

# Southern Africa Labour and Development Research Unit



## Eliminating Extreme Poverty in Africa: Trends, Policies and the Role of International Organizations

*by*  
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# Eliminating Extreme Poverty in Africa: Trends, Policies and the Role of International Organizations

Zorobabel Bicaba, Zuzana Brixiová and Mthuli Ncube <sup>1</sup>

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## Abstract

Eradicating extreme poverty for all people everywhere by 2030 is the first goal among the UN Sustainable Development Goals that guide the current development agenda. This paper examines its feasibility for Sub-Saharan Africa (SSA), the world's poorest but growing region. It finds that under plausible assumptions extreme poverty will not be eradicated in SSA by 2030, but it can be reduced to low levels. National and regional policies that focus on accelerating growth, while making it more inclusive would accelerate poverty reduction. International organizations, including informal ones such as the G20, can play a key role in this endeavor by encouraging policy coordination and coherence.

*Keywords:* Poverty, sustainable development, inclusive growth, policies, governance

*JEL classification:* E21, E25, I32, O11, O20

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## I. Introduction

'Eradicating extreme poverty for all people everywhere by 2030' tops the list of UN Sustainable Development Goals (SDGs) that guide the post-2015 development agenda (UN, 2014; Ravallion, 2016).<sup>2</sup> Africa's poverty eradication agenda focuses on wealth creation and prosperity, together with reduced inequality. These goals can be achieved through growth that is high and inclusive. In other words, as Africa gradually becomes a global growth pole, its growth would benefit all segments of its population (Janneh and Ping, 2012; AfDB et al., 2010).

Eradicating poverty by 2030 has gained consensus among international organizations as the UN post-MDG goals have been discussed. Further, in 2013, the World Bank endorsed two inter-linked goals: (i) to end extreme poverty by 2030 and (ii) to promote shared prosperity in every society. The specific targets are: (i) to bring the share of global population living below this threshold to less than 3% and (ii) to foster the per capita income growth of the poorest 40% of the population in each country (World Bank, 2013; Basu, 2013). The development agencies in both developed and developing countries give high priority to poverty reduction.

Bringing the extreme poverty below 3 percent of the global population by 2030 would be challenging but achievable.<sup>3</sup> However, as simulations in this paper suggest, even under our "best case" scenario of accelerated growth and redistribution from the 10 richest percent to 40 poorest percent of population, eliminating poverty by 2030 is out of SSA's reach. The poverty rate could be brought down to low levels – around 10 percent of SSA population in 2030. This paper focuses on: (i) poverty paths in SSA under different assumptions on key macroeconomic variables, that is (consumption) growth, population growth and income distribution; and (ii) national, regional and global policies that can improve upon poverty outcomes.

SSA is characterized by a high inequality and disproportionate reliance of the economy on natural resources and agriculture. From the perspective of African policymakers, the key issue is how to design and implement policies that will accelerate growth while making it more inclusive and sustainable over time. Poverty reduction requires inclusive growth so that growth benefits are shared across the population, including the poorest.

The paper first discusses pro-growth oriented national and regional macroeconomic policies and then structural reforms as a driver of growth and poverty reduction in SSA. It then explores the role of global institutions such as the G20. The paper suggests that to effectively support developing countries, the work of the G20 would benefit from more coherence and coordination among various working groups and topics.

The rest of the paper is organized as follows. Section II shows various growth and redistribution scenarios and their impact on SSA's poverty paths and outcomes. Section III examines differences among groups and countries. Section IV outlines policies, while Section V concludes with discussion of poverty reduction goals for the SSA region.

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<sup>2</sup> In this paper, the extreme poverty means living on a less than \$1.25 a day (in 2005 ppp adjusted prices), which is equivalent to new poverty line of \$1.92 a day in 2011 ppp adjusted prices. The headcount is only one measure of poverty, which does not reflect dynamics above or below the line.

<sup>3</sup> One scenario where poverty is reduced to such a low level assumes that progress achieved during 2000-2010 is maintained until 2030 (Ravallion, 2013). However, progress with poverty alleviation is likely to slow down at low poverty levels where poverty depth often rises (Chandy et al., 2013a; Yoshida et al., 2014).

## II. How Much Can Poverty Be Reduced by 2030?

### II.1 Trends in Poverty Reduction

The global poverty rate has been declining since the 1950s, but SSA has made strides only since the mid-1990s. Between 1999 and 2010, the region reduced extreme poverty by 10 percentage points, in part due to growth acceleration. Nevertheless, the World Bank household surveys suggest that in 2010 the poor still accounted for striking 48% of SSA's population and 30% of the global poor. SSA's poverty rate was more than double of the rate of the world's second poorest region, South Asia (Chandy and Gertz, 2011 and Olinto et al, 2013).

Substantial differences in poverty rates persist among African sub-groups and countries. While frontier markets drove poverty reduction in SSA during 2000s, contribution of fragile states has been subdued. Among frontier markets, Zambia and Tanzania, have maintained high rates of poverty, while some of the middle income countries such as Cabo Verde or Seychelles have almost eliminated it. In contrast, high inequality and poverty prevailed in the middle income countries in Southern Africa. Among fragile states, both large (e.g. Democratic Republic of Congo) and smaller countries (e.g., Liberia) post very high poverty rates.<sup>4</sup>

In sum, extreme poverty was unevenly distributed among world regions as well as among groups and countries within regions. In SSA, some of the largest countries (e.g., Nigeria) have also high shares of population living below the \$1.25 a day poverty line in both 2010 and 2030, making them a key contributor to poverty in the region. In 2010, besides fragile states, poverty rates exceeded half of the population in a number of smaller countries, including the frontier markets (e.g., Mozambique) and middle income countries (e.g., Swaziland).

Besides income poverty reduction, higher growth and income can be associated with improved social outcomes, well-being and advancements in human development, as illustrated, for example, by increased youth literacy rates and declining child mortality (Figures 2a and 2b). Societal well-being is also enhanced through greater access to electricity and – for advanced economies -- by reduced CO2 emissions relative to income (Figures 2c and 2d). However, the positive impact of growth on social indicators is not automatic, as evidenced by stagnating completion rates for primary education in resource-rich African countries (Figure 2f).<sup>5</sup>

In addition to social indicators, resource-rich and poor SSA countries fared differently in reducing income poverty. While resource-poor countries reduced it by 16 percentage points during 1995 – 2000, resource-rich countries posted only seven percentage-point reduction (World Bank, 2013).

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<sup>4</sup> SSA countries are classified as follows. (i) oil exporters : Angola, Cameroon, Chad, Republic of Congo, DRC, Cote d'Ivoire, Gabon, Nigeria, Sudan; (ii) frontier markets: Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Ghana, Kenya, Lesotho, Mauritius, Mozambique, Namibia, Senegal, Seychelles, South Africa, Rwanda, Tanzania, Uganda, Zambia; (iii) fragile states: Burundi, Central African Republic, Eritrea, Guinea, Guinea-Bissau, Liberia, Mali, Sierra Leone, Togo, Zimbabwe; and (iv) others: Comoros, Djibouti, Ethiopia, Gambia, Madagascar, Malawi, Niger, Sao Tome & Principe, Swaziland. Fragile states have either: i/ a harmonized average CPIA country rating of 3.2 or less, or ii/ the presence of a UN and/or regional peace-keeping or peace-building mission during the past 3 years, as agreed between the World Bank and other Multilateral Development Banks in 2007.

<sup>5</sup> A country is defined as resource-rich if over 1980-2010 on average more than 5 percent of its GDP has been derived from oil and non-oil minerals (excluding forests). The resource-rich countries in SSA are: Angola, Botswana, Cameroon, Chad, Democratic Republic of Congo, Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Guinea, Liberia, Mali, Mauritania, Namibia, Nigeria, Sierra Leone, Sudan, and Zambia.

More broadly, achieving greater human development impact from their growth remains a key challenge for resource-rich African countries (Figure 1).<sup>6</sup>

## *II.2 Trends in Inequality*

Furthermore, high real GDP growth since mid-2000s notwithstanding, large income inequalities between Africa and other world regions persist. Specifically, examining the trends in GDP per capita in ppp terms reveals that the gap between SSA's income per capita and that of major advanced economies has narrowed only marginally between 1995 and 2015. While SSA's GDP per capita was about 6 percent of GDP per capita of advanced economies in 1995, it was still only 8 percent in 2015. In contrast, developing Asia narrowed the gap with advanced economies by increasing the ratio from 8 to 21 percent during the same period. To narrow these income gaps, SSA will need to maintain or even accelerate growth in the coming decades.

Within SSA, inequality dynamics has been driven by both within and across-country inequality, with the latter predominating until 2010. One way to gauge the SSA's across-country inequality is to compare the GDP per capita (ppp adjusted) of a 'typical' (median) SSA country relative to GDP per capita of the entire region. The decline of this ratio points to widening inequality up to the global financial crisis (2009 and 2010), with a subsequent partial reversal (Figure 2). Similarly, within-country inequality is derived by comparing median and average income selected countries, revealing mixed record (Table 1, Annex I).

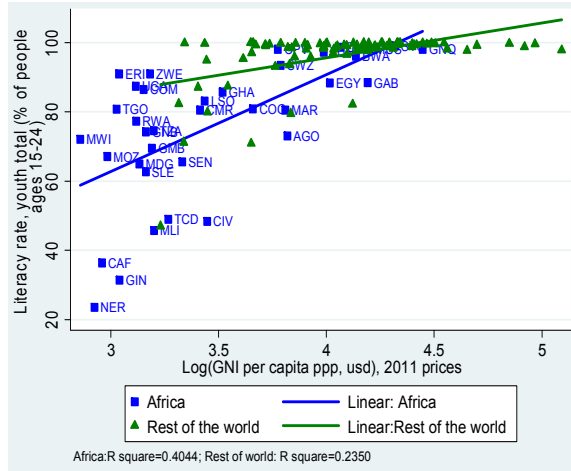
Further, evolution of Gini coefficient measures point to high but relatively stable inequality for the Africa region as a whole and varied pattern among sub-regions (Figure 3). Inequality remains the highest in middle income countries in Southern Africa, most of which are also caught in the 'middle income trap'. Rising inequality in East Africa, which contains some of the world's fastest growing regions, is of great concern and requires policymakers' attention. For example, robust economic growth of 6 – 7 percent a year notwithstanding, poverty in Tanzania declined only by 2.2 percentage points during the entire 1996 – 2010, well below 1.7 percentage point average reduction per year experienced by Rwanda (World Bank, 2013).

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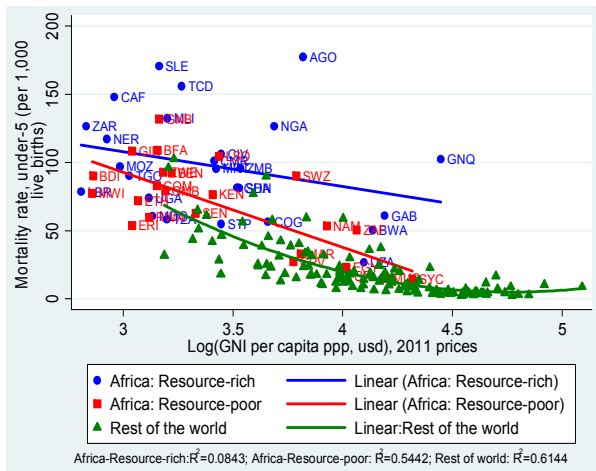
<sup>6</sup> Multidimensional index of poverty developed by Alkire and Santos (2010) reveals discrepancies between monetary and multi-factor poverty. For example, in Ethiopia 'only' about 30 percent of population lived in extreme poverty in 2010 according to PovCalnet data (below), but the country emerged as one of the poorest in Africa when the multidimensional approach to poverty was applied.

**Figure 1.** Non-income measures of poverty and well-being in African and other countries

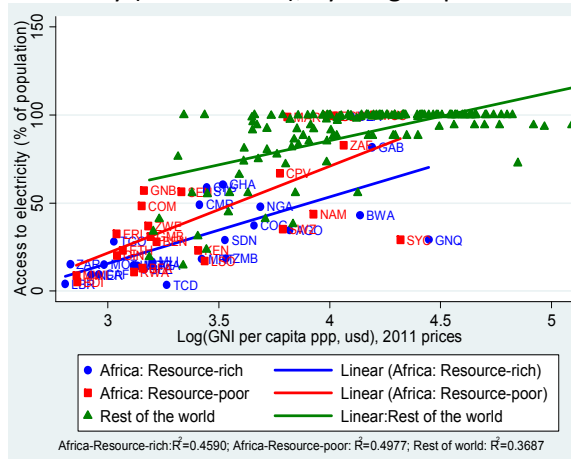
**Figure 1a.** Income levels and youth literacy rates (2009 - 2013), by regions



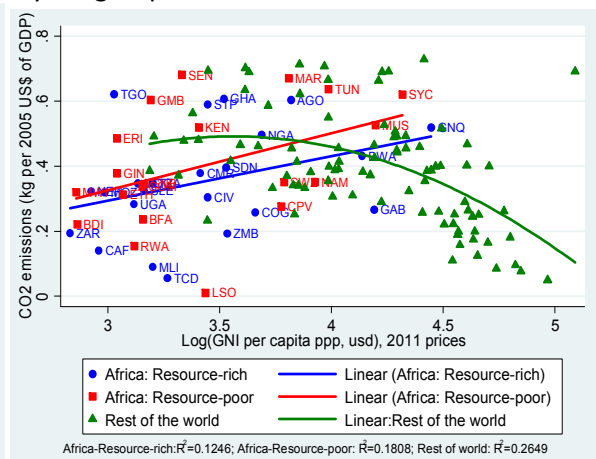
**Figure 1b.** Income levels and child mortality rates (2009 – 2013), by subgroups



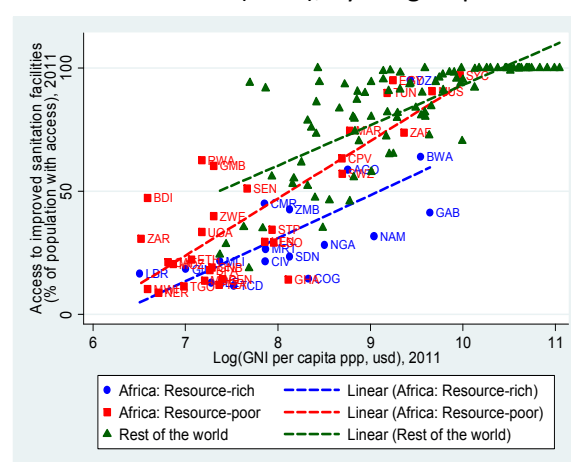
**Figure 1c.** Income levels and access to electricity (2009 – 2013), by subgroups



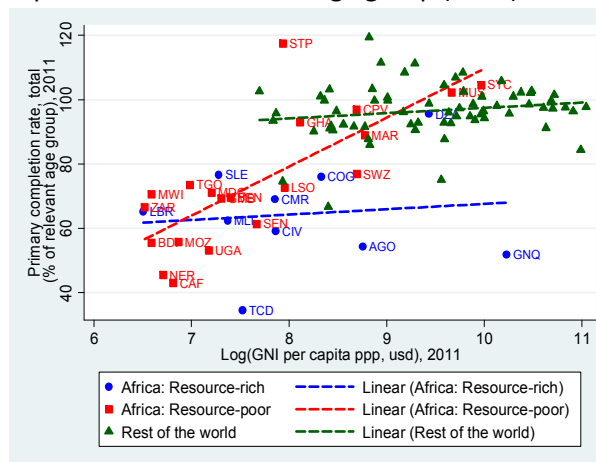
**Figure 1d.** Income and CO2 emissions (2010) by subgroups



**Figure 1e.** Income levels and improved sanitation facilities (2011), by subgroups

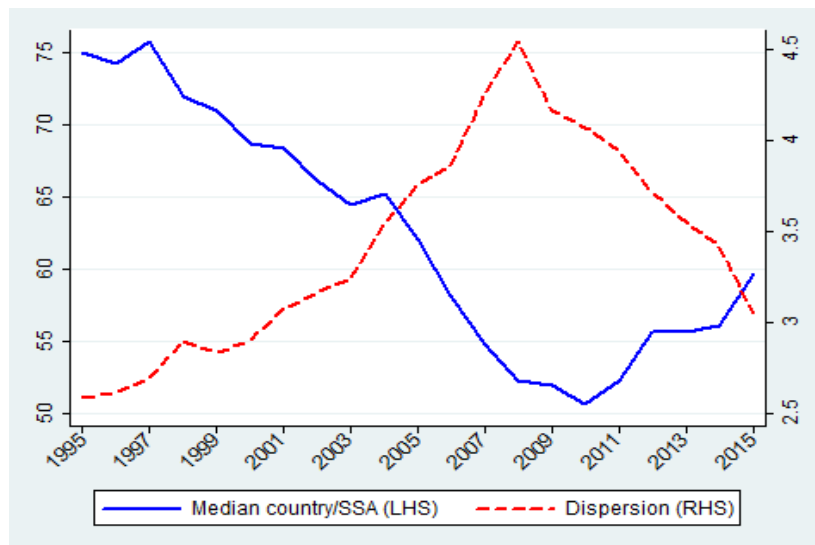


**Figure 1f.** Income and primary completion rate, percent of the relevant age group (2011)



**Source:** Authors' calculations based on the World Bank WDI database 2014. Child mortality rate is measured as death under-5 per 1,000 live births.

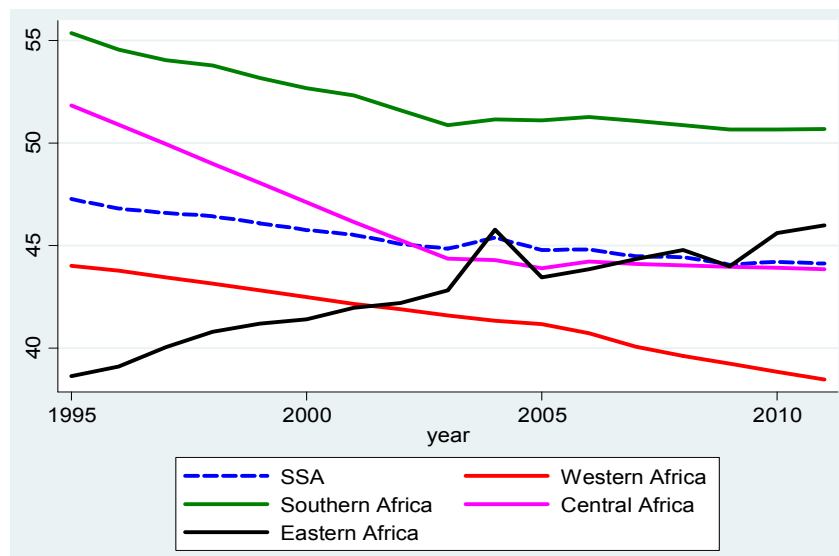
**Figure 2.** Inequality among countries in SSA, 1995 - 2015



**Source:** Authors' calculations based on the AfDB AEO database.

**Note:** Median income of SSA countries relative to GDP per capita of SSA is in percent. Dispersion is computed as standard deviation over median.

**Figure 3.** Inequality among SSA Regions, (Gini coefficients, %) 1995 – 2010



**Source:** Authors' calculations based on the AfDB AEO database.

While SSA has experienced rapid growth since the early 2000s, the poverty-reducing impact of this growth was less pronounced than in other world regions. Specifically, the estimated growth elasticity of poverty in SSA is -0.69, in contrast to -2.02 in other regions.

Substantively, two factors drive this difference.<sup>7</sup> First, growth generated by labor intensive sectors such as agriculture or manufacturing is more poverty-reducing than growth from the mineral

<sup>7</sup> Another reason is purely arithmetic: Since SSA's poverty levels are higher and incomes lower than those in other regions, same absolute changes in poverty and incomes translate to smaller and larger relative changes, respectively.



sectors. Within Africa, decline in poverty due to growth was thus slower in resource-rich countries. Second, besides resource-dependence, high initial income inequality hampers the poverty-reducing effect of growth in SSA. The extent to which growth reduces extreme poverty depends on redistributive policies and access to services that would enable the poor to benefit from growth. Once resource-dependence and inequality are controlled for, the gap between growth elasticities of poverty globally and in Africa narrows (World Bank, 2013).

### II.3 Looking Forward: The Baseline

To derive plausible future poverty paths in SSA, we draw on three main information sources, as in Kharas (2010) or Chandy et al. (2013): (i) the projected growth of the mean level of real consumption per capita (or income); (ii) redistribution of consumption (or income) between the 10 richest and the 40 poorest percent of population; and (iii) UN population projections. While the modeling framework is simple and does not incorporate policies directly, it captures them by implicit political economy structures that lead to higher growth or redistribution.

Our baseline scenario assumes that: (i) the consumption per capita will grow as projected in the EIU database; (ii) distribution of consumption will stay constant as in 2010 data in the World Bank's PovcalNet database and (iii) population would grow according to the UN's medium scenario. For each country, the initial (2010) consumption levels were obtained from the PovcalNet database. Similarly to other long-run models, the scenarios in this approach are illustrative and meant to foster debate rather than predict the future.

The dynamics of poverty reduction derived in the baseline will be driven by assumptions. As Ravallion (2013), Edward and Sumner (2014), Chandy et al. (2013) and others, the baseline scenario takes an 'inequality-neutral' approach. Specifically, in projections it assumes that the actual income or consumption distribution for the most recent year available remain constant. However, inequality changes over time (Ravallion and Chen (2012)). Hence the strong assumption of constant distribution is relaxed in the alternative scenarios below.

The methodology of poverty projections has been subject to long-standing debates (Klassen, 2010 among others). For example, the use of National Account (NA) statistics data was criticized for not reflecting consumption patterns of the poorest segments and hence underestimating the prevailing poverty (Deaton, 2005). Edward and Sumner (2015) underscore that various uncertainties surrounding the poverty data and methodology should not discourage researchers from estimating poverty rates. Rather, the uncertainties and the wide range of estimates that they may lead to should be acknowledged.

Against this background, poverty for each SSA country for every year up to 2030 was estimated using the Beta distribution of the Lorenz curve. The region's (population-weighted) poverty headcount ratio in year  $t$ ,  $H_{At}^w$  was obtained as follows:

$$(1) \quad H_{At}^w = \sum_{j=1}^N H_{jt} \frac{P_{jt}}{P_{At}} \quad \text{with} \quad P_{At} = \sum_{j=1}^N P_{jt}$$

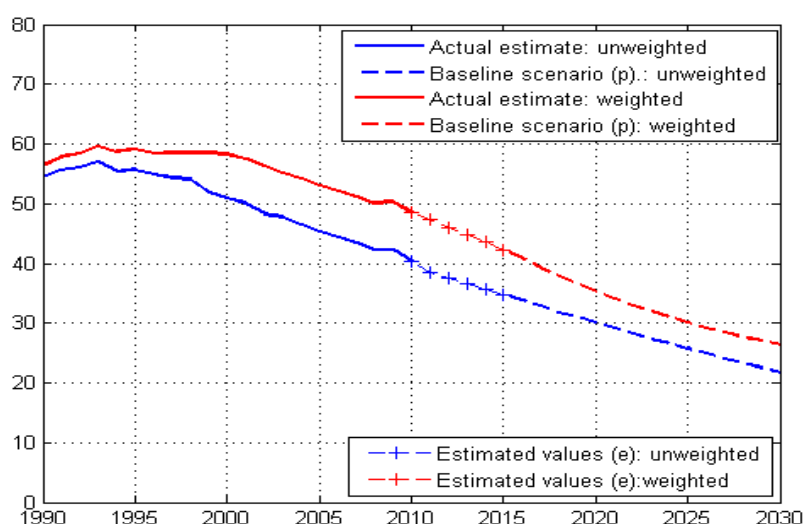
where  $P_{At}$  is Africa's population at  $t$ ,  $P_{jt}$  is population in country  $j$  at time  $t$ ,  $H_{jt}$  is poverty headcount share (in percent of population) in country  $j$  and year  $t$ , and  $N$  is the number SSA countries analyzed (Figure 1). The variations in the total poverty rate is due to the dynamics of population and the headcount index of poverty in individual countries. To show whether under

these assumptions future poverty would be more concentrated in larger or smaller countries, we calculate an un-weighted (simple average) poverty headcount in  $t$ ,  $H_{At}^u$  :

$$(2) \quad H_{At}^u = (1/N) \sum_{j=1}^N H_{jt}$$

The baseline scenario assumes constant consumption distribution over time (Gini coefficient of 0.4116) and an average real consumption growth of 6.5 percent per year up to 2030. Under this scenario the poverty rate in SSA would fall from 47.9 percent in 2010 to 27 percent of the population in 2030, a way above the three percent target. Further, the number of people living in extreme poverty would even slightly increase (Figure 4 and Table 1). The daily consumption of at least another quarter of the population would be \$1.25 - \$2 a day, underscoring the vulnerability of this group to falling back into poverty under adverse shocks. Countries with rapid population growth will face greater challenges to reduce the absolute number of the poor.

**Figure 4.** Poverty rates in SSA: Baseline scenario (% of total population), 1990 – 2030



**Source:** Authors' calculations based on the AfDB, EIU, UN and World Bank databases.

**Table 1.** Evolution of poverty in Africa, baseline scenario, 2010 – 2030

	2010(a)	2015(e)	2020(p)	2030(p)
Percent of population				
1st poverty line (<\$1.25)	47.9	42.7	36.0	27.0
2 <sup>nd</sup> poverty line (\$1.25-\$2)	28.0	28.6	28.0	25.1
Above \$2 a day	24.1	28.8	36.0	47.9
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Millions of poor				
1st poverty line (<\$1.25)	393	403	393	398
2 <sup>nd</sup> poverty line (\$1.25-\$2)	230	270	306	370
Above \$2 a day	198	272	393	706
<b>Total</b>	<b>820</b>	<b>944</b>	<b>1,091</b>	<b>1,474</b>

**Source:** Authors' calculations based on the AfDB, EIU, UN and World Bank databases.

**Notes:** In this table and the rest of the paper 'a' stands for actual outcomes, 'e' stands for estimates, and 'p' denotes projections.

These estimates are still more optimistic than other studies on poverty reduction prospects in Africa. Turner et al. (2014) projected that 24.9 percent of Africa’s population, or 397.3 million people, may still live on consumption below \$1.25-a-day in 2030. Their estimates included North Africa, which posts lower rates of poverty than SSA, reducing the overall poverty rate.

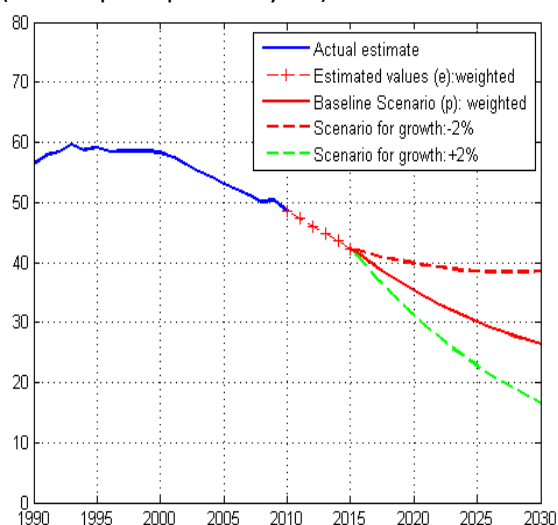
#### II.4 Alternative Scenarios

This section derives other plausible poverty paths by altering the baseline assumptions about real growth of consumption (income) per person and its distribution for each African country.

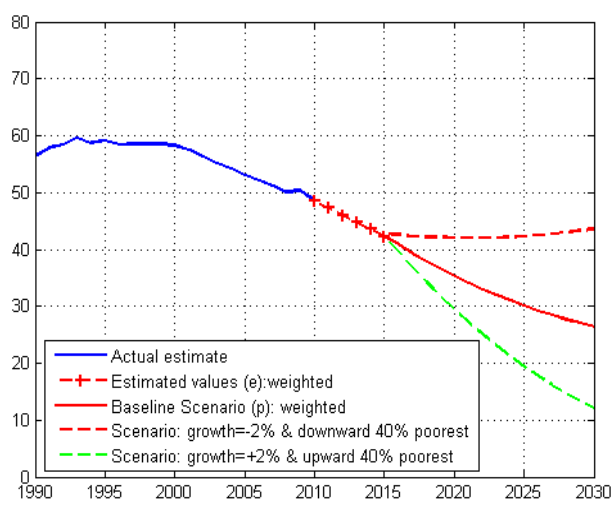
First, we increase (decrease) growth of consumption per capita by 2 percentage points a year, while maintaining consumption distribution as in the baseline scenario (Figure 5a).<sup>8</sup> With higher consumption growth, poverty rate falls to 15 percent of population in 2030 (221 million people). This represents decline in both poverty rate and people, with the number of poor falling by 172 million since 2010. Such poverty achievements would be more robust than under the baseline scenario, as almost two thirds of the population would achieve at least middle income status by 2030.<sup>9</sup> Conversely, should consumption growth decline by 2 percentage points a year, the poverty rate would rise to 42.1 percent of population (620 million people) in 2030, with additional about 230 million people living in extreme poverty in 2030 relative to 2010.

**Figure 5.** Poverty Rates: Alternative scenarios, 1990 – 2030 (percent of Africa’s population)

**Figure 5a.** African consumption growth (+ or - 2 perc. points a year)



**Figure 5b.** Consumption growth & distribution, (+ or - 2 perc. points a year and redistribution)



**Source:** Authors’ calculations based on the AfDB, EIU, UN and World Bank databases.

Second, we consider combined changes in per capita consumption growth and redistribution where besides changes in consumption growth, we consider trade-offs in consumption shares between the poorest 40 and the richest 10 percent of population in each country. Specifically, there would be a steady shift between the two groups during 2010 and 2030 by 0.4 percentage point every year, reflecting the distribution trends in historical data for Africa.<sup>10</sup>

<sup>8</sup> This choice is reflects past observed growth accelerations in Africa.

<sup>9</sup> Middle class is defined as people living on \$2 - \$20 a day (in 2005 ppp terms), as in AfDB (2011a).

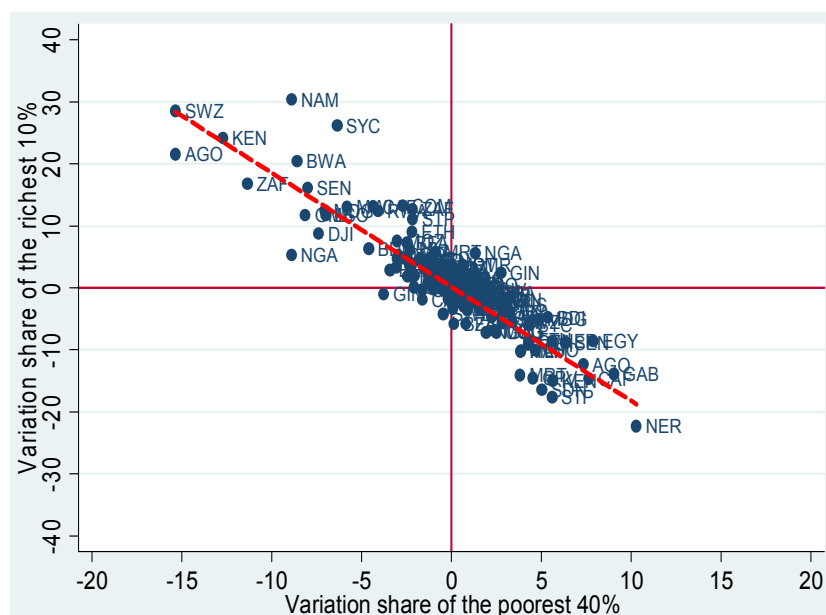
<sup>10</sup> We estimate the scale of the long term distribution trend observed in historical data on African countries as:

$Share_{it}^{40\%\_poorest} = \phi \cdot Share_{it}^{10\%\_richest} + \epsilon_{it}$ . Thus 1 percentage point decrease in consumption share by the top 10 percent results in 0.4 percentage point increase in the share among bottom 40 percent and vice versa.

Figure 5b shows poverty outcomes for the scenarios with a higher (lower) consumption growth and a steady shift in consumption share towards the bottom 40 percent of population (top 10 percent of population). Relative to the benchmark case, poverty outcome improved markedly under the ‘best case’ scenario of higher consumption growth and redistribution from top 10 to the bottom 40 percent of population, with the poverty rate falling to 9.9 percent of the population by 2030. With only 17 percent of population living on \$1.25 - \$2 a day, poverty reduction should be more resilient to reversals. Under the ‘worst case’ scenario, the poverty would rise to 45.9 percent of population in 2030, adding 283 millions of people into the group.

The negative tradeoff in redistribution of consumption (income) is illustrated in Figure 6, which uses the last two household surveys from the PovcalNet database. Specifically, the share of consumption of the poorest 40 percent of the population declined in some of the most unequal middle income countries in Southern Africa (e.g., Botswana, Namibia, Swaziland). In contrast, the share of the poorest 40 percent rose in some of the low incomes countries (e.g., Niger).

**Figure 6.** The trade-off in the consumption shares between the 40 % poorest and the 10% richest segments of the population in SSA



**Source:** Authors’ calculations based on the AfDB, EIU, UN and World Bank databases.

The above scenarios highlight the uncertainty that surround the various poverty paths and likely 2030 poverty outcomes. Still, even with the wide range of plausible poverty outcomes for Africa, the 3 percent or lower poverty rate by 2030 is not among them. The challenge of reducing extreme poverty in SSA is further underscored by the asymmetry of results under opposite scenarios. The number of the additional poor under the downside scenarios exceeds the additional number of people escaping poverty under the corresponding upside scenarios.

## II.4 Poverty Dynamics

Reducing poverty will become increasingly challenging over time. After the initial acceleration until about 2017, the progress is projected to slow in all scenarios (Figure 7). In the outer years, as the poverty rate declines and the mode moves above the poverty line, lifting people out of poverty will require more resources. Differently put, semi-growth elasticity tends to decline with poverty reduction, also in SSA (Table 2).<sup>11</sup> From the perspective of policymakers, who measure their achievements in poverty reduction in percentage points, this measure of dynamics is more useful than elasticity.

**Table 2.** Sub-Saharan Africa: semi-growth elasticity of consumption, 2010 – 2030

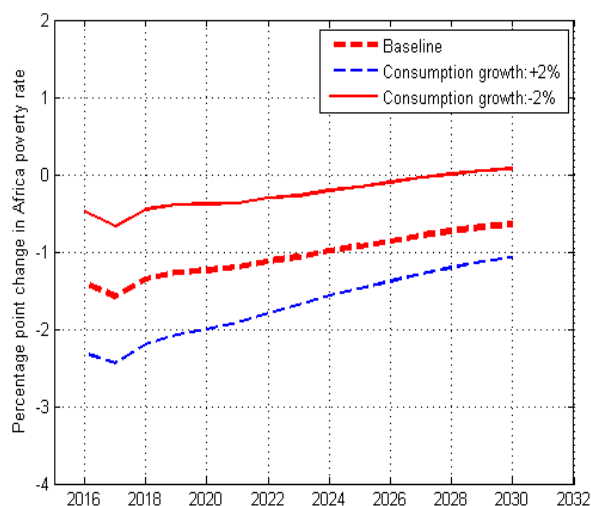
Poverty rates	(Mean) growth semi-elasticity of poverty (%)
45	-0,465
40	-0,454
35	-0,424
30	-0,398
25	-0,368

**Source:** Authors' calculations based on the AfDB, World Bank, and EIU databases.

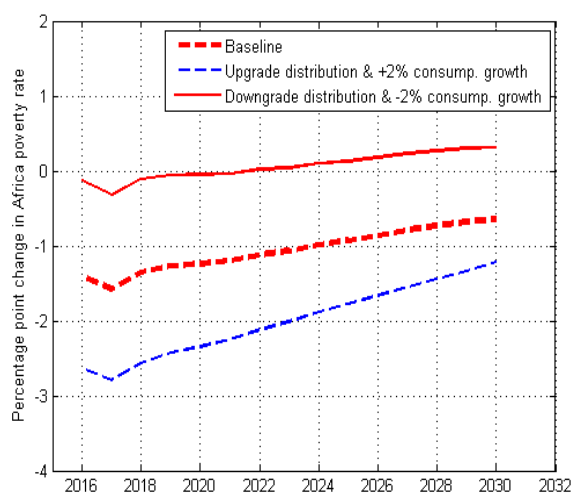
**Note:** Calculations were carried out under 2010 Africa distribution from PovcalNet for the baseline scenario.

**Figure 7.** Poverty rate dynamics: Alternative scenarios, 2012 - 2030 (percentage change)

**Figure 7a.** Consumption growth



**Figure 7b.** Consumption growth & distribution



**Source:** Authors' calculations based on the AfDB, World Bank and EIU databases.

<sup>11</sup> Growth elasticity refers to the ratio of a percent change in the poverty rate to a percent change in income or consumption. Semi-growth elasticity refers to the ratio of a percentage point change in the poverty rate to a percent change in income or consumption.

### III. Beyond the Aggregates

The aggregate results mask differences among countries and groups. This Section examines such differences, focusing on countries with the highest poverty rates and on fragile states.

#### III.1 Differences across SSA Countries

In 2010 the total poverty in SSA was disproportionately concentrated in several large countries and it will be increasingly be so over time. Specifically, in 2010 the top five contributors accounted for more than half of the poor living in the region (Table 3a). In the baseline scenario, the poor in Nigeria, the Congo Democratic Republic and Tanzania are still projected to account for almost half of the region's poor in 2030. Further, today's fragile states are projected to have the highest poverty rates in 2030 (Table 3b).

Large African countries with high poverty rates where the bulk of Africa's poor will live, such as Nigeria and the Democratic Republic of Congo (DRC), cannot be overlooked in policymakers' efforts to tackle poverty. The impact of growth on poverty reduction varies across countries and within countries over time, depending, among other factors, on income distribution. It will be particularly challenging in fragile countries with substantial poverty prevalence and depth, such as DRC (Figures 8a and 8b), which will require sustained and inclusive growth for decades to bring down poverty.

**Table 3.** SSA: Differences in Poverty Rates, 2010 and 2030(p), the baseline scenario

**Table 3a.** Countries contributing the most to Sub-Saharan Africa's poverty, 2010 and 2030

Country	2010-Share of the poor % of SSA poor	Poverty rate % of total population	Country	2030- Share of the poor % of SSA poor	Poverty rate % of total population
Nigeria	26.2	68.0	Nigeria	20.8	28.3
Congo DR	12.9	86.3	Congo, DR	20.1	70.7
Tanzania	7.3	67.0	Tanzania	8	36.0
Ethiopia	6.6	31.4	Madagascar	5.9	58.9
Madagascar	4.1	81.3	Mozambique	5.2	47.5
Total	57.1		Total	60.0	

**Table 3b.** Countries with highest projected poverty rates in 2030 (baseline)

Country	2010		2030			
	Actual	Baseline	High growth	Low growth	Best case	Worst case
	(percent of population)					
Congo DR	86.3	70.7	51.9	85.4	44.8	86.2
Madagascar	81.3	58.9	38.7	77.4	29.2	79.1
Chad	44.3	53.9	32.3	75.1	21.7	77.1
Central Afr. Rep.	62.9	51.9	35.1	68.8	27.1	71.3
Liberia	83.2	50.5	26.7	74.8	15.7	76.9
Average	71.6	57.2	36.9	76.3	27.7	76.1

**Source:** Authors' calculations based on the AfDB, World Bank and EIU databases.

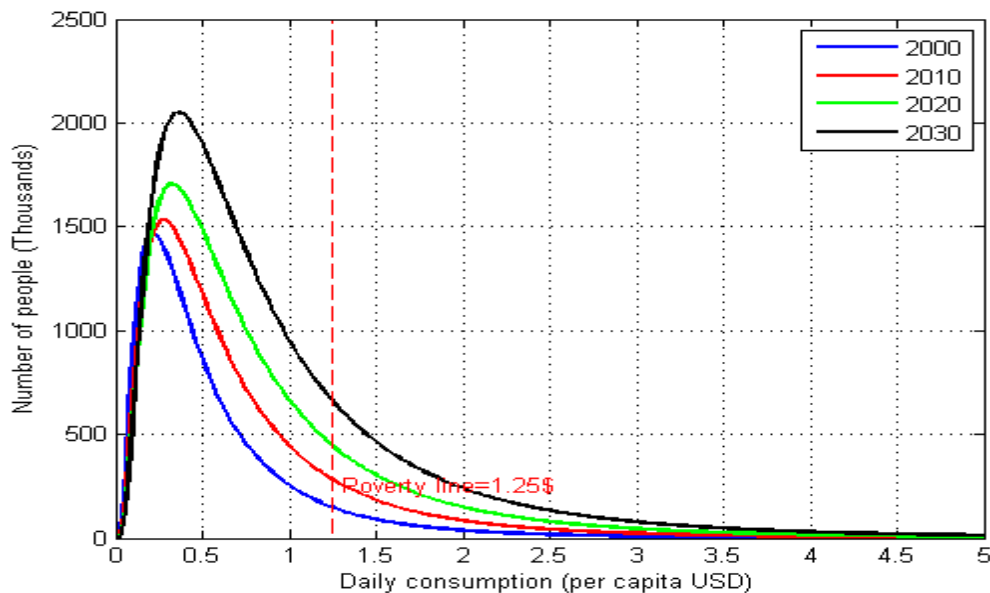
**Note:** Un-weighted average.

The limited reliability of poverty data in Africa also needs to be underscored. For example, the poverty rate in Ethiopia was estimated to be close to 30 percent in 2010. However, according to the multidimensional poverty index, which takes into account the dimensions of the human development index, Ethiopia was among the poorest countries in the world in 2010, alongside Niger and Mali (Alkire and Santos, 2010). This illustrates the need of looking beyond the aggregates and simple indicators, both at the regional and country level.

The Poverty Reduction and Growth Strategy Paper (PRGSP) of the DRC has been prepared in challenging economic and security conditions, following the conclusion of the National Peace and Reconciliation Agreement in 2002. The analysis revealed complex and multidimensional nature of poverty in the DRC, including the damaging psychological impacts of conflict on people’s well-being (IMF, 2007).<sup>12</sup> In Nigeria, which also contains a disproportionate share of Africa’s poor, poverty is concentrated among the uneducated population residing in the rural areas and being part of large households. The country’s rapid growth has not transferred into poverty reduction, in part because of large gaps in access to social services (Anyanwu, 2012).

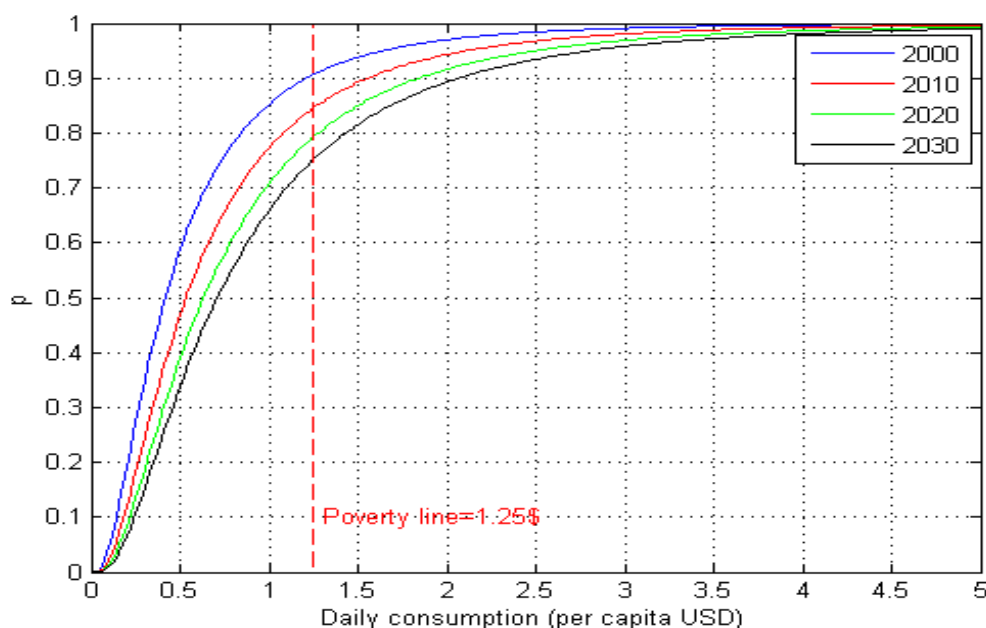
**Figure 8.** Poverty rates in the Democratic Republic of Congo, 2000 - 2030

**Figure 8a.** Congo Democratic Republic: Probability density functions, various years



<sup>12</sup> Violent conflicts impact negatively the psychological well-being of people and their ability to manage stress, with the poor being disproportionately impacted. At the time of the PRGSP, 70.9 percent of the poorest quartile of the population experienced nightmares vs. still very high 63.4 percent for the entire population (IMF, 2007)

**Figure 8b.** Congo Democratic Republic: Cumulative density functions, various years



**Source:** Authors' calculations based on the AfDB, UN, World Bank and the EIU databases.

### III.2 Differences across Africa's sub-groups

To understand the drivers of poverty reduction in Africa, we examine the performance of the main sub-groups: (i) oil exporters; (ii) frontier markets; (iii) fragile countries; and (iv) others. Denoting  $H_{jt}$  as the headcount poverty rate of country  $j$  at time  $t$  (as percent of the country's population),  $P_{jt}$  the population of this country at time  $t$ ,  $P_{Gt}$  the population of Africa's group,  $n$  the number of countries in a group, and  $m$  the number of groups, the weighted headcount poverty rate for each analytical group,  $H_{Gt}^w$  is obtained as<sup>13</sup>:

$$(3) \quad H_{Gt}^w = \sum_{j=1}^n H_{jt} \frac{P_{jt}}{P_{Gt}} \quad \text{with} \quad P_{Gt} = \sum_{j=1}^n P_{jt}$$

where in turn  $H_{At}^w = \sum_{G=1}^m H_{Gt}^w \frac{P_{Gt}}{P_{At}}$ . The contribution of a group to the change in Africa's poverty rate depends on the evolution of its share Africa and the evolution of its poverty rate.

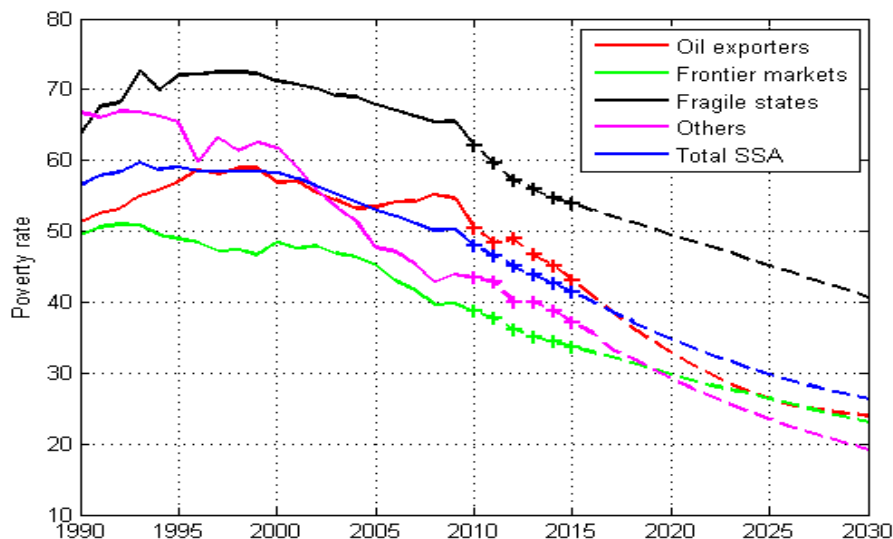
Classifying SSA countries into oil exporters, frontier markets, fragile states and others reveals that poverty rates in today's fragile states are expected to remain well above the rates recorded by other groups up to 2030, pulling the region's average up (Figures 9). Starting from a high rate in 2010 (almost 60 percent of population), fragile states are projected to maintain the highest poverty rate

<sup>13</sup> The variations of  $H$  are due to the dynamics of population and to the dynamics of the headcount index of poverty at individual countries levels:  $\frac{dH_{Gt}^w}{dt} = \sum_{j=1}^n \frac{dH_{jt}}{dt} \times w_{jt} + \sum_{j=1}^n H_{jt} \times \frac{dw_{jt}}{dt}$  where  $w_{jt}$  is the share of the population of the country  $j$  in group  $G$ .



even in 2030 -- about 40 percent of population in contrast to 20 percent in other countries. Even under the scenario of accelerated consumption growth, extreme poverty in fragile states would amount to more than 25 percent of the population (Figure 10). The poverty gap (depth) is also projected to stay much higher in fragile states than in other countries – it is expected to be 15 percent of the poverty line in 2030 vs. 7 percent in non-fragile states.

**Figure 9.** Poverty rates by SSA’s sub-groups, percent of total population, 1990 - 2030

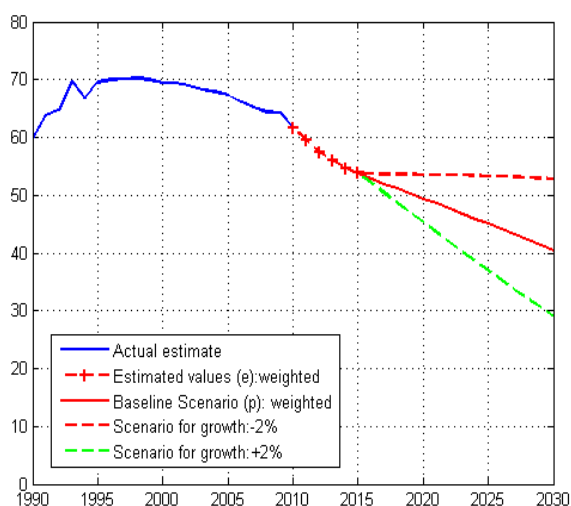


**Source:** Authors’ calculations based on the AfDB, UN, World Bank and the EIU databases.

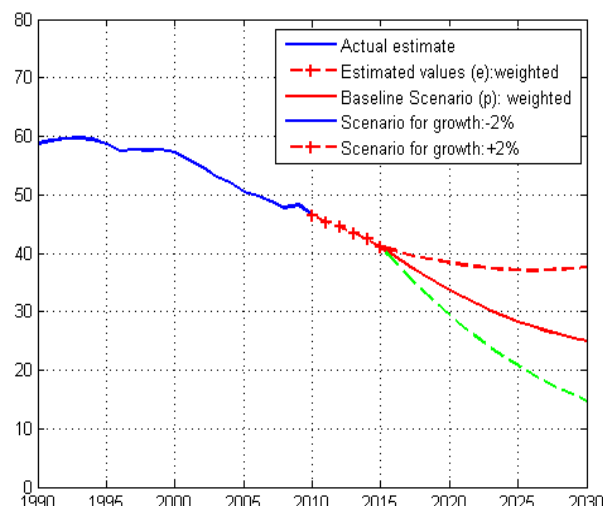
**Note:** Projections (dashline) were carried out under the baseline scenario.

**Figure 10.** Poverty rates: The baseline and different growth rates scenarios, (percent of relevant population)

**Figure 10a.** Fragile states



**Figure 10b.** Other countries



**Source:** Authors’ calculations based on the AfDB, UN, World Bank and the EIU databases.

These results are heavily impacted by high rates of poverty in the Democratic Republic of Congo, which projected to account for more than third of population of fragile states. Nevertheless, fragile states constitute an important focus group for targeted poverty measures in SSA, with fragility defined as a condition of elevated risk of institutional breakdown, societal collapse or violent conflicts (AfDB, 2014).

Conflict and fragility carry high cost and impede poverty reduction. Differently put, the vicious circle between fragility and armed conflict reinforces extreme poverty (AfDB, 2009). Armed conflicts have

devastating consequences in terms of human lives and economic costs (e.g., destroyed infrastructure, people and capital flight, reduced activities that depend on trust, etc.). The post-conflict countries need to deal with this legacy as well as with weakened institutions and policy frameworks. Fragile states thus warrant special attention of policy makers and development partners, especially since Africa is the continent impacted the most by fragility. Crosswell (2014) nuances this general recommendation with underscoring that weak policy performance and/or high levels of conflict and instability pose major obstacles to such progress.

### *III.3 Who Are the Africa's Poorest?*

Eradicating extreme poverty is a key challenge for SSA, given its high poverty rates, despite the recent decline. Further, according to the PovcalNet data, the number of people living below \$1.25 has not been falling in SSA, in contrast to other regions. Progress going forward will also depend on the poverty depth, which at \$0.71 average income for the extremely poor is substantial and again below that of any other developing region. Moreover, the poverty line of \$1.25 computed with ppp reflecting prices of all goods in consumer basket may not be appropriate for the poorest. One reason is that food prices often rise faster than the general price level while food takes up a disproportionate share of the poor's budget (ADB, 2014).

Among the extremely poor, poverty is clustered in the rural areas. Further, almost 60 percent of SSA's jobs and 78 percent of its poor workers obtain their livelihoods from agriculture, the least productive sector (Chuhan-Pole and Ferreira, 2014). This underscores the importance of its transformation as well as creation of alternative sources of livelihoods.

## **IV. Long-term Trends, Realistic Goals and Policy Options**

### *IV.1 Long-Term Trends*

To tackle extreme poverty, African policymakers and development partners – traditional and emerging – will need to anticipate long term drivers of change. Several recent studies that have examined megatrends provide useful context and allow better understanding of the macroeconomic scenarios for growth, poverty and inequality discussed in the previous section. The African Development Bank has emphasized the following key drivers of change/long term trends impacting the continent (AfDB, 2011b):

- Changing structure of global markets and shift in economic power, with expanding middle class and private sector, and declining importance of traditional aid;
- New technologies and innovation, especially in health, agriculture and energy;
- Changes to physical environment such as climate change contributing to land, energy and water scarcity; massive and pervasive infrastructure deficit;
- Delayed demographic transition, continued heavy burden of HIV;
- Private sector development and democratization.

The long term trends emphasized by the African Development Bank are consistent with those articulated by the African Union in the *Agenda 2063: The Future We Want for Africa*. They also complement long run trends impacting the global economy as highlighted in the last report of the US National Intelligence Council (NIC, 2012) or the Oxford Martin Commission for Future Generations (Oxford Martin School, 2013).

These long term trends, together with the aftermath of the global financial crisis and subdued global recovery, will likely have a negative impact on the underlying trend growth in SSA (Table 5). As shown in simulations, growth is expected to drive poverty reduction. Policymakers thus will need to invest in the drivers of long-run growth, both key core capabilities and drivers of structural transformation, as discussed in Rodrik (2015) and others.

#### *IV.2 Setting Realistic Goals*

The earlier sections have hinted at the challenges that SSA is likely to encounter in its quest to eliminate extreme poverty. While the region is not likely to reduce poverty to 3 percent of population by 2030 under plausible assumptions, it can bring it to low levels. Based on various numerical simulations presented in Section III, a more realistic goal would be reducing poverty in SSA by a range from half to two thirds by 2030. Both high growth and reduction in inequality between the bottom 40 percent of the population and top 10 percent would be needed to reduce poverty rates to low levels (e.g., around 10 percent of the population).

Several implications follow directly from the analysis. First, efforts to reduce poverty in SSA to very low levels cannot overlook large low income countries such as Nigeria. However, that does not imply that small middle income countries with high prevalence of poverty such as Swaziland should be marginalized. Second, poverty in SSA will be increasingly concentrated in today's fragile states and in particular in the Democratic Republic of Congo, which also has high population growth. Policymakers cannot neglect safeguarding stability and peacebuilding in the DRC and other fragile countries with high poverty rates, such as Liberia. The Strategy for Fragile States of the African Development Bank (AfDB, 2014) outlines ways to reduce poverty and safeguard stability in these countries. Third, factors impacting the global economy and Africa point to some negative pressures on the region's trend growth (Table 4), underscoring the challenges in trying to raise growth from the current 5 to 7 percent a year.

Policymakers will need to take these long-term trends and factors into account when designing poverty-reducing policies. Some of the policy options are outlined in the next section.

#### *IV.3 Policy Options for Growth and Poverty Reduction*

Since the early 2000s, Africa has maintained high rates of growth, even in the presence of large external shocks such as the global financial crisis. Strong growth notwithstanding, the progress with structural reforms and transformation has been more limited. In fact in some countries, the share of manufacturing in output and employment declined. However, growing the region's manufacturing base, especially the ICT segment, would lift productivity in across sectors.

To effectively tackle poverty, SSA countries will need to adopt appropriate national and regional policies and capitalize on opportunities in the global forums. However, country-specific circumstances vary and experience shows that it is often a unique combination of traditional and unorthodox policies that has succeeded in other regions. In that regard, SSA countries will also need to find their own paths.

**Table 4.** Changes in fundamentals impacting trend output growth in Sub-Saharan Africa

Factor	Expected trends in SSA	Transmission to growth	Impact on 'trend' growth
<b>Subdued global recovery</b>			
Expected lower global growth due to <ul style="list-style-type: none"> <li>▪ Slowing growth in emerging markets</li> <li>▪ Low growth/stagnation in Europe</li> </ul>	Lower trade (reduced import demand in partner countries); possibly reduced remittance inflows	Lower domestic activity due to lower exports and related activities; Reduced remittances	negative
<b>Financial markets</b>			
Conditions on international financial markets	Over the longer-term, tighter credit conditions due to risk re-pricing (higher rates, low liquidity)	Reduced investment and SME activity	negative
Development of housing markets	Housing markets have been developing in SSA	Increased domestic demand (also for complements)	positive, but relatively limited, and potentially volatile
<b>Commodity markets</b>			
Oil prices	Level lower in the short run, unclear over medium, more volatile	Varied impact on oil exporters and importers	positive in the short run, unclear over the long term a/
Food prices	Greater volatility; With growing population, global demand set to raise relative to supply	Volatility raises uncertainty about returns on investment; Inflationary pressures	negative
<b>Demographic trends</b>			
Population growth in Africa	High population growth expected to continue.	Could lead to demographic dividend or curse	positive if demographic dividend is reaped, negative otherwise
Population growth in EMEs			
Population growth in advanced economies	Aging population	Opportunity for 'brain circulation', if policies are put in place	ambiguous, but could be positive if increased migration leads to remittances and brain circulation
<b>Other factors</b>			
Slowdown in globalization	Increased protectionism, lower trade	Lower demand for African exports	negative
Regional integration	Likely to increase given the untapped potential	Increased regional demand, efficiency gains, diversified risks	positive, but only over the longer term
Climate change	Physical impacts of the climate change are expected to rise	In the long term, yields and the area of arable land will be reduced. In shorter term, more frequent and intense natural hazards.	negative absent of effective mitigation and adaptation measures positive if Africa leverages its vast natural resource base

**Source:** Adapted from Brixiova et al. (2010) and the Asian Development Bank. **Note:** a/ World Economic Forum discusses factors that make the oil price complex trend over the longer term complex: <https://agenda.weforum.org/2015/02/4-factors-that-will-affect-long-term-oil-prices/> (last accessed on April 5, 2015).

(i) *National Policies*

Experience of other regions also indicates that maintaining and even accelerating growth should remain a priority for poverty reduction agenda (Dollar et al., 2013). In 2008, the Commission on Growth and Development studied 13 countries that grew for 7 percent a year or more for at least 25 years during 1950 and 2006.<sup>14</sup> They underscored that all 13 countries shared a capable, credible, and committed government (Commission on Growth and Development, 2008). Further, the role of the state in incentivizing domestic savings and encouraging domestic resource mobilization, alongside of high investment, was emphasized.

Rodrik (2015) pointed out that two dynamics tend to drive growth: fundamental capabilities and structural transformation. Industrial policy – that is prioritization of high potential sectors – is instrumental for structural transformation in SSA. Policies of successful countries shared common features, namely a stable but flexible macroeconomic framework; incentives for restructuring, diversification and mobility; investment in physical and human capital as well as skills and technology adoption; and strong institutions. Country-specific circumstances would then determine which ‘constraint’ is binding and should receive a priority.

Macroeconomic policies can help facilitate high, stable and balanced growth. The global financial crisis illustrated the importance of fiscal space and the ability of countries to use it for discretionary counter-cyclical measures to protect growth. Going forward, SSA will need to accumulate sufficient reserves during the booms to cushion the downturns. Resource rich countries in particular should adhere to medium term expenditure frameworks so as to decouple revenue booms from outlays (Brixiova and Ndikumana, 2013). Fiscal policies should be complemented by credible but flexible monetary policy frameworks. The flexible inflation targeting frameworks are not unique to SSA or emerging markets; in fact all inflation targeting countries, including the advanced economies with quantitative easing measures, have been targeting inflation but also accommodating real shocks (Heinz and Ndikumana, 2011).

Structural reforms critical for inclusive growth. For example, the lack of efficient infrastructure in terms of access and quality hampers Africa’s competitiveness and productivity, reaching development goals, and participation in the global economy. Infrastructure is also critical for promoting human development through improving access of citizens to social services and their inclusion in societies. Estimates suggest that in SSA, real GDP growth could increase by 1- 2 percentage points a year if the region’s sizeable infrastructure gap (about \$50 billion a year) was closed (Foster and Briceño-Garmendia, 2010).

Besides infrastructure, what measures can support structural transformation, i.e. shift to more productive activities? On the supply side of the labor market, the policies could aim at increasing ‘quality of population’ (Behrman and Kohler, 2015), by raising access to and quality of education, with a view to increase share graduates in technical subjects. This should be complemented by increased availability and quality of health services, to enhance quality of human capital, productivity and well-being. On the demand side of the labor market, measures should aim at private sector development together with efficient and effective social protection.

Structural transformation can drive reduction in inequality and poverty since the sources of growth clearly matter for poverty reduction and inclusion: new jobs need to be created in productive and employment-intensive sectors. In particular, growth needs to generate productive jobs for large segments of population, based on lessons from Latin American and other countries successful in reducing poverty. The lessons from China suggest that to reduce poverty African countries should

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<sup>14</sup> The Commission comprised 19 development leaders and 2 academic economists.

focus on raising productivity of agriculture through market-based incentives and public support. The increased agricultural productivity also facilitates structural transformation, as manufacturing absorbs migrant workers from rural areas.

Brazil has shown that the government can help reduce poverty through well-designed redistributive programs and social protection, so far missing in most of Africa.<sup>15</sup> Brazil has made strides in reducing poverty and inequality, with public services and cash transfers have been the key, the latter through “Bolsa Familia” program (Arnold and Jalles, 2014).

### *Regional Policies*

Regional integration has gained momentum recently in several regional economic communities (RECs), as evidenced by increased intra-regional trade and flows of foreign direct investment, as well as announcements aiming to formalize the relations and bring them to higher levels. Successful regional integration would indeed allow countries draw on their comparative advantages, leading to higher efficiency and growth as well as integration to global value chains, and reduced ‘among countries’ inequality. It would also provide platforms for collective insurance (for example against food insecurity) and facilitate regional solutions to collective challenges such as climate change. Regional strategies should initially focus on developing areas of industrial complementarity to raise countries’ capacity to trade, supported by building regional infrastructure to ease movement of products, service, capital and people.

### *(ii) Global Policies*

As Ndikumana (2014) underscores, policy recommendations to address these challenges have typically focused on what SSA countries themselves, possibly with the support of development partners, can do to embark on a sustainable development path. Less attention has been paid to the role that global governance can and should play in addressing these challenges. Even if SSA countries implement appropriate measures at the national and regional levels, their efforts could be undermined if complementary steps are not taken at the global level, by advanced economies and other emerging markets. A global partnership and coordinated efforts, however, can help the SSA to tackle high poverty, unemployment and inequality.

How are then influential institutions such as the G20 faring on supporting inclusive growth in Africa and other low income developing countries? Following the Seoul Consensus on Development in 2010, the G20 placed development and low income developing countries at the center of its 2015 agenda. Development is to be a cross-cutting theme with linkages to all working groups and themes. Inclusiveness is now part of the G20 growth agenda, centered on strong, sustainable, balanced and *inclusive* growth. Further on the positive side, the Turkish Presidency also put inclusive business on the agenda for 2015, with a view to maximize the impact of the private sector on low income people and groups.

In 2015, the G20 and its development working group also prioritize outreach to non-G20, especially low-income countries. Nevertheless, given the current global governance structure, voices of SSA countries are often not heard on issues that impact them, reflecting their limited representation in the key global bodies. Africa needs to be adequately represented, as an equal partner, in the key

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<sup>15</sup> Ostry et al. (2014) found that the direct and indirect effects of redistribution—including the growth effects of the resulting lower inequality—are on average pro-growth. Macroeconomic data do not indicate a big trade-off between redistribution and growth. Bagchi and Svejnar (2013) find that wealth inequality reduced growth. More disaggregated analysis reveals that wealth inequality due to political connection reduces growth, while the impact of wealth inequality that is not politically connected does not have significant impact on growth.

policy and decision making global structures such as G20 (AfDB et al., 2010). On a positive note, more educated and empowered citizens everywhere, including in SSA, are increasingly making their government accountable for a global system that would result in a more prosperous, equitable and cleaner global economy (Birdsall and Meyer, 2013).

## **V. Conclusions**

This paper has illustrated some of the challenges that Sub-Saharan Africa is likely to encounter in its efforts to eliminating extreme poverty. A key message is that while the region cannot eliminate poverty (i.e. reduce it to 3 percent of population) by 2030 under plausible scenarios, it can bring it to low levels. The intermediate goals of higher growth and reduced income inequality reinforce each other. To achieve substantial and lasting poverty reduction, national and regional policies in SSA will need to aim for growth that is not only high and resilient to shocks, but most importantly inclusive.

This paper has focused on policies that African countries themselves can adopt – individually or collectively – to tackle effectively the challenge of pervasive extreme poverty. However, changes in the global governance structures are also called for. African countries would benefit from a greater scope for articulating their views in global forums such as the G20 on key issues impacting development on the continent and Africa’s place in changing global landscape.

## ANNEX I. INCOME INEQUALITY IN SSA COUNTRIES

**Table 1, Annex I.** Median and Average Income in Africa, SSA and Selected Countries (international dollars, ppp)

Economy	Income			Economy	Income		
	Median	Average	Ratio		Median	Average	Ratio
<i>Africa</i>				<i>SSA</i>			
1998	747.8	1041.7	1.4	1998	407.5	589.1	1.5
2005	1084.9	1487.6	1.4	2005	735.3	1042.1	1.4
Change (%)	45.1	42.8	n.a.	Change (%)	80.4	76.9	n.a.
<i>Comoros</i>				<i>Madagascar</i>			
1998	745.7	1039.3	1.4	1998	2258.3	2938.9	1.3
2005	760.8	1714.7	2.3	2005	593.4	1773.3	3.0
Change (%)	2.0	65.0	n.a.	Change (%)	-73.7	-39.7	n.a.
<i>Cote d'Ivoire</i>				<i>Malawi</i>			
1998	991.4	1475.1	1.5	1998	317.4	519.9	1.6
2005	919.2	1322.3	1.4	2005	371.4	500.6	1.4
Change (%)	-7.3	-10.4	n.a.	Change (%)	17.0	-3.7	n.a.
<i>Egypt</i>				<i>Niger</i>			
1998	1913.7	2541.0	1.3	1998	278.9	404.2	1.5
2005	2221.3	2773.6	1.3	2005	474.7	685.0	1.4
Change (%)	16.1	9.2	n.a.	Change (%)	70.2	69.5	n.a.
<i>Ethiopia</i>				<i>Nigeria</i>			
1998	173.5	234.1	1.4	1998	91.0	149.5	1.6
2005	745.1	882.6	1.2	2005	764.4	1029.6	1.4
Change (%)	329.4	277.0	n.a.	Change (%)	739.8	588.6	n.a.
<i>Gambia</i>				<i>Senegal</i>			
1998	414.2	675.0	1.6	1998	678.8	1311.0	1.9
2005	717.9	1114.9	1.6	2005	832.2	1101.3	1.3
Change (%)	73.3	65.2	n.a.	Change (%)	22.6	-16.0	n.a.
<i>Kenya</i>				<i>Uganda</i>			
1998	774.6	1148.1	1.5	1998	423.8	554.3	1.3
2005	916.7	1411.4	1.5	2005	555.5	800.7	1.4
Change (%)	18.3	22.9	n.a.	Change (%)	31.1	44.5	n.a.

Source: Authors' calculations based on the World Bank PovcalNet database.



## ANNEX II. DATA SOURCES AND METHODOLOGY

### Data sources

In the calculations of poverty rates, we focused on consumption aspect of poverty, as it captures individual welfare better than alternative measures (income, assets) and is less vulnerable to external shocks (volatile) than income. Since correlation between consumption and income in Africa is relatively high, the choice of one over the other is likely to have only limited impact on outcome. Moreover, at lower income levels, the difference between consumption and income is small (AfDB, 2011).

Several data sources were used in this paper to capture and project extreme poverty rates and the number of people living under \$1.25 a day in Sub-Saharan Africa. The primary sources were: (i) the World Bank's PovcalNet database for the initial (2010) consumption level (or the latest year) and its distribution;<sup>16</sup> (ii) the EIU database for the private consumption growth projections during 2011 and 2030; (iii) the UN database for population projections during 2011- 2030. Where consumption growth projections are not available, we use income (i.e. real GDP growth) projections from the AfDB African Economic Outlook database when available or four-year moving average. In the case of missing countries, we use regional growth averages. Specifically, poverty rates in a country with missing data are assumed to be identical to regional poverty rates, as in Chandy et al. (2013).

### Methodology

The methodology adopted in this paper relies on macroeconomic projections of income (consumption) growth and distribution as well as on projections for population growth. Specifically, in the consumption growth projections, inconsistencies between private consumption in national accounts and in household surveys (Ravalion, 2003; Deaton 2005) are addressed by discounting the projected EIU (AfDB) consumption (income) growth as in Deaton (2005).<sup>17</sup> The country discount rates were obtained as in Deaton (2005) by regressing an average annual survey consumption growth (between all consecutive surveys) on the private consumption growth from national accounts over the corresponding period:

$$w_i \left( \frac{C_{it+k}^{survey} - C_{it}^{survey}}{C_{it}^{survey}} \right) = \kappa \left( \frac{C_{it+k}^{Nat.Account} - C_{it}^{Nat.Account}}{C_{it}^{Nat.Account}} \right) w_i + u_{it} \quad (A1)$$

where  $w_i$  is the population weight of country  $i$  in total population of Sub-Saharan Africa,  $C_{it+k}^{survey}$  ( $C_{it+k}^{Nat.Account}$ ) is consumption from household survey (from national account) of country  $i$  in year  $t+k$ , and  $\kappa$  is the discount rate. The disadvantages of applying the same discount factor across countries are well recognized, but the lack of data does not so far allow for country-specific analysis of this factor.

For each year, poverty rates for each SSA country (47 countries) are estimated from (i) mean consumption per capita and (ii) distribution around that mean, estimated/projected for 2011- 2030 based on information in Povcal Net, EIU and AfDB databases. Drawing on method of Datt (1998), we

<sup>16</sup> World Bank's PovcalNet database, which provides detailed distributions of either income or household consumption expenditures by percentile, based on household survey data. In addition, PovcalNet provides information on mean household per capita income or consumption levels in 2005 PPP US dollars.

<sup>17</sup> Using 557 surveys from 127 developing countries, Deaton (2005) shows that consumption in the national accounts, which contains items not consumed by the poor, grows faster than consumption in household surveys.

utilize this data to obtain estimates of Beta Lorenz Curve or Quadratic Lorenz Curve. These Lorenz curves take the following forms:

a. *Beta Lorenz Curve:*

$$L(p) = p - \theta p^\gamma (1-p)^\delta \quad (A2)$$

where  $p$  is cumulative proportion (or percentage) of population and  $L$  is the corresponding cumulative proportion (or percentage) of consumption expenditure (i.e. the Beta Lorenz curve). Since  $p$  is a function of the poverty line  $z$ , we can obtain the headcount index of poverty ( $H$ ) when the first order derivative of  $L$  is evaluated at the poverty line:

$$\theta H^\gamma (1-H)^\delta \left[ \frac{\gamma}{H} - \frac{\delta}{1-H} \right] = 1 - \frac{z}{\mu} \quad (A3)$$

where  $\mu$  is the mean consumption per capita.<sup>18</sup>

b. *Quadratic Lorenz Curve*

$$L(1-L) = a(p^2 - L) + bL.(p-1) + c(p-L) \quad (A4)$$

where  $p$  is again cumulative proportion (or percentage) of population,  $L$  is the corresponding cumulative proportion (or percentage) of consumption expenditure, and  $a$ ,  $b$ , and  $c$  are parameters. The headcount poverty is described as:

$$H = -\frac{1}{2m} \left[ n + r \left( b + \frac{2z}{\mu} \right) \left\{ \left( b + \frac{2z}{\mu} \right)^2 - m \right\}^{1/2} \right] \quad (A5)$$

where  $m = b^2 - 4a$  is a parameter and  $\mu$  is again the mean consumption per capita.

After obtaining the Lorenz curve estimates, the projected poverty rates for \$1.25 a day and shares of population under different ranges of consumption a day (in 2005 ppp) are then computed utilizing the UN constant fertility variant population projections.

Numerical simulations were carried out in Matlab R2014a and the data labelling in Stata 13.

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<sup>18</sup> The Beta Lorenz curve is derived so that the following conditions must be hold:  $\theta > 0$  and  $0 < \{\gamma, \delta\} \leq 1$ . For Burundi, Botswana, Congo, Republic, Lesotho, Namibia, Swaziland and Zambia the condition  $\gamma \leq 1$  does not hold. Therefore, in our calculations for these countries, we replace the Beta Lorenz curve with the Quadratic version or constrain the parameter  $\gamma$  to be equal to 1.

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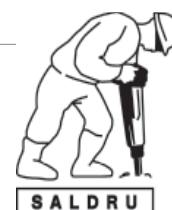
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# southern africa labour and development research unit

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The Southern Africa Labour and Development Research Unit (SALDRU) conducts research directed at improving the well-being of South Africa's poor. It was established in 1975. Over the next two decades the unit's research played a central role in documenting the human costs of apartheid. Key projects from this period included the Farm Labour Conference (1976), the Economics of Health Care Conference (1978), and the Second Carnegie Enquiry into Poverty and Development in South Africa (1983-86). At the urging of the African National Congress, from 1992-1994 SALDRU and the World Bank coordinated the Project for Statistics on Living Standards and Development (PSLSD). This project provide baseline data for the implementation of post-apartheid socio-economic policies through South Africa's first non-racial national sample survey.

In the post-apartheid period, SALDRU has continued to gather data and conduct research directed at informing and assessing anti-poverty policy. In line with its historical contribution, SALDRU's researchers continue to conduct research detailing changing patterns of well-being in South Africa and assessing the impact of government policy on the poor. Current research work falls into the following research themes: post-apartheid poverty; employment and migration dynamics; family support structures in an era of rapid social change; public works and public infrastructure programmes, financial strategies of the poor; common property resources and the poor. Key survey projects include the Langeberg Integrated Family Survey (1999), the Khayelitsha/Mitchell's Plain Survey (2000), the ongoing Cape Area Panel Study (2001-) and the Financial Diaries Project.



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