were declining, but remained always high and positive. Third, all regions increased relative to the Upper West Region, confirming the big spatial divide that was being accumulated in the country. Finally, particularly between 1991 and 2005, the incentive to diversify away from agriculture into nonagricultural self-employment and the returns on secondary education increased.

The rapid rise in the asset index is worth noting: the variation is always positive and significant (see the appendix). During the period, many households experienced a rapid improvement in housing conditions, water services, and electricity (see above). Many also started to buy durable goods such as means of transports and electronic equipment. Likewise, urbanization rates increased almost uniformly across percentiles, particularly in 2005–12, determining the declining return to migration (see above).

To analyze the drivers of poverty reduction using a multivariate methodology, we have estimated three unconditional quantile regressions (Firpo et al.) on the 20th, 40th, and 60th percentiles. We then use the estimated parameters in a standard Oaxaca-Blinder decomposition that takes, as a baseline, the 1991 consumption data.

The results of the regressions suggest the increasing importance of tertiary education, which was still relatively scarce among these percentiles relative to secondary and primary education, and, at the same time, the relative stability of the returns to the latter two levels of education. From the 20th percentile onward, the share of people with primary and secondary educational attainment rose over time, and, particular in the last year, the returns on primary education slowly declined. Meanwhile, in the 20th percentile and below, educational attainment was still limited, and the returns to education all increased beginning in 2005.

Formal and informal employment outside agriculture always had a positive impact on income; yet, over the last decade, the returns started to decrease. The initial high returns of nonagricultural activities clearly encouraged many households to progressively shift from agriculture to nonfarm activities, and the increase in supply clearly determined, in the long run, a decline in the returns. Few informal workers made the transition to the formal sector. There seems to have been clear constraints on the demand side that limited the expansion of the formal sector.

Based on the previous estimates, the Oaxaca-Blinder method enables us to identify the drivers of consumption change between the survey rounds. Three results are noteworthy. First, the higher percentiles managed, over the years, to accumulate more assets, human capital, and job opportunities relative to the lower percentiles. Conversely, the variation in the covariates on returns, with the notable exception of the period 1991–98, was similar across percentiles. Second, there is a relevant price effect between 1998 and 2005. The returns on scarce inputs such as skills, capital, and infrastructure grew quickly. This had a strong distributional impact: this is the period when the disparities between the north and the rest of the country accentuated (see below).

The growth in consumption between 2005 and 2012 was mainly driven by endowments and, relative to the previous period, was smaller and more egalitarian. The stagnation in the returns to covariates and the increase in endowments seems to suggest that the high returns obtained in the previous period encouraged households to invest in assets and human capital. This clearly reduced their scarcity, but, at the same time, returns declined. The lower returns meant that households with these inputs experienced a relative stagnation in income. Combined with the spike in inflation, this may explain the temporary convergence of the northern regions.

Poverty maps, 2000 and 2012

Poverty maps allow a better focus on the spatial distribution of poverty at the local level in finer detail. The Ghana Statistical Service has produced two comparable poverty maps. One, issued in May 2005, uses data from the 2000 Population and Housing Census and the 1998/99 Ghana Living Standards Survey. Another, more recent, was computed based on data from the 2010 Population and Housing Census and the 2012/13 Ghana Living Standards Survey (GLSS 6). Both use the small area estimation methodology that was developed to allow accurate estimates of consumption-based poverty and inequality at lower levels of disaggregation by combining information from censuses and household consumption surveys.²⁵

The methodology involves three major steps. The first step is to select a set of variables that are common to a census and a household expenditure survey. The subset of variables that are found to match between the census and the survey is used to estimate a regression model of per capita consumption based on the survey data. In the second step, the set of parameter estimates obtained from the regression model is applied to the same set of variables identified in the census data to obtain predicted per capita consumption for each census household. In the last step, based on the estimated level of per capita consumption, estimates of poverty, inequality, and other welfare measures, as well as standard errors, are calculated for any geographical unit with a sufficient number of households to obtain reliable estimates.

²⁵ Elbers, Lanjouw, and Lanjouw (2000).

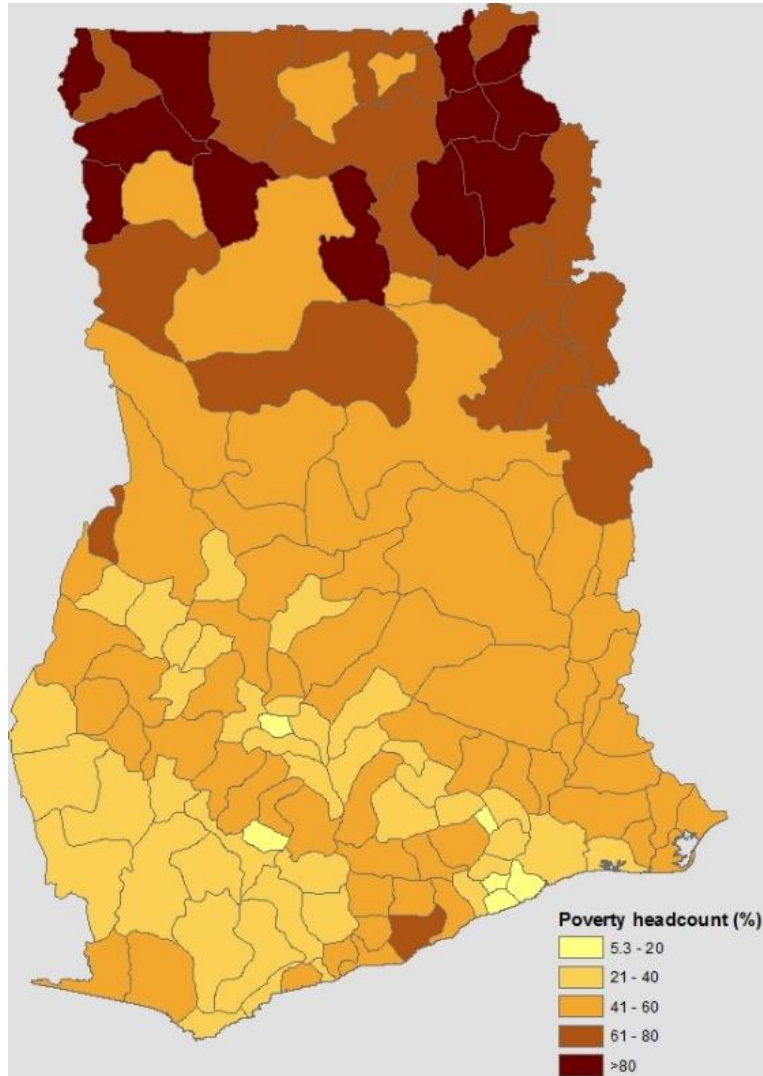
Questions from the censuses and the surveys were compared to obtain candidate variables. These are variables on which the questions were worded the same way in the survey and the census, including the response options. Correlates of household welfare—dependency ratios, household size, age of household head, the proportion of males in the household, the highest level of schooling completed, labor market status of the household head, and so on—were constructed from the matched variables from both data sources. The data from the survey were weighted to be nationally representative before the means of the correlates were compared. Only those variables the census mean of which fell within the 95 percent confidence interval of the survey mean were included in the regression model.

Because the survey and the census years did not coincide, the means of some correlates were not statistically equivalent. The mapping methodology was applied based on the assumption that the estimated relationship between household welfare and the correlates does not change over time. This assumption is reasonable given that the census and the survey were conducted within a two- or three-year interval. Some variables were aggregated to the cluster, district, and regional levels to reduce intracluster correlation by capturing variations in household welfare as a result of common cluster-level characteristics and location effects.

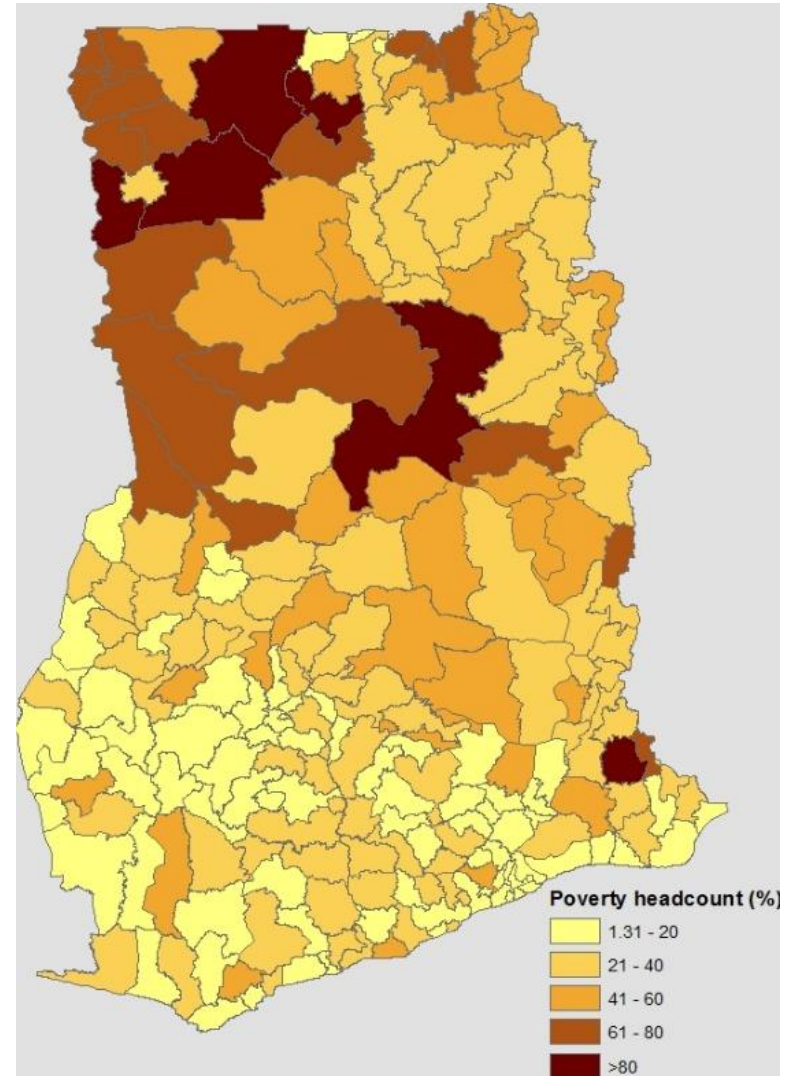
Figure 2.24 compares the two available poverty maps at the district level. The 2000 map (left) and the 2013 map (right). Although the number of districts increased from 110 to 215, the two maps are still visually comparable. A number of results showing the important changes that occurred in the country are worth mentioning.

Figure 2.24: Poverty maps, 2000 and 2013

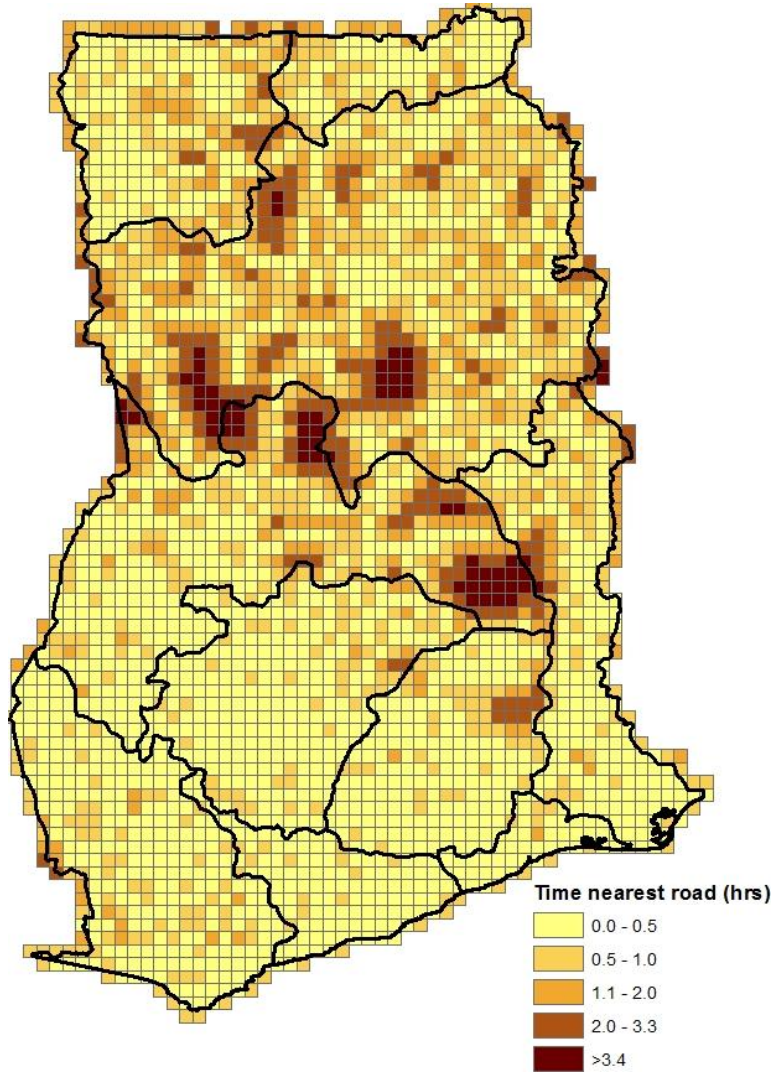
a. District poverty headcount, 2000 (%)



b. District Poverty headcount, 2013 (%)

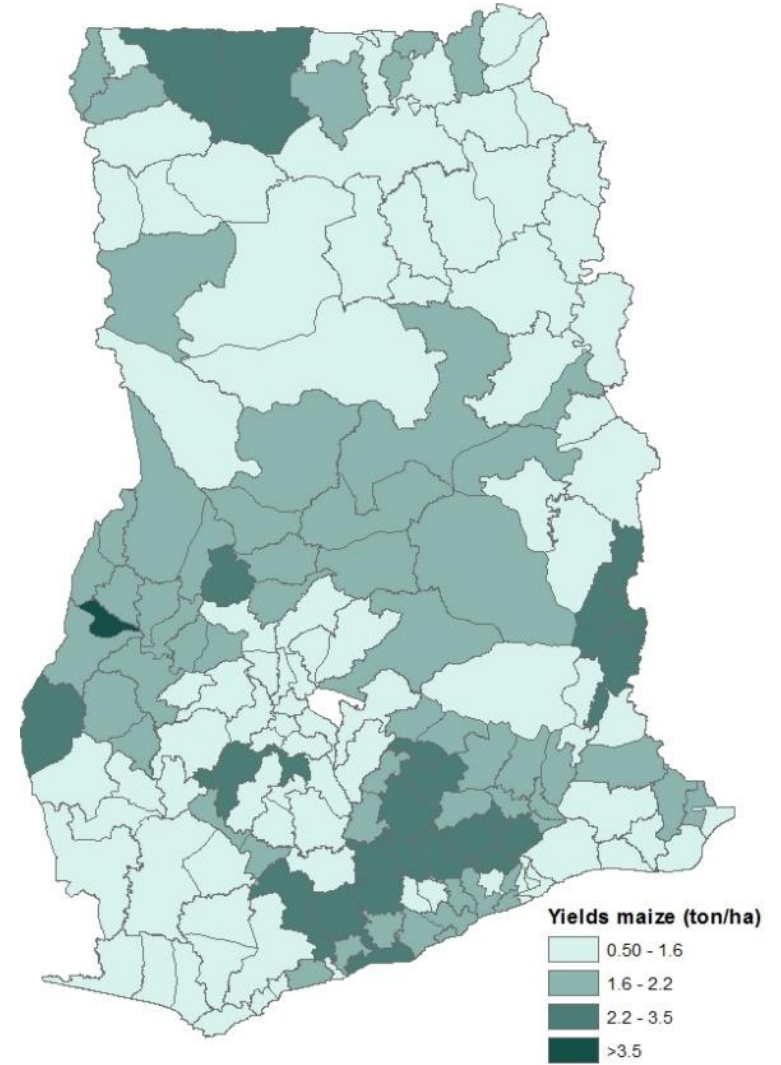


c. Proximity to roads, 2011 (hours)



Source: Calculations based on GLSS 4.

d. District maize yields, 2012 (metric ton/ha)



Source: Calculations based on GLSS 6.

In 2000, only a few districts in Accra and Ashanti regions showed a poverty rate below 20 percent. In the southwestern part of the country was a predominance of districts in which the poverty rates were between 21 and 40 percent. These districts are in the Western, Greater Accra, and Ashanti regions and in the Eastern Region neighboring Accra. In these areas, the particularly negative performance of the central regions sticks out; almost all these districts show poverty rates above 40 percent. There is a rather homogenous central belt stretching across almost all districts in the Brong Ahafo, eastern Ashanti, Eastern, and Volta regions in which poverty rates never fall below 40 percent. Part of the Northern Region bordering the Brong Ahafo and Volta regions shows similar characteristics. Moving to the north, practically all districts in the Upper East and Upper West regions record poverty rates well above 40 percent. At the extreme, a group of Upper West and Upper East districts bordering, respectively, Burkina Faso and Togo show rates above 80 percent.

The country was radically different 13 years later. The corner formed by the Western, Ashanti, Eastern, southern Brong Ahafo, Greater Accra, and coastal Volta regions that used to record poverty rates of between 20 and 40 percent now show, in the majority of districts, rates below 20 percent. There are clusters of higher poverty rates, particularly in the inland parts of the Central Region, but, overall, the improvement is striking. The Central belt that used to register poverty rates above 40 percent is now much more heterogeneous. Most of the districts saw a reduction in the poverty rate to less than 40 percent, mainly in the Brong Ahafo and Volta regions. In the north, we note the particularly positive performance of the eastern reaches relative to the western reaches. In east, the districts belonging to the Northern Region reduced poverty to less than 40 percent, while most of the districts belonging to the Upper East region—among the poorest in 2000—reduced the poverty rate to below 60 percent. In the west, particularly in the Upper West Region, the improvements were not remarkable: most of the districts record poverty rates far above 60 percent.

There is a lot of heterogeneity in standards of living in the northern regions; this could not be properly detected in the survey data. For instance, the Upper West Region has a poverty rate of about 70 percent. However, within the region, there is wide variation in the headcount rate across districts, from a low of about 36 percent in Wa Municipal District to approximately 84 percent in Wa East District and over 90 percent in Wa West District. It is noteworthy that the two poorest districts border the least poorest district in the region, a pattern that would not have been apparent without a poverty mapping exercise.

The map also reveals the existence of pockets of poverty and islands of prosperity. The poverty rate in Adaklu District (89.7 percent) in the Volta Region is more than two and half times the regional average (33.8 percent). Although Greater Accra has the lowest poverty rate in the country, poverty is concentrated in two districts, Ningo Prampram (31.2 percent) and Shai Osudoku (55.1 percent). In the Northern Region the headcount rate is around 50 percent, but two

districts have poverty rates of less than 30 percent, Tamale Metropolis (24.6 percent) and Sagnerigu Municipal (29.3 percent).

We compare the 2013 poverty map with two other maps in which we plotted the proximity to roads in hours and the maize yield (figure 2.24, charts c and d). The presence of roads is a good proxy for market connectivity and gives a sense of the difficulty or ease of accessing basic facilities such as hospitals and schools. One should expect a high correlation between the presence of road infrastructure and low poverty rates. Ghana is not exceptional in this regard. The western corner, where poverty is below 20 percent in most of districts, has the best road network: the nearest road is, on average, less than an hour away. By contrast, in the north, the average distance to the nearest road declines, and poverty rates increase.

The map of the yield of maize, the most common staple in the country, has some similarities with the poverty map, too. In an area covering the Eastern Region and the inland parts of the Central Region, maize yields are the highest in the country. This was also an area of rapid poverty reduction. (Further research will investigate the nexus between poverty reduction and increased productivity in food and in cash crops.) In southern Ghana, meanwhile, high maize yields are not necessarily associated with low levels of poverty. Often, the contrary is the case. Along the coast, poverty shrank, but this is not an area suitable for maize cultivation. Likewise, highly urbanized areas such as Ashanti registered rapid poverty reduction, but not because of higher crop productivity, or, in the case of the Western Region, because of higher productivity in different crops.

In the northern regions, the low maize productivity seems highly correlated with poverty. These are areas that are only modestly urbanized and in which cash crops are not so diffused. Only maize and a few other food crops are cultivated. Hence, low productivity leads to low levels of production and, consequently, low levels of consumption. The reasons are numerous. In this part of the country, farmers use few inputs; they have access to limited extension services; and they do not have access to irrigation. Agriculture is typically rainfed, but, as in most of the Sahel, the rainfall pattern is becoming more and more volatile, and crop failure is becoming more frequent.

The GLSS 6, in combination with the 2010 census, was used to construct a new poverty map. The map is an important tool to analyze regional trends and improve the granularity of poverty analysis. Compared with the map constructed in 2000, it confirms the big achievements of the country in poverty reduction. A large area consisting of the Western, Ashanti, Eastern, southern Brong Ahafo, Greater Accra, and coastal Volta regions shows poverty rates below 20 percent, where, in 2000, the rates were between 20 and 40 percent. The central belt that used to register poverty rates above 40 percent, now registers poverty rates below 40 percent in most districts. The northern regions, though not uniformly, also experienced important improvements.

In the north, if we exclude the Upper West Region, poverty has declined below 60 percent and, in certain districts in the Northern Region, even below 40 percent.

3. INEQUALITY AND POLARIZATION

During the period, there were two main socioeconomic narratives about Sub-Saharan Africa. The first paints a picture of an emerging continent where the middle class is expanding, and prosperity is reaching large swaths of the population.²⁶ The second acknowledges the relatively robust growth, but highlights the slow reduction in poverty. According to this second narrative, the lack of a more rapid reduction in poverty may derive, in part, from widening inequality.

The focus on the limited inclusiveness of growth in Ghana is not new. A previous poverty assessment on northern Ghana flagged the problem and extensively discussed how the country was growing rapidly, while reducing poverty at a slower pace. Comparing trends in poverty reduction from 1991 to 2006, the authors point out that southern Ghana was the main contributor to poverty reduction and started from relatively lower poverty rates. Whereas southern Ghana reduced poverty in both population shares and absolute population numbers, northern Ghana marginally reduced poverty in shares, but faced a surge in the absolute numbers.

The increasing divide between the north and the rest of the country is confirmed by several indicators of nonmonetary well-being. Data from the latest population census, the 2010 Population and Housing Census, have been used to compute indicators listed under the various Millennium Development Goals. If we look at most of these indicators, the differences between the north and the rest of the country are striking. For example, while the national literacy rate among youth is 85.7 percent, the rates of the three northern regions range from 54.1 percent (Northern) to 71.2 percent (Upper West) and 73.6 percent (Upper East).

Health and sanitation indicators are substantially worse in the north. Based on the 2010 census, the maternal mortality ratio at the national level was 485 deaths per 100,000 live births.²⁷ The indicator, however, ranges from 355 deaths per 100,000 in the Greater Accra Region to 802 deaths per 100,000 in the Upper East Region. As regards improved sanitation, the differences are pronounced across regions and between the north and the south.²⁸ For example, while the two most populous regions, Greater Accra (32.3 percent) and Ashanti (22.3 percent), recorded the

²⁶ See African Development Bank (2011); *Economist* (2011, 2013); McKinsey (2012).

²⁷ The maternal mortality ratio is the annual number of women who die from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of the termination of pregnancy, irrespective of the duration and site of the pregnancy, per 100,000 live births.

²⁸ This is referred to as the percentage of the population with access to facilities that hygienically separate human excreta from human, animal, and insect contact.

greatest access to improved sanitation, the three northern regions, namely, Northern (1.5 percent), Upper East (2.4 percent), and Upper West (2.2 percent), recorded rates that were far lower than the national average (13.6).

The broadness of the topic of inequality suggests, nonetheless, that the analysis should not be limited to the north-south divide. The following three subsections, summaries of three background papers on inequality in Ghana, tackle the inequality issue from three different angles. First, we focus on trends in inequality measured by consumption, and we look at the determinants of inequality by employing quantile regressions and interquantile regressions. To explore the factors associated with consumption inequality, Oaxaca-Blinder decompositions of consumption are calculated. These compare groups of households on the basis of whether they do or do not receive remittances and according to area and region of residence.

Second, we look at the human opportunity index (HOI) and the increasing gap between urban and rural areas and across agro-ecological zones (coastal, savannah, and forest). Focusing on opportunities means that the emphasis is not on inequality in the final outcome (consumption or income), but in the initial opportunities individuals face in the early stages of their lives. The concept of equality of opportunity implies that the chances to succeed in life should be independent of individual circumstances at birth, such as gender, location of birth, or socioeconomic and demographic origin.

Third, we focus on a specific aspect of inequality, polarization. Whereas inequality is the overall dispersion in the distribution of income or consumption, polarization is the combination of divergence from the global mean income and convergence on the local mean income. If societies experience income polarization, people cluster around group means and tend to be far from the mean or median of the overall distribution. An important aspect of the income polarization analysis is that it is concerned with the disappearance or non consolidation of the middle class. This occurs if, in a society, there is a tendency to concentrate in the tails, rather than the middle of the income distribution. Within each group, there is increasing identification, which means income homogeneity and, often, declining income inequality, while, between the two groups, increasing alienation emerges instead. The combined effect of the forces of alienation and identification between two groups of significant size tend to lead to effective opposition, a situation that might give rise to social tensions and conflict (Esteban and Ray 1999, 2008, 2011).

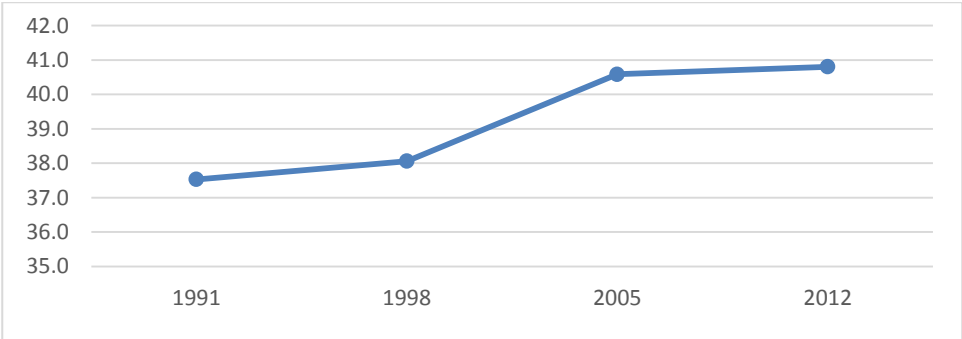
3.1 CONSUMPTION INEQUALITY TRENDS

We start our analysis on the trends in inequality in Ghana by looking at the Gini index measured on consumption. The Gini index increased from 37.5 in 1991 to 40.8 in 2005, about a 9 percent increase. The big jump in the Gini occurred between 1998 and 2005; it was around two points. This was also a period of rapid growth in household consumption; if inequality had not

widened so quickly, the already significant reduction in poverty we see in this period would have been even more pronounced. In 1998–2005, the performance of the southern and central regions was particularly good, and poverty was progressively concentrated in the northern regions. Together with the rapid increase in the returns to scarce resources (education, assets), this looks to be one of the drivers of the big variation (see above).

In 2005–12, there was a relative stagnation in inequality. Regions that did not experience any or only limited poverty reduction performed relatively better than others. Conversely, more urbanized centers other than Accra were hit particularly hard by price increases. The overall effect was a temporary reduction in the gap between the northern regions and the rest of the country. The Gini nonetheless kept rising; the egalitarian effect of convergence was being offset by the rapid expansion in consumption in Greater Accra, the richest region in the country.

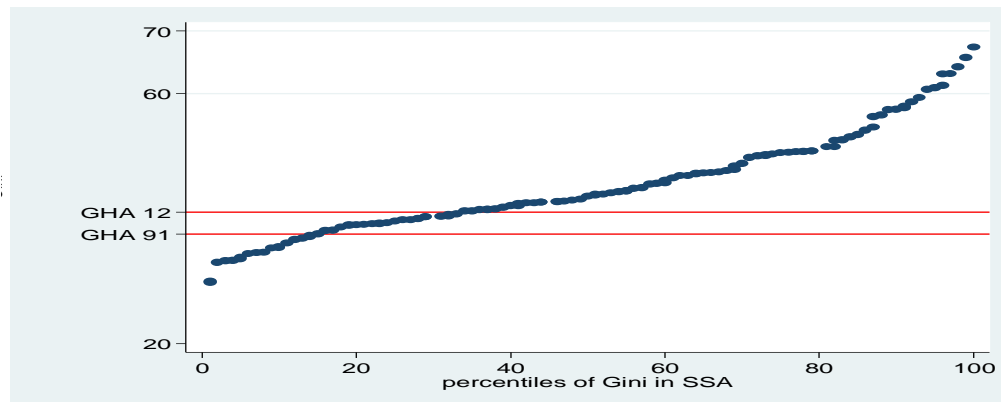
Figure 3.1: Gini index, 1991–2012



Source: Calculations based on GLSS 3–6.

Inequality is thus steadily increasing, but, compared with other Sub-Saharan African countries, Ghana’s economy appears more inclusive. In figure 3.2, we rank data on several Sub-Saharan African countries over the last 20 years. Ghana in 1991 was a rather egalitarian society and occupied the bottom 20 percent of the Gini distribution in Africa. In 2012, its relative position had clearly worsened; yet, the country’s position was still below the median, and, compared with other rapidly growing African economies, Ghana’s Gini was firmly among the lowest.

Figure 3.2: Gini indexes in Sub-Saharan Africa



Source: Calculations based on PovcalNet.

The general increase in inequality was the aggregate outcome of a number of facets of the dynamics of the regional. In table 3.1, we present the mean per adult equivalent consumption in 2005 prices and the Gini indexes by zones and by survey year.²⁹ Compared with 1991, Accra’s residents in 2012 had doubled their consumption. Accra grew more quickly than the rest of the country in every period considered. In 1991, the mean consumption in Accra was close to that in other urban areas, but, after seven years, it was 35 percent higher with respect to an increase in other urban areas of only 8 percent. A second boom occurred in 2005–12, when, despite the inflationary crisis, consumption grew by 26 percent. In 2012, the mean per adult equivalent consumption was 36 percent higher in Accra than in other urban areas, two times higher than in surrounding rural areas, and three times higher than in the rural north. Hence, the first clear driver of national inequality was the increasing spatial divide between the capital and the rest of the country. Job opportunities, investment, assets, human capital, and a regular flow of migrants were all concentrating in Accra, which, according to the last census, accounts for almost a quarter of the Ghanaian population.

Table 3.1: Mean per adult equivalent consumption and Gini index

Year	Zones	Mean	Gini
1991	Accra	724.0	35.0

²⁹ In this section, rather than using regions, we have aggregated households into five zones. This renders decompositions and graphs thereof more accessible. The zones are Accra; other urban areas; southern rural areas, including rural households in the Greater Accra, Ashanti, Western, Eastern, and Central regions; central rural areas, comprising rural areas in the Brong Ahafo and Volta regions; and northern rural areas, including the Northern, Upper East, and Upper West regions.

	Other urban	643.0	33.7
	Southern rural	415.4	34.1
	Central rural	417.6	34.3
	Northern rural	322.0	38.4
1998	Accra	983.0	29.4
	Other urban	695.1	36.3
	Southern rural	515.3	32.5
	Central rural	489.1	35.5
	Northern rural	291.4	36.9
2005	Accra	1,154.9	41.2
	Other urban	1,093.8	33.9
	Southern rural	652.2	32.6
	Central rural	650.7	35.2
	Northern rural	401.1	42.3
2012	Accra	1,455.4	34.8
	Other urban	1,071.0	34.7
	Southern rural	715.8	35.9
	Central rural	748.8	38.5
	Northern rural	521.8	42.3

Source: Calculations based on GLSS 3–6.

The second big driver is the increasing divide between the northern regions and the rest of the country. If we look only at rural areas, the southern and central regions grew much more quickly than the northern regions: 80 percent versus 60 percent. If we add that the rate of urbanization was growing more rapidly in the southern and central regions than in the north, all concurs in indicating that the gap is widening. The urban-rural divide, meanwhile, seems to be narrowing slightly. In 2012, in these urban areas, consumption in real terms declined because of the rapid rise in inflation; rural areas were thus partially able to reduce a gap that had accumulated in previous years.

These are important drivers of between-group inequality, capturing the divide caused by the increasing differences in the mean consumption of each group. However, the between component accounts for about 20 percent of total inequality (figure 3.3). The rest is explained by within-group heterogeneity. We report the Gini within each zone in the last column of table 3.1.

Figure 3.3: Inequality decomposition: Within and Between zones



Source: Calculations based on GLSS 3–6.

The most unequal area in the country is the rural north. Its Gini is always higher than the Ginis of the rest of country, confirming the substantial heterogeneity we detected in our analysis of the poverty maps. Looking at the maps, we could see this, but variations across districts were significant. For example, in 2013, districts in the Upper West Region with poverty rates around 40 percent bordered districts with rates above 80 percent. In general, the within-group inequality, if we exclude Accra, is rather stable; the Gini is generally above 33 and increased in most zones in 2005–12.

Accra represents an exception because the Gini has fluctuated a lot since 1991. The latest Gini indicates a sharp reduction. This result appears counterintuitive if we think that a big number of relatively poorer people settled in Accra, and the overall outcome should be an increase in inequality. In this case, it is difficult to establish whether the decline is genuine or has to do with the measure of welfare we are using. In general, household surveys do not contain good estimates of upper percentiles of welfare.³⁰ In using consumption to rank welfare, as is normally done in low- or lower-middle-income countries, we find the situation is aggravated. Consumption is accurate in capturing the well-being of poorer people, but rather imprecise in capturing the well-being of people in the upper percentiles.

The more household well-being improves, the less consumption, which, we recall, consists of food items for 50–60 percent of the population, captures the *real* welfare of households. More research is needed in this area. However, if we look at income data, which are normally better than consumption in describing the well-being of relatively richer households, the inequality rates appear much higher in Accra. One possible explanation is therefore that the conditions of Accra's residents have reached a certain welfare level whereby consumption underestimates well-being, and, as a consequence, inequality looks to be much narrower than it really is.

Inequality, growth, and poverty reduction are part of an iron triangle.³¹ If real per capita private consumption grew and poverty rates remained constant, one would expect inequality to increase. By contrast, if poverty rates remained constant and inequality did not increase, then one would expect zero growth in real private consumption per capita.

A decomposition of the changes in poverty across the three subperiods helps show the contribution of inequality in countering the positive effects of growth on poverty or, if narrowing, in fostering poverty reduction (table 3.2). To identify how much of the changes in poverty we can attribute to income growth and to inequality, we first assume that all the change derives from income growth, while inequality remained steady. Alternatively, we assume that all

³⁰ Alvaredo and Piketty (2010).

³¹ Bourgignon (2004).

the change drives from shifts in the income redistribution, while incomes remained steady. For this exercise, we use Shapley’s value decomposition, a nonparametric procedure that decomposes poverty reduction into growth and inequality components without any unexplained residual (Kolenikov and Shorrocks 2003).

Table 3.2: Shapley’s value decomposition of poverty reduction, 1991–98, 1998–2005, and 2005–12

Overall change in poverty	Nationwide	Accra	Other urban	Southern rural	Central rural	Northern rural
1991–98						
Growth contribution	-12.7	-12.0	-4.7	-15.5	-9.8	4.7
Inequality contribution	-0.2	-5.6	4.3	-1.7	-3.0	2.9
Poverty variation	-12.9	-17.6	-0.4	-17.2	-12.8	7.7
1998–2005						
Growth contribution	-13.2	-3.9	-17.5	-15.6	-17.5	-14.7
Inequality contribution	1.9	8.8	-4.1	0.3	2.9	-1.8
Poverty variation	-11.3	4.9	-21.6	-15.3	-14.6	-16.6
2005–12						
Growth contribution	-7.9	-4.2	0.6	-5.5	-8.4	-13.8
Inequality contribution	0.8	-2.7	0.1	4.4	4.0	-0.4
Poverty variation	-7.1	-6.9	0.7	-1.1	-4.5	-14.2

Source: Calculations based on GLSS 3–6.

As appears in table 3.2, inequality started to have a negative effect in 2005, when, under the effect of growth alone, poverty reduction could have been 13.2 percent. The increase in inequality eventually reversed 2 percent of the potential poverty reduction. In 2012, inequality had a much smaller impact on poverty. If there had been no growth, inequality could have contributed to an increase in poverty of about 1 percent. In 2012, the slowdown in poverty reduction relative to previous periods had more to do with the limited increase in consumption rather than a more unequal distribution.

The decomposition by zones sheds light on changes in regional distribution. Focusing on the last period, three trends emerge. First, in urban areas other than Accra, the poverty rate increased by 0.7 percent because of the combined effect of a decline in consumption in real terms and limited increase in inequality (see table 3.1). Second, in the southern and central rural areas, without the rapid widening in inequality, consumption growth would have led to a reduction in poverty of 5.5 and 8.4 percent, rather than 1.1 and 4.5 percent, respectively, in these areas. Finally, most of the poverty reduction taking place in the rural north derived from the accelerated growth in consumption. Inequality contributed only marginally to this reduction.

The analysis undertaken so far has focused on the spatial aspect of inequality without looking at other possible drivers. The following paragraphs report on the joint role of the various determinants of inequality using quantile regressions centered on the 10th, 25th, 50th,

75th, and 90th percentiles (see the appendix).³² The data of the four survey rounds are pooled. The variables on the right-hand side in the equations are demographic variables, employment and industry status, education levels (the excluded dummy is tertiary education), year dummies (the excluded year is 1992), dummies for households receiving remittances and for households living in Greater Accra and in rural coastal, rural forest, rural savannah, urban coastal, urban forest, and urban savannah areas. As proxies for household resources, home, land, and various durables, ownership dummies are included.

The results confirm the joint role of education, region of residence, and availability of remittances in accounting for differences across households at various percentiles of the consumption distribution. The coefficients of the dummy for remittances are positive in all regressions, but statistically different from zero only for the 10th and the 25th percentiles. Most of the differences between households, across the entire distribution, arise because of the educational attainment of the head and the region of residence; the age of the head also plays an important role. The coefficients of the ownership dummies suggest a positive correlation between the resources available to households and consumption across the entire distribution.

To explore the factors associated with consumption inequality, we provide Oaxaca-Blinder decompositions of consumption variations to compare groups of households on the basis of whether they do or do not receive remittances, rural or urban area, and region of residence. Table 3.3 reports the results obtained by running the same regressions for the various samples split using the same set of right-hand variables used in the quantile regressions (see the appendix).

Table 3.3: Oaxaca-Blinder decompositions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Remittances No remittances	Urban Rural	Forest Coastal	Savannah Coastal	Savannah Forest	Greater Accra Urban	Greater Accra Rural
Differences	0.381*** (0.014)	0.059*** (0.015)	0.001 (0.023)	-0.059** (0.024)	0.017 (0.016)	0.296*** (0.024)	0.596*** (0.023)
Endowments	0.267*** (0.018)	0.109*** (0.103)	0.016 (0.019)	0.092*** (0.027)	0.081*** (0.017)	0.121*** (0.019)	0.333*** (0.024)
Coefficients	0.079*** (0.017)	-0.040*** (0.012)	-0.020 (0.016)	-0.049*** (0.019)	-0.004 (0.016)	0.172*** (0.044)	0.239** (0.106)
Interaction	0.035* (0.021)	-0.010 (0.008)	0.005 (0.011)	-0.102*** (0.022)	-0.060*** (0.018)	0.003 (0.041)	0.015 (0.106)
Observations	32,029	32,029	22,284	18,403	24,684	12,854	22,443

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note. The table reports three Oaxaca decompositions of log consumption for 1991, 1998, 2005 and 2012 obtained comparing households receiving and not receiving between endowments (row 2), differences in coefficients (row 3) and the each of the two groups, reported in row 1, arises from differ remittances. The difference in log consumption interaction between the two (row 4)

Source: Jappelli and Padula 2015.

³² In this section, we report the results of Tullio Jappelli and Mario Padula, “Consumption Inequality and Household Risk Management in Ghana.”

Column (1) compares households receiving remittances with those not receiving remittances. Row 1 reports the difference in log consumption and shows that consumption is almost 6 percent greater among households receiving remittances than among households not receiving remittances. Such difference can be decomposed into differences arising because of endowments (row 2), which derives from differences in the right-hand variables used in the regressions, differences arising because of coefficients (row 3), and the interaction between the two (row 4). The results suggest that most differences are accounted for by endowments, while the differences accounted for by the coefficients are negative, as indicated in rows 3 and 4. Column (2) focuses on the rural-urban comparison. The consumption of urban households is 38 percent larger than that of rural households. The difference mostly arises because of endowments (row 2), but the role of returns (row 3) is also important; the returns are larger among rural households than among urban households.

The remainder of table 3.3 focuses on regional comparisons. The differences between forest and coastal regions (column 4) are not large and mainly arise because of differences in returns. Conversely, the differences between savannah coastal regions and savannah forest regions are larger. The differences in endowments are positive in the savannah coastal and savannah forest comparisons, while the differences accounted for by the regression coefficients are negative and smaller in absolute value.

The comparisons between groups of households living in rural or urban areas is taken into account: the differences between the two groups increase over time. The consumption of urban households was 20 percent larger than that of rural households in 1991, and 40 percent higher in 2012. The differences were entirely caused by differences in endowments in 1991, 1998, and 2012, while, in 2005, the overall difference was small because the difference in endowments was offset by the difference derived from the coefficients. The evidence implies that, while the difference in endowments between the two groups increased over time, the difference because of the coefficients (or the returns to the endowments) remained roughly constant.

In summary, the analysis of consumption inequality suggests that inequality increased over the period. The spatial divide in the form of a north-south gap and an Accra versus the rest of the country gap are clearly relevant contributors. The multivariate analysis enabled us to identify other drivers of inequality that played and will continue to play an important role. Educational attainment of the head, asset ownership, and access to remittances play an important role in explaining consumption differences among households. Age of the head also plays a role. There is rising consumption inequality over the life cycle, particularly among urban households. All this suggests that inequality in Ghana is multifaceted and needs to be analyzed under different angles.

In the following section, we focus on another aspect of inequality, opportunity. The section evaluates the most basic living conditions available to Ghanaian infants, children, and youth that are essential to their welfare and eventually conducive to their full human development as adults. The HOI is considered an appropriate instrument for identifying inequality and exclusion among children, when access to opportunities is associated with circumstances beyond the control of the children.

3.1 INEQUALITY OF OPPORTUNITY

Equitable access to human development among 11 million Ghanaian children is crucial for the country's future economic development. To assess this equitable access, the HOI is calculated. The concept behind the use of equal opportunity is that the chances to succeed in life should be independent of individual circumstances at birth, such as gender, location of birth, and socioeconomic and demographic origin.

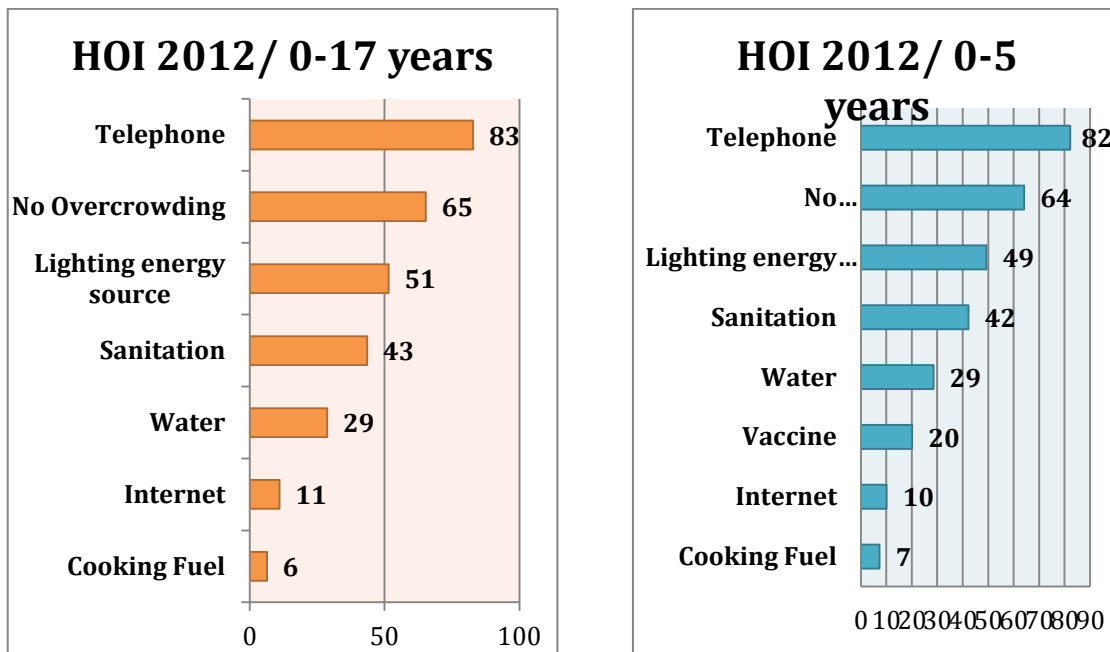
The objective of this section is to provide an overview of the access to key opportunities among all Ghanaian infants, children, and youth. Several questions are posed in this section, and we try to provide answers: Are opportunities for human development equitably allocated in Ghana? How much progress was made during the period under analysis? Which sectors offer better and more equitable opportunities? Which regions show the largest gaps in access to opportunity between households in favorable and unfavorable circumstances? Which sectors or regions provide better opportunities for children in adverse circumstances?

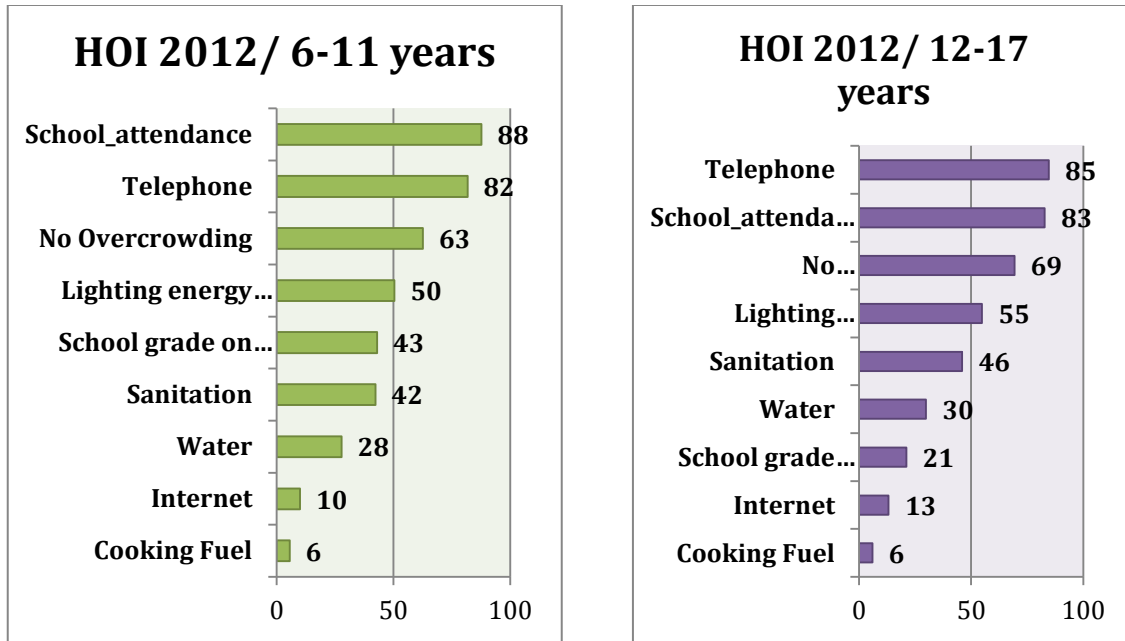
To assess the equitable access to opportunities, we examine trends in the HOI of 10 basic opportunity indicators grouped in four sectors: two HOIs linked to education, five HOIs connected to basic housing services, two HOIs related to technologies of information and communication, and one HOI related to immunization and vaccines. These 10 indicators cover human development milestones at the three stages of the life cycle between birth and 17 years of age: infancy, childhood, and adolescence.

The selected indicators also take into account two other criteria: (1) relevance to wellness and the quality of life of Ghanaian children and (2) responsiveness to public policies. To enable a one-dimensional assessment of opportunities, aggregate HOIs are reported for all children 0–17 years of age and for cohorts of infants (0–5), children (6–11), and adolescents (12–17). All opportunity indicators are computed for all households represented in the GLSS of 1998, 2005, and 2013. Indicators are further decomposed by urban and rural areas and by 10 administrative regions and 3 ecological zones.

The top-left chart in figure 3.4 shows the seven HOIs computed for all 0–17-year-olds in 2012 and displaying the HOIs in descending order from greater opportunity to less opportunity. In the other three quadrants, the same indicator is split by three subcohorts. All four charts in figure 3.4 indicate that, irrespective of age, Ghanaian children confront considerable disparities of access to opportunities for basic human development. HOI indicators in 2012 show that the biggest challenges among the 0–17 cohort are access to adequate cooking fuel, the Internet, and water. Cooking fuel and the Internet are also a challenge for each subcohort. There are some differences in the third-lowest HOI indicator: completing the school grade on time among adolescents 12–17 and vaccines among infants.

Figure 3.4: National HOI 0–17-year-olds and three cohorts, Ghana, 2012 GLSS



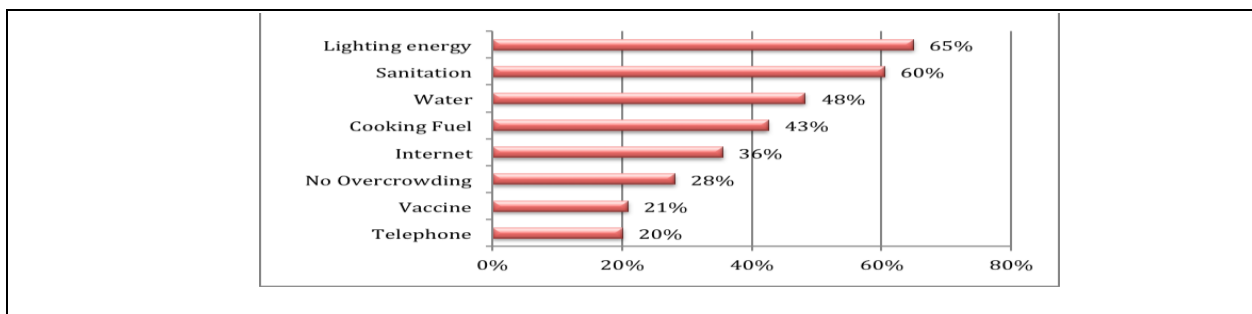


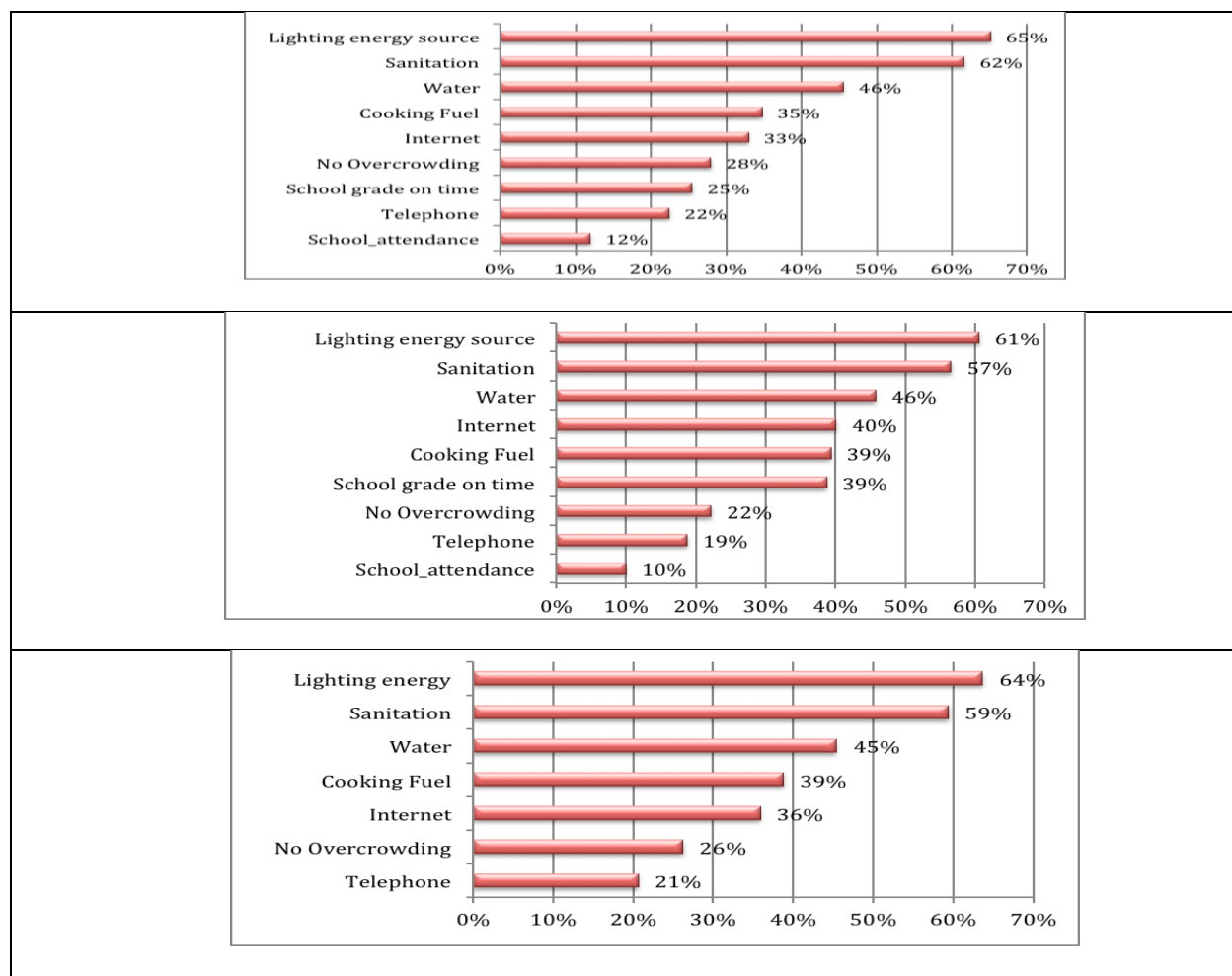
Source: Velez 2015.

Much better HOI indicators—in the 63 to 88 point range—correspond to access to telephones, no overcrowding in housing, and school attendance (6–11 and 12–17 age-groups), while moderately satisfactory HOI indicators—between 42 and 55 points—correspond to access to adequate lighting energy sources, sanitation, and completing school grade on time (6–11 age-group).

In addition to the large disparities across sectors, extremely large opportunity gaps subsist between children in favorable and unfavorable circumstances. Figure 3.5 displays, for each HOI, the inequity gaps that are equal to the expected probability of access between children in the 90th and 30th percentiles. These opportunity or equity gaps (p90/p30) are especially severe in lighting energy, sanitation and water, cooking fuel, the Internet, no overcrowding in housing, and completion of school grade on time among adolescents.

Figures 3.5: Opportunity gaps between percentiles p90/p30 0–17-year-olds and three cohorts, Ghana, 2012 GLSS





Source: Velez 2015.

Inequality of opportunity, by urban-rural residence and agroecological zone

While Ghanaian children are fairly evenly distributed between urban and rural areas (46 and 54 percent, respectively), urban centers offer a much higher level of opportunity. There was a disproportionate gap in opportunity between urban and rural areas of nearly 50 points in 2013. Income and consumption play an important role. While opportunities become more accessible among households at higher income per capita in both urban and rural areas, there is a significant opportunity gap favoring urban dwellers.

Table 3.4 explains in detail the main differences behind the excessive rural-urban opportunity gap. The urban and rural panels show the total number of children that have access to opportunities (first and second columns). The seven columns to the right display the share of children that have access to each opportunity. This means that 49 percent of rural children—roughly 3.1 million—have access to only one or two opportunities (in a total of seven). In one-third of these cases, they only have access to telephones and no overcrowding in housing and

nearly no access to adequate water (2 percent), sanitation (7 percent), lighting energy source (3 percent), the Internet (2 percent), or adequate cooking fuel (0 percent). In contrast, only 8 percent of urban children—approximately a half-million—face similar challenges, and 49 percent of urban children—2.8 million—have access to 5, 6, or 7 opportunities. The four largest rural-urban opportunity gaps are in lighting energy source, sanitation, water, and Internet, with HOI differentials of 48, 38, 33, and 22 points, respectively.

Table 3.4. Distribution of basic opportunities of human development: Urban and Rural areas, 0–17-year-olds, Ghana, 2013

Total number of opportunities available	Population (millions)	Population (%)	No overcrowding	Sanitation	Lighting energy source	Telephone	Internet	Water	Cook Fuel
			Access to each opportunity (rate %)						
	5.67	100%	Urban						
0-2	0.48	8	38	24	24	70	4	12	0
3	0.97	17	50	46	74	94	9	25	2
4	1.45	26	68	68	93	97	17	49	8
5	1.37	24	81	86	99	99	36	69	30
6	0.97	17	90	96	99	100	60	85	69
7	0.43	8	100	100	100	100	100	100	100
	6.44	100	Rural						
0-1	1.03	16	54	6	2	27	0	2	0
2	2.10	33	75	17	15	86	1	6	0
3	1.74	27	77	46	59	92	6	19	0
4	1.04	16	89	71	85	97	10	43	5
5-7	0.53	8	97	91	97	100	26	86	24

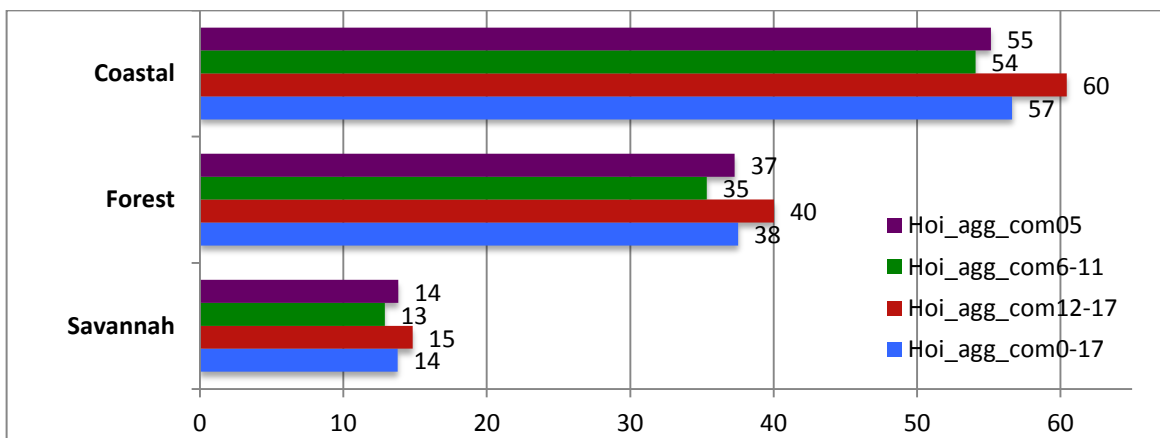
Source: Velez 2015.

Table 3.4 suggests that, in urban and rural areas, priorities are different even if the number of opportunities that may be accessed is the same. For example, for the one million rural children with access to one or zero opportunities, the next most critical opportunities at the margin are access to telephones or no overcrowding in housing, and, for the two million rural children with access to two opportunities, the next-most vital opportunities are sanitation and lighting energy source. On the other hand, for 480,000 urban children with access to two or fewer opportunities, the next critical opportunities are lightening energy source, sanitation, and telephones. For the 970,000 children with access to three opportunities, the next critical opportunities are water, lighting energy source, sanitation, and no overcrowding. For the 1.4 million urban children with access to four opportunities, the next-most critical opportunities are cooking fuel, water, and sanitation.

Any policy aimed at expanding the access to human development opportunities should distinguish urban and rural priorities and ponder the desired level of targeting. Overall, for 75 percent of urban children, the expansion of opportunities seems most critical in sanitation, lighting energy sources, and water. For 90 percent of rural children, the most critical opportunities to expand are telephones, no overcrowding in housing, and sanitation.

The evidence presented in this section reveals significant differences in access between urban and rural areas. Figure 3.6 compares opportunities across ecological zones using the same four aggregate HOIs for all children and the three cohorts. A similar profile emerges if we compare the three ecological zones: the coastal ecological zone offers the best opportunities, with HOIs for children 0–17 of 57 points, followed by the forest ecological zone, 48 points, and the savannah ecological zone, only 14 points. That the savannah ecological zone only offers a quarter of the opportunities offered by the coastal zone creates a considerable challenge in providing equitable human development among children in Ghana.

Figure 3.6. Aggregate opportunities, by Ecological Zone and cohort, Ghana, 2012

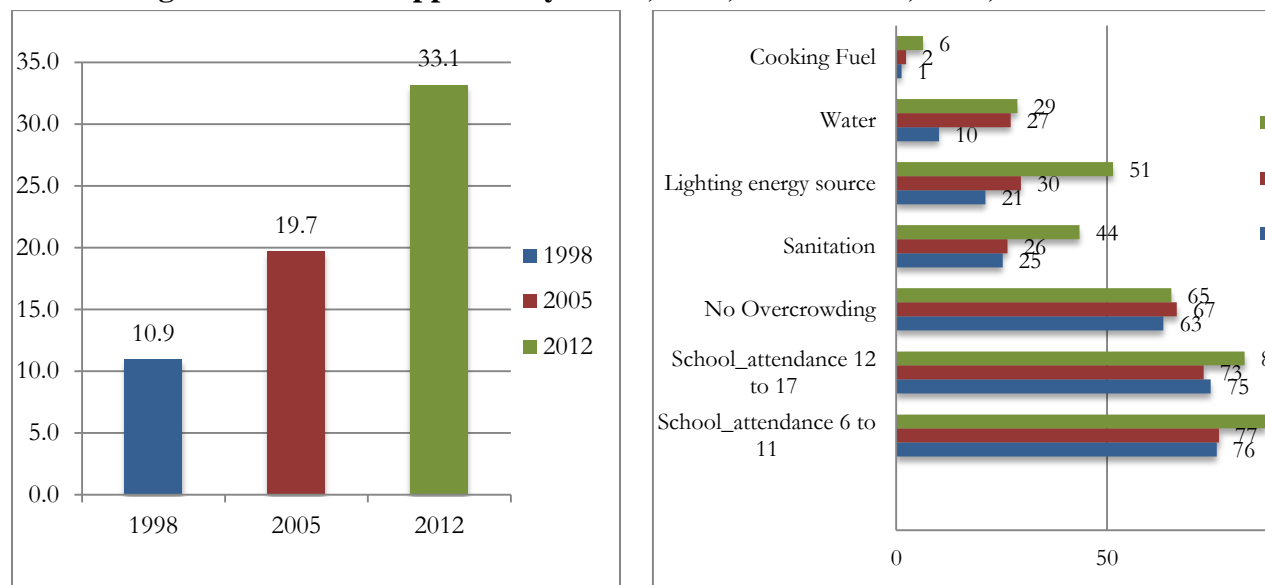


Source: Velez 2015.

Figure 3.7 presents the aggregate HOIs for 0–17-year-olds for 1998, 2005, and 2012 (left-side chart) and the seven specific HOIs for three periods and one aggregate for 0–17-year-

olds (right chart).³³ A number of findings emerge. First, between 1998 and 2013, there was an unambiguous improvement in access to aggregate opportunities for all children, but the pace of progress was more rapid between 2005 and 2013; this is also the period when asset and human capital grew the most. Second, except for no overcrowding and water, all other sector-specific HOIs showed a similar long-term pattern.

Figure 3.7 Human Opportunity Index, 0–17, Ghana 1998, 2005, and 2013



Source: Velez 2015.

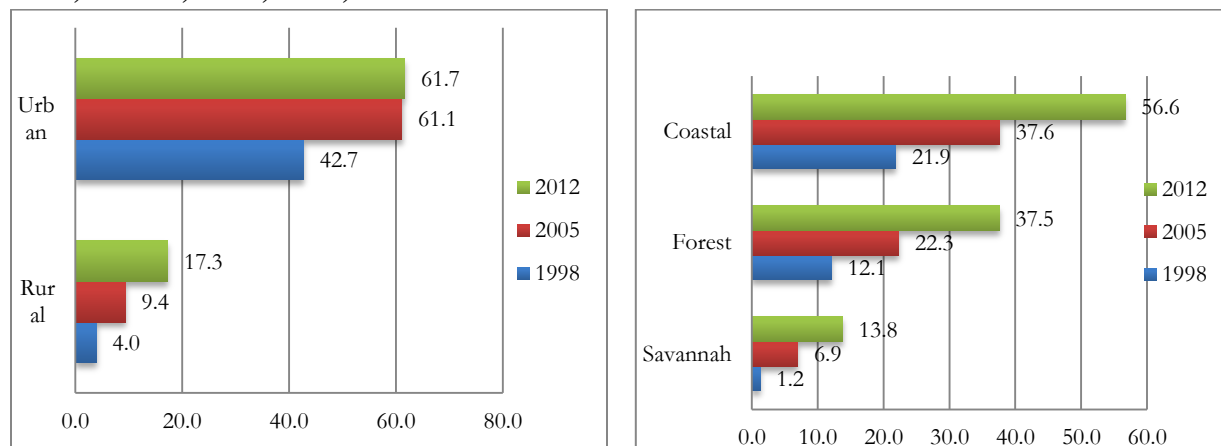
The aggregate HOI for all children 0–17 indicates that there was a persistent long-term improvement in access to human development in 1998–2012, but the pace of progress was more rapid in 2005–12 than in 1998–2005; the average growth was 1.9 and 1.3 percent a year, respectively. Sector-specific HOIs show a similar pattern of long-term improvement, plus better dynamics at the end of the last decade, except for no overcrowding and water (see figure 3.7, right chart). The other five specific HOIs showed much better performance in 2005–12 than in 1998–2005.

The clear improvements at the national level hide a big gap between rural and urban areas (figure 3.8, left chart) and by groups of regions (right chart). After 1998, the urban-rural gap expanded considerably, by 15 points, because the average annual rate of growth of the urban HOI nearly tripled the rural rate: 3 percent versus only 0.8 percent. The urban-rural dynamic, however, was reversed in 2005–13 because the performance of urban areas was poor, –0.2 percent average annual increase in the aggregate HOI, while the rural performance improved

³³ The aggregate HOI 0–17 excludes two opportunities not available in 1998, telephone and Internet. The trend in the aggregate HOI 0–17 (seven opportunities) and the aggregate HOI 0–17 (five opportunities) should differ by a large margin because the growth in the access to telephones was huge during the period.

moderately, to 1.1 percent average annual increase. Ghana experienced a reversal of the previous urban-rural dynamic, which prevented an escalation of the urban-rural opportunity gap.

Figure 3.8 Human Opportunity Index, 0–17, by urban and rural area and agroecological zone, Ghana, 1998, 2005, and 2013



Source: Velez 2015.

The opportunity gaps among the aggregate HOIs of the three ecological zones increased in both the long term and the medium term. The gap between the savannah ecological zone and the coastal ecological zone increased monotonously from 21 points in 1998 to 31 points in 2005 and 43 points in 2013. Likewise, the gap between the forest ecological zone and the coastal ecological zone reached 19 points in 2013, twice the value in 1998. The nonconvergent dynamics of the aggregate HOI across ecological zones reflect a strong disparity in annual growth rates among the opportunity indicators in favor of the coastal ecological zone.

The calculation of the HOI sheds light on another dimension of inequality often disregarded: opportunity. This section came to a number of important conclusions. First, irrespective of their age, Ghanaian children confront considerable disparities of access to opportunities for basic human development. The biggest challenges facing children correspond to five opportunities: expanding access to adequate cooking fuel, access to the Internet, access to water, completing school grades on time among adolescents, and sanitation.

Second, compared with urban children, rural children face a disproportionate opportunity gap of more than 50 points. Their extreme level of deprivation is illustrated by the fact that nearly half of rural children—roughly 3.1 million—have access to two or fewer opportunities out of a total of seven. Also, urban and rural priorities diverge in the incremental access to opportunities. Among urban children, the expansion of opportunities seems most critical in sanitation, lighting energy sources, and water. Among rural children, the most critical opportunities that should be expanded are no overcrowding, sanitation, and the telephone.

The access to aggregate opportunities between 2005 and 2013 relative to 1998–2005 shows unambiguous improvements in access to aggregate opportunities among all Ghanaian children and among each of the three cohorts. Between 2005 and 2012, there was a modest narrowing of the urban-rural opportunity gap between 2005 and 2013. This was helped by the poor urban performance. The urban-rural opportunity gap dropped for all aggregate and specific HOIs thanks to a much better performance, that is, higher average annual rates of growth, in all specific HOIs in rural areas and a poor relative performance in five urban HOIs during the same period. Regarding the opportunity gaps across regions, Ghana experienced moderate convergence, but the interregional rankings remain basically unchanged. However, across ecological zones, opportunities are diverging.

3.2 POLARIZATION

In the previous sections, the poverty and inequality analyses identify a big divide in economic and social performance between and within the regions of Ghana. Most of the welfare indicators we reviewed indicate that, since the 1990s, inequality has steadily increased. The increase in inequality, however, is only one aspect of the problem. The hypothesis discussed in this section is that Ghana has undergone a process of increasing income polarization. Whereas inequality is the overall dispersion of the distribution, referring to the distance of every individual from the median or mean income, polarization is the combination of divergence from the global mean income and convergence toward local mean incomes.

In income-polarized societies, people cluster around group means and tend to be far from the mean or median of the overall distribution. Within each group, there is income homogeneity and often narrowing income inequality. Thus, we may talk of increasing identification. Between the two groups, instead, we talk of increasing alienation.³⁴ The combined effect of the forces of alienation and identification between two groups of significant size leads to effective opposition, a situation that may give rise to social tensions and conflict.³⁵ Also, the group at the top of the distribution possesses voice, while the other group, which is made up of those at the bottom, are voiceless in matters that affect their welfare and society at large.

Another important aspect of the income polarization analysis is that it is concerned with the disappearance or, as in the case of Ghana and other Sub-Saharan African countries, the non-consolidation of the middle class.³⁶ This occurs precisely when, in a society, there is a tendency to concentrate in the tails, rather than the middle of the income distribution. A well-off middle class is important to every society because it contributes significantly to economic growth, as well as to social and political stability.

³⁴ Duclos et al. (2004).

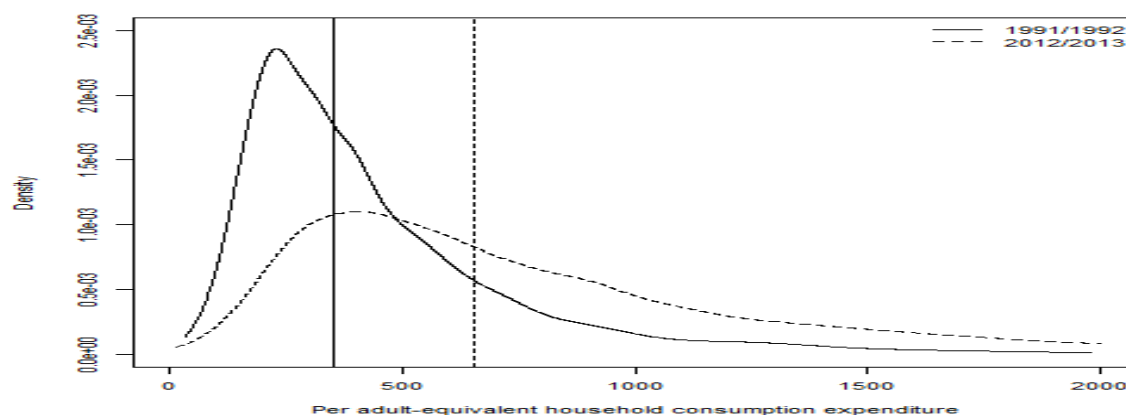
³⁵ Esteban and Ray (1999, 2008, 2011).

³⁶ Corral et al. (2015).

To measure the degree of polarization of Ghanaian society, we use the relative distribution method.³⁷ This method basically creates a distribution that captures the share of households in the comparison year (2012) that fall in each income decile of the reference year (1991). This distribution is then decomposed into changes in location that tell us if there is a change in the median (or mean) of the income distribution and changes in the shape effect that represents the relative distribution, net of the location effect, and is useful in isolating movements (redistribution) occurring between the reference and comparison populations.

For instance, one might observe a shape effect with some sort of (inverse) U-shaped pattern if the comparison distribution is relatively (less) more spread around the median than the median-adjusted reference distribution. Thus, it is possible to determine whether there is polarization of the consumption distribution (increases in both tails), downgrading (increases in the lower tail), upgrading (increases in the upper tail), or convergence toward the median (decreases in both tails). The graphical display provides a useful visual summary of the relative size and nature of the components of the decomposition (figure 3.9).

Figure 3.9: The distribution of total household consumption expenditure in Ghana, 1991 and 2012



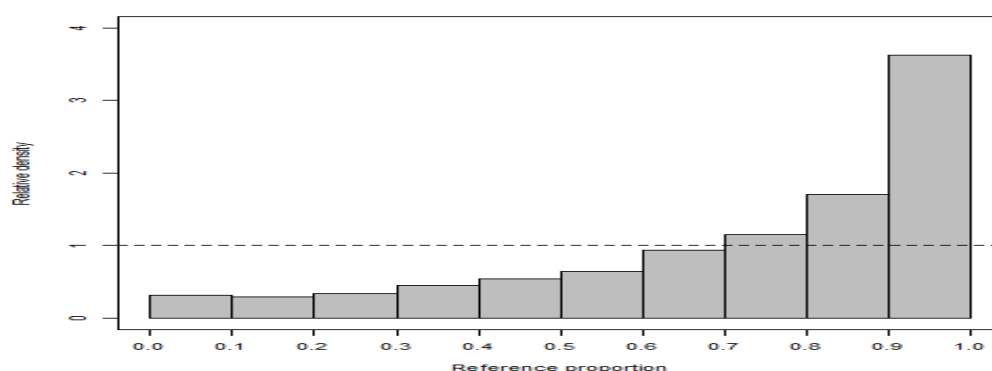
Source: Clementi et al. 2015.

³⁷ Developed by Handcock and Morris (1998, 1999), techniques based on the relative distribution powerfully assist in the description of distributional change and enable counterfactual comparison of compositionally adjusted distributions. Basically, relative distribution methods can be applied whenever the distribution of some quantity across two populations is compared either cross-sectionally or over time. For our purposes, relative distribution is defined as the ratio of the density in the comparison year to the density in the reference year evaluated at each decile of the consumption distribution; it can be interpreted as the share of households in the comparison year's population that fall into each 10th of the reference year's distribution. This allows us to identify and locate changes that have occurred along the entire Ghanaian household consumption distribution.

Two probability density functions of total per adult equivalent consumption expenditure are presented. The solid line is the distribution of household consumption in 1991, taken as the baseline throughout the analysis. The density drawn with the dotted line, treated as the comparison, is the distribution in 2012.

The graphical display, however, does not provide much information on the relative impact that location and shape changes had on the differences in the two distributions at every point of the expenditure scale. It also does not convey whether the upper and lower tails of the consumption distribution were growing at the same rate and for what reasons (that is, location or shape driven). This is exactly what relative distribution methods are particularly good at pulling out of the data. The relative density of total per capita consumption expenditure of Ghanaian households between 1991 and 2012 is examined in figure 3.10, which shows the share of households in 2012 that fall into each decile of the 1991 distribution.

Figure 3.10: Relative consumption distribution, Ghana, 1991–2012

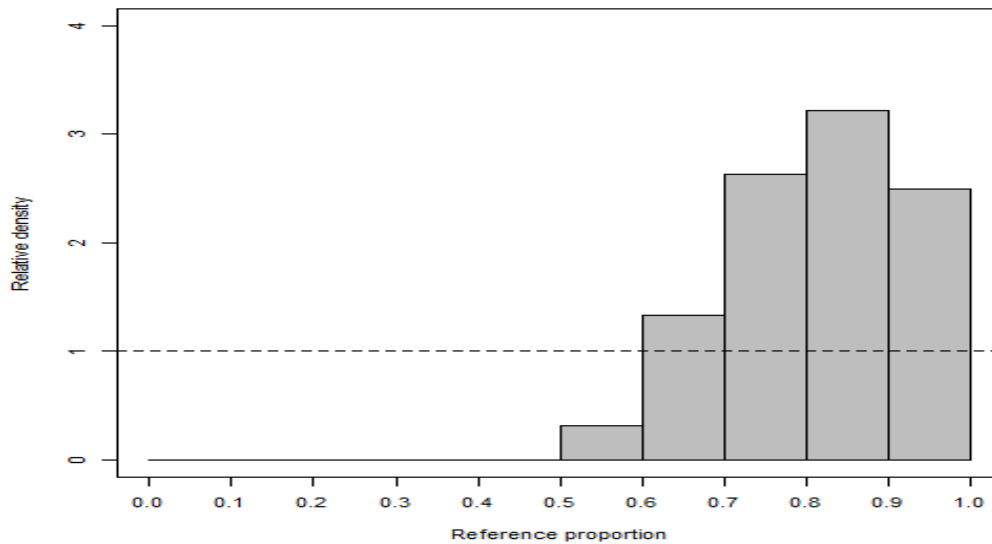


Source: Clementi et al. 2015.

Figure 3.10 offers the immediate impression that the proportion of households in the upper deciles increased dramatically throughout the two decades, while the proportion in the bottom and around the middle declined. Indeed, choosing any decile between the first and the eighth in the 1991/92 distribution, the share of households in 2012/13 the consumption rank of which corresponds to the chosen decile is less than the analogous share of households in 1991/92.

This dominant trend of overall growth may be masking some of more subtle changes. To see these, we decompose the relative density into location and shape effects. Figure 3.11 presents only the effect caused by the median shift, which is the pattern the relative density would have displayed if there had been no change in the distributional shape, but only a location shift in the density.

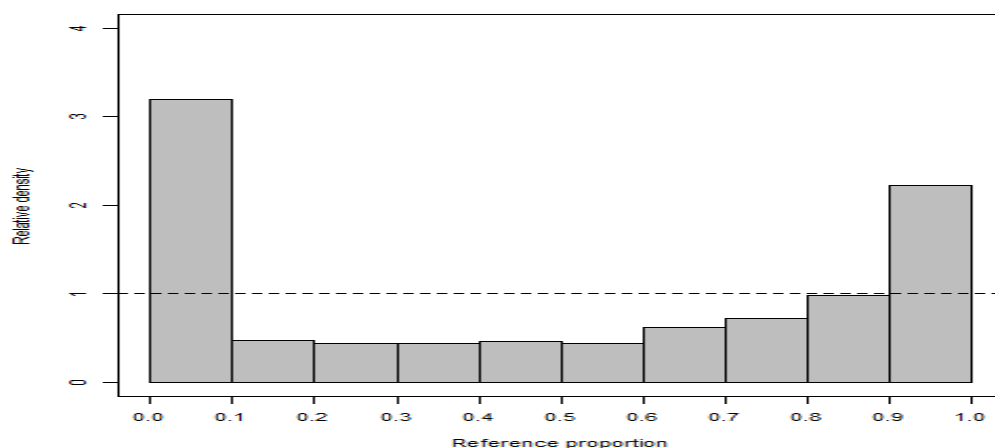
Figure 3.11: The effect of the median difference in consumption growth, 1991–2012



Source: Clementi et al. 2015.

The effect of the median shift was quite large. This alone would have virtually eliminated the households in the first five deciles of the 1991 consumption distribution and placed a considerable portion of them in the top end of the 2012 distribution. Note, however, that neither tail of the observed relative distribution is well reproduced by the median shift. For example, the top decile in figure 3.12 is about 2.5, below the value of 3.8 observed in the actual data, and the bottom deciles in the same figure are also substantially lower than observed.

Figure 3.12: The median-adjusted relative consumption distribution in 1991–2012 (the effect of changes in distributional shape



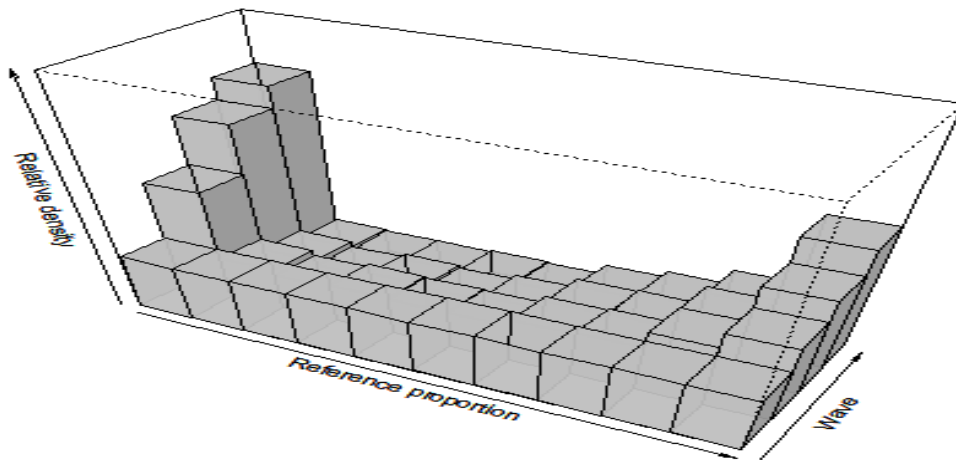
Source: Clementi et al. 2015.

These (and other) differences are explained by the shape effect presented in figure 3.12, which shows the relative density, net of the median influence. Without the higher median, the greater dispersion of consumption expenditures would have led to relatively more low-consuming households in 2012, and this effect was mainly concentrated in the bottom decile. By contrast, at the top of the distribution, the higher spread worked in the same direction as the location shift: operating by itself, it would have increased the share of households in the top decile of the 2012 consumption distribution by nearly 160 percent. In sum, once changes in real median expenditure are netted out, a U-shaped relative density is observed, indicating that polarization was hollowing out the middle of the Ghanaian household consumption distribution.

Relative distribution methods allow us also to analyze how redistribution across households took place over the entire period. For each wave of the GLSS between 1991 and 2012, figure 3.13 shows the shape effect of the household consumption relative density using 1991 as the reference sample.³⁸ Following the plot through each successive wave, one is offered with the immediate impression that the share of households at both the top and bottom tails of the Ghanaian consumption distribution increased consistently over the course of the period, while the share in the middle declined.

Figure 3.13: Median-adjusted relative consumption distribution series for Ghana, 1991/92–2012/13

³⁸ The relative distribution and therefore its shape effect are by definition flat in the reference year ([Morris et al., 1994, p. 211](#)).



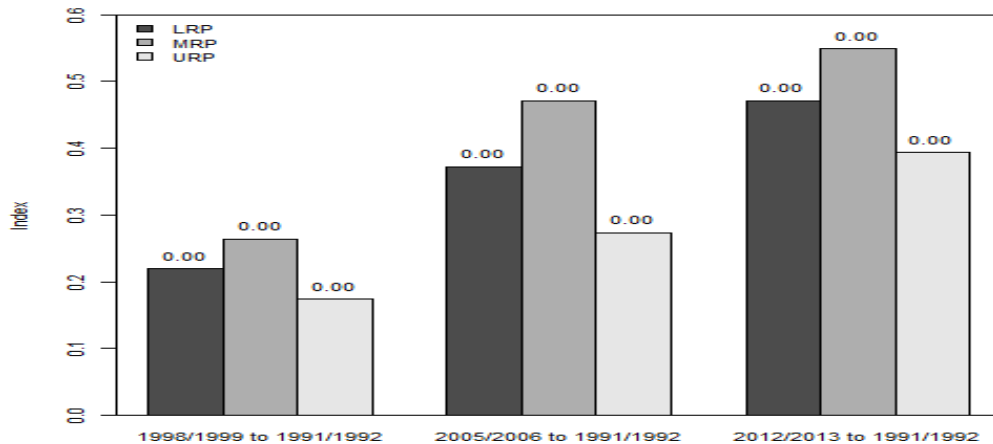
Source: Clementi et al. 2015.

Polarization, or the hollowing out of the middle, has therefore been the consistent trend in distributional inequality in all the GLSS waves since 1991. Confirming the point made about trends in inequality, for polarization also, the 1998–2005 period is the one where we see, compared with 1991, a rapid increase in consumption expenditure dispersion and a high concentration in the tails. Compared with 1991 deciles, more households in 2005 occupy the lowest and the highest tails moving out from the central deciles. In 2012, the hollowing out of the middle slows down, but continues to expand: both the 1st and the 10th percentiles are above the value in 2005 and, of course, far above the 1991 reference levels.

To summarize these changes, we present, in figure 3.14, the set of relative polarization indexes computed from the GLSS data using formulas shown in the relative polarization index (appendix 3).³⁹ These indexes track changes in the shape of the distribution only, and they code the direction as well as the magnitude of the change. The overall index rises continuously, and the rise is statistically significant from the outset, thus confirming the visual impression from figure 3.14. Decomposing the overall index into the contributions from the lower and upper tails of the distribution, it also appears that downgrading dominated upgrading in the polarization upswing, the value of the LRP is indeed always greater than that of the URP.

Figure 3.14: Relative polarization indexes, by wave

³⁹ Because the value of the three indicators always equals 0 in the baseline year ([Morris et al., 1994, p. 209](#)), polarization summaries for 1991/92 are not included in figure 3.14.



Source: Clementi et al. 2015.

Note: The number above each bar indicates the p-value for the null hypothesis that the index equals 0.

The analysis on polarization has produced some preliminary results we reported above. The study, however, is still ongoing and, in a second phase, will be extended in the direction of analyzing the impact of the covariates on polarization. Making use of the Oaxaca-Blinder decomposition, recently modified by Fortin et al. (2011), we will examine how modifications in the consumption covariates such as household structure, educational attainment, labor market outcomes, and the increasing spatial divide have impacted the increase in economic polarization.

In this section, we analyze the trends in polarization in Ghana. The country represents an interesting case for such analysis. First, because, unlike other countries in the area, the levels of inequality would not suggest that such significant distributional changes have taken place. In fact, the analysis of polarization shows quite the opposite. Net of the consumption per adult equivalent increase, a clear rise in polarization is detected, meaning that the distributional movements observed in 1991–2012 hollowed out the middle of the Ghanaian household consumption distribution and increased the concentration of the mass toward the highest and lowest deciles.

Second, because the time trend is of particular interest, like inequality, polarization in Ghana started to increase in the late 1990s, accelerated in 2005, and kept growing in 2012, but at a slower pace. Finally, as our preliminary results show, the polarization process is highly heterogeneous.⁴⁰ In Greater Accra, the overall upshift of the household expenditure distribution masks a significant polarization in both the lower and upper tails, while, in the poorest regions (as in the country as a whole), the growth of polarization is mainly caused by a downgrading of lower consumption expenditures.

⁴⁰ See “Polarization and Its Discontents: The case of Ghana.”

4. APPENDIX

ADMINISTRATIVE MAP OF GHANA



Source: en.wikipedia.org/wiki/Regions_of_Ghana#/media/File:Clickable_Regions_of_Ghana.svg

POVERTY CALCULATIONS IN 2012

This appendix discusses the methodology to compute poverty using the Ghana Living Standard Survey round 6 data. The World Bank provided Technical Assistance (TA) to the General Statistical Service of Ghana (GSS). The GSS and World Bank worked together to construct the household consumption expenditure aggregates, adjust this measure of total expenditure into real terms for comparison across space and time (back to 2005/2006 to compare with the previous survey, GLSS5), and construct two poverty lines to measure the poor and the extreme poor. In a second stage of collaboration, a poverty report was produced.

This effort faced two major challenges: rebasing the poverty lines and computing reliable price deflators. This brief note describes the methodology used to calculate the new poverty lines and the methods used to construct robust price deflators.

Rebasing the poverty line

The poverty line and extreme poverty line (measured in Ghana Cedis) are designed to measure whether a household is poor or extreme poor, by comparing the total household consumption and food consumption to each line. The basis for extreme poverty line is the cost of buying a basic bundle of food which is sufficient to give adequate calories and based on “typical” consumption of the poor/near poor (in terms of food types and their quantities). The poverty line is computed by adding an amount to cover nonfood expenditures to the extreme poverty line. Two key decisions are made: the bundle of food (types/quantities) to reach sufficient calories and the nonfood amount (usually a fixed share of the food poverty line). The basis for both the basket of food items and the nonfood share had been selected in 1999 and had not been updated since then. Several new items had entered Ghanaian household consumption since then as well as general changes in consumption patterns had occurred (items such as DVD/VCD, MP3/MP4 players, vacuum cleaner, rice cooker, mobile phone, tablet PCs, etc..) In this regard, these aspects were deemed to be potentially outdated and warranted revision. The GSS decided to re-compute the poverty lines based on the GLSS6, to reflect changes in the food basket consumed by Ghanaian households.

In line with international practice, GSS calculated the average expenditure of the food consumption basket for the bottom 50 percent of individuals ranked by consumption per adult equivalent, and derived the amount of calories in this basket. The calorie price is then calculated by dividing the adult equivalent expenditure of the food basket by the amount of adult equivalent calories provided by the basket. This calorie price is representative of the price paid by a typical household in the bottom 50 percent. This price is then multiplied by 2900 calories which was used to compute the extreme poverty line for the GLSS6.

Following common practices in other developing countries, expenditure on non-food consumption is added to the extreme poverty line calculated above. This non-food basket is determined by those whose total food expenditure is about the level of the extreme poverty line (10 percent individuals below and above the line). This is based on Engel's law which states that the share of food expenditure decreases as household income/expenditure increases. By selecting the population whose food consumption is around the extreme poverty line, their non-food expenditure is used as the benchmark for estimating the absolute poverty line.

The methodology used produced revised poverty lines: an extreme poverty line of 792.05 Ghana cedis and a poverty line of 1,314.00 Ghana cedis per equivalent adult per year in the January 2013 prices of Greater Accra Region. In dollar terms, the revised poverty line is equivalent to about \$1.83 per day (\$1.10 for the extreme poverty line). The poverty line indicates the minimum living standard in Ghana while the extreme poverty line indicates that even if a household spends their entire budget on food, they still would not meet the minimum calorie requirement.

Price deflators

Once one has defined poverty lines, to compare the survey expenditure data, one needs to adjust the nominal expenditures in the date into real values. Since the GLSS6 is conducted over a period of 16 months and across the country, the price levels facing household vary across both time and space. The base for the real expenditure is January 2013 prices of Greater Accra Region (to match the base for the poverty lines).

The Consumer Price Index (CPI) is one source for converting nominal values into a real value. The current CPI, introduced in January 2012, is different from the previous in terms of basket used but also in terms of data collection. The new CPI was not rescaled back to previous years. It is worth mentioning two innovations in the current CPI among others. First, data are collected separately in urban and rural areas, whereas previously this data was just averaged and second, Upper West and Upper East regions are now considered two different regions while before it was collected under only one set of data.

The new CPI covers only the last two years; before January 2012 the only available data are those from the old CPI. This posed a problem of comparability between the GLSS5 (2005/2006) and GLSS6. Using the old CPI (for which data collection continued until the end of 2013) was not a viable option. The old CPI indicated that between September 2005 and September 2013, prices increased cumulatively by 260 (see Table 1); food prices increased by 200 percent. In terms of price inflation facing the typical Ghanaian households, other evidence suggested this was substantially lower inflation than was occurring. For example, taking the old poverty line and using the old CPI to inflate it to 2012/2013 prices resulted in a much lower

poverty rate for 2012/2013 (13.3 percent, a 15 percentage point drop) than seems credible (Table 2). Both GSS and World Bank judged this result not credible and decided to look at alternative price deflators.

Table A1: Cumulative inflation by different sources (September 2005-September 2013)

Source	Old CPI	Old CPI-Food	GLSS prices-Food	Mixed deflator (food)	Mixed deflator (food+non-food)
Cumulative price inflation	260%	200%	460%	290%	330%

GSS proceeded with another type of check since both GLSS 5 and 6 have price modules. During household interviews, enumerators went to local markets and collected price information on a set of food and non-food items; this was a rich source of information and potentially more accurate in describing the prices households really face. Nonetheless, this dataset showed some limitations; the kilogram conversion of some food items was sometimes inaccurate and non-food prices turned out to be incomparable between the two surveys. Nonetheless, using the food price data in the household surveys, food price inflation looked quite different than from the food CPI (Table 1).

Given the high data heterogeneity and the need to reproduce, as much as possible, the conditions households faced, GSS constructed a food price index that uses survey weights and raw prices from CPI, henceforth called the food mixed deflator. This method uses survey information to reflect the food weights in household consumption more accurately combined with the more systematic price data collected under the CPI effort. The food mixed deflator shows a cumulative increase of prices of 290 percent.

The construction of the non-food component was more intricate. Whereas for food prices there was an almost perfect correspondence in coverage between the GLSS (used for weights) and CPI price data, this was not the case for non-food prices. Items asked in the GLSS were not the same as those collected in the CPI. To overcome this problem GSS estimated the non-food index using the same Engel's method used for the non-food poverty line. The combination of food and non-food indexes yielded the mixed deflator which showed an overall price increase of 330 percent from 2005-2013 (Table 3).

Table 2 presents poverty figures from GLSS 5 and GLSS6, by revised and old poverty lines and by CPI and new mixed deflator. For temporal deflation of poverty lines different deflators are used. For spatial deflation the new CPI in 2012-2013 and the old CPI in 2005-2006 are used. Overall old and new CPIs spatially do not differ much.

Table A2: Poverty rates using the revised and the old poverty lines with different price deflators

Source	Old CPI		Mixed deflator	
	GLSS5 2005-06	GLSS6 2012-13	GLSS5 2005-06	GLSS6 2012-13
Revised poverty line	44.7	24.2	31.9	24.2
Old poverty line	28.5	13.3	28.5	21.4

Note: the final poverty rates reported by the GSS for the GLSS6 analysis are 31.9 percent and 24.2 percent (using revised poverty line and mixed deflator).

Two points are important to mention. First, the revised poverty lines produce minimal differences in the poverty rates for GLSS6 (Table 2, 31.9 percent and 28.5 percent and 24.2 percent and 21.4 percent). By contrast, the use of different deflators changes significantly the poverty rates. When using the old CPI (and the old poverty line) poverty more than halved from 2005-2006 to 2012-2013 (from 28.5 percent to 13.3 percent). The new deflators estimates a much higher rate of inflation than the old CPI and, as such, mechanically the fall in poverty is reduced. This is because deflating consumption in 2012/2013 to 2005/2006 levels will produce a smaller level consumption when there is more inflation.

HOI METHODOLOGY

The *HOI* is a measure of access to a specific human opportunity based on discounting the rate of global coverage, C , with penalization P linked to the inequality of coverage across all groups of circumstances:

$$HOI = C - P$$

The *penalization* is equal to the product of the coverage and the inequality of opportunity, and is given by $P = (C * D)$, where D is the Dissimilarity Index, which measures the difference between the rates of coverage of an opportunity across different groups of circumstances. This index can be interpreted as the fraction of people to whom a service or good must be re-assigned as a percentage of the total number of people who have access to this good or service. Thus, 1-D would represent the percentage of opportunities available that are assigned according to the equality of opportunity principle:

$$HOI = C - P = C * (1-D) = C * (1-P/C)$$

The penalization is zero if all the rates of coverage across all the groups of circumstances are identical, and the penalization grows positively as the differences in coverage between groups of circumstances grow. The HOI has three important properties. First, it is defined as a rate of coverage that is responsive to inequality of opportunity. Thus, its value falls as the inequality of the allocation of a given number of opportunities grows. Second, this indicator is responsive to inequality and is Pareto consistent. If no one loses access and at least someone gains access, then the index will always increase, independently of whether this person belongs to a vulnerable group. Third, when the rate of coverage of all the groups of circumstances increases proportionally, the HOI will increase in the same proportion.⁴¹ Thus, the HOI will always improve when (1) inequality decreases and total coverage stays the same, or (2) total coverage increases while inequality stays the same. Lastly, given that the HOI is equal to the difference between the rate of coverage and the penalization, it will always be equal to or less than the total rate of coverage. The index on a scale of 0 to 100 points is presented.

Ten opportunity indicators for children, classified into four groups or sectors are examined: education (two), basic housing services (five), technologies of information and communication –TICs- (two) and Immunization (one). All 10 opportunity indicators listed in Table 4 are relevant for the quality of life for children and youth, are responsiveness to public policies, and pinpoint human development milestones at three stages of the life cycle between birth and 17 years of age –early childhood, childhood and adolescence.

Table 4. Human Opportunity Indicators, Ghanaian children, GLSS 2005/06 and 2012/13

<i>Sector</i>	<i>Tag</i>	<i>Definition</i>
Education	School attendance *	School attendance for children ages -6 to 17 years old-
	School grade on time	Completion of school grades -1st to 12th- on time with respect to children's age. For children -6 to 17 years old-
Basic Housing Services	Water *	Access to adequate water source for children -0 to 17 years old-
	Sanitation *	Access to adequate sanitation for children -0 to 17 years old-.
	Lighting energy source *	Access to adequate lighting energy source for children -0 to 17 years old-
	No-overcrowding *	Access to not over-crowded homes for children -0 to 17 years old-
	Cooking Fuel*	Access to adequate cooking fuel for children -0 to 17 years old-
TICs	Telephone	Access to telephone (landline or mobile) for children -0 to 17 years old-
	Internet	Access to internet for children -0 to 17 years old-

⁴¹ It can be shown that in this case both the rate of coverage and the penalization increase by the same percentage, like the HOI.

Immunization	Immunization Vaccines*	Access to complete vaccination for children under 4
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(*) Seven opportunities available in the GLSS surveys 1998, 2005 and 2013.

RELATIVE POLARIZATION INDEXES

For group-level data, the median relative polarization index (MRP) takes the form (Morris et al., 1994, p. 217; Handcock and Morris, 1999, p. 190):

$$\text{MRP} = \frac{4}{Q-2} \sum_{i=1}^Q \left| \frac{i-\frac{1}{2}}{Q} - \frac{1}{2} \right| g^t(i) - \frac{Q}{Q-2}, \quad (1)$$

where $g^t(i)$, $i = 1, \dots, Q$, are the relative proportions in **Error! Reference source not found.** and the adjustment by $1/2$ establishes the mid-point for each group. The expression for a decile aggregation is easily obtained from Equation (1) by setting $Q = 10$. The index varies between -1 and 1. It takes the value of 0 when there has been no change in the distribution of household consumption relative to the reference year. Positive values signify relative polarization (i.e., growth in the tails of the distribution) and negative values signify relative convergence toward the center of the distribution (i.e., less polarization).

The median relative polarization index can be decomposed into the contributions to distributional change made by the segments of the distribution above and below the median, enabling one to distinguish “upgrading” from “downgrading”. For grouped data, the lower relative polarization index (LRP) and the upper relative polarization index (URP) are calculated as:

$$\text{LRP} = \frac{8}{Q-2} \sum_{i=1}^{Q/2} \left| \frac{i-\frac{1}{2}}{Q} - \frac{1}{2} \right| g^t(i) - \frac{Q}{Q-2}, \quad (2)$$

$$\text{URP} = \frac{8}{Q-2} \sum_{i=Q/2+1}^Q \left| \frac{i-\frac{1}{2}}{Q} - \frac{1}{2} \right| g^t(i) - \frac{Q}{Q-2}. \quad (3)$$

They have the same theoretical range as the MRP and decompose the overall polarization index in the following way (Handcock and Morris, 1998, 1999):

$$\text{MRP} = \frac{1}{2}(\text{LRP} + \text{URP}). \quad (4)$$

To test the hypothesis of no change with respect to the reference distribution, i.e. that the three indices have a statistically significant difference from zero, the asymptotic distribution of the estimates, under the non-parametric null hypothesis that the reference and comparison distributions are identical, is used.

Under this hypothesis, the distribution of the group-level estimates of the MRP is asymptotically normal with a mean equal to 0 and a variance equal to (Morris et al., 1994, p. 218):

$$\text{Var}(\text{MRP}) = \frac{1}{3} \left(\frac{1}{m} + \frac{1}{n} \right). \quad (5)$$

Distributional approximations for the LRP and URP are similar. The variance in both cases is approximately (Handcock and Morris, 1999, p. 170):

$$\frac{5}{3} \left(\frac{1}{m} + \frac{1}{n} \right). \quad (6)$$

Therefore, given a chosen significance level, the p-value for testing the null hypothesis $H_0 : \text{RP} = 0$ against the alternative that one of the three indices is different from zero can be calculated as:

$$p\text{-value} = 1 - \Phi \left(\frac{|\text{RP}|}{\sqrt{\text{Var}(\text{RP})}} \right), \quad (7)$$

where $\Phi(\cdot)$ is the standard normal distribution function and RP denotes the median, lower or upper polarization index.

In practice, the normal approximations will be very good for sample sizes of 50 or more. As the sample sizes in our study (m and n) are typically on the order of thousands, the distributional approximations involved are excellent.

		2005-1991						2012-1991					
		20th percentile		40th percentile		60th percentile		20th percentile		40th percentile		60th percentile	
		Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
quantile predicted (1)		5.717		6.142		6.505		5.879		6.302		6.677	
quantile predicted (2)		5.353		5.710		6.027		5.353		5.710		6.027	
Difference		0.364 0.00		0.432 0.00		0.478 0.00		0.526 0.00		0.592 0.00		0.650 0.00	
		<i>endowments</i>						<i>endowments</i>					
Demographic Features	Household size	0.013	0.01	0.015	0.01	0.021	0.00	0.017	0.00	0.020	0.00	0.028	0.00
	Share of Children	0.001	0.27	0.001	0.33	0.001	0.23	0.003	0.08	0.002	0.15	0.003	0.04
	Share of Dependents	0.000	0.97	0.000	0.93	0.000	0.54	0.000	0.97	0.000	0.93	0.001	0.53
	Household Head Age	0.000	0.84	-0.001	0.49	0.000	0.69	0.000	0.83	-0.001	0.43	0.000	0.66
	Sex of Household	-0.012	0.02	-0.006	0.23	-0.004	0.30	-0.010	0.02	-0.005	0.23	-0.004	0.30
	Share of Adult Male	0.009	0.01	0.014	0.00	0.013	0.00	0.009	0.01	0.015	0.00	0.013	0.00
	Share of Adult Female	0.007	0.02	0.016	0.00	0.017	0.00	0.009	0.02	0.021	0.00	0.023	0.00
Education Features	Up to Primary School	0.001	0.75	-0.001	0.61	0.001	0.40	0.002	0.74	-0.002	0.60	0.004	0.39
	Up to Secondary School	0.001	0.62	0.000	0.82	0.002	0.21	0.001	0.60	0.000	0.81	0.002	0.18
	Higher than Secondary School	0.004	0.04	0.002	0.33	0.006	0.04	0.006	0.04	0.004	0.33	0.008	0.03
Socioeconomic Features	Private Workers	0.001	0.44	0.000	0.65	0.000	0.88	0.000	0.58	0.000	0.73	0.000	0.90
	Public Workers	0.000	0.99	0.000	0.85	0.000	0.88	0.000	0.99	0.000	0.84	0.000	0.87
	Agricultural Self Employed	0.001	0.40	0.002	0.37	0.003	0.21	0.005	0.32	0.006	0.29	0.011	0.11
	Non Agricultural Self Employed	0.000	0.76	0.000	0.82	0.000	0.86	0.002	0.27	0.001	0.48	0.001	0.62
other	Assets (see note)	0.047	0.00	0.097	0.00	0.111	0.00	0.088	0.00	0.182	0.00	0.211	0.00
	Western	0.000	0.89	0.000	0.90	0.000	0.82	-0.001	0.61	0.000	0.64	0.001	0.30
	Central	-0.004	0.10	-0.004	0.06	-0.001	0.41	-0.003	0.10	-0.004	0.06	-0.001	0.40
	Greater Accra	0.001	0.63	-0.001	0.66	-0.003	0.18	0.002	0.61	-0.002	0.65	-0.006	0.13
	Volta	-0.001	0.30	0.000	0.57	0.000	0.59	0.001	0.45	0.000	0.65	0.000	0.66
	Eastern	-0.001	0.52	0.000	0.70	0.001	0.63	-0.005	0.21	-0.002	0.54	0.002	0.42

	Ashanti	0.002	0.36	0.001	0.41	0.000	0.97	0.006	0.10	0.004	0.19	0.000	0.96
	Brong Ahafo	-0.003	0.33	0.001	0.71	0.003	0.12	-0.002	0.36	0.001	0.72	0.002	0.14
	Northern	-0.003	0.38	-0.001	0.82	0.002	0.44	-0.001	0.61	0.000	0.88	0.000	0.64
	Upper East	0.003	0.32	0.002	0.33	0.002	0.30	0.006	0.06	0.004	0.08	0.004	0.05
	Urban Area Residence	0.011	0.00	0.012	0.00	0.012	0.00	0.040	0.00	0.042	0.00	0.042	0.00
	Total	0.079	0.00	0.148	0.00	0.187	0.00	0.176	0.00	0.286	0.00	0.345	0.00
		<i>coefficients</i>						<i>coefficients</i>					
Demographic Features	Household size	-0.133	0.09	-0.125	0.08	0.014	0.79	-0.148	0.03	-0.127	0.07	-0.011	0.83
	Share of Children	0.054	0.05	0.016	0.49	0.051	0.02	0.046	0.06	0.043	0.05	0.038	0.08
	Share of Dependents	0.009	0.06	0.007	0.13	0.007	0.13	0.003	0.51	0.001	0.87	0.001	0.90
	Household Head Age	-0.108	0.24	0.023	0.78	-0.097	0.17	-0.051	0.54	-0.040	0.60	-0.059	0.39
	Sex of Household	0.064	0.07	0.047	0.15	0.029	0.31	0.086	0.01	0.055	0.06	0.026	0.35
	Share of Adult Male	-0.044	0.08	-0.063	0.01	-0.012	0.55	-0.045	0.04	-0.034	0.11	0.012	0.55
	Share of Adult Female	0.005	0.89	-0.037	0.22	0.001	0.98	0.019	0.53	-0.009	0.75	-0.001	0.98
Education Features	Up to Primary School	0.001	0.87	0.009	0.18	0.003	0.62	0.016	0.03	0.008	0.19	-0.003	0.61
	Up to Secondary School	0.032	0.06	0.045	0.03	0.003	0.88	0.073	0.00	0.037	0.05	0.009	0.62
	Higher than Secondary School	0.001	0.66	0.004	0.14	0.003	0.38	0.001	0.51	0.003	0.31	0.001	0.65
Socioeconomic Features	Private Workers	0.007	0.58	0.019	0.16	0.019	0.21	-0.012	0.31	-0.005	0.68	-0.001	0.96
	Public Workers	0.004	0.20	0.003	0.32	0.001	0.75	0.000	0.93	0.002	0.58	0.005	0.22
	Agricultural Self Employeed	0.073	0.11	0.068	0.12	0.097	0.05	0.019	0.63	0.031	0.45	0.076	0.10
	Non Agricultural Self Employeed	0.024	0.09	0.034	0.02	0.028	0.09	0.008	0.52	0.014	0.29	0.010	0.53
other	Assets (see note)	-0.025	0.02	0.000	0.97	-0.019	0.09	-0.052	0.00	-0.029	0.01	-0.033	0.00
	Western	0.136	0.00	0.068	0.00	0.040	0.00	0.072	0.00	0.041	0.00	0.032	0.00
	Central	0.119	0.00	0.040	0.00	0.012	0.19	0.070	0.00	0.011	0.25	-0.003	0.75
	Greater Accra	0.132	0.00	0.049	0.00	0.007	0.51	0.086	0.00	0.058	0.00	0.051	0.00
	Volta	0.095	0.00	0.031	0.00	0.010	0.17	0.048	0.00	0.022	0.00	0.015	0.03
	Eastern	0.192	0.00	0.097	0.00	0.041	0.00	0.101	0.00	0.041	0.00	0.018	0.13
	Ashanti	0.176	0.00	0.066	0.00	0.022	0.10	0.108	0.00	0.036	0.01	0.012	0.35

Brong Ahafo	0.139	0.00	0.062	0.00	0.028	0.01	0.084	0.00	0.047	0.00	0.030	0.00
Northern	0.096	0.00	0.039	0.00	0.011	0.18	0.058	0.00	0.018	0.03	-0.002	0.84
Upper East	0.040	0.00	0.018	0.01	0.010	0.04	0.058	0.00	0.029	0.00	0.020	0.00
Urban Area Residence	-0.045	0.01	-0.018	0.27	-0.020	0.21	-0.030	0.05	-0.055	0.00	-0.075	0.00
_cons	-0.784	0.00	-0.225	0.16	-0.011	0.94	-0.386	0.02	0.061	0.69	0.119	0.41
Total	0.261	0.00	0.278	0.00	0.278	0.00	0.232	0.00	0.257	0.00	0.286	0.00

Results from quantile regressions

	(1)	(2)	(3)	(4)	(5)
	p10	p25	p50	p75	p90
Male	0.019 (0.014)	0.015 (0.011)	-0.002 (0.010)	0.016 (0.011)	0.045*** (0.014)
Age [30,50]	0.022 (0.015)	0.032*** (0.012)	0.027** (0.011)	0.029** (0.012)	0.053*** (0.014)
Age + 50	-0.047*** (0.017)	-0.021 (0.013)	-0.037*** (0.012)	-0.026* (0.013)	0.010 (0.016)
No education	-0.176*** (0.027)	-0.237*** (0.021)	-0.238*** (0.019)	-0.227*** (0.021)	-0.221*** (0.026)
Primary	-0.150*** (0.030)	-0.179*** (0.024)	-0.171*** (0.021)	-0.178*** (0.023)	-0.172*** (0.029)
Lower secondary	-0.093*** (0.026)	-0.136*** (0.020)	-0.143*** (0.018)	-0.162*** (0.020)	-0.157*** (0.025)
Upper secondary	-0.099*** (0.027)	-0.139*** (0.021)	-0.144*** (0.019)	-0.163*** (0.021)	-0.123*** (0.025)
Family size	0.133*** (0.005)	0.121*** (0.004)	0.117*** (0.004)	0.104*** (0.004)	0.091*** (0.005)
Kids under 16	-0.051*** (0.007)	-0.043*** (0.005)	-0.043*** (0.005)	-0.037*** (0.005)	-0.028*** (0.006)
Remittances	0.040*** (0.012)	0.032*** (0.009)	0.011 (0.008)	0.001 (0.009)	0.015 (0.011)
Distance to main water point (Kms)	0.061* (0.037)	0.031 (0.029)	-0.001 (0.026)	-0.008 (0.029)	-0.020 (0.035)
Toilet	0.144*** (0.016)	0.140*** (0.012)	0.140*** (0.011)	0.095*** (0.012)	0.048*** (0.015)
Number of rooms	-0.000 (0.006)	0.012** (0.005)	0.028*** (0.004)	0.035*** (0.005)	0.042*** (0.006)
Electricity	0.069*** (0.015)	0.064*** (0.011)	0.056*** (0.010)	0.043*** (0.011)	0.032** (0.014)
Ownership of dwelling unit	0.023* (0.013)	0.036*** (0.010)	0.046*** (0.009)	0.033*** (0.010)	0.018 (0.012)
Ownership of land	0.043*** (0.013)	0.048*** (0.010)	0.057*** (0.009)	0.073*** (0.010)	0.071*** (0.012)
Ownership of bicycle	0.053*** (0.015)	0.059*** (0.011)	0.050*** (0.010)	0.048*** (0.011)	0.053*** (0.014)
Ownership of car	0.199*** (0.023)	0.209*** (0.018)	0.185*** (0.016)	0.182*** (0.018)	0.151*** (0.022)
Ownership of radio	0.104*** (0.011)	0.104*** (0.008)	0.100*** (0.007)	0.106*** (0.008)	0.080*** (0.010)
Ownership of television	0.186*** (0.016)	0.150*** (0.012)	0.129*** (0.011)	0.177*** (0.012)	0.107*** (0.015)

Ownership of refrigerator	0.215*** (0.016)	0.201*** (0.012)	0.197*** (0.011)	0.200*** (0.012)	0.192*** (0.015)
Ownership of stove	0.222*** (0.016)	0.207*** (0.013)	0.194*** (0.011)	0.181*** (0.013)	0.180*** (0.015)
Ownership of sewing machine	0.105*** (0.014)	0.091*** (0.011)	0.077*** (0.009)	0.091*** (0.011)	0.095*** (0.013)
Greater Accra	-0.045* (0.026)	0.014 (0.020)	0.049*** (0.018)	0.062*** (0.020)	0.064** (0.025)
Urban-Forest	-0.001 (0.024)	0.019 (0.019)	-0.005 (0.017)	0.003 (0.019)	-0.003 (0.023)
Urban-Savannah	-0.140*** (0.029)	-0.103*** (0.023)	-0.082*** (0.020)	-0.096*** (0.023)	-0.068** (0.028)
Rural-Coastal	0.044 (0.027)	0.057*** (0.021)	0.064*** (0.019)	0.048** (0.021)	0.043* (0.026)
Rural-Forest	-0.012 (0.024)	0.014 (0.019)	-0.005 (0.017)	-0.009 (0.019)	-0.023 (0.023)
Rural-Savannah	-0.365*** (0.028)	-0.322*** (0.022)	-0.274*** (0.019)	-0.216*** (0.022)	-0.156*** (0.027)
Year 1998	-0.097*** (0.022)	-0.099*** (0.017)	-0.090*** (0.015)	-0.101*** (0.017)	-0.073*** (0.021)
Year 2005	0.544*** (0.020)	0.364*** (0.015)	0.412*** (0.014)	0.429*** (0.015)	0.465*** (0.019)
Year 2012	0.544*** (0.020)	0.565*** (0.016)	0.610*** (0.014)	0.638*** (0.016)	0.689*** (0.019)
Constant	6.593*** (0.102)	6.998*** (0.080)	7.327*** (0.071)	7.735*** (0.079)	8.157*** (0.097)
Observations	32029	32029	32029	32029	32029

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1