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Multidimensional Poverty in Sub-Saharan Africa: Levels and Trends

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Abstract

This paper provides an overview of multidimensional poverty – levels and trends – in Sub-Saharan Africa (SSA), using the most recent estimations and analyses of the global Multidimensional Poverty Index (MPI), which was developed by the Oxford Poverty and Human Development Initiative (OPHI), launched in 2010 and reported in UNDP's *Human Development Reports*. The global MPI 2014 covers 37 SSA countries, which are home to 91% of the population of the region. This paper synthesizes the main results: the levels of poverty in SSA overall as well as in West, East, Central and Southern Africa. It compares the MPI in rural and urban areas and the MPI with income poverty. It also summarizes results on inequality among the poor as this is highest in SSA countries. In terms of poverty dynamics, of the 19 SSA countries for which we have time-series data, 17 – covering 93% of the poor people across all 19 – had statistically significant reductions in multidimensional poverty. Finally, we scrutinize the situation in SSA according to a new measure of destitution, which identifies a subset of poor people as destitute if they experience a number of extreme deprivations like severe malnutrition or losing two children. Throughout this analysis, the paper demonstrates the descriptive analyses that multidimensional poverty indices enable – such as decomposition and dynamic analysis of poverty by subnational groups and ethnic groups, and the breakdown and dynamic analysis of the composition of the MPI according to its constituent indicators.

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The Oxford Poverty and Human Development Initiative (OPHI) is a research centre within the Oxford Department of International Development, Queen Elizabeth House, at the University of Oxford. Led by Sabina Alkire, OPHI aspires to build and advance a more systematic methodological and economic framework for reducing multidimensional poverty, grounded in people's experiences and values.

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1. Introduction: Why MPI in Africa and What It Captures?

Erik Thorbecke's tireless work, which spanned decades, has, among other topics, vigorously investigated poverty in Africa. For example, already in the 1970s he drew attention first to employment then to basic needs in Kenya, and it was the Nairobi Household Survey, used in Joel Greer's doctoral thesis, that provided the illustration of the Foster-Greer-Thorbecke (FGT) class of measure in the original 1984 paper. More recently, poverty measurement methodologies have joined together these two approaches – the FGT class of decomposable poverty measures and multidimensional approaches to poverty analysis. This paper uses a dual-cutoff methodology for measuring multidimensional poverty that, quite particularly, combines the counting-based measurement methodologies, which were used in the basic needs approaches, with the FGT measures (Alkire and Foster 2011; Alkire *et al.* forthcoming).

Analysis of poverty across African countries requires a comparable measure. Several papers of the African Economic Research Consortium's Thematic Research Group on Poverty, Income Distribution and Food Security*,* led by Professor Thorbecke, have recently analysed multidimensional poverty in Africa using the multiple correspondence analysis approach (e.g. Ningaye et al. 2011; Njong *et al.* 2010) and the fuzzy set approach (Diallo 2012, among others). Some other papers have used the Alkire-Foster methodology to depict multidimensional poverty profiles for African countries (Batana 2013; Levine et al. 2012; Kabubo-Mariara et al. 2011). All of these studies are done in a single country context apart from Batana (2013) who provides poverty analysis across fourteen African countries. This paper complements these studies and analyses poverty in Sub-Saharan Africa (henceforth SSA) using the 2014 Multidimensional Poverty Index (MPI) and associated estimations and analysis (Alkire, Conconi and Seth 2014a, 2014b; and Alkire, Roche and Vaz 2014). Launched in 2010 and reported in the United Nations Development Programme's (UNDP) *Human Development Reports* since that time (Alkire and Santos 2010, 2014; UNDP 2010), the MPI assesses people's deprivations according to ten indicators organized into three equally weighted dimensions: education, health and living standards. The ten indicators identify a person as deprived if:

1. No household member has completed five years of schooling.
2. Any school-aged child is not attending school up to the age at which they would complete class eight.
3. Any child has died in the household.
4. Any adult or child for whom there is nutritional information is malnourished.
5. The household has no electricity.

6. The household's sanitation facility is not improved (according to MDG guidelines) or it is improved but shared with other households.

7. The household does not have access to safe drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home, round-trip.

8. The household has a dirt, sand or dung floor.

9. The household cooks with dung, wood or charcoal.

10. The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck.

The multidimensional measurement methodology first constructs a deprivation score that sums the weighted indicators – with education and health indicators (1–4 above) weighted at 1/6 and living standard indicators weighted at 1/18 to preserve equal weights across dimensions. A person is identified as multidimensionally poor if they are deprived in at least one third of the weighted indicators. The MPI is the product of the percentage of people identified as poor and the average intensity – or average deprivation score among the poor. Alkire and Foster term this index the 'Adjusted Headcount Ratio' or M_0 because, somewhat like the poverty gap measure in unidimensional space, it reflects the average breadth of deprivations poor people experience and thus provides policy incentives to reduce intensity of deprivations even for the poorest among the poor.

In 2014, MPI estimations are reported for 108 countries; this paper describes results for Sub-Saharan Africa.[1] In 2014, the Oxford Poverty and Human Development Initiative (OPHI), which estimates the MPI, also released a new measure of destitution, which identifies a subset of poor people as destitute if they experience a number of extreme deprivations like severe malnutrition, losing two children, having all primary-aged school children out of school, and practicing open defecation (Alkire, Conconi and Seth 2014a, 2014b). This paper presents destitution figures for 24 SSA countries, which are home to 644.6 million people or 75% of the population of the region. Changes in MPI and destitution over time (from Alkire, Roche and Vaz 2014) are also presented for 19 SSA countries and 161 subnational regions, covering 547 million people[2] or about 63.9% of the SSA population as per population estimates for 2010.

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[1] In some cases we re-state findings that arise from the global MPI analyses, including Research in progress (Alkire Conconi and Seth 2014b, Alkire Roche and Vaz 2014), **Working Papers** (Seth and Alkire 2014), **and Briefings** (Alkire and Seth 2014, Alkire et al 2014c, 2014d, 2014e, and Alkire and Vaz 2014).

[2] In this case, that is true using either population data from the 'closing' year of the survey or from 2010 for all countries.

2. Data and Coverage

2.1 Updates and coverage

In 2010 the MPI covered 35 SSA countries and used data from 2000–2007 with one country (Tanzania) having data for 2008. In 2014 the MPI covers two additional countries and contains updated estimations for 14 countries. These 37 countries have a total population of 779.6 million people, which is 91% of the population of the region.[3] Fully 27 of these countries' MPI estimates use data that are from 2008 or later. For 23 countries, the data are 2010 or later. The 37 SSA countries analysed include six Central Africa countries, six East Africa Countries, nine Southern Africa countries and 16 West Africa countries. The global MPI has been decomposed by 363 subnational regions across 34 African countries.

2.2 Data sources

The MPI relies on the most recent data available from three datasets that are publicly available and comparable. We use USAID's Demographic and Health Survey (DHS) for 25 African countries, UNICEF's Multiple Indicators Cluster Survey (MICS) for ten countries, and the WHO's World Health Survey (WHS) for one country (Chad). We use The National Income Dynamics Study (NIDS) for South Africa. The global MPI was computed for different numbers of countries and dates of data. Thirty-six of the 37 datasets used for SSA contain information on all 10 MPI indicators. The WHS 2003 for Chad lacks information on school attendance. Table 1 provides data sources, dates of surveys and population sizes for the different SSA countries analysed.

Table 1: Global MPI 2014: Data and Coverage for SSA Countries

Country	Region	MPI data source		Total population (in thousands)	
		Survey	Year	Year of the survey	Population 2010
Cameroon	Central Africa	DHS	2011	21,156	20,624
Central African Republic	Central Africa	MICS	2010	4,350	4,350
Chad	Central Africa	WHS	2003	9,311	11,721
Congo	Central Africa	DHS	2011/12	4,337	4,112
Congo DR	Central Africa	MICS	2010	62,191	62,191
Gabon	Central Africa	DHS	2012	1,633	1,556
Burundi	East Africa	DHS	2010	9,233	9,233
Ethiopia	East Africa	DHS	2011	89,393	87,095
Kenya	East Africa	DHS	2008/09	39,825	40,909
Rwanda	East Africa	DHS	2010	10,837	10,837
Tanzania	East Africa	DHS	2010	44,973	44,973
Uganda	East Africa	DHS	2011	35,148	33,987
Lesotho	Southern Africa	DHS	2009	1,990	2,009

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[3] All population aggregates use 2010 population data from UNDESA (2013).

Madagascar	Southern Africa	DHS	2008/09	20,496	21,080
Malawi	Southern Africa	DHS	2010	15,014	15,014
Mozambique	Southern Africa	DHS	2011	24,581	23,967
Namibia	Southern Africa	DHS	2006/07	2,081	2,179
South Africa	Southern Africa	NIDS	2012	52,386	51,452
Swaziland	Southern Africa	MICS	2010	1,193	1,193
Zambia	Southern Africa	DHS	2007	12,110	13,217
Zimbabwe	Southern Africa	DHS	2010/11	13,359	13,077
Benin	West Africa	DHS	2006	8,444	9,510
Burkina Faso	West Africa	DHS	2010	15,540	15,540
Cote d'Ivoire	West Africa	DHS	2011/12	19,840	18,977
Gambia	West Africa	MICS	2005/06	1,482	1,681
Ghana	West Africa	MICS	2011	24,821	24,263
Guinea	West Africa	DHS	2005	9,576	10,876
Guinea-Bissau	West Africa	MICS	2006	1,453	1,587
Liberia	West Africa	DHS	2007	3,522	3,958
Mali	West Africa	DHS	2006	12,326	13,986
Mauritania	West Africa	MICS	2007	3,330	3,609
Niger	West Africa	DHS	2012	17,157	15,894
Nigeria	West Africa	MICS	2011	164,193	159,708
Sao Tome and Principe	West Africa	DHS	2008/09	173	178
Senegal	West Africa	DHS	2010/11	13,331	12,951
Sierra Leone	West Africa	MICS	2010	5,752	5,752
Togo	West Africa	MICS	2010	6,306	6,306

Source: Alkire, Conconi, and Seth (2014a). Population data are from UNDESA (2013).

3. State of Multidimensional Poverty and Inequality in Sub-Saharan Africa

3.1 The global MPI 2014: Key findings for Sub-Saharan Africa

The global MPI 2014 covers 37 SSA countries, which are home to 91% of the population of the region using 2010 population data (UNDESA 2013). In 2014, a total of 462 million people are living in multidimensional poverty; that is 58.9% of all people living in these countries. Nearly 30% of total MPI poor of the world (out of 108 countries analysed) live in SSA (Alkire, Conconi and Seth 2014a).

Where do SSA's poor call home? Of these 462 million people, 36.3% live in West Africa, 36.0% in East Africa, 14.5% in Central Africa and 13.3% in Southern Africa. Nigeria alone is home to 71.2 million of MPI poor people; that is 15.4% of total number of SSA MPI poor. Of the 462 million people identified as MPI poor in SSA, 85.8% live in rural areas – significantly higher than the income poverty estimate of 73.8%.

The country with the highest percentage of MPI poor people is Niger, where 2012 data shows it has a headcount ratio (H) of 89.3%. This means that in 2014, no country has a proportion of MPI poor people higher than 90%, although subnational headcount ratios exceed 90% for 42 out of the 363 SSA subnational regions for which subnational MPI figures are available (Alkire, Conconi and Seth 2014b).

The highest levels of inequality are also found in SSA countries. Out of the 90 countries analyzed, the greatest inequality among the poor was in Burkina Faso (Alkire and Seth 2014). Of the 19 SSA countries for which we have time-series data, 17 – covering 93% of poor people across all 19 – had statistically significant reductions in multidimensional poverty.[4] Nearly all countries that reduced multidimensional poverty also reduced inequality among the poor (Alkire, Roche and Vaz 2014). More details are provided in Tables A.1, A.2 and A.3 of the Appendix.

3.2 Urban-rural decomposition: A large part of SSA poor live in rural areas

The global MPI uses the same indicators to depict rural and urban poverty, allowing us to directly compare MPI poverty in rural and urban areas. This provides a new source of information on directly comparable rural-urban poverty breakdowns for our 37 SSA countries.[5]

Of the 462 million people identified as MPI poor in SSA, 85.8% live in rural areas – significantly higher than the income poverty estimate of 73.8%. With the MPI, the pattern of higher incidence and intensity of poverty in rural areas than in urban ones is consistent across the different SSA countries. This is combined with the fact that in 33 of the 37 SSA countries analysed, over half of their population lives in rural areas. Thus, those in acute poverty are mostly concentrated in rural areas.

The MPI suggests that the rural share of poverty is higher than income poverty estimates of 70 to 75%. UN agencies frequently cite this as their headline figure – for example the Global Donor Platform for Rural Development (GDPRD 2005) argues that since "three-quarters of the poor live in rural areas of the developing world," rural poverty needs to be targeted to achieve Millennium Development Goal 1. Similarly, according to the World Bank's 2008 *World Development Report: Agriculture for Development* and an ILO report in the same, 75% of the world's poor live in rural areas. A 2013 World Bank briefing, *The State of Poor*, also takes this as a starting point: "More than three quarters of those living in extreme poverty are in rural areas and nearly two thirds of the extremely poor earn a living from agriculture" (Olinto et al. 2013). Where do these income poverty estimates of urban-rural poverty come from? In short, they come from cross-country income poverty data carefully combined using a number of assumptions. Complementing these, the global MPI uses a set of ten indicators that are applied consistently in both rural and urban areas and can be decomposed very easily into comparable measures.

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[4] Due to data availability, time spells for the various countries differ. They are much longer in some countries than in others. Table A.4 of the Appendix provides the different time spells for the 19 countries included in the dynamic analysis.

[5] The definition of 'rural' and 'urban' are derived from the surveys used to construct the MPI; these definitions may vary slightly across countries.

Figure 1: The relationship between the MPI and inequality among the poor across SSA countries
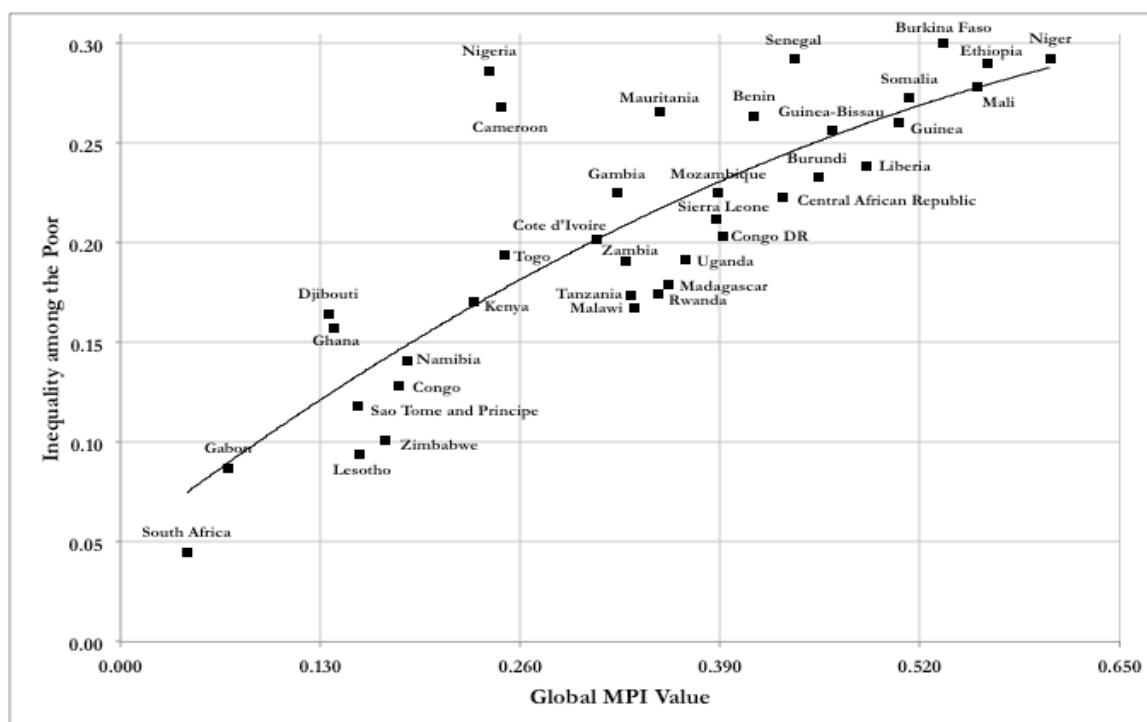
Source: Alkire and Seth (2014).

4. Destitution in Sub-Saharan Africa

The 2014 global MPI results also apply more extreme MPI indicators to shine a light on hundreds of millions of people who face grinding hardships and thus must be singled out as populations of concern: the destitute or poorest of the poor. The destitution measure is designed such that the destitute are a strict subset of the MPI poor, which facilitates some interesting analysis because different proportions of MPI poor people experience the troubling condition of destitution across countries and subnational regions. This section describes destitution in Sub-Saharan Africa.

4.1 What is 'destitution'?

With the debate raging about the accuracy of the $1.25/day measure to monitor extreme poverty and its reduction, it can be useful to introduce into this discussion a different measure of extreme poverty. The global MPI identifies more people as poor than the $1.25/day measure, both across all developing countries and in Africa. One way to focus in on the poorest of the poor is to change the poverty cutoff – for example, to identify a person as 'severely poor' if they are deprived in one-half or more of the weighted deprivations at the same time. Indeed this measure of severe MPI poverty has been reported by OPHI and the UNDP *Human Development Reports* since 2010.

A second way to focus on the poorest of the poor – and the one used in the new measure of destitution – is to adjust the indicator definitions so that each indicator (or in this case, eight of the ten indicators) reflects more critical deprivation levels. In 2014, we used this second method to find the poorest of the poor – the **destitute**. Those identified as 'destitute' are deprived in **at least one third of the destitution indicators, which are more extreme** than those used to identify the MPI poor (see Table 2).

Table 2. The Deprivation Thresholds of Those Who Are Both MPI Poor and Destitute

Dimension	Indicator	Deprived if…	Relative Weight
Education	Years of schooling	No household member has completed **at least one** year of schooling (>=1).	1/6
	Child School Attendance	**No child** is attending school up to the age at which they should finish **class 6.**	1/6
	Child Mortality	**2 or more children** have died in the household.	1/6
Health	Nutrition	**Severe undernourishment** of any adult (**BMI<17kg/m²**) or any child (**-3 standard deviations** from the median).	1/6
	Electricity	The household has no electricity (**no change**).	1/18
	Improved Sanitation	There is **no facility (open defecation).**	1/18
	Safe Drinking Water	The household does not have access to safe drinking water, or safe water is more than a **45-minute** walk (round trip).	1/18
Living Standard	Flooring	The household has a dirt, sand or dung floor (**no change**).	1/18
	Cooking Fuel	The household cooks with dung or wood (**coal/lignite/charcoal are now non-deprived**).	1/18
	Assets	The household has **no assets (radio, mobile phone, etc.)** and no car.	1/18

Source: Alkire, Conconi, and Seth (2014a).

4.2 Who are the destitute in Sub-Saharan Africa?

Data on destitution are currently available for 24 of the 37 SSA countries that were analysed in the global MPI 2014: Burkina Faso, Burundi, Cameroon, Central African Republic, Congo, Cote d'Ivoire, DR Congo, Ethiopia, Gabon, Ghana, Guinea-Bissau, Malawi, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda and Zimbabwe. Results for other countries will be forthcoming.

Across the 24 SSA countries analysed so far, fully 200.3 million people are destitute. Indeed over half – 53.3% – of MPI poor people are identified as destitute, because they are experiencing the critical disadvantages described above in at least one-third of the weighted indicators. Each of the destitution indicators does, unfortunately, play a part in mapping out their conditions. Of the people who have been identified as destitute in these 24 countries, 60.9% have experienced the loss of two or more children. More than half of them have at least one household member who is severely malnourished. Fifty-three

percent of the destitute don't have any household member who has completed even one year of schooling, and in almost 52% of them all primary school-aged children are not attending school. Also, almost all of them (93.3%) have no access to electricity and 63.4% of them don't possess even the most basic assets – no bicycle, no radio, no telephone, no refrigerator, no television, no motorbike and, certainly, no car or truck. And 89.4% practise open defecation, with all the feelings of shame, fear, insecurity and humiliation that accompany it. In addition, 71% of them don't have access to safe drinking water or the source of water is more than 45 minutes away, round-trip, 86.2% of all of destitute people in these 24 countries have inadequate flooring and, also, almost all of them (99.6%) use solid cooking fuels for cooking. The sad truth is that none of the destitution indicators is, thus far, irrelevant.

Of the 200.3 million people identified as destitute in our 24 African countries, some 75.5 million, or 37.7%, were found to be experiencing severe destitution; in other words they are deprived in at least half of the indicators of destitution and are the very poorest of the poor.

4.3 Where are the destitute in Sub-Saharan Africa?

Niger has the highest incidence of destitution in Africa, with 68.8% of the population living in destitution; Ethiopia and Burkino Faso also have very high incidences – 58.1% and 57.5%, respectively. In stark contrast, the incidence of destitution is 5.5% in Swaziland, 3.2% in Gabon and merely 1% in South Africa.

Of the 24 African countries analyzed, by far the largest number of people living in destitution are to be found in Ethiopia. Some 50.6 million people, or 58.1% of the Ethiopian population, are destitute. In terms of numbers of destitute people, Ethiopia is followed by Nigeria and Congo DR, which are respectively home to 42.5 million and 21.6 million destitutes. Gabon and Swaziland each have less than 100 thousand destitutes.

The other interesting comparison is between acute poverty and destitution, because countries' experiences in controlling destitution – even when their MPI levels may be similar – also vary dramatically. For example, the MPI of Nigeria is 0.240, Cameroon's is 0.248 and Malawi's is 0.334 – in other words, Malawi has a higher MPI than the others. But whilst 66.7% of the population are MPI poor in Malawi (H), only 24.2% of people are destitute. In comparison, in Nigeria 43.3% of the population are MPI poor and fully 26.2% are destitute. This can also be seen if we compare the proportion of MPI poor people who are destitute in Nigeria (61.5%) with Cameroon (46.2%) and in Malawi (35.1%). The range of this proportion is large: in South Africa, only 9.3% of the people who are MPI poor are also destitute, whereas in Niger it is 77.1%. On average across the 24 SSA countries analysed in this section, 53.3% of MPI poor people are also destitute.

5. Multidimensional Poverty Dynamics in 19 African Countries

Moving to a dynamic perspective and drawing on Alkire, Roche and Vaz (2014), we now examine how multidimensional poverty changed in 19 SSA countries and 161 subnational regions, covering 547 million people – or around 63.9% of the SSA population as per population estimates for 2010. We report changes over time in global MPI and its components – the headcount ratio (H), which is the percentage of people identified as multidimensionally poor, and intensity (A), which is the average percentage of deprivations the poor people experience together – as well as for the ten poverty indicators that are used to construct the index. We zoom in to see which of the ten MPI indicators drove progress and look at where population growth competes with or erases it. We also compare reductions in multidimensional poverty with trends in income poverty and economic growth. Finally we investigate changes in destitution and inequality among the poor and analyse disparities in trends across subnational regions and, in some cases, between ethnic groups.

Dynamic analyses are undertaken for 19 SSA countries and 161 subnational regions in Sub-Saharan Africa: Benin, Cameroon, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Zambia and Zimbabwe.[6] The changes reported draw upon rigorously comparable MPI values – which are denoted MPI_T because some differ slightly from published MPI values.[7] For details of the methodology used to construct rigorously comparable estimations, as well as the data in full, see Alkire, Roche and Vaz (2014).

5.1 How did they perform? – Absolute reductions

Seventeen of these 19 SSA countries – covering 93% of poor people across all 19 – had statistically significant reductions in multidimensional poverty.[8] Rwanda and Ghana led the 19 countries with their outstanding absolute decrease in MPI, followed by Tanzania, Uganda, Mozambique, Ethiopia and Niger.

Strikingly, the countries that reduced MPI most in absolute terms were predominantly Eastern Africa countries, Low Income Countries (LICs) and Least Developed Countries (LDCs). For example, in 2012, Rwanda's GNI was $600, Tanzania's was $570 and Uganda's, $440. All three are LICs, with Rwanda's

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[6] These are the countries for which there was a recent MPI estimation and comparable DHS datasets for analysis across time; 18 countries have all 10 indicators; Tanzania lacks nutrition.

[7] To construct definitive comparisons of MPI over time, we restrict comparisons to information that was exactly the same in both periods. Thus the MPI_T always differs slightly from MPI published values *except* in Benin 2001, Cameroon 2011, Ethiopia 2000, Ghana 2003, Kenya 2003, Malawi 2004 and 2010, Namibia 2000, Nigeria 2003, Tanzania 2008, Zambia 2001 and Zimbabwe 2011. For details of each adjustment see Alkire, Conconi and Seth (2014a) and Alkire, Roche and Vaz (2014).

[8] All statistical significance is evaluated at the level of $\alpha=0.01$. Ethiopia had comparisons for two periods. Madagascar had a statistically significant *increase* in MPI at $\alpha=0.01$. Again, time spells for the various countries differ (more details in Table 3).

pace of growth being the fastest at over 8% during the survey period.

Rwanda had the fastest progress in absolute terms, showing a fall in MPI from 0.461 to 0.330 – about -0.026 per year – and a fall in incidence (H) from 82.9% to 66.1% in a five-year period (2005–2010). That is, H fell by 3.4 percentage points each year.

Ghana, a Lower-Middle Income Country (LMIC), and Tanzania (LIC) were close behind, reducing MPI_T by -0.021 and -0.018 on average every year, respectively, and reducing H by 3.4 and 2.3 percentage points per year, respectively. Elsewhere in Africa, Uganda, Mozambique and Ethiopia also did very well, with annualized MPI_T reductions of -0.015, -0.014 and -0.013, respectively. Uganda reduced H by 2.2 percentage points per year, Mozambique by 1.5 percentage points and Ethiopia by 0.8 percentage points.

Niger, Benin and Zambia showed the next fastest reduction of MPI, reducing headcount ratios (H) between 0.6 and 1.4 percentage points and MPI_T by 0.012 per year.

A range of countries including Nigeria, Lesotho, Kenya, Malawi, Zimbabwe, Gabon and Cameroon had **slower but still significant reductions** in poverty. Senegal had no statistically significant reduction in poverty, and Madagascar had a statistically significant **increase.**

5.2 How did they perform? – Relative reductions

Absolute changes are easy to compare across countries and are the key comparison to make. However, while a country with high poverty rates like Rwanda could reduce H by 10 percentage points, Gabon – with initially low rates of poverty – could barely do so (see Figure 2). So we also look at compound annualized relative reductions, especially to understand the changes in poverty for countries with low absolute poverty levels.

Of our 19 SSA countries, we found the biggest **relative** reductions in **Ghana, Rwanda and Gabon;** Ghana cut poverty by 8.1% per year relative to its starting level. Each of the top-performing countries – Ghana, Rwanda, Gabon, Tanzania, Zimbabwe and Lesotho – reduced their original MPI_T by 4.4% to 8% per year – making them successes in relative terms.

Figure 2: Level of MPI and Speed of Poverty Reduction in Sub-Saharan Africa
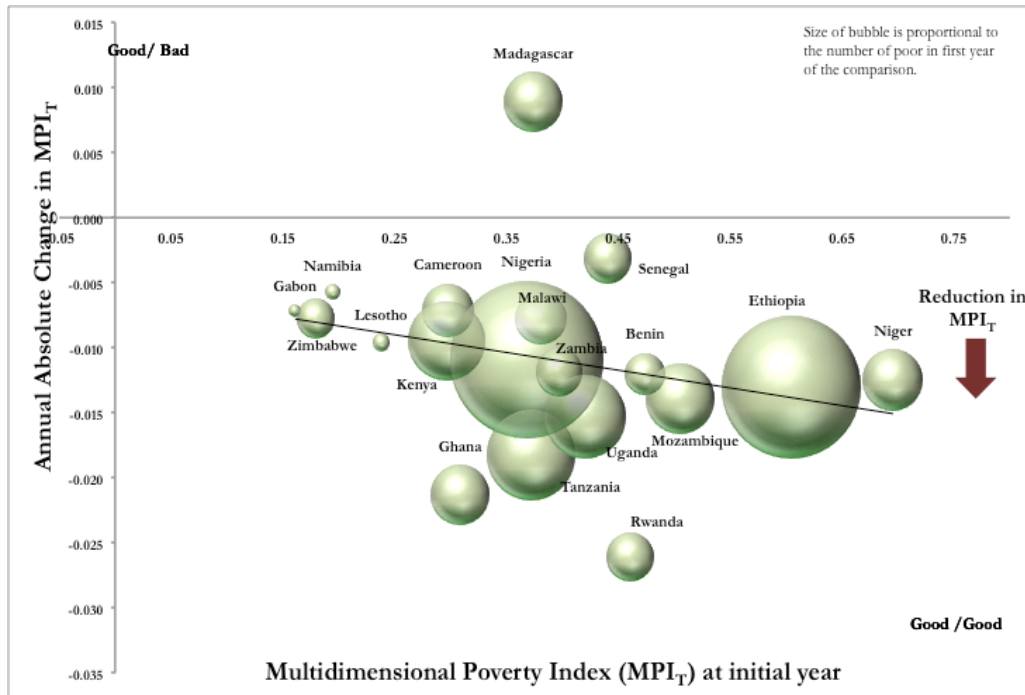
Source: Alkire, Roche, and Vaz (2014).

5.3 Reductions in headcount vs. reductions in intensity

Of the 19 SSA countries for which we have data on MPI poverty over time, 17 countries reduced MPI poverty and the **incidence** of MPI (H) significantly, and 15 reduced **intensity** (A) significantly. Nearly all countries reduced incidence more than intensity. The exceptions were Ethiopia, where incidence fell by around 0.8 percentage points per year, while intensity fell by 1.0, and Niger, where incidence dropped 0.6 percentage points and intensity dropped 0.9. (More details in Tables A.4 and A.5 of the Appendix).

The 'top performing' countries reduced both the incidence and the intensity of MPI poverty. Absolute reductions in intensity were strongest in Rwanda, Ethiopia, Niger, Tanzania and Ghana, showing the important progress made in the poorest countries to reduce the share of hardships experienced by those who are poor.

Figure 3: MPI Reduction in Sub-Saharan Africa: Incidence and Intensity
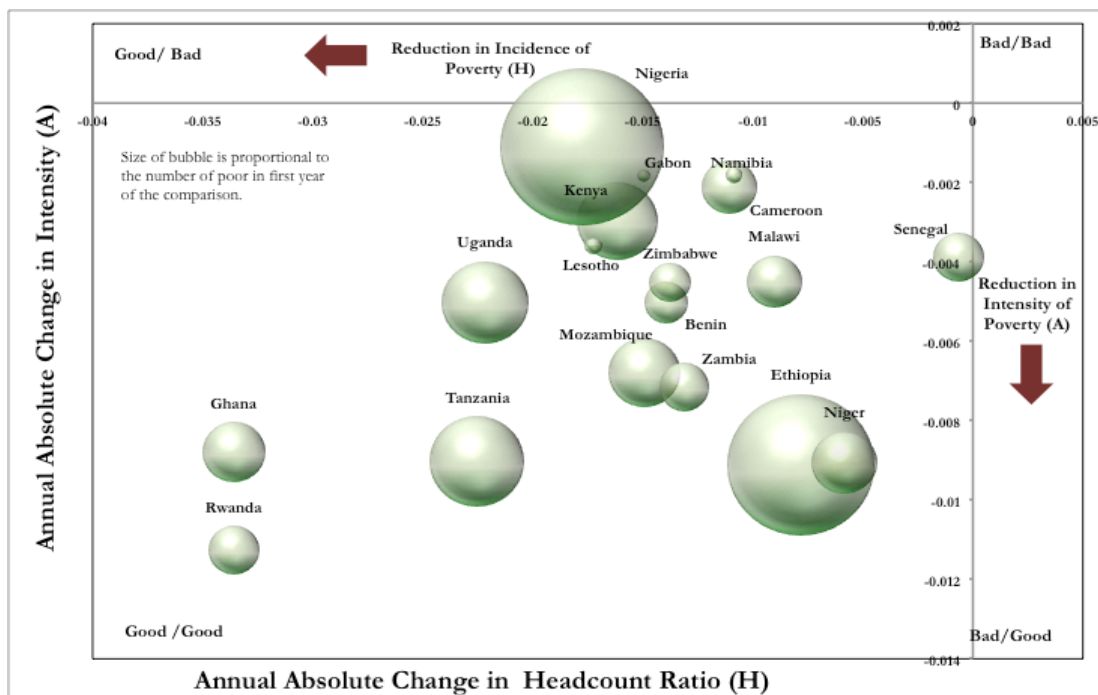
Source: Alkire, Roche, and Vaz (2014).

Disaggregating by groups

It is vital to look beyond national averages, as these disaggregated analyses of poverty reduction by region and ethnicity add very important information. Why? Consider, for example, Nigeria, Benin, Zambia and Niger. Each country reduced MPI significantly, and the average absolute rate of reduction was about the same – at 0.011 or 0.012 per year. However, in Nigeria, significant reductions occurred in only one region, which houses 13% of the country's poor people; there was no significant change in the other regions. In contrast, in Zambia, there were changes in regions housing 67% of poor people; in Benin, 81% of poor people, and Niger had statistically significant changes in 100% of its subnational regions.

Tracking changes across subnational region

We track MPI changes over time for 161 subnational regions of Africa, reporting their MPI, H and A, and the composition of their poverty and how it changed over time.

In total, 100 of the 161 subnational regions, housing 60% of the poor, had statistically significant reductions in MPI in absolute terms. Six countries – Gabon, Ghana, Malawi, Mozambique, Niger and Rwanda – showed statistically significant reductions in each of their subnational regions, which is truly stellar progress.

Happily, in five countries the poorest subnational area made the biggest strides in reducing multidimensional poverty. In Kenya, Malawi, Mozambique, Namibia and Niger, the poorest region reduced poverty the most, enhancing equity across the land.

Mixed progress for different ethnic groups

In Benin and Kenya, Alkire Roche and Vaz (2014) compare changes over time across the main ethnic groups, and their findings are presented here. Both countries had statistically significant reductions in MPI, but with very different distributions across ethnic groups.

Figure 4: Poverty Reduction among Ethnic Groups in Benin
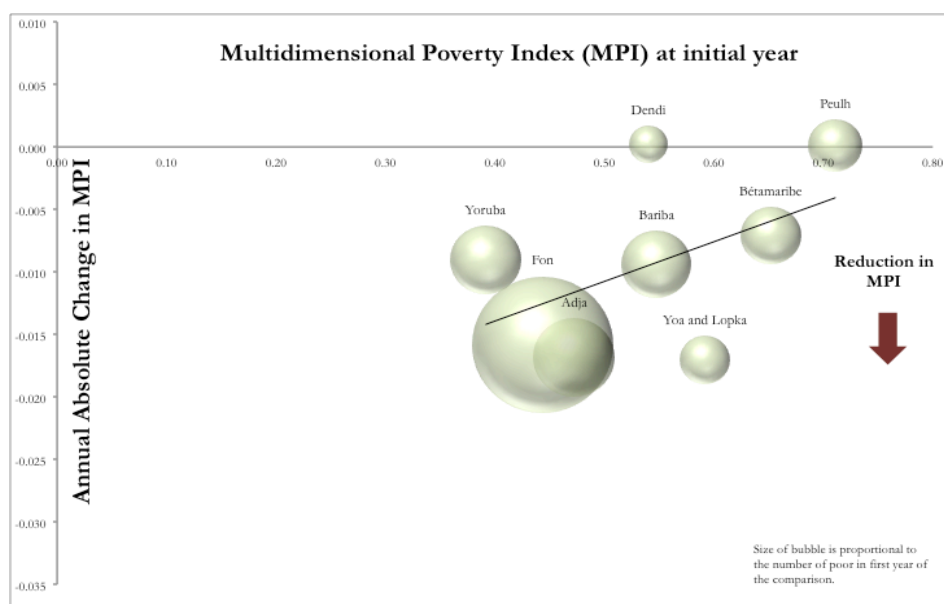
Source: Alkire, Roche, and Vaz (2014).

Benin reduced MPI significantly for only two out of the eight main ethnic groups. Poverty reduction was practically zero among the poorest ethnic group, the Peulh. Figure 4 shows MPI levels in 2003 and annualized absolute change in MPI for the eight main ethnic groups in Benin. Clearly, the poorer ethnic groups tend to reduce poverty less than the 'richer' groups. This kind of increase in disparity across ethnic groups reflects an increase in horizontal inequality among the poor.

Figure 5: Poverty Reduction among Ethnic Groups in Kenya
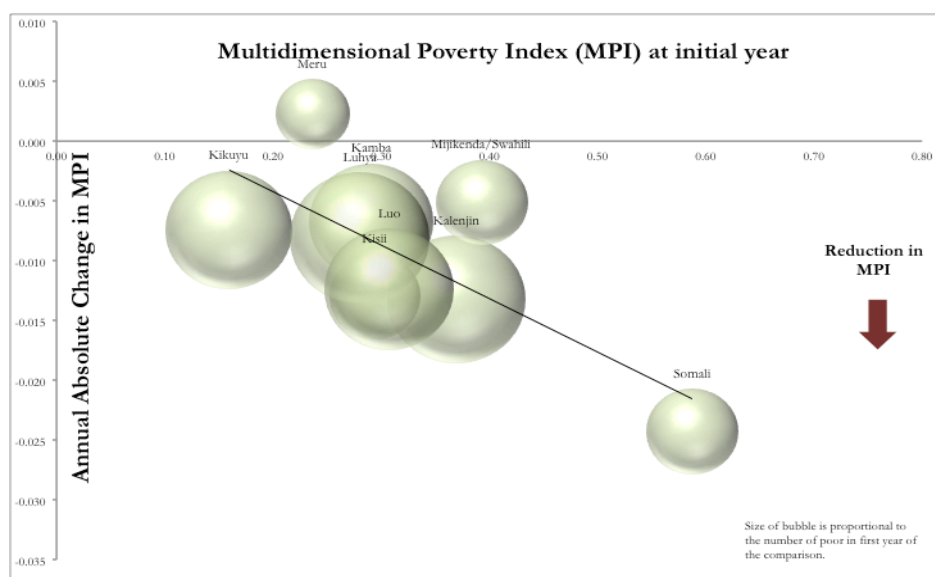
In contrast, Kenya shows a clear pro-poor trend across ethnic groups. The MPI poorest group, the Somali, had the largest absolute reduction in poverty, reducing poverty at an annualized rate of 4.6%, 1.1 percentage points faster than the national rate of 3.5%. The gap between this group and the least poor ethnic group, the Kikuyo, reduced from 0.428 to 0.335. Kenya's trend is pro-poor and equalizing, and the poorest ethnic groups are not being left behind – indeed they are catching up.

Poverty dynamics in rural and urban areas

For each of the 19 countries studied, we present the levels and changes in MPI and its consistent indices by rural and urban areas.[9] Poverty was higher in rural than urban areas in all of the countries in both of the periods. Thirteen SSA countries had significant reductions in urban poverty and 18 had significant reductions in rural areas.

At the global level, rural areas as a whole reduced multidimensional poverty faster than urban areas. But in Sub-Saharan Africa, there is no significant difference between urban and rural areas in terms of poverty reduction. On average, rural areas reduced the headcount ratio by 1.3 percentage points per year as compared to 1.4 percentage points per year for urban areas. The annualized average rural MPI reduction was 0.011, whereas the urban MPI reduction was 0.008. Naturally rural-urban migration will also have affected these rates.

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[9] The DHS surveys use the national census definitions to identify rural and urban clusters then update the household listings to reflect major population shifts.

Across all countries the composition of poverty differed across urban and rural areas, with deprivations in electricity, water and flooring contributing more to MPI in rural areas and deprivations in child mortality, malnutrition and school attendance contributing relatively more to urban poverty.

Population growth and poverty reduction

In order to eradicate poverty, the speed of reduction in the multidimensional headcount ratio (H) has to outpace population growth. Of the 17 countries that reduced MPI significantly, when population growth is taken into account, only eight countries reduced the **number** of poor people across the periods. In nine countries, population growth wiped out poverty reduction; in Benin, Cameroon, Ethiopia, Kenya, Malawi, Mozambique, Niger, Uganda and Zambia, the absolute number of poor people went up.

MPI vs. income poverty

Half of the SSA countries for which we have income data for a similar period reduced multidimensional poverty faster than income poverty; in the remaining countries, income poverty was reduced faster.

Ghana, Rwanda and Cameroon cut MPI poverty more than two times faster than income poverty. Niger, Uganda and Ethiopia had much stronger absolute and relative reductions in income poverty than in multidimensional poverty. In Nigeria and Zambia, while MPI incidence fell, income poverty increased. If progress was only measured by reducing income poverty, Niger, Uganda, Mozambique and Ethiopia would be considered the leaders in poverty reduction. The tremendous gains of Rwanda and Ghana, among others, would have been invisible (See Figure 7 for more details).

Growth in GNI per capita and poverty reduction

The level of success in translating the gains of growth into poverty reduction varies across countries and also sometimes across periods (see Table 3). For instance, in the periods under analysis, Ghana and Mozambique registered similar rates of growth in GNI per capita, but Ghana reduced MPI more than twice as fast as Mozambique. On the other hand, although Ethiopia has grown ten times faster than Cameroon, the latter reduced MPI as quickly as Ethiopia. Finally, although the average growth rate in Ethiopia more than doubled between the period 2000–2005 and 2005–2011, the annualized relative change in the MPI remained practically the same.

Figure 7: Absolute Reduction of MPI and $1.25/day Incidence per Year[10]

Source: Alkire, Roche, and Vaz (2014).

Table 3: Relative change in MPI$_T$ and GNI per capita growth for some SSA countries

Countries	Multidimensional Poverty		GNI per capita	
	MPI$_T$ Year 1	Annualized relative change in M0	GNI per capita in Year 1, Atlas method (current US$)	Average GNI per capita growth (annual %)
Benin 2001–2006	0.474	-2.7%	360	0.7%
Cameroon 2004–2011	0.298	-2.6%	800	0.8%
Ethiopia 2000–2005	0.677	-2.2%	120	3.6%
Ethiopia 2005–2011	0.604	-2.3%	160	8.2%
Gabon 2000–2012	0.161	-6.1%	3,100	-0.1%
Ghana 2003–2008	0.309	-8.1%	320	4.8%
Kenya 2003–2008/9	0.296	-3.5%	410	2.0%
Lesotho 2004–2009	0.238	-4.4%	750	-0.1%
Madagascar 2004–2008/9	0.374	2.3%	290	2.0%
Malawi 2004–2010	0.381	-2.2%	220	0.8%
Mozambique 2003–2011	0.505	-3.1%	230	4.7%
Namibia 2000–2007	0.194	-3.2%	1,950	3.6%
Niger 2006–2012	0.696	-1.9%	270	0.9%
Rwanda 2005–2010	0.461	-6.4%	260	5.6%
Senegal 2005–2010/11	0.440	-0.7%	770	1.1%
Tanzania 2008–2010	0.371	-5.0%	450	3.5%
Uganda 2006–2011	42.0%	-3.95%	330	4.5%
Zambia 2001/2–2007	39.7%	-3.21%	325	-1.4%

Source: Alkire, Roche, and Vaz (2014).

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10 The graph only includes countries where the reduction in MPI headcount was statistically significant and for which we have data on income poverty.

Destitution in Sub-Saharan Africa – Did things change for the poorest of the poor?

In addition to studying trends in multidimensional poverty, we study trends in destitution for the same countries and periods. Recall that the destitution indicators are more extreme: for example, severe malnutrition instead of malnutrition, losing two children, having all primary school-aged children out of school, not having anyone with at least a year of schooling in the household, practicing open defecation, and so on. Only for electricity and flooring are the indicators unchanged. A person is destitute if he or she is deprived in at least a third of the weighted destitution indicators (Alkire, Conconi and Seth 2014a). The good news is that all 19 SSA countries reduced destitution significantly except Madagascar, and, in nearly all of them, destitution rates fell (in relative terms) faster than multidimensional poverty rates.

What's noticeable again is that the countries that were best at tackling destitution are mostly LICs and LDCs of Africa. The largest absolute reduction in the destitution MPI was seen in Ethiopia, followed by Niger, Ghana, Rwanda, Tanzania and Zambia – all of them LICS or LDCs except Ghana. For example, Ethiopia's 2012 GNI per capita was $380 and Niger's, $390.

Between 2000 and 2011, Ethiopia reduced the percentage of the population who were destitute by a massive 30 percentage points and reduced intensity among the destitute by fully 10 percentage points. That is, the average poor person in 2011 was deprived in nearly two standard-of-living indicators less than the average poor person had been in 2000. During the first five years, reduction sped forward at 3.3 percentage points each year, with significant reductions in all indicators and the strongest gains in water, sanitation and educational variables. From 2005 to 2011 progress slowed slightly, but the reduction was still impressive at 2.2 percentage points of the population annually. Niger's rate of destitution-MPI reduction matched that of Ethiopia 2005–2011.

In the large majority of the African countries, destitution is more prevalent in rural areas. Fortunately, it is also in those areas that most countries have made more important progress in absolute terms. Rural reductions in destitution were statistically significant in 17 countries, whereas urban reductions were significant in only 11 countries. In terms of indicators, the majority of the countries registered significant improvements in sanitation and child mortality, suggesting that health and sanitation policies are playing an important role in improving the lives of the poorest of the poor.

6. Conclusion

This paper has provided an overview of multidimensional poverty – levels and trends – in Sub-Saharan Africa using the most recent estimations and analyses of the global Multidimensional Poverty Index. The global MPI is broadly comparable across countries and strictly harmonized to assure comparable assessments of changes over time in the studies we draw upon. Its methodology stands on the shoulders

of a body of previous work in basic needs and counting-based traditions, as well as in axiomatic poverty measurement. Its focus is Africa, where we show a vast range of levels and compositions and trends of multidimensional poverty and its reduction. This analysis shatters any depiction of African poverty as uniform; it also provides information that is relevant for comparable policy analysis.

Using the global MPI analyses for Africa, the paper shows the kinds of descriptive analyses that multidimensional poverty indices promote – analyses such as decomposition and dynamic analysis of poverty by subnational groups and ethnic groups, as well as the breakdown and dynamic analysis of the composition of MPI according to its constituent indicators. With regards to the robustness of the results, the paper relies on Alkire and Santos (2014) who performed a range of sensitivity and robustness tests on the 2010 MPI results with respect to the various associated normative choices and confirmed the reliability of the MPI framework as a poverty measure.

Naturally, a 'global' MPI such as the one presented here can be powerfully supplemented by national MPIs, whose indicators and cutoffs reflect the policy priorities that are relevant for national (and subnational) policies. Furthermore, analyses based on household surveys can be expanded by using relevant census variables directly. And indeed South Africa's census-based MPI – fondly known as SAMPI – is a pioneering measure in both of these aspects (Statistics South Africa 2014). Furthermore, the next wave of research will be to move to analyses of MPI levels and trends using macro- and micro-econometric techniques, and we hope that this paper will stimulate such further studies. The period following the publication of the FGT measures was unusually rich and constructive for the understanding and reduction of income poverty. We anticipate that the next generation of multidimensional poverty analyses in Africa will be similarly fruitful in human terms.

Appendix – Tables

Table A.1: MPI and Percentage of People Who Are Poor and Deprived by Indicators

Country	Year	MPI	Education		Health		Living Standards					
			YS	SA	CM	N	E	IS	DW	F	CF	AO
Benin	2006	0.412	42.4	40.7	37.4	24.8	65.0	69.5	33.1	39.6	71.3	28.1
Burkina Faso	2010	0.535	57.7	58.5	51.2	38.3	81.3	76.2	32.1	55.2	83.7	17.5
Burundi	2010	0.454	35.2	27.6	43.2	35.4	79.7	54.9	41.9	76.4	80.8	58.7
Cameroon	2011	0.248	16.7	18.4	27.4	18.3	37.3	34.7	28.9	34.5	45.5	23.0
Central African Republic	2010	0.430	29.2	33.0	40.7	21.5	74.2	76.5	48.1	69.5	77.5	55.4
Chad	2003	0.344	42.3		2.4	7.0	61.9	58.4	42.9	60.0	61.3	53.1
Congo DR	2010	0.392	15.5	26.9	37.4	21.6	71.7	72.7	56.6	68.8	73.9	58.0
Congo, Republic of	2011/12	0.181	5.4	5.3	17.4	19.0	36.3	37.6	24.2	25.2	38.5	23.1
Cote d'Ivoire	2011/12	0.310	30.9	33.3	36.7	18.5	36.8	52.6	22.8	16.6	56.4	15.0
Ethiopia	2011	0.564	47.6	40.0	37.9	55.6	78.8	81.6	65.5	82.6	87.2	76.5
Gabon	2012	0.070	3.4	3.1	11.2	7.7	6.6	14.2	6.6	7.7	8.9	6.1
Gambia	2005/06	0.324	28.3	36.8	38.2	21.4	54.2	32.1	20.8	22.0	60.3	19.1
Ghana	2011	0.139	13.0	8.7	15.2	7.4	23.0	28.9	16.1	7.8	30.2	11.9
Guinea	2005	0.506	54.3	53.4	52.8	17.0	74.3	75.6	37.7	52.2	82.5	56.0
Guinea-Bissau	2006	0.462	48.3	41.5	50.7	21.1	73.4	49.2	42.3	62.8	77.5	42.3
Kenya	2008/09	0.229	9.0	8.5	20.1	21.4	46.6	42.6	30.8	40.9	47.6	27.7
Lesotho	2009	0.156	9.6	10.8	12.4	5.3	34.6	31.2	18.4	23.0	32.8	26.0
Liberia	2007	0.485	30.5	56.0	49.0	23.6	82.9	78.9	33.5	50.9	83.9	64.9
Madagascar	2008/09	0.357	47.3	26.0	23.7	11.9	65.0	66.5	49.4	13.5	66.9	53.7
Malawi	2010	0.334	23.4	15.7	38.1	16.3	64.5	62.6	31.3	57.2	66.7	38.4
Mali	2006	0.558	60.7	54.8	51.5	36.1	78.6	79.5	43.7	71.2	86.5	35.4
Mauritania	2007	0.352	36.0	31.5	26.6	19.0	53.0	54.5	45.4	44.9	53.4	43.2
Mozambique	2011	0.389	38.1	29.8	30.1	18.1	65.3	61.8	50.6	61.9	69.5	42.4
Namibia	2006/07	0.187	8.3	8.5	14.3	20.4	36.1	36.4	14.7	31.7	37.5	24.6
Niger	2012	0.605	59.1	57.5	54.0	46.6	81.5	83.1	51.4	79.8	89.2	51.7
Nigeria	2011	0.240	19.7	19.7	27.0	18.5	31.0	35.2	28.2	25.4	42.2	15.2
Rwanda	2010	0.350	29.4	11.5	36.5	28.5	67.0	29.3	38.4	63.0	68.9	45.9
Sao Tome and Principe	2008/09	0.154	18.3	8.3	15.3	10.1	25.7	29.6	9.4	0.5	31.3	24.5
Senegal	2010/11	0.439	30.7	53.0	48.3	58.5	40.4	47.9	22.6	32.3	60.8	13.8
Sierra Leone	2010	0.388	30.4	28.0	40.7	16.0	70.8	68.4	40.5	50.9	72.5	49.6
South Africa	2012	0.044	1.0	0.6	9.5	5.4	4.9	7.5	3.3	3.7	6.5	3.2
Swaziland	2010	0.086	5.6	3.0	11.7	3.7	19.0	14.2	13.3	5.4	19.5	11.0
Tanzania	2010	0.332	11.4	25.1	29.9	22.7	63.9	61.4	49.5	55.8	65.4	35.0
Togo	2010	0.250	23.0	14.8	28.5	11.8	45.7	48.6	32.7	14.8	49.7	24.4
Uganda	2011	0.367	18.9	15.4	41.7	33.3	68.0	59.5	44.5	60.6	69.8	30.2
Zambia	2007	0.328	13.3	21.1	36.3	18.7	61.9	57.4	49.8	51.5	63.0	39.5
Zimbabwe	2010/11	0.172	2.4	8.1	15.5	19.1	35.8	30.6	20.9	21.6	37.7	27.5

Source: Alkire, Conconi, and Seth (2014a).

Table A.2: MPI and Other Monetary Poverty Indicators for 37 African Countries

Country	Year	MPI	H	A	$1.25 a day Value	$1.25 a day Year	$2 a day Value	$2 a day Year	National poverty line Value	National poverty line Year	HDI 2013[b]	GNI per capita 2010[c]
		Range 0 to 1	% Pop	Aver. % of depriv.	H		H		H		Range 0 to 1	(PPP 2008 $)
Benin	2006	0.412	71.8	57.4	47.3	2003	75.3	2003	36.2	2011	0.436	750
Burkina Faso	2010	0.535	84.0	63.7	44.6	2009	72.6	2009	46.7	2009	0.343	670
Burundi	2010	0.454	80.8	56.2	81.3	2006	93.5	2006	66.9	2006	0.355	240
Cameroon	2011	0.248	46.0	53.8	9.6	2007	30.4	2007	39.9	2007	0.495	1,170
Central African Republic	2010	0.430	77.6	55.5	62.8	2008	80.1	2008	62.0	2008	0.352	510
Chad	2003	0.344	62.9	54.7	61.9	2003	83.3	2003	46.7	2011	0.340	770
Congo DR	2010	0.392	74.0	53.0	87.7	2006	95.2	2006	71.3	2005	0.304	230
Congo, Republic of	2011/12	0.181	39.7	45.7	54.1	2005	74.4	2005	46.5	2011	0.534	2,550
Cote d'Ivoire	2011/12	0.310	58.7	52.8	23.8	2008	46.3	2008	42.7	2008	0.432	1,220
Ethiopia	2011	0.564	87.3	64.6	30.7	2011	66.0	2011	29.6	2011	0.396	380
Gabon	2012	0.070	16.5	42.5	4.8	2005	19.6	2005	32.7	2005	0.683	10,040
Gambia	2005/06	0.324	60.4	53.6	33.6	2003	55.9	2003	48.4	2010	0.439	510
Ghana	2011	0.139	30.4	45.8	28.6	2006	51.8	2006	28.5	2006	0.558	1,550
Guinea	2005	0.506	82.5	61.3	43.3	2007	69.6	2007	55.2	2012	0.355	440
Guinea-Bissau	2006	0.462	77.5	59.6	48.9	2002	78.0	2002	69.3	2010	0.364	510
Kenya	2008/09	0.229	47.8	48.0	43.4	2005	67.2	2005	45.9	2005	0.519	860
Lesotho	2009	0.156	35.3	44.1	43.4	2003	62.3	2003	56.6	2003	0.461	1,380
Liberia	2007	0.485	83.9	57.7	83.8	2007	94.9	2007	63.8	2007	0.388	370
Madagascar	2008/09	0.357	66.9	53.3	81.3	2010	92.6	2010	75.3	2010	0.483	430
Malawi	2010	0.334	66.7	50.1	61.6	2010	82.3	2010	50.7	2010	0.418	320
Mali	2006	0.558	86.6	64.4	50.4	2010	78.7	2010	43.6	2010	0.344	660
Mauritania	2007	0.352	61.7	57.1	23.4	2008	47.7	2008	42.0	2008	0.467	1,110
Mozambique	2011	0.389	69.6	55.9	59.6	2008	81.8	2008	54.7	2009	0.327	510
Namibia	2006/07	0.187	39.6	47.2	31.9	2004	51.1	2004	28.7	2009	0.608	5,610
Niger	2012	0.605	89.3	67.7	43.6	2008	75.2	2008	59.5	2007	0.304	390
Nigeria	2011	0.240	43.3	55.3	68.0	2010	84.5	2010	46.0	2010	0.471	1,440
Rwanda	2010	0.350	69.0	50.8	63.2	2011	82.4	2011	44.9	2011	0.434	600
Sao Tome and Principe	2008/09	0.154	34.5	44.7	28.2	2001	54.2	2001	61.7	2009	0.525	1,310
Senegal	2010/11	0.439	74.4	58.9	29.6	2011	55.2	2011	46.7	2011	0.470	1,030
Sierra Leone	2010	0.388	72.5	53.5	51.7	2011	79.6	2011	52.9	2011	0.359	580
South Africa	2012	0.044	11.1	39.5	13.8	2009	31.3	2009	23.0	2006	0.629	7,610
Swaziland	2010	0.086	20.4	41.9	40.6	2010	60.4	2010	63.0	2009	0.536	2,860
Tanzania	2010	0.332	65.6	50.7	67.9	2007	87.9	2007	28.2	2012	0.476	570
Togo	2010	0.250	49.8	50.3	28.2	2011	52.7	2011	58.7	2011	0.459	500
Uganda	2011	0.367	69.9	52.5	38.0	2009	64.7	2009	24.5	2009	0.456	440
Zambia	2007	0.328	64.2	51.2	74.5	2010	86.6	2010	60.5	2010	0.448	1,350
Zimbabwe	2010/11	0.172	39.1	44.0					72.3	2011	0.397	650

(a) Figures correspond to the most recent estimates available by March 2014 from *World Development Indicators* (World Bank 2014).

(b) Figures correspond to *Human Development Report 2013. The Rise of the South: Human Progress in a Diverse World* (UNDP 2013).

(c) Figures correspond to the most recent estimates available by March 2014 from *World Development Indicators* (World Bank 2014).

Source: Alkire, Conconi, and Seth (2014a).

Table A.3: Multidimensional Poverty and Destitution in 24 African Countries

Country	Year	MPI (M0$_{MPI}$)	H (H$_{MPI}$)	A (A$_{MPI}$)	M0 of Destitute (M0$_D$)	% of Destitute (H$_D$)	D-Intensity among Destitute (A$_D$)	% of Destitute to MPI Poor (H$_D$/H$_{MPI}$)
Burkina Faso	2010	0.535	84.0%	63.7%	0.294	57.5%	51.1%	68.5%
Burundi	2010	0.454	80.8%	56.2%	0.166	39.2%	42.4%	48.6%
Cameroon	2011	0.248	46.0%	53.8%	0.095	21.3%	44.5%	46.2%
Central African Republic	2010	0.430	77.6%	55.5%	0.176	39.8%	44.3%	51.3%
Congo DR	2010	0.392	74.0%	53.0%	0.151	34.7%	43.6%	46.9%
Congo, Republic of	2011/12	0.181	39.7%	45.7%	0.037	9.1%	40.4%	22.9%
Cote d'Ivoire	2011/12	0.310	58.7%	52.8%	0.123	27.6%	44.5%	47.0%
Ethiopia	2011	0.564	87.3%	64.6%	0.284	58.1%	48.9%	66.5%
Gabon	2012	0.070	16.5%	42.5%	0.012	3.2%	38.1%	19.5%
Ghana	2011	0.139	30.4%	45.8%	0.037	9.0%	41.0%	29.5%
Guinea-Bissau	2006	0.462	77.5%	59.6%	0.221	47.0%	47.0%	60.7%
Malawi	2010	0.334	66.7%	50.1%	0.094	23.4%	40.1%	35.1%
Mozambique	2011	0.389	69.6%	55.9%	0.166	36.8%	45.3%	52.8%
Niger	2012	0.605	89.3%	67.7%	0.369	68.8%	53.6%	77.1%
Nigeria	2011	0.240	43.3%	55.3%	0.135	26.6%	50.5%	61.5%
Rwanda	2010	0.350	69.0%	50.8%	0.112	27.8%	40.2%	40.3%
Senegal	2010/11	0.439	74.4%	58.9%	0.196	39.4%	49.7%	53.0%
Sierra Leone	2010	0.388	72.5%	53.5%	0.185	40.9%	45.3%	56.4%
South Africa	2012	0.043	10.9%	39.4%	0.004	1.0%	36.7%	9.3%
Swaziland	2010	0.086	20.4%	41.9%	0.021	5.5%	38.0%	26.7%
Tanzania	2010	0.332	65.6%	50.7%	0.103	24.2%	42.6%	36.9%
Togo	2010	0.250	49.8%	50.3%	0.084	20.2%	41.7%	40.6%
Uganda	2011	0.367	69.9%	52.5%	0.122	29.8%	41.0%	42.6%
Zimbabwe	2010/11	0.172	39.1%	44.0%	0.052	13.4%	38.8%	34.3%

Source: Alkire, Conconi, and Seth (2014a).

Table A.4: Levels, Changes and Statistical Significance of Changes in Incidence (H$_T$)

	Multidimensional Headcount ratio (H$_T$)				Annualized change		t-statistics for difference	
	Year 1		Year 2		Absolute	% Relative		
Benin 2001–2006	79.082	(.9)	72.116	(.8)	-1.393	-1.8%	5.63	***
Cameroon 2004–2011	53.765	(1.3)	46.019	(1.1)	-1.107	-2.2%	4.77	***
Ethiopia 2005–2011	89.903	(.6)	85.217	(.9)	-.781	-0.9%	4.17	***
Gabon 2000–2012	35.388	(1.2)	17.425	(1.0)	-1.497	-5.7%	10.83	***
Ghana 2003–2008	58.732	(1.1)	41.935	(1.2)	-3.359	-6.5%	9.74	***
Kenya 2003–2008/9	60.102	(1.2)	51.228	(1.6)	-1.614	-2.9%	4.18	***
Lesotho 2004–2009	50.774	(1.0)	42.154	(1.4)	-1.724	-3.7%	4.76	***
Madagascar 2004–2008/9	67.007	(2.1)	73.295	(1.1)	1.397	2.0%	2.87	***
Malawi 2004–2010	72.075	(1.0)	66.658	(.8)	-.903	-1.3%	4.33	***
Mozambique 2003–2011	82.285	(.7)	70.332	(1.0)	-1.494	-1.9%	9.90	***
Namibia 2000–2007	41.288	(1.6)	33.681	(1.0)	-1.087	-2.9%	3.03	***
Niger 2006–2012	93.496	(.5)	89.993	(.6)	-.584	-0.6%	4.62	***
Nigeria 2003–2008	63.540	(1.6)	54.662	(.9)	-1.776	-3.0%	4.56	***
Rwanda 2005–2010	82.921	(.8)	66.122	(1.0)	-3.360	-4.4%	12.60	***
Senegal 2005–2010/11	71.206	(2.4)	70.848	(1.5)	-.065	-0.1%	0.15	
Tanzania 2008–2010	65.645	(1.2)	61.138	(1.1)	-2.253	-3.5%	2.88	***
Uganda 2006–2011	77.859	(1.1)	66.774	(1.5)	-2.217	-3.0%	5.25	***
Zambia 2001/2–2007	72.014	(1.3)	64.798	(1.2)	-1.312	-1.9%	3.09	***
Zimbabwe 2006–2010/11	39.685	(1.1)	33.497	(1.1)	-1.375	-3.7%	3.98	***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10. Standard errors reported between brackets.
Source: Alkire, Roche and Vaz (2014).

Table A.5: Levels, Changes and Statistical Significance of Changes in Intensity (A_T)

	Intensity of Poverty (A_T)				Annualized Change		t-statistics for difference	
	Year 1		Year 2		Absolute	% Relative		
Benin 2001–2006	59.917	(.6)	57.396	(.4)	-.504	-0.9%	3.61	***
Cameroon 2004–2011	55.339	(.7)	53.848	(.7)	-.213	-0.4%	1.48	
Ethiopia 2005–2011	67.220	(.4)	61.752	(.5)	-.911	-1.4%	8.65	***
Gabon 2000–2012	45.465	(.4)	43.257	(.4)	-.184	-0.4%	3.46	***
Ghana 2003–2008	52.532	(.4)	48.143	(.5)	-.878	-1.7%	6.53	***
Kenya 2003–2008/9	49.329	(.5)	47.693	(.7)	-.297	-0.6%	1.87	*
Lesotho 2004–2009	46.816	(.3)	45.018	(.4)	-.360	-0.8%	3.23	***
Madagascar 2004–2008/9	55.803	(.6)	56.506	(.4)	.156	0.3%	0.94	
Malawi 2004–2010	52.803	(.3)	50.106	(.3)	-.449	-0.9%	7.01	***
Mozambique 2003–2011	61.347	(.4)	55.912	(.4)	-.679	-1.2%	9.93	***
Namibia 2000–2007	47.098	(.6)	45.835	(.4)	-.180	-0.4%	1.67	*
Niger 2006–2012	74.404	(.6)	68.974	(.5)	-.905	-1.3%	7.45	***
Nigeria 2003–2008	57.881	(.7)	57.322	(.4)	-.112	-0.2%	0.57	
Rwanda 2005–2010	55.557	(.3)	49.923	(.3)	-1.127	-2.1%	12.98	***
Senegal 2005–2010/11	61.839	(1.0)	59.704	(.7)	-.388	-0.6%	1.94	*
Tanzania 2008–2010	56.564	(.5)	54.759	(.4)	-.903	-1.6%	3.07	***
Uganda 2006–2011	53.937	(.4)	51.425	(.5)	-.502	-0.9%	3.66	***
Zambia 2001/2–2007	55.128	(.4)	51.195	(.4)	-.715	-1.3%	6.98	***
Zimbabwe 2006–2010/11	45.274	(.3)	43.238	(.3)	-.452	-1.0%	4.51	***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10.   Standard errors reported between brackets.
Source: Alkire, Roche and Vaz (2014).

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