

## 2. How Inclusive Has Africa's Recent High-Growth Episode Been?

### INTRODUCTION AND SUMMARY

**This chapter focuses on the apparent disconnect between recent growth and poverty outcomes in sub-Saharan Africa:**

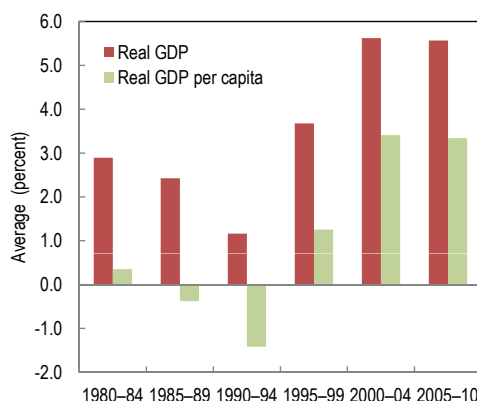
- *Since the mid-1990s, many sub-Saharan African (SSA) countries have experienced a marked acceleration in economic growth.* Whereas region-wide real GDP growth averaged some 2¼ percent between 1980 and 1995, since 1995 growth has averaged more than 5 percent and a higher still 5½ percent from 2000 to 2010 (Figure 2.1).
- *Progress on poverty reduction, however, looks to have been much more limited.* Region-wide estimates, which are available only through 2005, show that the proportion of people living below the poverty line (US\$1.25 a day purchasing-power parity [PPP] adjusted) declined only modestly from 59 percent in 1996 to 51 percent in 2005. And when one looks at the link between per capita growth and poverty reduction in a sample of SSA countries that includes more recent data points, the relationship is a weak one (Figure 2.2).

**This weak relationship between per capita growth and poverty reduction has prompted concern that the region's recent high growth has not been sufficiently inclusive.** But the cross-country analysis on which this conclusion is based has significant limitations. For one, when the sample size is limited to those SSA countries that have actually sustained high growth for a longer duration, the elasticity of poverty reduction with respect to growth is higher. But beyond this,

---

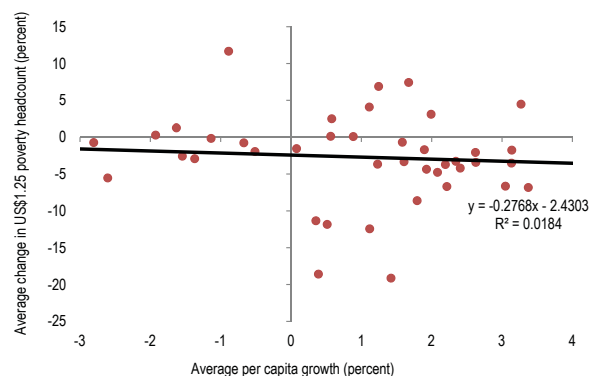
This chapter was prepared by Rodrigo Garcia-Verdu, Abebe Aemro Selassie, and Alun Thomas, with input from Yemisrach Amare and Robert Keyfitz.

Figure 2.1. Sub-Saharan Africa: Real GDP Growth



Source: IMF, World Economic Outlook database.

Figure 2.2. Sub-Saharan Africa: Average Change in US\$1.25 Poverty Headcount and Average per Capita GDP Growth, 1995-2010



Source: World Bank, World Development Indicators.

the elasticity depends greatly on the interaction between the distribution of income and the position of the poverty line in individual countries. A robust assessment of the inclusiveness of the region's growth requires more of a case study approach through closer examination of household survey data. We set out to do this in this chapter as follows:

- We start by delving into the stylized facts of the link between growth and poverty reduction in the region. In particular, given the diversity of growth outcomes, we consider whether similar variation is evident in poverty outcomes and other measures of well-being.
- We then go beyond the correlations at the aggregate level between growth and poverty rates, which tend to characterize much of the debate on sub-Saharan Africa. To this end, we use case studies of six countries—Cameroon, Ghana, Mozambique, Tanzania, Uganda, and Zambia<sup>1</sup>—to address the following questions:
  - Did output growth translate into higher living standards for the majority of the population in these countries?
  - Has the incidence of growth been evenly distributed among the population, or have some groups been left out?
  - What was the impact of the high-growth episode on employment creation?
  - Are we measuring the growth of real GDP per capita accurately, or are we underestimating true growth, as suggested by a recent study by Young (2010)?

### Our main findings are as follows:

- *The pickup in growth since the mid-1990s has been accompanied by fairly modest reductions in poverty headcounts among the full set of SSA countries, although considerable progress has been made in terms of improving social and health indicators.* That said, when one looks at the experience of countries in the region that have sustained growth at high levels, there is a closer link between income improvements and poverty reduction. Still, even for this group of high-growth countries, the elasticity of poverty reduction with respect to per capita GDP

growth is lower than that observed in other regions.

- *Close examination of household survey data for the six countries, however, suggests that high per capita economic growth does have a strong bearing on the inclusiveness of growth.* Specifically, we consider two measures of inclusiveness in this study. Our first (absolute) measure is whether the poorest quartile of the consumption distribution registered positive real per capita consumption growth. The second measure, which is more of a relative concept of inclusiveness, compares the ratio of consumption growth between the lowest and highest quartiles of the consumption distribution. Under the absolute measure, the poorest quartile experienced substantial annual household per capita consumption growth in three of the four high-growth countries (Ghana, Tanzania, Uganda). By contrast, the poorest quartile of the consumption distribution in the low-growth countries experienced low (Cameroon) or even negative (Zambia) changes in consumption. The results for Mozambique depend on whether one uses the consumer price index (CPI) or regional price indices to deflate nominal household per capita consumption, with the former showing relatively high growth and the latter showing negative growth for the poorest quartile.
- *We also find (tentative) evidence of the importance of employment opportunities in rural areas, and in particular in agriculture, for higher consumption growth among poorer households.* The stronger per capita consumption growth observed in Cameroon and Uganda at the poorest levels, for example, seems related to high agricultural employment growth. By contrast, rural agricultural employment fell between the surveys considered in both Mozambique and Zambia, where the poorest experienced weaker or negative per capita consumption growth. The importance of rural employment outcomes is intuitive given the fact that about 70 percent of the population in the six countries resided in rural areas in the early 2000s.

<sup>1</sup> As explained in more detail below, the choice of these countries has been driven by the availability of household survey data which are comparable over time and coincided to the largest extent possible with the more recent period when growth accelerated.

- *There is also evidence of significant employment growth in the case study countries.* Surveys include questionnaires about the level of formal employment as well as involvement in other income-generating activities (which would also capture subsistence agriculture). When the two numbers are considered together, the employment-to-working-age-population ratio in five of the countries increased between surveys, Ghana being the exception.
- *We also find some evidence that the growth in real incomes is being underestimated, most likely the result of biases in the measurement of the consumer price index.* In particular, we considered the change in the share of consumption devoted to food between surveys in each country. According to Engel's Law, this share varies negatively with the level of income. The estimated shifts over time in the Engel curves for three (Cameroon, Ghana, Zambia) of the four countries considered suggest that real income growth was significantly underestimated.<sup>2</sup>

**It is inevitably difficult to draw sweeping conclusions on outcomes in a region as diverse as sub-Saharan Africa, but overall the evidence suggests that the recent high-growth episode has been fairly inclusive.** In particular, we find reasonably strong evidence on the importance of growth for the fate of the poorest households. In all of the countries where per capita growth was high, the poorest quartiles of the consumption distribution have seen significant increases in real consumption. This is consistent with earlier findings that, as Kraay (2006) puts it, “underscore the importance of growth in average incomes for poverty reduction.” On a more cautionary note, the paucity of reliable data requires care in the interpretation of some results, and we flag this wherever possible. A good example is that of Mozambique. Whether one deflates nominal consumption per capita using regional price deflators from the survey or from the national

<sup>2</sup> In the other case (Uganda), we find real income growth to have been overestimated.

consumer price index yields dramatically different results. And indeed in the last section of this chapter we provide evidence of significant biases that might have caused real income per capita to be underestimated in some countries.

## THE GROWTH-POVERTY DISCONNECT IN SUB-SAHARAN AFRICA: MORE APPARENT THAN REAL?

**For sub-Saharan Africa as a whole, the link between growth and poverty reduction is weak.**

The simple correlation coefficient between growth and changes in the headcount poverty rate in those countries for which poverty data are available is only  $-0.14$  (Figure 2.3, upper left panel).<sup>3</sup> But the picture changes markedly when the sample is split between the high- and low-growth countries in the region.<sup>4</sup> In the high-growth group (Figure 2.3, upper right panel), higher growth is more clearly associated with poverty reduction, although the correlation remains modest. Indeed, the estimated elasticity of changes in the poverty level with respect to per capita GDP growth is about  $-1$  for the high growth group, compared with  $-1.4$  for the fast-growing Asian low-income countries and  $-2.3$  for all fast-growing countries in Asia. But in the low-growth sub-Saharan Africa group, the correlation is close to zero (Figure 2.3, lower left panel).<sup>5</sup> Moreover, even if we censor the low-growth sample to positive growth episodes, there is no indication that positive growth rates are associated with poverty reduction in this group (Figure 2.3, lower right panel).

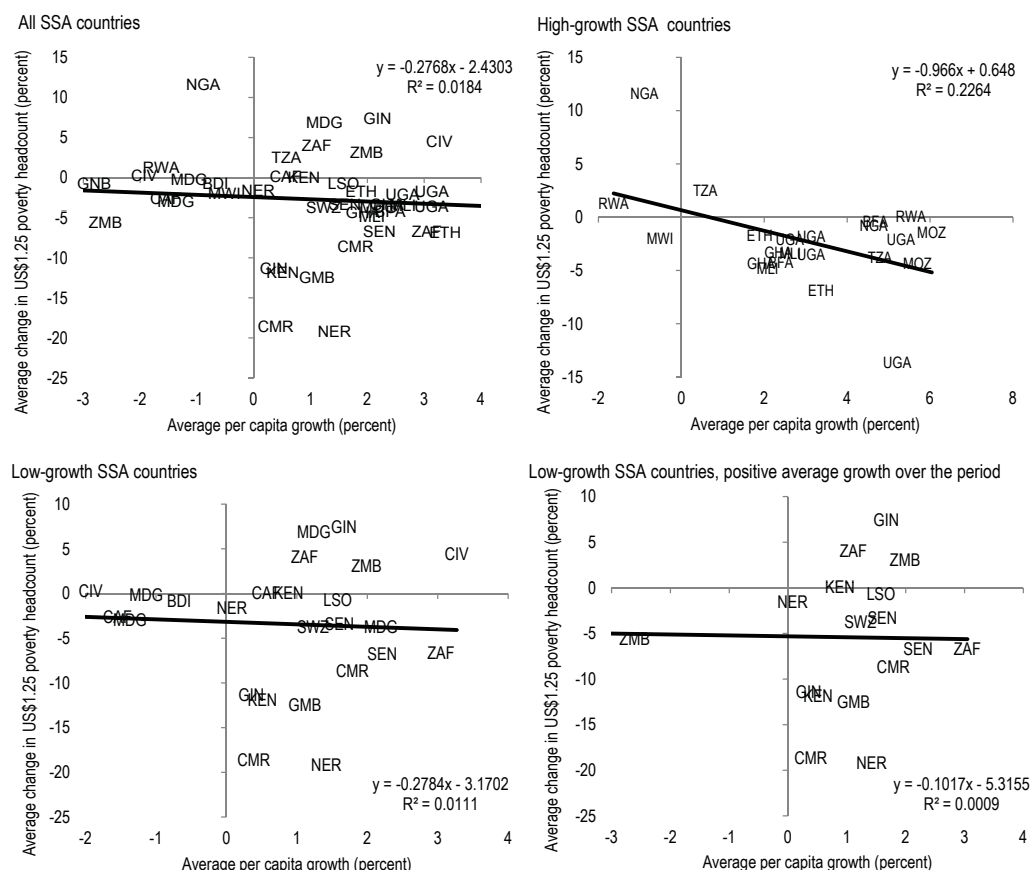
**What of the association between economic growth and nonincome measures of well-being?**

We consider two measures here: infant mortality and the United Nations Development Program's

<sup>3</sup> Some countries have more than one observation.

<sup>4</sup> Countries with average per capita real growth rates of  $2\frac{1}{4}$  percent or higher over the 1995–2010 period are considered “high-growth” countries, and those below this level are considered “low-growth” countries.

<sup>5</sup> The elasticity for all SSA countries is about  $-0.3$ , comparable with the estimates of Fosu (2011) and OECD-AfDB (2011).

**Figure 2.3. Growth and the Evolution of Headcount Poverty Rates in Sub-Saharan Africa, 1995–2010**

Sources: World Bank, World Development Indicators; and authors' calculations.

Human Development Index (HDI). Both of these variables can be directly and indirectly influenced by income levels as well as being useful proxies for populations' access to government services.

### The link between improved social outcomes and growth is stronger for the high-growth countries than for the entire sub-Saharan Africa sample:

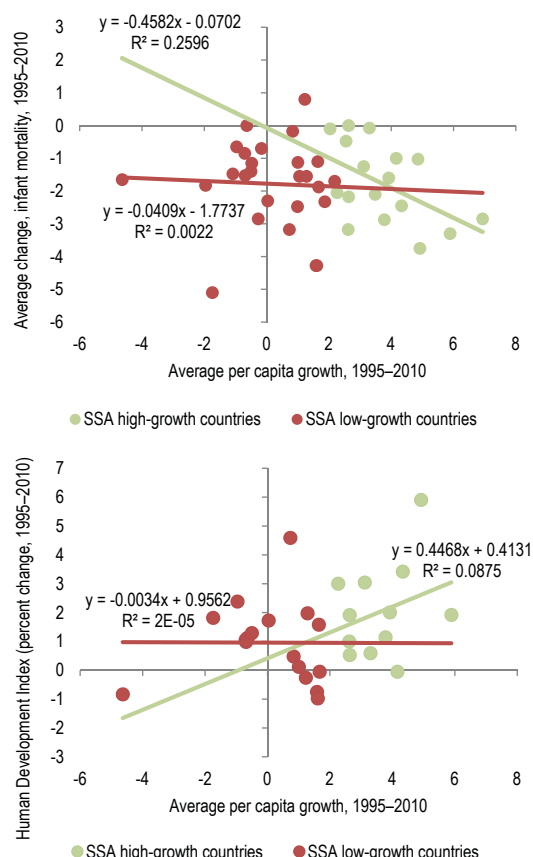
- Declines in infant mortality and growth for the entire region are practically uncorrelated. But the correlation is considerably higher for the high-growth countries (Figure 2.4, upper panel).
- High-growth SSA countries have also achieved better human development outcomes than slower-growing SSA countries (Figure 2.4, lower panel). The HDI is a broad measure of socioeconomic well-being, with a weight of

one-third assigned to per capita income, one-third to life expectancy at birth, and one-third to a basket of education indicators (literacy rate and combined school enrollment rates).

### However, factors other than growth influenced the observed improvements in social outcomes.

In particular, as Kenny (2011) argues, global factors such as the diffusion of technology in, for example, health services have likely played a major role. Thus, for example, between 1995 and 2010, infant mortality declined on average by 1.8 per thousand live births annually in SSA, nearly double the pace registered in other developing regions. But growth in SSA was actually slower during this period—2.1 percent per capita compared with 3.8 percent elsewhere. The most likely explanation for these developments is that initial infant mortality levels in sub-Saharan Africa were extremely high, and

**Figure 2.4. Growth, Infant Mortality, and Human Development Index**



Sources: United Nations Development Program; World Bank, World Development Indicators; and authors' calculations.

these countries benefited most from the diffusion of medical technology.<sup>6</sup>

## Explaining these stylized facts

**In the broadest of terms, there are two views on the relatively weak link between poverty and growth.**

- *Perhaps the dominant view is that poverty reduction has not been rapid in sub-Saharan Africa (including in the high-growth countries) because of a highly unequal initial distribution of*

<sup>6</sup>In a cross-country regression covering all developing countries, the initial mortality rate explains nearly half of the subsequent decline. Applying the estimated coefficient ( $-0.0162$ ,  $t = -9.6$ ) to SSA's higher initial levels accounts almost entirely for SSA's better outcome.

*income and/or unpropitious patterns of growth.*

From a theoretical perspective, if the initial distribution of income is highly unequal, the impact of growth on poverty will be smaller (Bourguignon, 2003).<sup>7</sup> And regarding the patterns of growth, Teal (2011), for example, argues that uncompetitive industrial sectors in SSA have failed to channel investment and labor into the highest-yielding activities that would support faster growth of employment and productivity.

- *The second perspective, however, is that there has actually been much more poverty reduction in the region. In this view, measurement difficulties mask the positive developments that have taken place.*<sup>8</sup> Sala-i-Martin and Pinkovskiy (2010) for example, argue that between 1995 and 2006, poverty in the region fell by as much as 25.7 percent using the US\$1 per day poverty line and 12.4 percent using the US\$2 per day poverty line. But they arrive at this estimate by combining data from household surveys on the consumption shares accruing to different population groups with national income accounts data on real per capita GDP growth to draw inferences about the evolution of poverty. They do not justify their use of data from the national accounts to determine the shifts in the mean of the distribution rather than the changes implied by the household surveys, which show slower growth in consumption per capita levels. Using a different tack, Young (2010) also suggests that real income growth as estimated by national accounts data in SSA may

<sup>7</sup>Ravallion (2004), reviewing data from 62 developing countries, estimated poverty elasticities in a range of  $-4.3$  percent down to as little as  $-0.6$  percent, depending on the degree of income inequality.

<sup>8</sup>The data gaps in the SSA region are substantial. From 1980 to 2009, a total of 116 comparable household surveys that collected data on income, expenditure, consumption, or some combination of these variables were conducted for the 44 countries that comprise the IMF's SSA region—an average of one survey per country every 16 years. Indeed, three countries in the region have never conducted such a survey, and at the peak (in 1993), only 35 percent of the region's population was covered.



have been underestimated by several percentage points. He arrives at this result by looking at the growth in ownership of assets, durable goods, and improvements in health outcomes from Demographic and Health Survey data.

**Notwithstanding the usefulness of these cross-country regressions in describing the relationship between changes in poverty and those in real GDP, there is a limit as to what one can conclude from them.** One of the limitations

of this type of cross-country regression analysis is that the elasticities depend on the shape of the distribution of income or consumption per capita and on the position of the poverty line with respect to the distribution. In particular, the closer the poverty line is to the median of the distribution, the more sensitive the poverty headcount will be to changes in real GDP per capita. In what follows, we analyze the whole distribution of per capita consumption to avoid this limitation when using aggregate data.

**In the rest of this chapter, we aim to improve our understanding of the impact of the region's high-growth episode on the well-being of different segments of the population as follows.**

First, we use household consumption survey data—the “gold standard” to gauge the status of the poor—to consider the inclusiveness of growth in the region.<sup>9</sup> Second, we turn to one of the oldest established empirical regularities in economics—Engel's Law, which posits that the share of income allocated to food consumption decreases with the level of income—to gauge the veracity of newer claims that real income growth in the region may have been underestimated.

*In sum, there is evidence of aggregate growth being positively associated with poverty reduction and other measures of improvements in well-being. And the link is somewhat stronger for the countries in the region that have been enjoying higher growth in recent years. This of course is different from inferring causality*

<sup>9</sup> Consumption is a better measure of welfare than income in many low-income countries because a nontrivial share of the population relies on subsistence agriculture, in which income tends to be more irregular and harder to measure.

*between these outcomes. Rather, our sense is that growth has been more of a facilitator—for example, by providing the fiscal resources needed to provide better health and education services. On the more marked progress that the region has made on measures of social development, such as declines in infant mortality and improvements in the HDI, the contribution of the better economic environment has been supported by other factors, such as improvements in technology, increasingly responsive political processes, and better diffusion of improvements in medical technologies (UNDP, 2010; Kenny, 2011).*

## INSIGHTS FROM CASE STUDIES

**This section aims to enrich our understanding on the inclusiveness of growth in the region using six case studies—Cameroon, Ghana, Mozambique, Tanzania, Uganda, and Zambia (see Appendix I for survey details).** The sample choice is driven by data availability and is not fully representative of SSA countries in general—there are no post-conflict or fragile states and no large oil exporters (Cameroon is a marginal net exporter), and only one francophone country is included.<sup>10</sup> With the exception of Cameroon and Zambia, the countries enjoyed average per capita income

<sup>10</sup> This choice was driven by the need to have at least two household surveys collected using the same methodology, so that changes in measured total household consumption and changes in household characteristics are not the result of changes in sampling scheme, questionnaires, definitions, data collection procedures, and so on. On average, the six case study countries represented 18.3 percent of the SSA region's total population and 11.7 percent of the region's total GDP (PPP adjusted). The sample of countries included in this chapter is on average less developed than the average for the SSA region. This can be seen through differences in several characteristics: they had a lower level of real GDP per capita (US\$1,135 vs. US\$1,976, PPP adjusted); a higher annual population growth rate (2.7 vs. 2.5); a higher share of rural population (69.2 vs. 64.0); a higher share of agriculture in total GDP (27.8 vs. 14.8); lower shares for industry (25.4 vs. 31.4) and services (46.8 vs. 53.9); a higher share of final consumption expenditure in GDP (88.4 vs. 84.6); a higher employment-to-population ratio (74.5 vs. 64.8); and higher female (48.2 vs. 43.5) and male (85.9 vs. 80.8) labor force participation rates. Nevertheless, they had approximately the same female (53 years) and male (51 years) life expectancy at birth and a lower infant mortality rate (78.9 vs. 84.5). All averages for the SSA region correspond to the period 2005–09.

growth of more than 2¼ percent during 1995–2010 (among the region's faster-growing economies). In what follows, we start by reporting on the incidence of growth in these countries, consider the determinants of total household consumption based on household characteristics, and review the evidence on the evolution of employment outcomes. Finally, we also report the results of our work on estimating CPI bias using Engel curves to corroborate the growth rates of real GDP per capita reported in the system of national accounts.

## The incidence of growth

**The estimation of growth incidence curves (GICs) is a useful way to identify the extent to which both poorer and richer households have benefited from growth.** If an estimated GIC is above zero everywhere, this satisfies the absolute measure of inclusiveness in the sense that per capita consumption is growing along all points of the distribution. If, in addition, the curve slopes downward, this points to consumption growth of poorer households being higher than that of richer households and satisfies the relative measure of inclusiveness.<sup>11</sup> Figure 2.5 shows the GICs of real household consumption per capita for the total populations of our six case study countries. The red line surrounded by the shaded area in the figure is the actual GIC, the green line is the average consumption growth rate for all deciles, and the orange line corresponds to the growth rate for households in the middle of the consumption per capita distribution (the representative household). Our main findings are as follows:

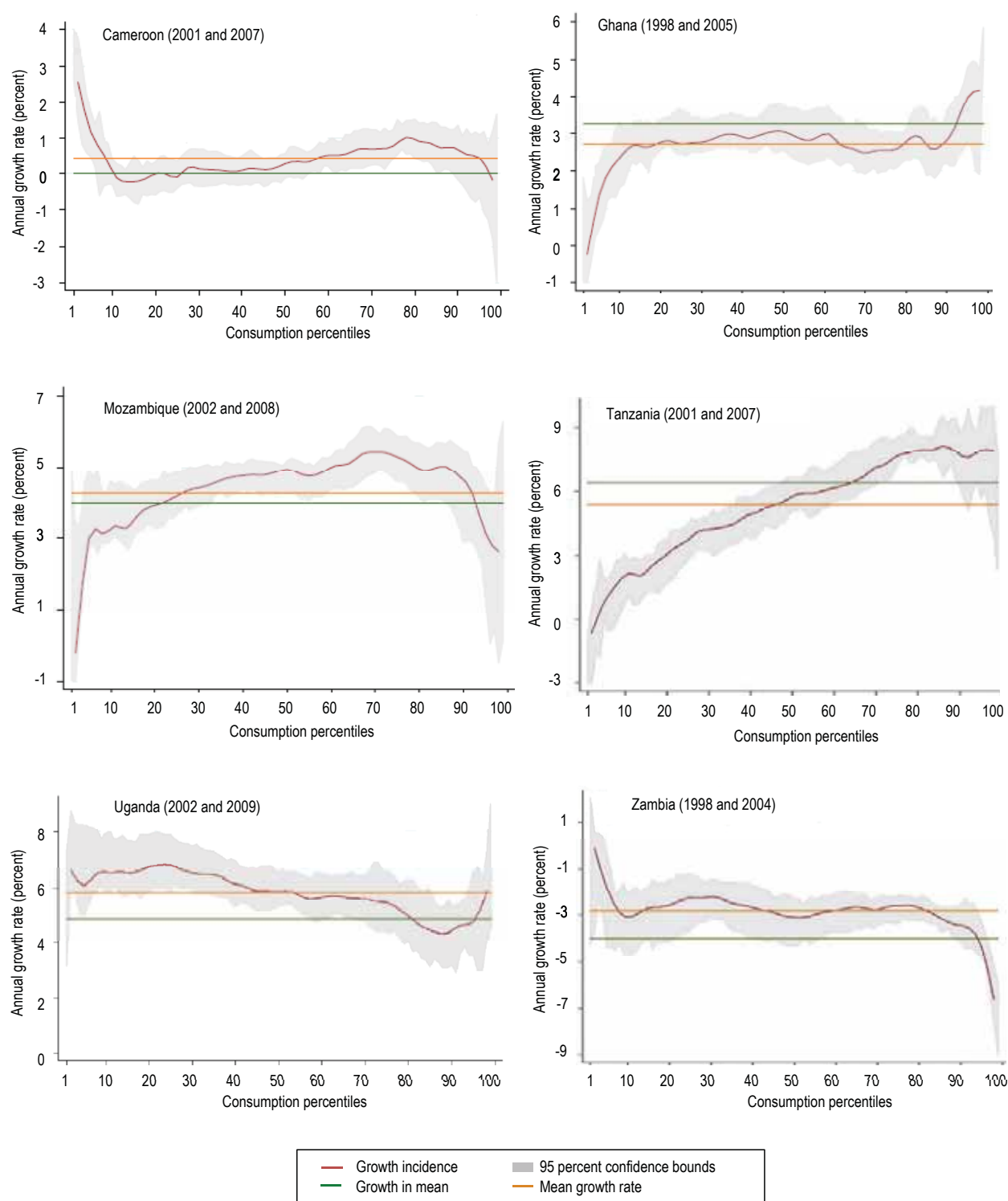
- In absolute terms, the poorest quartile fares best where economic growth is higher. In particular, in the six country case studies, the pattern of household consumption growth for the poorest quartile is closely linked to the evolution of overall per capita economic growth (Table

2.1), with the elasticity between per capita consumption growth of the poorest quartile and per capita growth at 0.87 and significant. In four of the six countries in the sample (Ghana, Mozambique, Tanzania, Uganda), per capita income expanded by 4¼ percent annually between the relevant surveys, and mirroring this, annual household consumption growth averaged a relatively high 3½ percent for the poorest quartile of the consumption distribution.<sup>12</sup> In the other two countries, where annual per capita consumption growth was 1 percent or lower between surveys (Cameroon, Zambia), the poorest quartile did rather badly. In Cameroon, annual household consumption per capita growth was 1 percent for the poorest quartile, and in the case of Zambia, this group actually experienced an annual decline of 1.9 percent in consumption.

- In relative terms, however, the extent to which growth is inclusive is not related to the level of economic growth. The poorest quartile did better in relative terms than richer households in low-growth Cameroon and Zambia as well as high-growth Uganda. In the other three high-growth countries (Ghana, Mozambique, Tanzania), the poorest quartile experienced lower growth in consumption rates relative to the highest quartile (Table 2.1 and Figure 2.5).
- For the six case studies, per capita GDP growth and poverty reduction are not closely correlated, but the link between our two measures of inclusiveness and poverty reduction is strong. In particular, the elasticity of the change in the poverty headcount in relation to the growth in consumption of the poorest quartile is –0.7 and significant, while the

<sup>11</sup> Of course, consumption growth is a closer match to income growth for poor households given that they have little or no savings, and therefore the disparities would be different if reliable income estimates were available.

<sup>12</sup> The Mozambique survey data provides their own set of regional price deflators, which can be used to deflate total household consumption per capita in 2008–09 and compare it with the same variable in 2002–03. Doing so (instead of using the CPI) shifts the growth incidence curve downward, with the lowest three deciles in fact experiencing negative consumption growth. For cross-country comparability we use the CPI to deflate nominal consumption for all six case studies. And in the text we qualify the tentative nature of the results for Mozambique wherever applicable.

**Figure 2.5. Growth Incidence Curves of Real Households Consumption per Capita**

Source: IMF staff estimates based on data from various household surveys (see Appendix I).



Table 2.1. Macroeconomic, Poverty, and Consumption Aggregates in Sample Countries (*annual percent change, except where noted*)

	Period	Growth per Capita	Real Exchange Rate	Terms of Trade	Employment		Poverty Headcount		Gini Coefficient			Per Capita Consumption		
		Percent change over the period	Percent change over the period	Percent change over the period	Employment-output elasticity	Latest estimate	Latest estimate	Latest estimate	Initial estimate	Latest estimate	NIPA data	Survey data		
												All households	Poorest quartile	Ratio of poorest quartile to average
Cameroon	2001–07	0.57	6.9	56.2	2.7	0.8	9.6	-3.9	0.4	0.39	1.0	0.82	1.0	1.24
Ghana	1998–2005	2.33	-29.1	-33.6	3.4	0.7	30.0	-1.3	0.41	0.43	3.6	3.66	2.6	0.71
Mozambique	2003–09	5.54	6.4	32.8	4.4	0.6	60.0	-2.5	0.47	0.46	7.2	3.50	2.9	0.82
Tanzania	2000–07	4.38	-34.6	-47.2	3.3	0.5	67.9	-3.0	0.35	0.38	3.7	6.73	3.9	0.58
Uganda	2002–09	4.45	0.4	-5.0	7.5	1.0	28.7	-4.1	0.46	0.44	3.6	3.40	4.7	1.37
Zambia	1998–2004	1.16	9.8	20.9	1.9	0.6	64.3	1.5	0.53	0.51	0.5	-3.43	-1.9	0.55
<i>Memo items:</i>														
Bangladesh <sup>1</sup>	1992–2000	3.00	...	-4.8	...	...	57.8	-1.1	0.28	0.33	0.8	1.80	1.0	0.56
Cambodia <sup>2</sup>	1994–2004	5.70	-33.1	51.4	...	...	40.2	-0.8	0.35	0.42	5.8	2.80	0.80	0.29
Vietnam <sup>2</sup>	1993–2002	5.90	-9.0	6.8	...	0.3	40.1	-2.6	0.34	0.38	4.2	5.50	4.0	0.73

Sources: IMF, World Economic Outlook database; IMF, Information Notice System; household surveys; Besley and Cord (2007); Klump and Bonschab (2005); and International Monetary Fund (2006).

Note: NIPA = National Income and Product Account (Bureau of Economic Analysis, U.S. Department of Commerce).

<sup>1</sup> Estimate based on Bangladesh growth incidence curve.

<sup>2</sup> For Cambodia and Vietnam, the poorest quintile replaces the poorest quartile.

relationship between the change in the poverty headcount and per capita growth among the country sample is insignificant. Thus, in sample countries in which consumption growth of the poorest quartile was positive (Ghana, Tanzania, Uganda) or relatively inclusive (Cameroon, where the poorest quartile fared much better than the richest quartile even though overall growth was low), estimates show a decline in poverty headcount (Table 2.1). In Mozambique, too, headcount poverty fell. It was only in Zambia, where consumption growth was strongly negative for the poorest quartile, that poverty increased significantly.

**The diverse pattern of inclusive growth observed in sub-Saharan Africa is broadly similar to the experience of a number of comparable Asian countries.** In Bangladesh (between 1991 and 2000) and Cambodia (between 1994 and 2004), consumption growth of the poorest quartile was only about 1 percent per year, whereas in Vietnam (between 1993 and 2002), the corresponding consumption growth was significant at 4 percent per year. The highest consumption quartiles saw significantly higher consumption increases than the poorest quartiles (see, for example, the estimated GIC for Vietnam in Figure 2.6). In Cambodia (between 1994 and 1999), the consumption growth rate was high among the urban population (3½ percent per year) but not in rural areas. Consistent with higher growth at the upper end of

the income distribution in all three countries, the Gini coefficients rose during the 1990s.

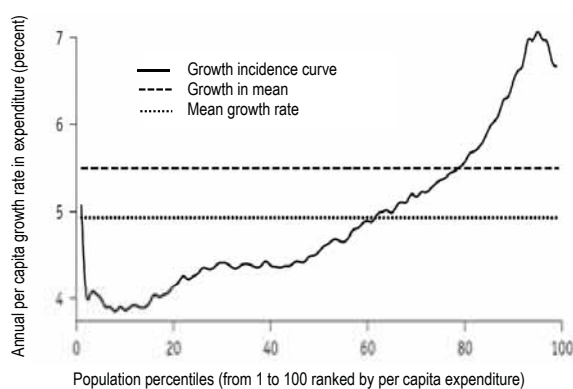
## Determinants of household consumption

**This section considers the factors that might help explain the incidence of growth in the six country case studies, with particular focus on the households in the lowest quartile of the consumption distribution.** We first identify the main household characteristics that help explain the level of consumption for both the whole sample and for those in the lowest quartile. We then try to get a sense of whether changes in the value of attributes that characterize poor households might be related to the incidence of growth.

**The coefficients associated with the determinants of consumption are similar among the sample of countries and can explain a large fraction of the variation in household consumption.**<sup>13</sup> As can be seen in Table 2.2 and Figure 2.7, in general between 60 percent and 70 percent of the variation in household consumption can be explained by household size, sex and age, employment status, sector of employment, and education level of the head of the household, and whether the household is located in an urban or rural area. Household size has the highest explanatory power in all six countries, with each additional household member raising total household consumption, albeit at a declining rate; age (as a proxy for experience) is also associated with higher household consumption, whereas a consistent positive education-consumption profile is evident across countries. Specifically:

- Large urban-rural consumption differentials are evident in the six country cases, varying between 12 percent (Mozambique) and 24 percent (Ghana), and these have generally

**Figure 2.6. Vietnam's Growth Incidence Curve, 1993–2002**



Source: Bonschab and Klump (2005).

<sup>13</sup> The fact that the estimates are very similar in each of the two surveys of each country (not shown in Table 2.2, but available upon request) suggests that the position that households occupy in the distribution of consumption per capita does not change much over time. This supports the interpretation of the growth incidence curves as if they were estimated using synthetic cohorts data rather than two independent cross-section surveys.

**Table 2.2. Log Household Consumption Determinants (Most Recent Survey)<sup>1</sup>**

	Ghana 2005	Cameroon 2007	Uganda 2009	Mozambique 2008/09	Tanzania 2007	Zambia 2004
Household size (log)	0.37 ***	0.29 ***	0.24 ***	0.26 ***	0.31 ***	0.17 ***
Age (log)	0.13 ***	0.18 ***	0.20 ***	0.16 ***	0.02	0.05 ***
Male head of household	0.03 ***	0.01	0.08 ***	0.04 ***	0.06 **	0.02
Employment dummy	0.16 ***	0.04 **	0.02	0.07 ***	0.21 ***	0.07 ***
Agriculture sector dummy	-0.23 ***	-0.15 ***	-0.09 ***	-0.12 ***	-0.26 ***	-0.04 ***
Manufacturing sector dummy <sup>2</sup>	-0.08 ***	-0.03 **	-0.10 *	-0.11 ***		0.03 *
Government sector dummy	-0.12 ***	0.19 ***	0.16 ***	0.02	0.15 ***	0.02
Primary schooling	0.07 **	0.08 ***	-0.14 ***	0.12 ***	0.13 ***	0.04 *
Lower secondary schooling	0.16 ***	0.16 ***	-0.04	0.22 ***	0.44 ***	0.13 ***
Upper secondary schooling	0.38 ***	0.29 ***	0.01	0.56 ***	0.71 ***	0.47 ***
College/nursing/teacher training	0.69 ***	0.59 ***	0.87 ***	1.00 ***	1.23 ***	1.03 ***
Urban dummy	0.24 ***	0.21 ***	0.20 ***	0.12 ***	0.23 ***	0.12 ***
<b>Diagnostic statistics</b>						
Number of observations	7280	10416	6117	9836	9332	17824
R-squared	0.68	0.69	0.63	0.66	0.66	0.59

Sources: IMF staff estimates based on data from various household surveys (see Appendix I).

Note: \*\*\*, \*\*, \* indicate statistical significance at the 99 percent, 95 percent, and 90 percent levels, respectively.

<sup>1</sup> Characteristics refer to head of household except for household size and urban dummy.

<sup>2</sup> For Zambia, the manufacturing dummy refers to nonagriculture, nongovernment salaried employment.

remained stable over time. These differentials have provided the incentive for a continued exodus from rural to urban areas over the past decade, consistent with the prediction of the Harris-Todaro model of migration. Between 2001 and 2009, the share of the population in rural areas fell by more than 6 percentage points (median) in the sample of countries to 62 percent.<sup>14</sup>

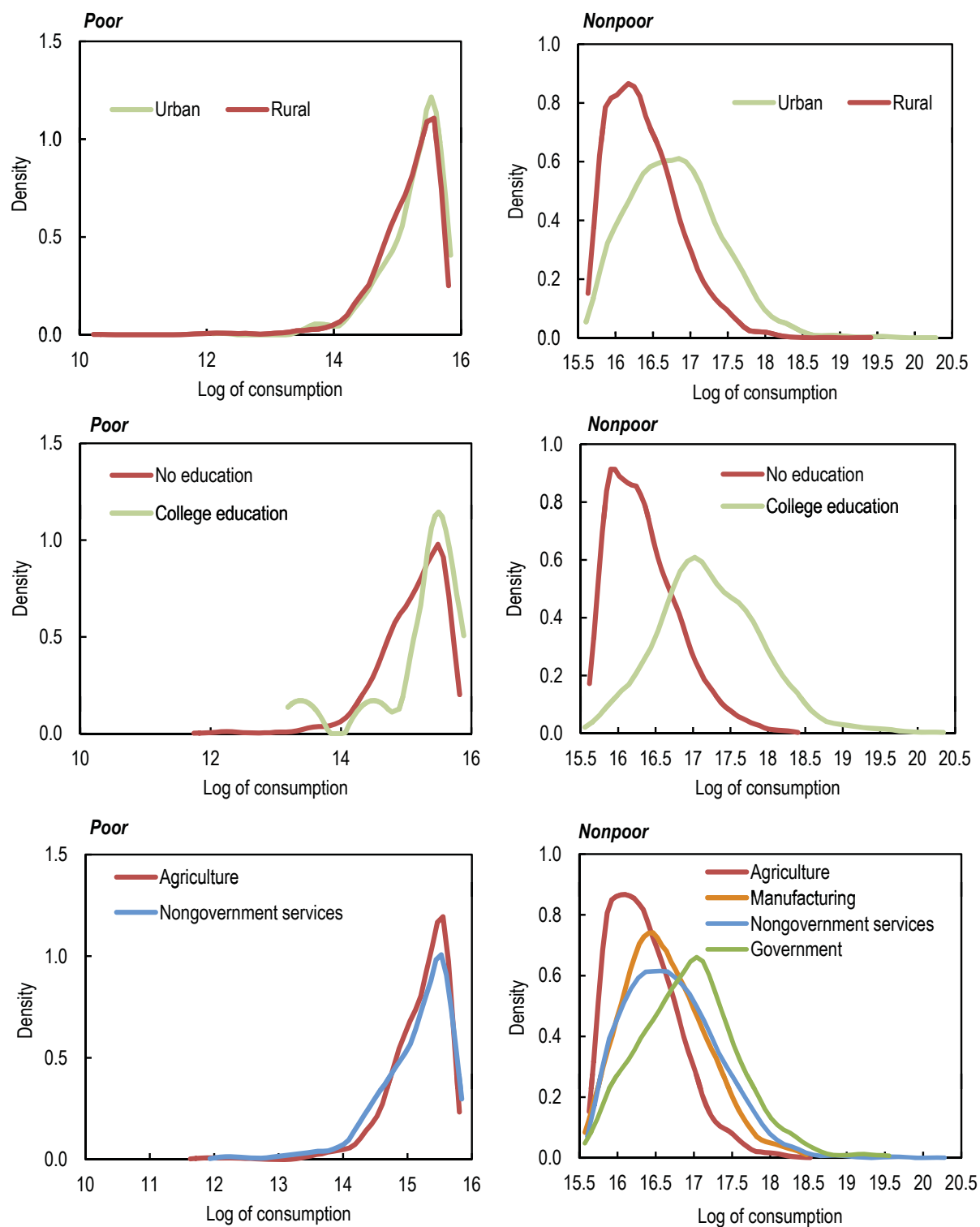
- Household heads with primary school education earn between 0 and 13 percent (Tanzania) more than those without education, whereas college-educated household heads earn between 60 percent (Cameroon) and more than 100 percent (Mozambique, Tanzania, Zambia) more than uneducated household heads. Moreover, the premium for college education

has risen over time in most of the sample countries.

- Large consumption differentials also exist for household heads employed in government relative to the primary sector. In most countries, government workers are among the highest paid (for example, Cameroon, Tanzania and Uganda), whereas agricultural workers earn the least, and manufacturing workers are only slightly higher up the consumption scale than agriculture workers, in half of the countries in the sample (the reference group omitted from the regressions is nongovernment services).
- However, the consumption differential between agricultural workers and those in other sectors has declined over time.<sup>15</sup>

<sup>14</sup> Regional differences in consumption levels are also large and have remained stable over time (not shown in table). They vary from 30 percent in Cameroon to 50 percent in Mozambique, with part of the difference explained by regional differences in prices. See note 12 on the use of regional price deflators.

<sup>15</sup> When the sample is restricted to the poorest quartile, differences between characteristics are more difficult to discern (Figure 2.7).

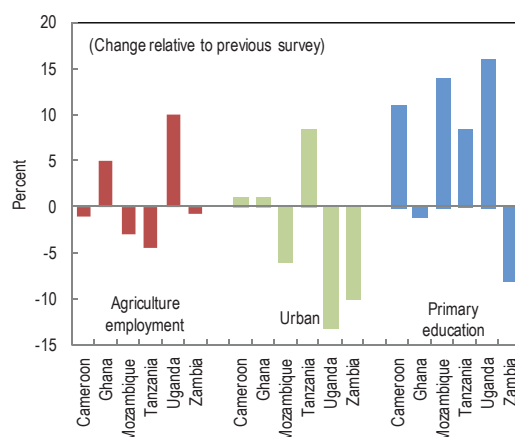
**Figure 2.7. Ghana: Density Estimates of the Consumption Distribution by Quartile, 2005**

Sources: Ghana Living Standards Survey 2005; and authors' calculations.

**Changes in the determinants of consumption among the poorest quartile between surveys do not shed much light on the incidence of growth, except for in Uganda.** As the majority of the poor are engaged in agricultural activities in rural areas and primary education is generally the highest level attained, we focused on these characteristics to help understand the incidence of growth. Our tentative reading of the numbers is that Uganda's consumption growth performance among the poorest quartile may be partly explained by the sharp improvement in agricultural incomes and in the education premium (primary level) of these households relative to the rest of the population (Figure 2.8). Between surveys, the consumption level of poor families in Uganda with household heads employed in agriculture rose by 10 percentage points more than in families whose head is employed in nongovernment services. In Cameroon, too, where the poorest quartile also experienced the highest consumption growth, there was a relative improvement in the education premium. However, changes in the determinants of consumption in other countries were not consistent with the incidence of growth. For example, the rise in the value of education in Mozambique and the decline in the urban premium in Zambia were not accompanied by propoor growth.

**The results of the regressions, in which a high percentage of the variance of household consumption can be explained by a few characteristics, show that household surveys among the sample of countries can be used for targeting the poorest households to receive income transfers.** Clearly differentiated location clusters have been identified with different levels of household consumption, whereas the health component of the surveys can also be used to identify health impediments, such as sickness or disability. Several developing countries have introduced direct cash transfer programs (conditional or unconditional) and other targeted safety net programs as a feasible and cost-effective way of protecting the poorest households against shocks and providing them with some of the growth dividend. Brazil and Mexico are

**Figure 2.8. Consumption Value of Characteristics of the Poorest Quartile**



Source: Household surveys; and authors' calculations.

prime examples. Their most successful programs (Bolsa Escola–Bolsa Familia and Progres-Oportunidades, respectively) made use of the geographical information from their household surveys in targeting the poor population; this was supplemented with the selection of beneficiary households within the targeted communities based on socioeconomic data collected for all households. Although there are several challenges that need to be overcome before implementing targeted transfers or safety nets, these barriers are perhaps more political than technical in nature (for example, the claim that “everybody is poor”).

## Employment

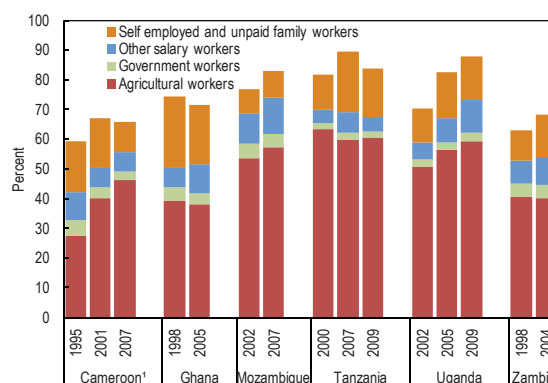
**Household income and expenditure surveys can also be used to analyze the role of employment patterns in the inclusiveness of growth in the case studies.** The frequency of data is limited to two or three data points, and changes in questionnaires between surveys make comparisons difficult (see Appendix II for a discussion of the methodology used to generate labor force data). Moreover, the meaning of employment for SSA households differs considerably from that used in developed countries because subsistence living represents a large share of household activity and formal employment represents a low share of total



employment. For these reasons, we prefer to view employment as all income-generating activities rather than just formal sector employment. Our findings for the six countries include the following:

- The increase in the number of people engaged in income-earning activities (a proxy for employment) has been strong over the past decade among the sample countries analyzed, with a median estimate of about 3¼ percent growth per year (Table 2.3).<sup>16</sup> Such high employment growth rates have helped raise the ratio of employment to the working-age population in all sample countries except Ghana, where there has been a sharp increase in the number of people out of the labor force attributable to youth remaining in school for a longer period (Figure 2.9). In addition, economic growth in these countries has been characterized by high employment intensity, with the median employment-output growth elasticity at 0.6 compared with 0.4 for Cambodia and Vietnam.
- Agricultural employment growth has been particularly strong in countries that have demonstrated propoor growth over the past decade. Agricultural employment has grown at 6 percent per year in both Cameroon and Uganda, whereas the growth rate has been much weaker in the other sample countries, and even negative in Zambia. The correlation between consumption growth of the poorest quartile and agricultural employment growth is even stronger for the rural population—at 0.62, slightly below the correlation between growth of real GDP per capita and consumption growth of the poor.
- The growth in urban employment has been extremely rapid, with a median estimate of almost 7 percent per year, over twice the employment growth rate among the whole population. However, given the rapid migration

**Figure 2.9. Total Employment to Working-Age Population Ratio**



Source: Household surveys; and authors' calculations.

<sup>1</sup> For Cameroon, the employment-population ratio in 2007 refers to those who work at least 25 hours per week.

from rural to urban areas, the increase in the ratio of employment to the working-age population has been more modest—at almost 1 percentage point.

- Formal sector employment is often used as a measure of the development process among LICs because formal sector jobs generally provide social security benefits and more stable incomes. Formal employment is proxied by salaried employment (government and other salaried workers) in this chapter given the unavailability of information on social benefits from most surveys. Based on this definition, formal employment in relation to the working-age population for the whole economy has risen in all sample countries except for Cameroon, and in regard to urban areas, it has risen in all sample countries except for Cameroon and Tanzania. However, at 13.6 percent of the working-age population (median estimate for the six sample countries), it remains considerably below the levels registered in Cambodia (25 percent in 2007) and Vietnam (44 percent in 2007).

<sup>16</sup> This growth compares favorably with Cambodia and Vietnam, two fast-growing LICs.

**In sum, employment growth over the past decade has been strong across the six countries, especially among the urban population.** This increase has helped to raise the ratio of employment to the working-age population. Although formal employment has also increased in relation to the working-age population, it remains far below the levels in Cambodia and Vietnam. Large cross-country differences in agricultural employment growth are the most likely candidate for explaining disparities in consumption growth. One of the features of the GICs is the contrast between propoor per capita consumption growth in Cameroon and Uganda and the relatively lower/negative per capita consumption growth among the poor in Mozambique and Zambia. Employment developments provide some explanation as to why agricultural employment growth has been strong in Cameroon and Uganda whereas it has been much weaker in Mozambique and actually negative in Zambia. Moreover, these differences are even sharper when we consider the rural population.

## NEW EVIDENCE ON THE EVOLUTION OF REAL INCOME IN SSA FROM ENGEL CURVES

**In this section, we turn to one of the best-established empirical regularities in economics, Engel's Law, to see if it can help explain the apparent dissonance between changes in income and poverty reduction in our case studies.** As discussed in the first section of this chapter, there is an apparent disconnect between per capita growth and improvements in other welfare indicators. Several recent studies, including Kenny (2011), Sala-i-Martin and Pinkovskiy (2010), and Young (2010), suggest that well-being in the African region might actually be higher than is generally believed. Engel's Law, which states that the share of total household resources allocated to food consumption decreases with the level of total household resources, has been found to hold across and within countries (see Figures 2.10 and 2.11). Our aim here is to exploit this empirical regularity for insights on the evolution of real incomes. Perhaps real incomes in the region are not being measured accurately, giving rise to the dissonance

**Table 2.3. Employment Indicators (annual percent change, except where noted)**

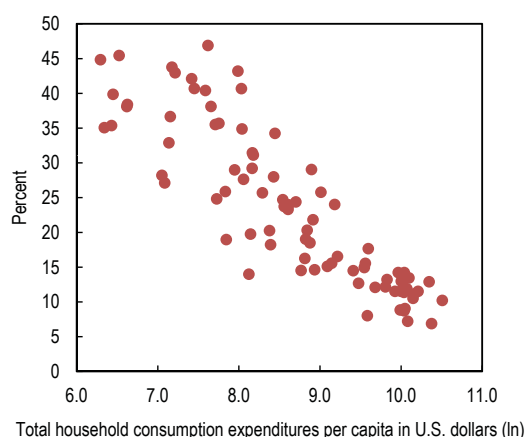
	Period	Employment			Agricultural Employment	Rural Agricultural Employment	Formal Sector Employment <sup>1</sup>
		Total Employment	Output Elasticity	Urban Employment			
Cameroon	2001–07	2.7	0.8	5.6	5.9	4.2	9.5
Ghana	1999–2005	3.4	0.7	6.1	3.5	1.4	13.3
Mozambique	2003–09	4.4	0.6	7.4	3.4	-0.4	16.7
Tanzania	2000–09	3.3	0.5	8.8	2.3	2.1	9.5
Uganda	2002–09	7.5	1.0	9.8	6.0	6.4	13.9
Zambia	1998–2004	1.9	0.6	5.1	-0.2	-1.6	13.8
<i>Memo items:</i>							
Cambodia	2004–07	4.2	0.4	4.5	3.9	4.7	25.0
Vietnam <sup>2</sup>	2000–07	2.9	0.4	6.1	-0.3	n.a.	44.0
Sub-Saharan Africa (sample median)		3.3	0.6	6.8	3.5	1.8	13.6

Sources: Household surveys; Vietnam Ministry of Planning and Investment and UNDP (2010); World Bank (2008).

<sup>1</sup> Latest estimate in percent of working-age population.

<sup>2</sup> Agricultural employment is for 2000–08.

**Figure 2.10. Food Expenditure Share and Household Consumption Expenditure per Capita in a Sample of 84 Countries, 2010**



Sources: U.S. Department of Agriculture Economic Research Services, based on data from Euromonitor.

between growth and progress in poverty reduction. In other countries, including Brazil, Mexico, and the United States, among others, there is evidence that real income growth has been underestimated on account of the overestimation of true cost-of-living increases by CPI inflation (see Costa, 2001; Hamilton, 2001; and de Carvalho and Chamon, 2011). Could the same factor be at work in SSA where there has arguably been even more rapid economic change?

**The basic intuition for the approach used in this section is as follows.** Assuming household preferences are stable over time and given a well-specified model, we should be able to infer the evolution of real incomes from shifts in the estimated Engel curve.<sup>17</sup> For example, if the

<sup>17</sup> Nakamura (1997) was the first to suggest that Engel's Law could be used to measure changes in real income. His motivation was the possibility that the measured productivity slowdown that began in the early 1970s in the United States and in other developed countries was actually a result of the overestimation of inflation, which resulted in a decrease in the growth rate of real income. Both Costa (2001) and Hamilton (2001) formalize Nakamura's intuition using regression analysis, with which they analyze the relation between food expenditure and real total household expenditure after controlling for household characteristics. In particular, they employ Deaton and Muellbauer's (1980) AIDS specification, reaching similar conclusions, both finding that inflation measured through the CPI in the United States has overestimated true cost-of-living increases.

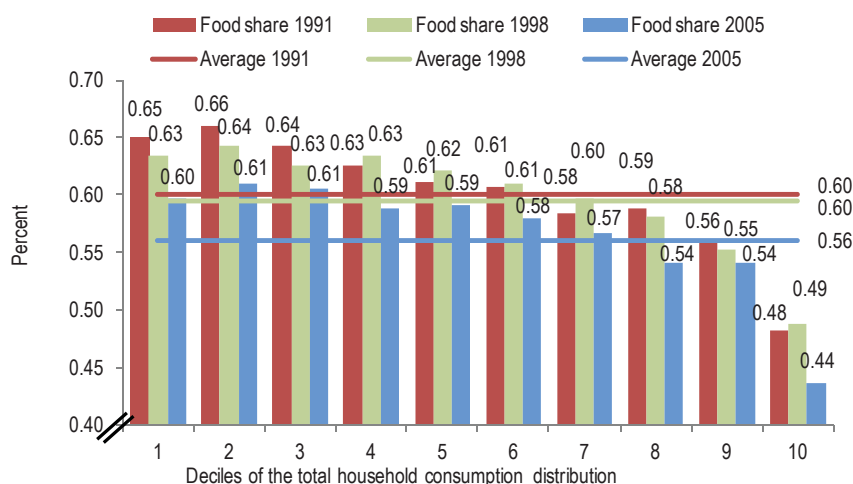
estimated Engel curve shifts over time to the left (right), it implies that a lower (higher) level of total household consumption corresponds to each food share. Figure 2.12 depicts the Engel curve for Ghana<sup>18</sup> estimated using data for the period 1998–2005. In particular, it shows the fitted regression line (in red) and also shows the fitted regression line including the negative coefficient associated with a year dummy variable (in green), which shifts the original Engel curve toward the origin. Given that for every level of real total household consumption, the green line associates a lower share of total household consumption allocated to food than the red line—one conclusion we can draw is that real total household consumption may be underestimated.<sup>19</sup>

**The reason for the underestimation of real income growth is generally acknowledged to be overestimation on inflation.** There are various upward biases associated with measuring cost of living with a Laspeyres-type CPI index. First, the use of a fixed basket of products in most CPI indexes overestimates changes in the cost of living because consumers change their consumption bundles in response to relative price changes (substitution bias). Second, most statistical agencies ignore changes in the quality of products, so that any increase in the price of a product will be accounted as inflation, even if it corresponds to a product of higher quality. Third, statistical agencies

<sup>18</sup> Engel curves, by definition, require that all other variables be held constant. In particular, Engel curves generally take the form  $w = f(p, y, z)$ , where  $w$  is the share of total household resources (income, expenditure or consumption) allocated to food consumption,  $p$  is a vector of prices (including the food price index),  $y$  is a measure of total household resources, and  $z$  is a vector of household characteristics. Although it can be argued that prices are held constant when using data from a cross-sectional household survey (as long as the law of one price holds), several household characteristics change over time, and thus regression analysis is used to control for these changing characteristics.

<sup>19</sup> If, on the contrary, the coefficient of the year dummy variable were positive, then for every level of real total household consumption, the red line would be associated with a higher share of total household consumption allocated to food, and one would have to conclude that inflation measured through the CPI is downward-biased and that the growth of real total household consumption is overestimated.

**Figure 2.11. Ghana: Food Expenditures as a Share of Total Household Consumption by Deciles of the Total Household Consumption Distribution**



Sources: IMF staff estimates based on data from the Ghana Living Standards Surveys for 1991, 1998, and 2005; and Ghana Statistical Service.

are also slow in changing their sampling schemes to incorporate new products and establishments that often experience sharp initial declines in prices.

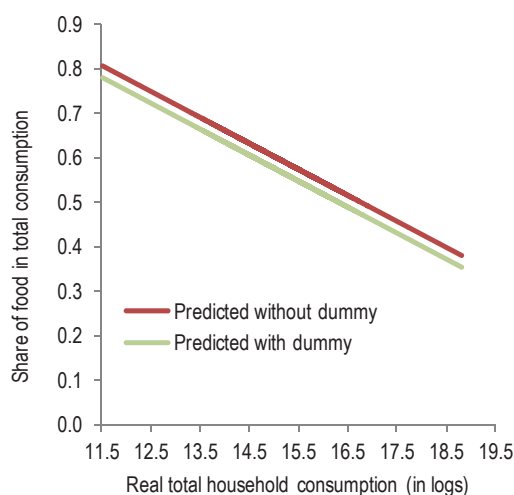
### Turning to our results:

- As shown in Table 2.4, which illustrates regression results for the case of Ghana (1991–2005), there is an upward bias in CPI inflation in the later period (1998–2005), because the coefficient associated with the time dummy for

2005 is negative and statistically significant.<sup>20</sup> In contrast, there was a downward bias in the first period (1991–98), because the first period dummy variable is positive.

- The result of this regression formalizes the intuition shown in the figure for the case of Ghana (Figure 2.12), which suggests that the rapid decline over the period 1998–2005 in the share allocated to food consumption from the household survey is too large to be accounted for by the increase in real GDP per capita or in real consumption expenditure per capita from national accounts, suggesting that CPI inflation overestimated the true cost of living increases.<sup>21</sup>

**Figure 2.12. Engel Curve for Ghana Estimated Using Data for the Period 1998–2005**



Sources: IMF staff estimates based on data from the Ghana Living Standards Surveys for 1998 and 2005; and Ghana Statistical Service.

<sup>20</sup>In all cases, the consumption variable includes expenditure as well as the imputed value of home production for self-consumption. All the regressions have been estimated using the ordinary-least-squares estimator, and the sample has been restricted to households whose food consumption as a share of total household consumption was greater than 5 percent and smaller than 90 percent. In all cases, this restriction has reduced the sample size by less than 2 percent of the original, and the sign and magnitude of the estimated biases are not sensitive to this sample selection rule.

<sup>21</sup>The results of the regression are shown only for the whole sample in the case of each country. Nevertheless, the fact that all deciles of the consumption per capita distribution show changes over time in the food shares that are similar to changes in the mean (see Figure 2.11 for evidence from Ghana) suggests the bias is not driven by changes in the consumption patterns of any particular group, but is a common phenomenon. Thus,

**Table 2.4. Engel Curves for Food in Ghana over the Period 1991–2005**

Dependent variable: Food consumption as a share of total household consumption

	1	2	3	4	5	6
Constant	1.547 ***	1.528 ***	1.607 ***	1.524 ***	1.535 ***	1.521 ***
Total real household consumption (log)	-0.064 ***	-0.062 ***	-0.069 ***	-0.066 ***	-0.066 ***	-0.067 ***
2005 dummy		-0.016 ***	-0.013 ***	-0.014 ***	-0.014 ***	-0.014 ***
1998 dummy		0.013 ***	0.015 ***	0.014 ***	0.014 ***	0.013 ***
Household size			0.005 ***	0.004 ***	0.004 ***	0.003 ***
Age of household head				0.001 ***	0.001 ***	0.001 ***
Male head of household					-0.009	-0.006 ***
Employed						0.032 ***
Number of observations	19,036	19,036	19,036	19,036	19,036	18,444
R-squared	0.0999	0.1070	0.1141	0.1252	0.1261	0.1341
Adjusted R-squared	0.0998	0.1069	0.1139	0.1250	0.1258	0.1338

Sources: IMF staff estimates based on data from the Ghana Living Standards Surveys for 1991, 1998, and 2005; and Ghana Statistical Service.

Note: \*\*\*, \*\*, and \* indicate significance at the 99 percent, 95 percent, and 90 percent confidence levels, respectively.

**Table 2.5. Engel Curves for Food in Cameroon, Ghana, Uganda, and Zambia**

Dependent variable: Food consumption as a share of total household consumption

	Cameroon 2001–07	Ghana 1998–2005	Uganda 2002–10	Zambia 1998–2004
Constant	1.546 ***	1.515 ***	1.970 ***	1.283 ***
Total real household consumption (log)	-0.089 ***	-0.065 ***	-0.108 ***	-0.061 ***
Second-year dummy	-0.065 ***	-0.027 ***	0.049 ***	-0.063 ***
Household size	0.013 ***	0.002 ***	0.011 ***	0.001 ***
Age of household head	0.001 ***	0.001 ***	0.001 ***	0.001 ***
Male head of household	-0.006 **	-0.006 **	0.016 ***	0.031 ***
Employed	0.065 ***	0.032 ***	0.006 *	-0.008 ***
Number of observations	22,140	13,950	16,727	29,246
R-squared	0.2106	0.1318	0.2510	0.1403
Adjusted R-squared	0.2104	0.1314	0.2507	0.1402

Source: IMF staff estimates based on data from the various household surveys (see Appendix I).

Note: \*\*\*, \*\*, and \* indicate significance at the 99 percent, 95 percent, and 90 percent confidence levels, respectively.



The specification in column 6 of Table 2.4 is used for contrasting the four countries for which comparable data are available for at least two years, namely, Cameroon, Ghana, Uganda, and Zambia. This specification provides a relatively constant magnitude of the CPI bias and the best fit to the data in terms of the adjusted *R*-squared statistic. As can be seen in Table 2.5, the results for three out of the four countries for which the Engel curves are estimated—Cameroon, Ghana, and Zambia—show a drift of the Engel curve to the left over time, thus suggesting that CPI inflation has overestimated the increase in the true cost of living and that real income growth has been underestimated. In the case of Uganda, the opposite has been the case, because the Engel curve has drifted to the right over time, suggesting that CPI inflation has underestimated the increase in the true cost of living and that real income growth has been overestimated.<sup>22</sup>

**The apparent underestimation of the growth rate in true real income in Cameroon, Ghana, and Zambia, particularly during the period when growth accelerated in the region, has important implications.** First, it confirms the

---

in principle there is no reason to believe that the poorest quartile is experiencing more or less underestimation of real income than the average.

<sup>22</sup> The magnitude of the CPI bias implied by the parameter estimates in each of the regressions is obtained by combining the parameter estimates for the coefficient of real consumption and the dummy variable with an estimate of the food price elasticity and the corresponding relative inflations of the food and nonfood components of the CPI in each country. Because no estimate of the food price elasticity is available for any of the countries in our sample, Hamilton's (2001) estimate of 0.0369 for the United States is used. The estimates of the annual CPI bias are a 10 percent underestimation in the case of Zambia, 8.6 percent in Cameroon, and 2 percent in Ghana, and a 9 percent overestimation in the case of Uganda. Although the magnitude of these estimates is larger than that found for developed countries (which generally are in the range of 1 percent to 3 percent annually), they are comparable with those obtained for some developing countries, including those of de Carvalho and Chamon (2011) for Brazil over the period 1987–96, which find an overestimation of close to 9.5 percent using a similar specification and estimator, and those of Gibson, Stillman, and Le (2008) for Russia over the period 1994–2001, which find an overestimation of 1 percent per month.

results of the analysis of Young (2010), which suggests that growth in real consumption per capita has been underestimated in national accounts using a completely different methodology. Second, it points to a potential explanation for the apparent disconnect between increases in real income and improvements in nonincome measures of well-being, namely, that real income growth may be underestimated, so that there may in fact be a stronger relation between growth in real income and improvements in other welfare indicators. The evidence of an underestimation of real income growth in three of the four countries for which data are available suggests that real income growth may be underestimated in other countries in the region, although given the data limitations (in terms of coverage of the region's population with comparable household surveys), this is a conjecture that requires further research to be confirmed or rejected.

## CONCLUSIONS

**Broadly, then, our main findings are as follows:**

- First, for the region as a whole, the link between poverty and growth is generally weak. But this relationship is considerably stronger for the region's high-growth countries.
- Second, there is evidence of growth having been fairly inclusive in the region's high-growth countries. We find, for example, that the lowest quartile in three out of the four case studies (Ghana, Tanzania, Uganda) has enjoyed fairly high increases in consumption. But there are signs that in many of these countries higher-income households have enjoyed still higher growth in consumption. This implies some increase in inequality, broadly in line with patterns observed in a number of high-growth Asian countries.
- Third, we find evidence of real income growth having been underestimated in some countries—fairly significantly in some cases. In these cases, real consumption gains have accordingly been underestimated (and thus poverty rates likely overstated). And the main

reason for this appears to be biases in the way that CPI is measured. This is consistent with the finding of Young (2010) that income growth has been much higher than is registered in U.S. Department of Commerce National Income and Product Account (NIPA) statistics.

**Some of the policy implications that we can infer from our findings are as follows:**

- The focus of many sub-Saharan policymakers on policies that promote broad and sustainable growth is likely the means by which the poor can be helped the most.
- Still, this does not imply that high average growth is a sufficient condition to ensure inclusiveness. Once it has been established that growth has indeed not been inclusive, temporary and well-targeted transfer programs could be considered to help those being left out by the growth process. In terms of targeting, as shown above, even a few observable household characteristics—such as education levels,

region of residence, sector of employment, and employment status—go a long way toward explaining, in a statistical sense, the difference in consumption levels across households.

- Perhaps more importantly, as shown in the case of the six countries studied, those countries that experienced higher growth in agricultural employment also experienced higher poverty reduction. Some public policies could, if properly implemented, lead to short-term increases in agricultural output and productivity, including diffusion of fertilizers and improved seeds, while others, such as investments in electrification, irrigation, rural roads, and agricultural extension services, will require time to be implemented properly and will thus have medium-term effects. At any rate, with about two-thirds of the region's population living in rural areas and with most of the region's people deriving their income from agricultural activities, increasing agricultural productivity is necessary for accelerating poverty reduction.

## Appendix I: Survey Characteristics

Country	Survey	Years	Acronym	Data collection agency or agencies	Start date of data collection	End date of data collection	Sampling frame	Sampling scheme
Cameroon	Enquête Camerounaise Auprès des Ménages III	2007	ECAM 3	Institut National de la Statistique	September-07	December-07	3eme Recensement Général de la Population et de l'Habitat de novembre-décembre 2005	Two-stage stratified random sampling
	Enquête Camerounaise Auprès des Ménages II	2001	ECAM 2	Institut National de la Statistique	September-01	December-01	2eme Recensement Général de la Population et de l'Habitat de 1987	Two- and three-stage stratified random sampling
Ghana	Ghana Living Standards Survey 5	2005	GLSS5	Ghana Statistical Service	September-05	August-06	Complete list of the 2000 Population and Housing Census Enumeration Areas	Two-stage stratified random sampling
	Ghana Living Standards Survey 4	1998	GLSS4	Ghana Statistical Service	April-98	March-99	Complete list of the 1984 Population and Housing Census Enumeration Areas	Two-stage stratified random sampling
Mozambique	Inquérito sobre Orçamento Familiar	2008-09	IOF 2008-09	Intituto Nacional de Estadística	August-08	September-09	Master Sample (amostra mãe) from the 2007 Population Census (Censo Populacional)	Three-stage stratified random sampling
	Inquérito aos Agregados Familiares	2002-03	IAF 2002-03	Intituto Nacional de Estadística	July-02	June-03	Master Sample (amostra mãe) from the 1997 Population Census (II Recenseamento Geral da População e Habitação 1997)	Three-stage stratified random sampling
Tanzania	National Household Budget Survey	2007	HBS 2007	National Bureau of Statistics	January-07	December-07	National Master Sample developed from the 2002 Population and Housing Census	Two-stage stratified random sampling
	National Household Budget Survey	2000-01	HBS 2000/01	National Bureau of Statistics	May-00	June-01	National Master Sample (NMS) based on the 1978 Population Census and later updated with information from the 1988 Population Census	Two-stage stratified random sampling
Uganda	Uganda National Household Survey IV	2009-10	UNHS 2009/10	Uganda Bureau of Statistics	May-09	April-10	2002 Population and Housing Census Frame	Two-stage stratified random sampling
	Uganda National Household Survey II	2002-03	UNHS 2002/03	Uganda Bureau of Statistics	May-02	April-03	List of enumeration areas with number of households based on cartographic work for the 2002 Population and Housing Census	Two-stage stratified random sampling
Zambia	Living Conditions Monitoring Survey IV	2004	LCMS IV	Central Statistical Office	November-04	December-04	2000 Census of Population and Housing	Two-stage stratified cluster sampling
	Living Conditions Monitoring Survey II	1998	LCMS II	Central Statistical Office	November-98	December-98	Updated master frame based on the 1990 Census of Population and Housing	Two-stage stratified cluster sampling

## Appendix I (concluded)

Country	Sampling units	Total population	Sample size (households) planned	Sample size (households) actual	Sample size (persons)	Percentage of responses (coverage rate)	Sample fraction	Representativeness of the sample
Cameroon	Enumeration areas or zones de dénombrement (742), households (ménages)	18,659,938	12,609	11,391	51,837	90.34	360	National, urban, and rural, for 10 administrative regions (provinces), and for the metropolitan regions of Yaounde and Douala
	Enumeration areas or zones de dénombrement (612), households (ménages)	16,242,478	11,553	10,992	56,443	95.14	288	National, urban, and rural, for 10 administrative regions (provinces), and for the metropolitan regions of Yaounde and Douala
Ghana	Enumeration areas (550), households (15)	22,279,846	8,700	8,687	37,128	99.85	600.1	National, urban, and rural, for 10 administrative regions, with a minimum sample size of 400 households, for three ecological zones (coastal, forest, and northern), and for the Greater Accra metropolitan region
	Enumeration areas (300), households (20)	18,724,275	6,000	5,998	25,694	99.97	728.7	National, urban, and rural
Mozambique	Primary sampling units (Unidades Primárias de Amostragem), enumeration areas (Áreas de Enumeração), households (Agregados Familiares)	22,638,414	11,000	10,832	51,177	98.47	442.4	National, urban, and rural, for three regions (north, center, and south), and 10 provinces (Cabo Delgado, Niassa, Nampula, Tete, Zambézia, Manica, Sofala, Inhambane, Gaza, Maputo Província) and the capital city (Maputo Capital)
	Primary sampling units (Unidades Primárias de Amostragem), enumeration areas (Áreas de Enumeração), households (Agregados Familiares)	19,521,546	8,727	8,700	44,100	99.69	442.7	National, urban, and rural, and for three regions (north, center, and south)
Tanzania	Clusters (447), households (24)	41,276,209	10,752	10,466	37,896	97.34	1,089.2	Mainland Tanzania, Dar es Salaam region (urban), other urban and rural areas
	Clusters (1,158), households (24)	34,514,835	22,584	22,178	108,084	98.20	319.3	Mainland Tanzania, Dar es Salaam region (urban), other urban, and rural areas, and mainland Tanzania's 20 regions
Uganda	Enumeration areas (712), households (10)	30,700,000	6,800	6,775	36,432	99.63	842.7	National, urban, and rural, and for three regions (central, eastern, northern, and western)
	Enumeration areas (1,000), households (10)	25,000,000	10,000	9,711	50,513	97.11	494.9	National, urban, and rural, and for three regions (central, eastern, northern, and western)
Zambia	Standard enumeration areas (1048), households (around 20)	11,583,176	20,000	19,350	103,295	96.75	112.1	National, urban, and rural, for nine provinces, and for the 72 districts
	Standard enumeration areas (820), households (around 20)	10,039,846	16,740	16,715	93,471	99.85	107.4	National, urban, and rural, for nine provinces, and for the 72 districts

Source: Household surveys.

## Appendix II: A Methodology for Calculating Labor Force Components

The labor force definition used in this chapter comprises individuals between 16 and 65 years old who are employed or are actively seeking work, and this definition is comparable to the UN definition used for most countries. In all countries, employment status corresponds to the main job, so that students working part-time are not counted in the labor force because they are not working as their primary activity.

For Ghana and Cameroon, the employed are defined as those who have worked during the preceding 12 months, and this amount is divided by the total working-age population to derive the employment ratio. This figure is compared with the number of people who indicate their sector of employment, and the minimum of these two figures is used. For Zambia, the employed are defined as those who have had an active economic status in terms of working for wages, running a business, or working in agriculture, as well as unpaid family workers, whereas for Tanzania those who indicate an industry affiliation are assumed employed. For Mozambique and Uganda, only status during the last seven days is used for employment, with the employment total defined as the sum of those who have worked during the preceding seven days and those who have not worked during this period but normally have a job.

In Ghana and Cameroon, the split between the unemployed and those out of the labor force is obtained by using the question “Did you search for work during the past seven days?” Those who searched for work are defined as the unemployed,

and the unemployment rate is derived using this figure divided by the working-age population. Those out of the labor force are defined as working-age population minus employed minus unemployed. If the number of unemployed derived in this way looks as if it is miscoded, the figure for those out of the labor force is used based on the question “Why have you not worked or looked for work?” with the unemployment rate derived as a residual. If there is disparity between the employment totals based on questions about activities during the preceding 12 months and the unemployment and out-of-the-labor force totals based on questions about activities during the preceding week, the ratios of the latter two variables are applied to the difference between the working-age population and the employment total.

To identify salaried employees, government workers are first excluded in all countries based on the assumption that all of these workers receive wage income. Nongovernment salaried workers are defined as follows: in Ghana, a worker potentially receiving payment is asked, “How are you paid in your main job?” All categories except “payment in kind” and “not remunerated” are summed. In Mozambique, salaried workers are identified in response to the question “Are you a salaried worker?” In Cameroon, salaried workers are defined as senior executives, middle management, and qualified and semiqualfied workers. In Tanzania, nongovernment salaried workers are defined as those working for nongovernmental organizations (NGOs), religious workers, parastatal employees, and other employees, whereas in Zambia, nongovernment salaried workers are defined as parastatal, private sector, and NGO employees. In Uganda, salaried workers are derived from the question on employment status.



*This page intentionally left blank*