

INCLUSIVE GROWTH IN SUB-SAHARAN AFRICA: EVIDENCE FROM SELECTED COUNTRIES DURING THE RECENT HIGH-GROWTH PERIOD¹

I. INTRODUCTION

Most countries in Sub-Saharan Africa (SSA) have experienced a period of high economic growth beginning around the mid 1990s, leading to renewed optimism about the region's development prospects.² Furthermore, most countries in the region weathered the global economic crisis of 2008–2009 remarkably well, contrasting with previous episodes when growth collapsed as a result of external shocks.

Despite this acceleration of growth and increased resilience, how certain are we of the magnitude of the acceleration? The statistical base on which real Gross Domestic Product (GDP) per capita is measured is extremely weak in most countries in SSA, so there is a large degree of uncertainty associated with these growth estimates.³

Even if one is willing to take data on the growth of real GDP at face value, the perception exists among policymakers and citizens in the region that SSA growth has not been shared evenly among the population or accompanied by an increase in employment opportunities in many countries (jobless growth), especially where growth has been concentrated on the extraction of natural resources. What is the evidence that higher levels of output are being translated into greater job creation, improved access to key services, and higher living standards for the majority of the population?

This chapter presents a diagnostic of whether the population at large has benefitted from the recent high-growth episode in SSA. Section II focuses on well being indicators measured by access to basic services, ownership of durable goods, and household consumption using household survey data from Cameroon, Ghana, Mozambique, Tanzania, Uganda, and Zambia.⁴ The section looks at the distribution of changes over time in real consumption per capita among the population through the estimation of growth incidence curves (GIC) and also analyzes the

¹ This is an extended version of Chapter 2 of the IMF's Regional Economic Outlook Sub Saharan Africa. Sustaining the Expansion and will also include an analysis of Rwanda by the time of the conference.

² Contrast, for example, the papers of Collier and Gunning (1999a, 1999b) and Artadi and Sala-i-Martin (2003), on the one hand, with those of Sala-i-Martin and Pinkowskyv (2010) and Young (2010) or the books by Miguel (2009) and Radlet (2010), on the other.

³ For examples of the uncertainty surrounding GDP estimates in SSA, see Jerven (2009, 2010a, 2010b, 2011a, 2011b).

⁴ The choice of countries analyzed in this chapter was driven by data availability and, in particular, 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, etc.

determinants of household consumption using Mincer-type regressions, and the impact of growth on employment opportunities through the estimation of standard measures of labor market performance. Section III applies a methodology to estimate the bias in the Consumer Price Index (CPI) using Engel curves as a way to corroborate the growth rates of real GDP per capita from the System of National Accounts (SNA). The basic conclusions of the chapter are as follows:

- Close examination of household survey data suggests that high per capita economic growth does have a strong bearing on the inclusiveness of growth. Ownership of consumer durables has increased extremely rapidly over the sample period in all countries except for Zambia which experienced weak per capita GDP growth. In terms of consumption growth, we consider two measures of inclusiveness. 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, and Uganda). By contrast, the poorest quartile of the consumption distribution in the low-growth countries saw low (Cameroon) or even negative (Zambia) changes in real consumption per capita. The results for Mozambique depend on whether one uses the CPI or the regional price indices to deflate nominal household consumption per capita, with the former showing relatively high growth and the latter showing negative growth for the poorest quartile.
- We also find evidence of the importance of employment opportunities in rural areas, and in particular in agriculture, for higher consumption growth among the poorer households. The stronger per capita consumption growth observed in Cameroon and Uganda at the poorest levels seems related to high agricultural employment growth. By contrast, rural agricultural employment between the surveys considered fell 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.
- 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). Considering the two numbers together, with the exception of Ghana, the employment-to-population ratio in the other five countries increased between surveys.
- Regarding the evolution of real incomes in the region, we provide evidence that the growth in real consumption is being underestimated, most likely due to biases in the measurement of the consumer price index (Section III). In particular, we considered the

change between surveys in the share of consumption devoted to food 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, and Zambia) of the four countries considered suggest that in our sample real income growth was significantly underestimated.⁵

II. MEASURES OF WELFARE

The issue of whether GDP is an appropriate measure of economic performance and welfare has been debated ever since the introduction of the SNA in the late 1940s, and remains a hotly contested issue. Sen, Stiglitz and Fitoussi (2010), in a recent report written for the French government on "The Measurement of Economic Performance and Social Progress", argue that GDP is neither a measure of income nor a measure of well-being, but rather an indicator of market activity constructed by adding up the market value of goods and services produced in the economy.

One of the contested issues is whether national income product accounts (NIPA) data or survey data provide a more accurate reflection of household welfare. Sala-i-Martin and Pinkovskiy (2010) have argued that a very sharp decline in poverty rates has been registered among SSA countries based on combining the growth rates from NIPA data and data on the distribution of consumption from household budget surveys, although they do not justify why NIPA data are better than survey data for measuring changes in means. In contrast, Deaton (2010) has argued that there is no reason to believe that NIPA data are better than survey data for measuring consumption, and concludes that the true poverty level lies in between the estimates using NIPA and survey consumption growth rates (Box 1).

While there is general agreement that well-being is multidimensional and covers material living standards, health, education, political voice, social connections, environment, and security (see Sen et al. 2010), this chapter limits its analysis to material living standards and employment opportunities. We first consider welfare measured through ownership of assets and access to public services and then turn to household consumption and employment opportunities.

A. Welfare measured through asset holdings and access to services

A number of analysts have used indices based on ownership of consumer durable goods and assets and access to public services as an alternative measure of economic well-being to household consumption.⁶ Items such as a radio, television, refrigerator, bicycle, motorcycle, and car are normally chosen as the consumer durables, while dwelling characteristics such as

⁵ In the other case (Uganda), we find real income growth to have been overestimated.

⁶ See, for example, Booysen et al. (2009), Filmer and Scott (2008), Sahn and Younger (2009 and 2000), and Young (2010).

building materials, the quality of flooring and roofing, main source of drinking water, type of toilet facilities, etc. are used to measure access to services. The methodology of principal components is a common method for providing the weights used to aggregate these indicators into a single asset index.

The rank correlation between per capita expenditures and these types of asset indices is typically greater than 0.5, with the correlation higher for countries outside SSA. For example, Filmer and Scott (2008) find that the correlation for Brazil is 0.64, while the correlation for Ghana and Zambia is about 0.4. The lower correlation among SSA countries is likely related to the fact that a large subset of low-income households do not own the consumer durables used in the index while access to piped water and sanitation is very low, especially in rural areas. Booysen et al. (2009) emphasize that the limited discrimination ability at the lower end of the income scale makes asset indices a poor tool for analyzing the extremely poor.

This section aims to enrich our understanding on the inclusiveness of growth in the region using six case studies—from Cameroon, Ghana, Mozambique, Tanzania, Uganda, and Zambia. 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, no large oil exporters (Cameroon marginal net exporter), and only one francophone country is included (Appendix I). With the exception of Cameroon and Zambia, the other four countries all enjoyed average per capita income growth of more than 2¼ percent during 1995–2010 (among the region’s faster growing economies).

For the sample of countries, data on access to consumer durables and access to publicly provided services is provided through the Afrobarometer surveys supplemented by the household budget surveys.⁷ Both types of surveys indicate that ownership of consumer durables has increased extremely rapidly over the past decade in all countries except for Zambia which registered negative growth in the fraction of the population reporting owing a given asset. If we weight ownership of radios, televisions and cars equally, the annual change in consumer durables varies between no change in Zambia to an increase of 2.2 percent per annum in Ghana. Except for Ghana, the changes are broadly inversely related to initial ownership shares. Cameroon has the highest television and motor vehicle ownership share with a 0.4 percent annual increase in ownership shares while Mozambique had the lowest share in 2002 and the highest annual increase (1.5 percent).

Access to publicly-provided services has also become much more widespread over time across counties.⁸ Ghana and Cameroon have the highest levels of access to the electricity grid, piped

⁷ Afrobarometer is an independent, non-partisan research group funded by UK DFID and USAID that surveys nationally representative, random, stratified probability samples for 20 SSA countries every three years.

⁸ Although access to health clinics in Cameroon and Uganda seems to have stalled, the question asked in Cameroon is not comparable across surveys because in 2007 access to hospitals was included together with access to health clinics

water and sewage system, consistent with their higher levels of GDP per capita. Moreover, Ghana has also demonstrated the fastest increase in coverage over this period with Mozambique a close second. The increase in access to publicly-provided goods is buttressed by the proportion of respondents who indicate that they seldom go without food, water, medical care, and cooking fuel. Except for access to cooking fuel in Uganda, all countries show a rising share over time of households that report seldom going without these basic needs, with Ghana remaining above the other countries in terms of levels.

Based on the demand for durables, various housing characteristics, children's health status, and family conditions, Young (2010) has argued that the growth rate of per capita consumption among SSA countries was about 3½ percent per annum over the 15 year period through 2005/06, which is three times the average estimate from NIPA data. His analysis is based on the relationship between these factors and educational attainment, under the assumption that educational attainment is a good proxy for family income (as supported by the Mincer regressions below). He shows that the elasticity of education with respect to owning a car is positive and significant, and is much higher than the elasticity with respect to owning a radio. Using these relationships between educational attainment and the identified characteristics, combined with an assumption about the rate of return to education, he derives consumption growth estimates.⁹ As a counter to Young's argument, Harttgen, Klassen and Vollmer (2011) argue that the relationship between asset growth and per capita income growth is very weak especially among non-African countries where concerns about NIPA statistics are less serious. They conclude that inferring income growth from changes in asset indices is not very robust.

⁹ Luminosity data from satellites and anthropometric measures such as height for age and weight for age provide additional measures of welfare, but these give a mixed picture of living standards in SSA. See Deaton (2010) and Henderson et al. (2010) for a discussion.

Box 1. Differences between survey and national accounts estimates of consumption

Many argue that living standards or welfare are more closely associated with household consumption estimated from surveys rather than with the alternative measure based on NIPA estimates of private consumption expenditure. This is because household surveys provide detailed information on household market and non-market consumption and imputed housing services while private consumption expenditure in many developing countries is derived as a residual. It is calculated by taking the difference between nominal GDP calculated from the production approach and those components of aggregate demand which are calculated directly. On the other hand, surveys often fail to capture households at the top end of the income distribution and exclude non-profit establishment expenditures on services that are provided to households.

To assess differences between the two estimates, the value of private consumption expenditure from the NIPA is compared to aggregate consumption estimates from the household surveys used in this chapter. The decline over time in the ratio of the survey estimate to the NIPA estimate of consumption is consistent with the experience of other countries, and likely reflects an increase in the number of people at the top end of the income distribution that are not sampled in the survey. The speed at which the ratio has declined in Cameroon, Ghana and Zambia is comparable to that of China, although faster than in India and the United States. In Mozambique, Tanzania and Uganda the ratios have remained fairly constant.

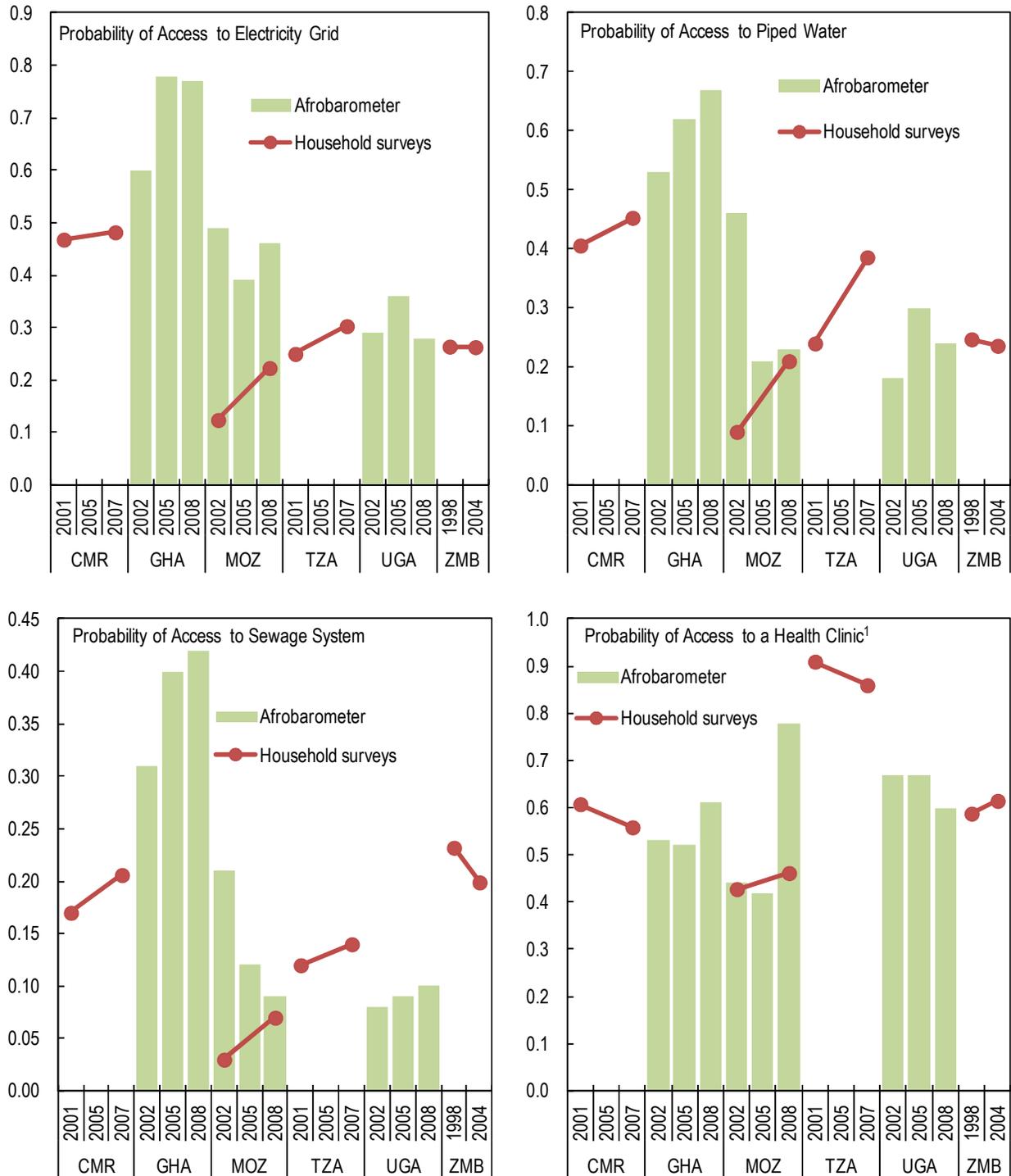
Comparison between survey and NIPA expenditure change

	Ratio of survey to NIPA private expenditure totals	
Cameroon	0.9 (2001)	0.77 (2007)
Ghana	0.92 (1998)	0.79 (2005)
Mozambique	0.83 (2002)	0.86 (2009)
Tanzania	1.00 (2001)	1.02 (2007)
Uganda	1.3 (2002)	1.2 (2009)
Zambia	0.88(1998)	0.75(2004)
China ¹	0.95 (1990)	0.8 (2000)
India ¹	0.68 (1983)	0.56 (1999)
United States ¹	0.8 (1984)	0.64 (2001)

Sources: Household data surveys unless otherwise referenced

¹Deaton (2005), Review of Economics and Statistics, February

Figure 1. Access to Resources

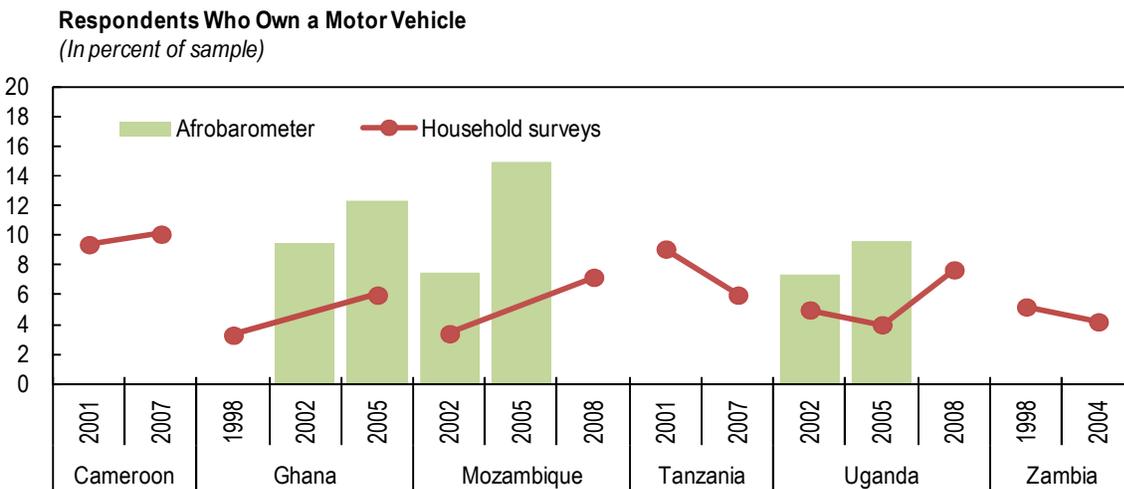
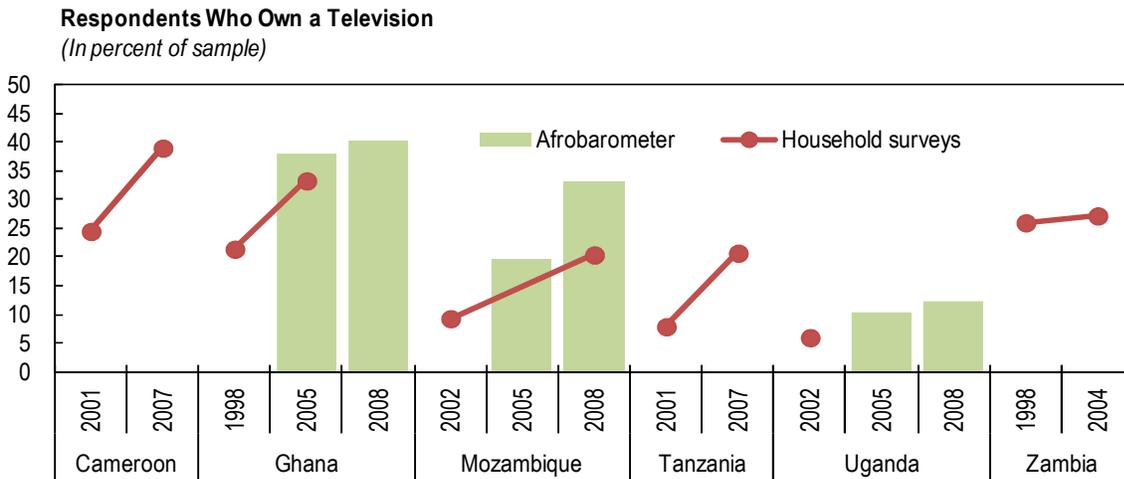
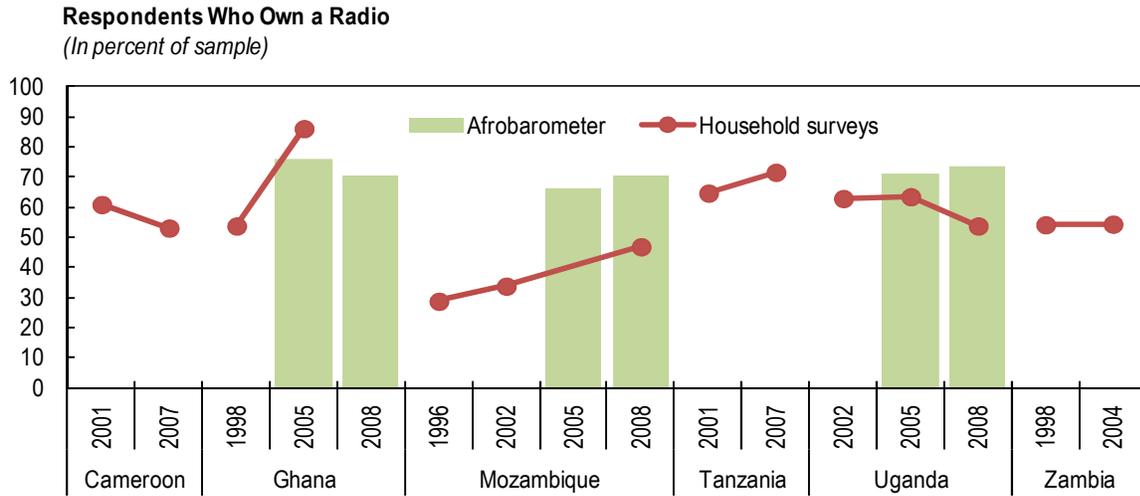


Source: Afrobarometer; and Household surveys.

Note: Probability of zero signifies no access and 1 signifies full access.

¹Data for Cameroon in 2007 includes hospitals and health clinics. For Mozambique the data reflect the probability of reaching a health unit within 30 minutes.

Figure 2. Consumer Durables



Sources: Afrobarometer; and Household Budget Surveys.

B. Welfare measured through household consumption

An alternative benchmark of household welfare is aggregate consumption using household survey data on home production for self consumption, consumption of purchased goods (i.e. expenditure) and consumption of imputed housing services. Consumption is preferred over income as the measure of welfare or living standards for a variety of reasons. First, since surveys can only hope to measure financial flows over a short period, consumption is a better measure of living standards since it is less volatile than income. Indeed, many people in low income countries (LIC) do not receive any income during their lifetime, because they are paid in kind or are unremunerated employees in unincorporated family enterprises. Therefore, measuring inequality based on data on the previous month's income will overstate inequality. Second, the concept of consumption is clearer to survey participants than the concept of income, especially in countries where income from self-employment is the norm and salaried employment is the exception. Third, respondents are generally more reluctant to share information about their income than about their consumption. Since income is usually taxable, it may be hard for respondents to be persuaded that their income information will not be passed to the tax authorities.

Evidence on the incidence of growth in SSA

One common concern among policymakers and citizens alike in the SSA region is whether the recent growth average has been evenly distributed among the population. Estimating the Growth incidence curves (GIC) proposed by Ravallion and Chen (2003) can identify the incidence of growth in real consumption per capita. The GIC depict the annual growth rate of real consumption per capita between two periods (vertical axis) with comparable surveys for each group of households ordered according to their position in the distribution of consumption per capita (horizontal axis). If the GIC lies above zero all along the whole distribution of real consumption per capita, then all households experienced positive growth and growth is said to be pro-poor according to the absolute definition of pro-poor growth. If, in addition to lying above the zero growth line, the GIC has a negative slope throughout (i.e. it decreases monotonically), then growth is said to be pro-poor according to the relative definition of pro-poor growth. In practice, GIC tend to have more complex forms, often crossing the horizontal axis (negative growth) at one or more points, so one cannot categorically say that growth was pro-poor or non pro-poor for the whole distribution.

Figure 3 shows the GIC of real household consumption per capita for the total populations of our six case study countries. The red line surrounded by the shaded area is the actual GIC, the green line is the average consumption level 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 fare 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 GDP growth (Table 1). Indeed, the correlation between the two variables is 0.7. In four of the six countries in the sample (Ghana, Mozambique, Tanzania and Uganda) per capita GDP 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.¹⁰ In the other two countries where annual per capita GDP growth was 1 percent or lower between surveys (Cameroon and 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.

Table 1. Macroeconomic, Poverty and Consumption Aggregates in Sample of Countries

(Percent change per annum, except where stated)

	Period	Growth per Capita	Real Exchange Rate	Terms of Trade	Poverty Headcount		Gini coefficient			Per Capita Consumption		
					Latest estimate	Initial estimate	Latest estimate	Initial estimate	Latest estimate	Survey data		
										All households	Poorest Quartile	Ratio of poorest quartile to average
			Percent change over the period	Percent change over the period					NIPA data			
Cameroon	2001–07	0.57	6.9	56.2	9.6	-3.9	0.45	0.43	1.0	0.82	1.0	1.24
Ghana	1998–05	2.33	-29.1	-33.6	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	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	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	28.7	-4.1	0.46	0.44	3.6	3.40	4.7	1.37
Zambia	1998–04	1.16	9.8	20.9	64.3	1.5	0.53	0.51	0.5	-3.43	-1.9	0.55
<i>Memo items:</i>												
Bangladesh	1992–2000	3.00	n.a.	-4.8	57.8	-1.1	0.28	0.33	0.8	1.80		
Cambodia 1	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 1	1993–2002	5.90	-9.0	6.8	40.1	-2.6	0.34	0.38	4.2	5.50	4.0	0.73

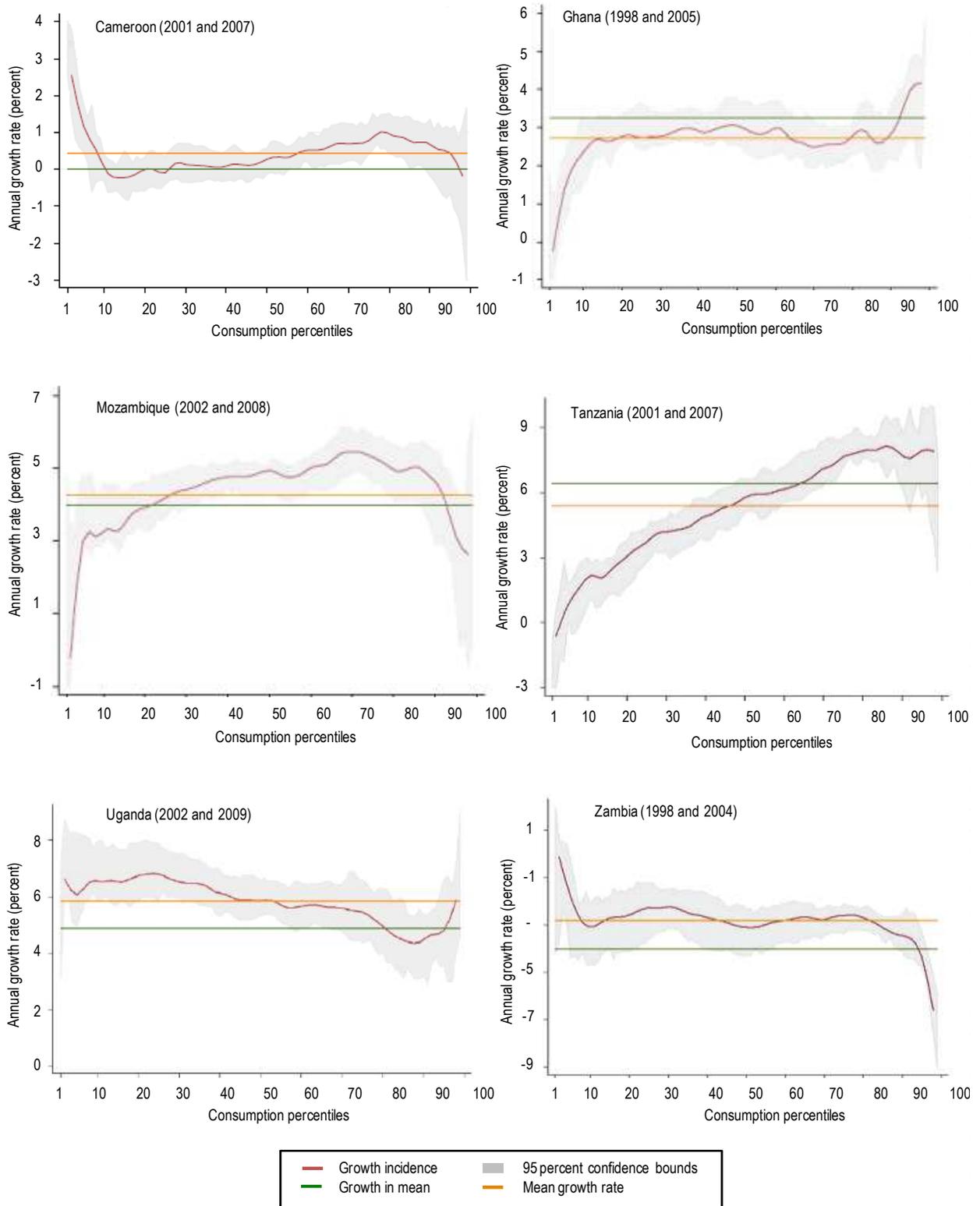
Sources: IMF, World Economic Outlook database; IMF, Information Notice System; household surveys, "Delivering on the Promise of Pro-Poor Growth," World Bank 2007, eds. Besley and Cord, Klump and Bonschab (2004)

1 For Cambodia and Vietnam, the poorest quintile replaces the poorest quartile

¹⁰ As mentioned before, the Mozambique household survey data provides its own set of regional price indices which can be used to deflate total household consumption per capita in 2008–09 and compare it with the same variable in 2002–03. If one does so instead of using the CPI to deflate nominal household consumption per capita, one obtains a growth incidence curve that is shifted downwards, with the lowest three deciles in fact experiencing negative consumption growth. The use of regional price indices is in general preferable to the use of the CPI to deflate nominal consumption since it is well known that there are significant differences in prices across regions. The reason why this chapter uses the CPI to deflate nominal is for uniformity, since regional price deflators are not available for the other countries.

- 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 in high growth Uganda. In the other three high-growth countries (Ghana, Mozambique, and Tanzania), the poorest quartile experienced lower growth in consumption relative to the highest quartile—Table 1 and Figure 3.
- In terms of national poverty estimates, both the relative and absolute measures of the inclusiveness of consumption seem to matter. Thus, in five of the six countries in which overall consumption growth was positive (Ghana, Mozambique, Tanzania and 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 1). It was only in Zambia where per capita GDP growth was low and consumption growth strongly negative for the poorest quartile that poverty increased significantly.

Figure 3. Growth Incidence Curves of Real Households Consumption per Capita



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

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 1991–2000) and Vietnam (1993–2002), overall consumption growth was positive (5½ percent per annum in Vietnam and 2 percent in Bangladesh). The highest consumption quartiles also saw significantly higher consumption increases than the poorest quartiles (Table 1). In Cambodia (between 1994–99), the consumption growth rate was high among the urban population (3½ percent per annum) but not in rural areas. Consistent with higher growth at the upper end of the income distribution in all three countries, their Gini coefficients rose during the 1990s.

Determinants of household consumption

Having identified large differences in the incidence of growth across countries, this section considers the factors that might help explain these differences, with particular focus on the households in the lowest quartile of the consumption distribution.

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. As can be seen in Table 2, on average, between 60 and 70 percent of the variation in household consumption can be explained by household size, age, sex, employment status, sector of employment and education level of the household head, 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 household consumption but at a declining rate. This may reflect more children that consume less than household heads and/or more family members with less earnings potential than the household head. The log of the age of the household head is also positive and reflects a rising consumption/income profile for more experienced adults, 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 remained stable over time. These differentials have provided the incentives for workers to move from rural to urban areas over the past decade, consistent with the Harris-Todaro model of migration. Between 2001 and 2009 the share of the population in rural areas fell more than 6 percentage points (median) in the sample of countries to 62 percent. Moreover, Nuamah et al. (2010) show for Ghana that the likelihood of being employed in urban areas rises in line with the level of education so it is likely that the more educated have made the rural- to-urban move.
- Regional consumption differentials have hardly changed in any country over recent surveys, remaining stable in Ghana and Mozambique and actually diverging in Cameroon (not shown). The differential between Cameroon's richest regions (Yaounde and Douala) and other regions doubled between 2001 and 2007 to 30 percent, while in Mozambique, Central Maputo has maintained a 50 percent positive consumption differential over other

regions and in Ghana, Accra has maintained a 40 percent consumption differential over and poorest region (Upper East and West). These nominal consumption differentials are likely to be partially compensated by differences in regional price indices. Indeed, deflating nominal consumption in Ghana by the regional price indices reduces the differential between the richest and poorest regions by 10 percentage points to 30 percent and the ranking of the richer regions is changed, with Accra losing the top spot.

- 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, in contrast to the stability of education differentials at lower levels of education, the college premium has increased substantially over time, consistent with the findings of Fox and Gaal (2008).¹¹
- 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 sectoral coefficients in nongovernment services). Over the past decade, the consumption differential between agricultural workers and those in other sectors has declined over time.

Very limited differences exist between characteristics for the poorest quartile of the consumption distribution.

- Across time within a single country and across countries, the distribution of consumption between those living in urban and rural areas is very similar, suggesting limited incentives to migrate to urban areas for those at the bottom end of the consumption distribution (the case of Ghana in 2005 is shown for illustrative purposes). Controlling for other characteristics (work experience, household size and employment sector), an urban premium for the poor is only identified in Cameroon and Ghana. This is supported by Kakwani et al. (2005), who find that a cash transfer system that targets the poor in rural areas is able to reduce the poverty gap considerably more in Cameroon and Ghana than in the other countries.

¹¹ The stability of the coefficients over time provides support for the estimation of GIC based on repeated cross sectional household survey data because it requires the assumption that the same groups of households occupy the same position in the distribution of consumption over time.

Agriculture and non-government service work and various education categories exhibit little variation in consumption. While higher educated households are likely to be positioned at the upper end of the consumption distribution of the poorest households, the modal estimate is the same as for household heads with no education. A possible explanation is that more highly educated household heads have unobservable characteristics that make them stay in the poorest segment of the population. Controlling for other factors, the regression estimates reveal a positive consumption differential for primary and lower secondary education for the poorest individuals, suggesting that education incentives exist for the poorest in these countries.

Table 2. Log Household Consumption Determinants (Most Recent Survey)¹

	Ghana		Cameroon		Uganda		Mozambique		Tanzania		Zambia	
	1998	2005	2001	2007	2005	2009	2002	2008/09	2001	2007	1998	2004
Household size (log)	0.31 ***	0.37 ***	0.29 ***	0.29 ***	0.28 ***	0.24 ***	0.23 ***	0.26 ***	0.24 ***	0.31 ***	0.28 ***	0.17 ***
Age (log)	0.10 ***	0.13 ***	0.19 ***	0.18 ***	0.20 ***	0.20 ***	0.17 ***	0.16 ***	0.06 **	0.02	0.03	0.05 ***
Male head of household	0.05 ***	0.03 ***	0.02	0.01	0.03 **	0.08 ***	0.03 **	0.04 ***	0.13 ***	0.06 **	0.04 **	0.02
Employment dummy	0.16 ***	0.16 ***	0.05 ***	0.04 **	0.02	0.02	0.10 ***	0.07 ***	0.07 ***	0.21 ***	0.15	0.07 ***
Agriculture sector dummy	-0.26 ***	-0.23 ***	-0.20 ***	-0.15 ***	-0.31 ***	-0.09 ***	-0.17 ***	-0.12 ***	-0.20 ***	-0.26 ***	-0.15 ***	-0.04 ***
Manufacturing sector dummy ²	0.01	-0.08 ***	0.05 ***	-0.03 **	-0.07 **	-0.10 *	-0.09 ***	-0.11 ***			-0.04 **	0.03 *
Government sector dummy	0.03	-0.12 ***	0.16 ***	0.19 ***	0.16 ***	0.16 ***		0.02	-0.13 ***	0.15 ***	0.01	0.02
Primary schooling	0.03	0.07 **	0.06 ***	0.08 ***	-0.05 **	-0.14 ***	0.13 ***	0.12 ***	0.16 ***	0.13 ***	-0.05	0.04 *
Lower secondary schooling	0.10 ***	0.16 ***	0.15 ***	0.16 ***	0.15 **	-0.04	0.31 ***	0.22 ***	0.37 ***	0.44 ***	0.09 ***	0.13 ***
Upper secondary schooling	0.28 ***	0.38 ***	0.31 ***	0.29 ***	0.21 ***	0.01	0.81 ***	0.56 ***	0.49 ***	0.71 ***	0.43 ***	0.47 ***
College/nursing/teacher training	0.31 ***	0.69 ***	0.62 ***	0.59 ***	0.71 ***	0.87 ***		1.00 ***	0.78 ***	1.23 ***	1.10 ***	1.03 ***
Urban dummy	0.25 ***	0.24 ***	0.10 ***	0.21 ***	0.39 ***	0.20 ***	0.15 ***	0.12 ***	0.10 ***	0.23 ***	0.27 ***	0.12 ***
Coefficients of lowest quartile												
Employment dummy	-0.02	0.05	0.04	-0.01	0.03	0.06	0.01	0.29 ***	0.00	0.00	0.05	-0.09 *
Agriculture sector dummy	0.11 **	0.13 ***	0.11 ***	0.04	0.16 ***	0.02	0.15 ***	0.07 *	0.17 ***	0.16 **	0.11 **	-0.01
Manufacturing sector dummy	0.00	-0.03	-0.01	-0.01	0.01	0.03	0.06	0.06			0.13 **	0.02
Government sector dummy	0.03	0.38 ***	-0.24 ***	-0.21 ***	0.08	0.00		-0.15	0.14 **	-0.07	0.04	0.05
Primary schooling	0.07 *	0.06	-0.03	0.08 ***	0.14 ***	0.21 ***	-0.11 ***	0.03	-0.10 **	0.10 *	0.15 ***	0.07 **
Lower secondary schooling	0.02	0.04	-0.01	0.11 ***	0.01	0.13 **	-0.26 ***	-0.04	-0.22 **	-0.19 *	0.10 **	0.10 ***
Upper secondary schooling	-0.15	-0.39 ***	-0.05	0.02	0.01	0.18 **	-0.98 ***	-0.29 **	-0.43 ***	-0.64 ***	-0.16 **	-0.20 ***
College/nursing/teacher training	-0.22 *	-0.76 ***	-0.39 ***	-0.16 **	-0.49 *			-1.01 ***	-0.62 ***	-1.50 ***	-0.81	-1.08 ***
Urban dummy	-0.15 ***	-0.13 ***	-0.03	-0.13 ***	-0.19 **	-0.21 ***	-0.10 ***	-0.13 ***	-0.05	-0.17 ***	-0.04	0.01
Diagnostic statistics												
Number of observations	5151	7280	10021	10416	6729	6117	7857	9836	20255	9332	15283	17824
R-squared	0.68	0.68	0.66	0.69	0.65	0.63	0.64	0.66	0.53	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.

¹Characteristics refer to head of household except for household size and urban dummy.

²For Zambia, the manufacturing dummy refers to nonagriculture, nongovernment salaried employment.

Employment developments

Against the backdrop of strong growth in SSA in recent years, the perception exists that this growth experience was not accompanied by increased employment opportunities, especially in countries concentrated on the extraction of natural resources. This is an important issue because household consumption is clearly dependent on employment income as shown in the coefficient estimates from the regressions in the previous section. One difficulty in making this assessment is the general absence of employment data among SSA countries (only Botswana, Mauritius, and South Africa provide annual data).

Household income and expenditure surveys can be used to overcome this problem because almost all surveys have a labor market component and can provide periodic snapshots of employment developments. However, the frequency of data is limited to two or three data points and changes in questionnaires between surveys make comparisons difficult (see Appendix 1 for a discussion of the methodology used to generate the labor force data). Moreover, the meaning of employment for SSA households differs considerably from that used in developing 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 employment.

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 of countries analyzed, with a median estimate of 3¼ percent per annum (Table 3). This outcome compares favorably with Cambodia and Vietnam, two other fast growing LICs. The 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.¹² 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.

¹² The proportion of those out of the labor force and remaining in school has risen from 7 to 50 percent in Ghana between the two surveys, compared to a jump of 38 to 80 percent in Cameroon, and flat at 60 percent in Mozambique.

Table 3. Employment Indicators*(Annual percentage change, except where stated)*

	Period	Employment					Formal Sector Employment ¹
		Total Employment	Output Elasticity	Urban Employment	Agricultural Employment	Rural Agricultural 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 ²	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).

¹Latest estimate in percent of working-age population.²Agricultural employment is for 2000–08.

Agricultural employment growth has been particularly strong in countries that have demonstrated pro-poor 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.

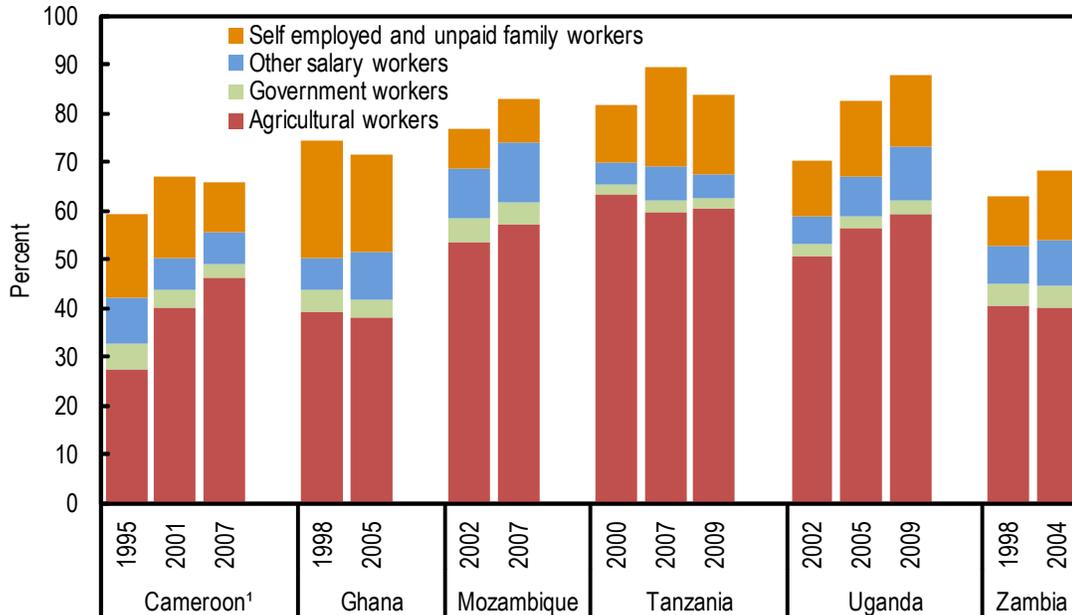
The growth in urban employment has been extremely rapid, with a median estimate of almost 7 percent per year, over twice the employment growth rate among the whole population. However, given the rapid migration from rural to urban areas, the increase in the ratio of employment to the working-age population has been more modest, at almost 1 percentage point. The increase in the ratio of employment to the working-age population among SSA countries is comparable to the experience in Cambodia and Vietnam in recent years.

Formal sector employment is often used as a measure of the development process among LICs because formal 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).

On the other hand, the fact that salaried employment has grown less rapidly than total employment among SSA countries is not necessarily synonymous with adverse welfare developments. First, formal employment may not reflect jobs with health and social security benefits because of lack of data. Second, Fox and Gaal (2008) show that informal sector earnings grew more rapidly than formal sector earnings during the 1990s in Cameroon and Mozambique. Third, Perry et al. (2008) argue that many labor force participants in Latin America prefer the flexibility afforded by working for themselves in a nonfarm business rather than being an employee. This is because of low economy-wide productivity levels and the fact that informal sector workers may have access to mechanisms that substitute for formal social protection programs financed by payroll taxes.

Figure 4. Total Employment: Working Age Population Ratio



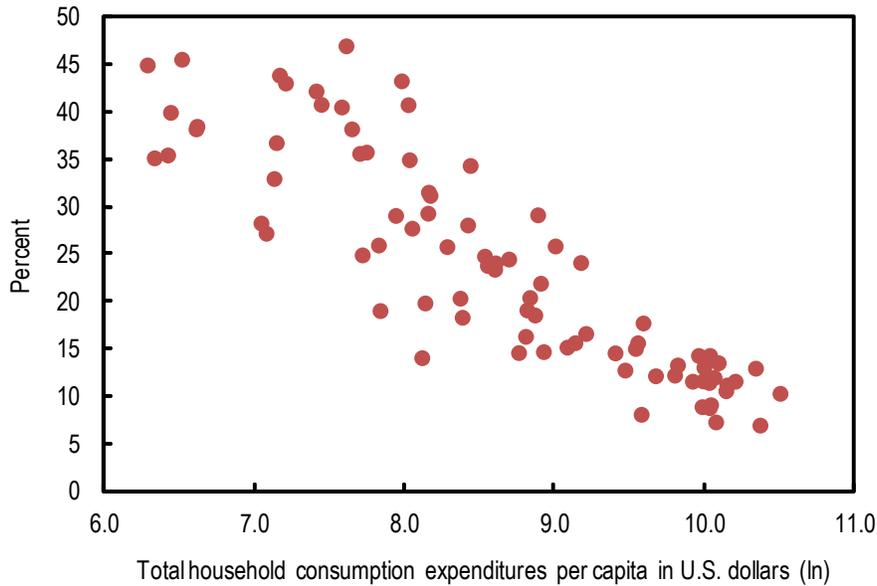
Source: Household surveys.

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

III. ENGEL CURVES

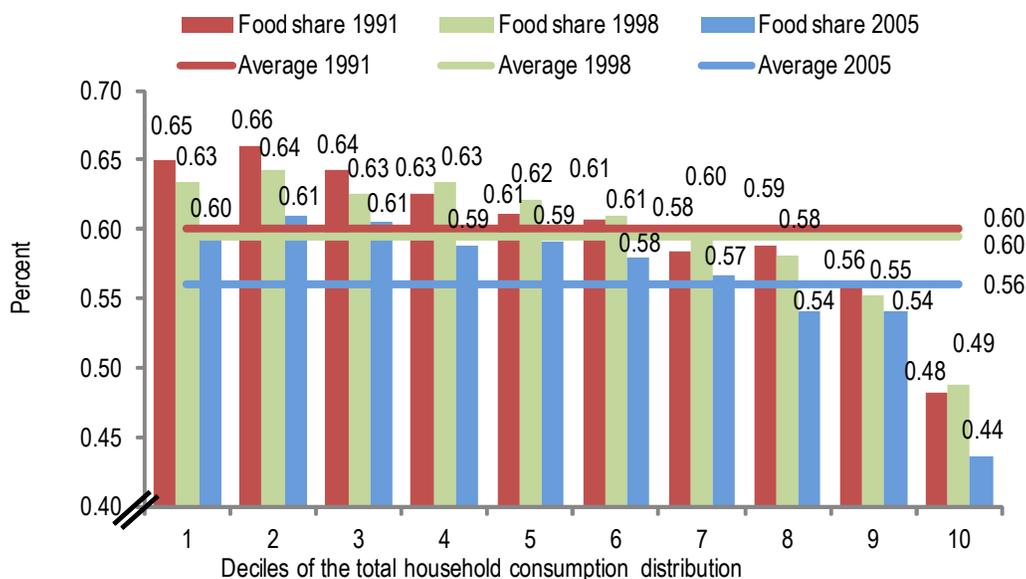
We now turn to one of the best established empirical regularities in economics, Engel's Law, to help explain the apparent dissonance between changes in income and poverty reduction in our case studies. Several recent studies, including Kenny (2011), Sala-i-Martin and Pinkovsky (2010), and Young (2010), 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 over various time periods and across countries (see Figures 5 and 6). 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 well, giving rise to the dissonance 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?

Figure 5. Food Expenditure Share and Household Consumption Expenditure per Capita in a Sample of 84 Countries, 2010



Sources: United States Department of Agriculture Economic Research Service, based on data from Euromonitor.

Figure 6. 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 (GLSS) for 1991, 1998, and 2005; and Ghana Statistical Service.

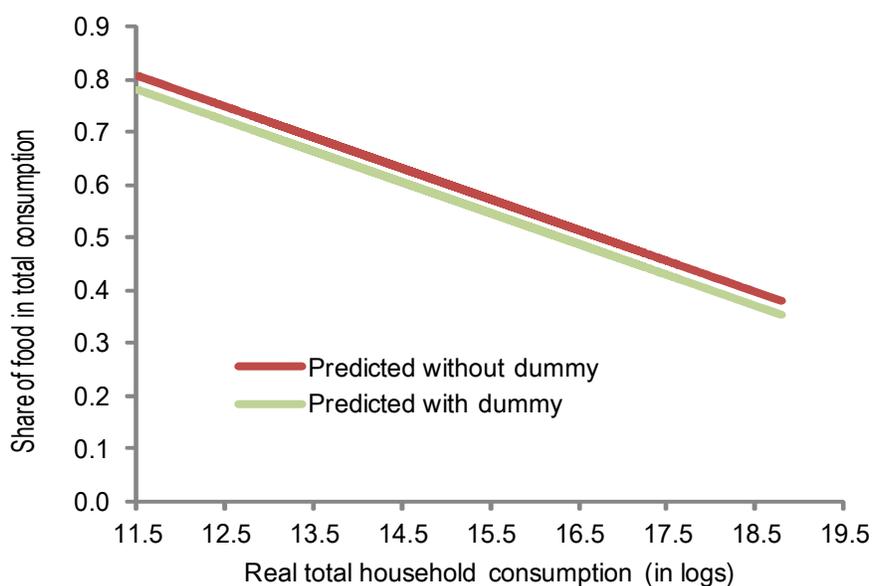
The basic intuition for the approach used in this section is as follows. Assuming household preferences are stable over time and given a well-specified model, we should be able to infer the evolution of real incomes from shifts in the estimated Engel curve.¹³ For example, if the estimated Engel curve shifts over time to the left (right), it implies that a lower (higher) level of total household consumption corresponds to each food share.¹⁴ Figure 7 depicts the Engel curve

¹³ 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, because they both find that inflation measured through the CPI in the United States has overestimated true cost-of-living increases.

¹⁴ 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.

for Ghana estimated using data for the period 1998–2005. In particular, it shows the fitted regression line (in red) and the fitted regression line including the negative coefficient associated with a year dummy variable (in green), which shifts the original Engel curve towards 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.¹⁵

Figure 7. 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.

The reason for the under-estimation of real income growth is generally acknowledged to be over-estimation 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

¹⁵ If, on the contrary, the coefficient of the year dummy variable is 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.

agencies 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 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 (*d2005*) is negative and statistically significant.¹⁶ In contrast, there was a downward bias in the first period (1991–98), because the first period dummy variable (*d1998*) is positive.

Table 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.

The result of this regression formalizes the intuition shown in the figure above for the case of Ghana (Figure 7), 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

¹⁶ All the regressions were estimated using the ordinary least squares (OLS) estimator, and the sample was 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 reduced the sample by less than 2 percent of the original sample size, and the sign and magnitude of the estimated biases are not sensitive to this sample selection rule.

increase in real GDP per capita or in real consumption expenditure per capita from national accounts, thus suggesting that CPI inflation overestimated the true cost of living increases.¹⁷

The specification in column (6) is used for contrasting the four countries for which comparable data are available for at least two years, namely, Cameroon, Ghana, Uganda, and Zambia. 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 income and the dummy variable with an estimate of the food price elasticity and the corresponding relative inflations of the food and non food 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, the estimate by Hamilton (2001) of 0.0369 for the United States is used.

The results for three out of the four countries for which the Engel curves are estimated—Cameroon, Ghana, and Zambia—show a drift to the left over time of the Engel curve, thus suggesting that CPI inflation has overestimated the increase in the true cost of living and that real income growth has been underestimated (Table 5). 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. The estimates of the annual CPI bias are a 10 percent underestimation (annual) 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 de Carvalho and Chamon (2011) for Brazil over the period 1987–96, who find an overestimation of close to 9.5 percent using a similar specification and estimator, and Gibson, Stillman and Le (2008) for Russia over the period 1994–2001, who find an overestimation of 1 percent per month.

¹⁷ The results of the regression are shown only for the whole sample in the case of each country. Nevertheless, because all deciles of the consumption per capita distribution show similar changes over time in the food shares as the mean (see Figure 6 for evidence from Ghana) suggests the bias is not driven by changes in the consumption patterns of any particularly group, but is a common phenomenon. Thus, in principle there is no reason to believe that the poorest quartile is experiencing more or less underestimation of real income than the average.

Table 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
<i>R</i> -squared	0.2106	0.1318	0.2510	0.1403
Adjusted <i>R</i> -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 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 supports the conclusions of Young (2010), who argue that real consumption per capita growth has been underestimated in national accounts using a completely different methodology. 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.

IV. CONCLUSIONS

Broadly, then, our main findings are as follows.

- 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, and Uganda) enjoyed fairly high increases in consumption. But there are signs that in many of these countries higher income households enjoyed still higher growth in consumption. This implies some increase in inequality, broadly in line with patterns observed in a number of high-growing Asian countries.
- 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 views of Young (2010) that income growth has been much higher than is registered in NIPA statistics.

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

- The focus of many sub-Saharan policy makers on policies that promote broad and sustainable growth are 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 not indeed 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, employment status, and so on—go a long way towards explaining, in a statistical sense, the difference in consumption levels across households.
- Perhaps more importantly, as shown in the case of the six case studies, 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 them deriving their income from agricultural activities, increasing agricultural productivity is necessary for accelerating poverty reduction.

Appendix Table 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 Aupres des Menages 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 Auprés 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	Instituto 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	Instituto 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 Table 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 with 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 past 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 that had an active economic status in terms of working for wages, running a business, working in agriculture and unpaid family workers while for Tanzania those that indicate an industry affiliation are assumed employed. For Mozambique and Uganda, only their status during the last seven days is used for employment with the employment total defined as the sum of those who worked during the past 7 days and those who did not work 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 that 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 past 12 months and the unemployment and out-of-the-labor force totals based on questions about activities during the past week, the ratios of the latter two variables are applied to the difference between the working-age population and the employment total.¹⁸

To identify salaried employees, government workers are first separated out in all countries based on the assumption that all of these workers receive wage income. Non-government salaried workers are defined as follows: In Ghana, a worker potentially receiving payment is asked “how

¹⁸ This is the case for Ghana.

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 semi qualified workers. In Tanzania, non-government salaried workers are defined as NGOs, religious workers, parastatal employees and other employees while in Zambia, and non-government salaried workers are defined as parastatal, private sector and NGO employees. In Uganda, salaried workers are derived from the question on employment status.

References

- Artadi, Elsa V. and Xavier Sala-i-Martin, 2003, "The Economic Tragedy of the XXth Century: Growth in Africa," NBER Working Paper 9865 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Asia Foundation, (2010) "Getting to Work," mimeo, Hanoi, Vietnam.
- Collier, Paul and Jan Willem Gunning, 1999a, "Explaining African Economic Performance," *Journal of Economic Literature*, Vol. 37, No. 1, pp. 64–111.
- _____, 1999b, "Why Has Africa Grown Slowly?," *Journal of Economic Perspectives*, Vol. 13, No. 3, pp. 3–22.
- Costa, Dora L., 2001, "Estimating Real Income in the United States from 1888 to 1994: Correcting CPI Bias Using Engel Curves," *Journal of Political Economy*, Vol. 109, No. 6, pp. 1288–1310.
- Deaton, Angus, and John Muellbauer, 1980, "An Almost Ideal Demand System," *American Economic Review*, Vol. 70, No. 3, pp. 312–26.
- Deaton, Angus, 2005, "Measuring poverty in a growing world (or measuring growth in a poor world)," *Review of Economics and Statistics*, Vol. 87, Issue 1, pp. 1–19.
- _____, 2010, "Price Indexes, Inequality, and the Measurement of World Poverty," *American Economic Review*, Vol. 100, No. 1, pp. 5–34.
- de Carvalho Filho, Irineu and Marcos Chamon, 2011, "The Myth of Post-Reform Income Stagnation in Brazil," MPRA Paper No. 28532 (Munich: Munich Personal RePec Archive).
- Economic Institute of Cambodia, 2008, "Cambodia's Labor market and Employment," (Washington: World Bank).
- Fox, Louise and M. Gaal, 2008, *Working out of Poverty: Job Creation and the Quality of Growth in Africa*, (Washington: World Bank).
- Fox, Louise, 2009, *Sharing the Growth in Uganda: Recent Labor market Outcomes and Poverty Reduction*, (Washington: World Bank).
- Hamilton, Bruce W., 2001, "Using Engel's Law to Estimate CPI Bias," *American Economic Review*, Vol. 91, No. 3, pp. 619–630.

Harttgen, K., Klasen, S. and S. Vollmer, 2011, “An African growth miracle? Or what do asset indices tell us about trends in economic performance?”, mimeo University of Gottingen

Houthakker, Hendrik, 1987, “Engel’s Law,” *The New Palgrave: A Dictionary of Economics*, Vol. 2, John Eatwell, Murray Milgate, and Peter Newman, eds., London: Macmillan, pp. 143–44.

Jerven, Morten, 2011a, “Users and Producers of African Income: Measuring African Progress,” *African Affairs*, Vol. 109, No. 434, Advance Access published online February 8, 2011, pp. 1–22.

_____, 2011b, “Growth, Stagnation or Retrogression? On the Accuracy of Economic Observations, Tanzania, 1961–2001,” *Journal of African Economics*, Vol. 20, No. 3, Advance Access published online February 22, 2011, pp. 377–394.

_____, 2010a, “Accounting for the African Growth Miracle: The Official Evidence—Botswana 1965–1995,” *Journal of Southern African Studies*, Vol. 36, Issue 1, March 2010, pp. 73–94.

_____, 2010b, “Random Growth in Africa? Lessons from an Evaluation of the Growth Evidence on Botswana, Kenya, Tanzania and Zambia, 1965–1995,” *Journal of Development Studies*, Vol. 46, Issue 2, February 2010, pp. 274–294.

_____, 2009, “The Relativity of Poverty and Income: How Reliable Are African Economic Statistics?,” *African Affairs*, Vol. 109, No. 434, pp. 77–96.

Kakwani, N., Soares, F. and H. Son, 2005, “Conditional Cash Transfers in African Countries,” International Poverty Centre, (New York: United Nations Development Programme, UNDP).

Kenny, C., 2011, *Getting Better: Why Global Development is Succeeding-and How we Can Improve the World Even More* (New York: Basic Books)

Miguel, Edward, 2009, *Africa’s Turn?* (Cambridge, Massachusetts: Boston Review and The MIT Press).

Nakamura, Leonard, 1997, “Is the U.S. Economy Really Growing Too Slowly? Maybe We’re Measuring Growth Wrong.” *Federal Reserve Bank of Philadelphia Business Review*, pp. 3–14.

Nsawah-Nuamah, Nicholas, Francis Teal and Moses Awoonor-Williams, 2010, “Jobs, Skills and Incomes in Ghana: How Was Poverty Halved?” (Oxford: The Center for Study of African Economies, WPS/2010–01)

Perry, Guillermo, 2008, *Informality: Exit and Exclusion*, (Washington: The World Bank).

Sala-i-Martin, Xavier, and Maxim Pinkovsky, 2010, "African Poverty is Falling ... Much Faster than you Think!" NBER Working Paper Number. 15775 (Cambridge, Massachusetts: National Bureau of Economic Research.)

Sen, A., J. Stiglitz, and J-P. Fitoussi, 2010, *Report of the Commission on the Measurement of Economic Performance and Social Progress*

Young, Alwyn, 2010, "The African Growth Miracle," (unpublished; London School of Economics, Department of Economics).