Why is growth less poverty reducing in Africa?[†]

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ABSTRACT

This paper analyses the economic impacts of growth on poverty in Sub-Saharan Africa, exploiting a rich and unique dataset covering 56 countries between 1990 and 2012. Albeit the high economic growth rates of the last decades, there have been increasing concerns that growth is not benefiting African population at large. In line with the view that certain sectors are more poverty reducing than others, we find that during the period 1990-2012 productivity gains in agriculture played a smaller role in Africa than elsewhere. At the same time, employment shifts out of agriculture have contributed only half as much to poverty reduction than in the rest of the world, and especially there has been no impact of movements into manufacturing employment, which instead have been at the basis of the poverty reducing strategies of South and East Asia in the past decades. Forecasted projections for the years to come suggest that African governments would need to double their efforts towards structural transformations in order to achieve sustained poverty reduction.

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1. Introduction

At the turn of the new millennium Senegal and Thailand found themselves growing at a rapid pace. By 2010 both countries increased their economy by almost 45 percent. However, over the same decade poverty rates dropped by a remarkable 81 percent in Thailand, whilst a more modest 23 percent reduction took place in Senegal. The question on everybody's mouth is: why is growth less poverty reducing in Africa than in the rest of the world?

Indeed, from the mid-1990s economic growth in Sub-Saharan Africa (SSA) picked swiftly, rising by about 31 percent between 1994 and 2010, at an average of 1.7 percent a year (McKay, 2013). However, despite these rapid advancements, there have been increasing concerns that economic growth is not benefiting African population at large (Thorbecke, 2013; Christaensen et al., 2014). Otherwise said, increases in output did not transfer as much as in the rest of the developing world (ROW) in increases in average consumption of those individuals at the bottom of the income distribution. As a matter of fact, whilst GDP growth rates are strictly comparable in the last decades (Figure 1), poverty reduction has been constantly lower in Africa than in other regions of the world (Figure 2).

This paper attempts to pin down the key mechanisms behind the question of whether African growth patterns are inherently less poverty reducing than those experienced in other regions of the world. Making use of several innovative data sources, including newly released poverty and employment data by the World Bank, we find that the job creation linked to the African positive economic outlook of the last years had little impact on the welfare of the poorest segments of the population. This may be particularly the case if, as argued by some commenters, working age population kept on increasing in Africa but wage jobs as well as jobs in highly-productive sectors stagnated. Our results also suggest that, despite being the sector where most poor earn their living in Africa, productivity gains in agriculture did not reach the poor, eventually because technological advances occurred in export-oriented capital-intensive activities. The rise of biofuel production, for example, raises several concerns about its impact on poverty: in fact, biofuel plantations reduce smallholder lands, pay substandard wages, and tend to be less labor intensive and hence less pro-poor (Arndt et al., 2010). Finally, we find that on one side employment shifts out of agriculture played a smaller role in Sub-Saharan Africa than in other regions, while on the other side employment rate growth in manufacturing did not contribute to poverty reduction in Africa.

Our results can then be exploited in order to speculate on the future trends of poverty in Sub-Saharan Africa. Projections suggest that GDP per capita growth alone will virtually not contribute to poverty reduction in the period 2012-2020. On the contrary, in order to maintain poverty reduction at a sustained pace, African decision-makers would need to boost their efforts towards structural transformations. In

particular, improvements in agricultural productivity are mostly necessary, as well as policies to foster growth of non-agricultural employment.

The remainder of the paper is structured as follows. The poverty-growth nexus and the important role of demographics on income per capita is briefly discussed in section 2. Section 3 presents stylized facts and the conceptual framework motivating our work. Data and methodology are described in section 4 and 5 respectively, whilst section 6 presents our results. We discuss the forecasted poverty projections deriving from our econometric estimates in Section 7. Finally, section 8 concludes, drawing some policy implications and future research needs.

2. Growth Is Less Poverty Reducing in Africa

The linkages between growth and poverty have been at the center of an intense debate over the last years. Most researchers would now agree that overall rising per capita incomes reduce poverty, but the main question became to what extent economic growth translates into poverty reduction (Adams, 2004). Specifically, the debate rotated around the concept of "growth elasticity of poverty", which measures the percentage decline in poverty given a percentage rise in GDP growth. Previous studies estimated this elasticity to be between -1 and -3, which implies that a 10 percent increase in economic growth reduces poverty rates by about 10-30 percent (Ravallion and Chen, 1997; Epaulard, 2003). With such high potential in eradicating material hardship, it comes as no surprise that pro-poor policies have been often exclusively targeted at promoting average income growth (Kraay, 2006; Kalwij and Verschoor, 2007).

However the growth elasticity of poverty has also been found to depend on inequality (Ravallion and Chen, 1997) and the initial income levels (Bourguignon, 2003). Indeed a general argument on the heterogeneous impact of growth on poverty reduction is based on the socio-economic conditions of the population: wealth, inequality, education attainments, urbanizations, and mortality rates have all been found to affect the magnitude of this effect (Loayza and Raddatz, 2010). In this sense, as Sub-Saharan Africa typically saw high levels of inequality coupled with very low initial per capita income, it is not startling that it has an overall lower elasticity than the rest of the world (Fosu, 2009). As shown by World Bank (2013), sustained growth alone will not be able to eradicate poverty in Africa in the next 20 years:

even assuming a very optimistic per capita GDP growth rate of 4.2 percent, poverty headcount would only fall to 16.7 percent.[1]

Since the mid-1990s African economies saw an unparalleled phase of persistent growth. Indeed, six of the world's ten fastest-growing economies were in Sub-Saharan Africa (McKay, 2013). Typically, the literature associates this impressive growth with a steep rise in commodity prices, caused by increasing demand and high liquidity in the international financial markets (Berardi and Marzo, 2015). Other factors include progress towards political accountability and democracy, new technologies, better macroeconomic management, and the end of several previous conflicts.

Given the well-established link between economic growth and poverty reduction, we would therefore expect Africa's unprecedented growth to result in great poverty reduction. However, before proceeding in empirically assessing the growth elasticity of poverty in SSA versus the rest of the developing world, it is worth mentioning the important role of demographics in Africa. In fact, with the exception of some island nations, fertility and youth dependency rates in Sub-Saharan Africa are among the highest in the world, exposing the region to smaller per capita income (Canning et al., 2015). In the near future, population is expected to continue growing in Africa, reaching over 2 billion people (or three times Europe's population) by 2050, with important consequences for per capita income (World Bank, 2013).

Indeed, as shown in Figure 3, throughout the whole sample of SSA countries, GDP per capita growth has been consistently lower than GDP growth, suggesting that population increased more than income. This has been more the case in SSA than in the rest of the developing world. In fact, over the period 1990-2012 there has been less correspondence between GDP and GDP per capita in SSA compared to the ROW (Figure 4). Otherwise said, a 5 percent annual change in GDP translates into a 3.4 percent annual change in GDP per capita in ROW, but only into a 2.3 percent change in GDP per capita in SSA. Therefore, a first important difference between Sub-Saharan Africa and the rest of the world is that greater population expansion reduces the share of aggregate economic growth benefiting each individual in Africa.

Nonetheless, even taking into account differences in demographics, per capita GDP growth in Sub-Saharan Africa still seems to transfer to poverty reduction at a smaller pace than for the other regions. Figure 5 represents the relationship between poverty change and per capita income growth in a sample of growth spells around the world between 1990 and 2012. Whilst for the rest of the world the relationship is on average negative (meaning that greater economic growth correlates with overall poverty reduction), there appears to be very little linkage, if any, in Africa. This result is indeed in line with previous findings

[1] In Section 7 we will also forecast some future trends in poverty rates based on our econometric results.

by Christiansen et al. (2014), which estimate the poverty growth-elasticity to be much lower in Africa than in the rest of the world (-0.69 for SSA and -2.02 for ROW).

3. What Accounts for Africa's Lower Poverty Impact?

Why is per capita income elasticity of poverty smaller for Sub-Saharan Africa than for the rest of the world? Conceptually there are two main channels through which the poor can benefit from economic growth and improve their living standards: earnings and redistribution. On one hand, when the economy expands, the share of income going to each citizen increases, and the rising earnings let a portion of the poor emerge from poverty. On the other hand, redistributive policies may reallocate the gains of economic growth from better-off to worse-off segments of the population, improving the livelihood of the poor and reducing poverty headcounts. Given that redistributive policies are very uncommon in the developing world, this paper aims at deepening our knowledge of the linkages between growth, earnings and poverty, which indeed bear great potential for effective policy implications. In particular, drawing from the existing literature, stylized facts and persistent myths, we test three hypotheses that may jointly determine the weaker relationship between growth, earnings and poverty in SSA.

Hypothesis 1. One of the most important transmission channel between growth and poverty reduction is its effect on employment opportunities for the poor (Gutierrez et al., 2009). In the last decade, academics and policy makers have been increasingly alarmed that in certain regions of the world economic growth has not resulted in significant and transformative job creation (see for example Onaran, 2008, for a study on Eastern Europe, and Verme et al., 2015, on Morocco).[2] Some commenters suggest that the phenomenon is widespread also in Africa, in particular because several countries with economic growth dominated by the mineral exporting sector have had little or no job creation (Fox and Gaal, 2008).[3] For instance, Ancharaz (2011) argues that, whilst African exports have increased at an annual average of 18.5 percent between 2000 and 2007, the rate of job creation has stagnated around 3 percent over the same period.

[2] Determinants of the jobless growth phenomenon are several, spanning from demographic factors related to the growing size of the working age population to economic explanations such as the sharp productivity rise due to the adoption of new technology (see Verme et al., 2015).

[3] The thesis received also particular attention amid the ravaging effects of the economic crisis, especially in South Africa and Kenya (see for example Business Daily (2010), "Kenya's economy returns 2.6% jobless growth", available at: http://www.businessdailyafrica.com/Kenyas-economy-returns-26-per-cent-jobless-growth/-/539552/922654/-/m2v03ez/-/index.html (accessed 03/17/2016)).

Despite of this seldom perception that the exceptional GDP growth rates of Sub-Saharan Africa in the last decades did not match a similarly buoyant labor market, we test whether, even at similar employment growth rates, Sub-Saharan Africa still did not manage to benefit from job creation and reduce poverty to the same extent than the rest of the developing world. In fact, there are several potential explanations for such a smaller impact of employment rate growth on poverty in Africa. On one side, throughout Sub-Saharan Africa labor force has grown but wage job creation has stalled, so that job seekers have moved to low productive, informal, small-scale economic activities, often working in family businesses. As a consequence, these newly created jobs did not foster poverty reduction as much as highly-productive and highly-paid jobs in manufacturing and wage employment in other regions of the world. On the other side, job creation in Africa may have occurred exactly in those activities where the poor do not have access to, such as manufacturing, public sector, top-end services.

Hypothesis 2. As argued by Hoekman et al. (2002), for growth to have some meaningful effect on poverty reduction, it has to occur in those sectors where a large share of the poor earns their living. In most developing countries the majority of poor works in rural activities (ILO, 2005). For instance, Berardi and Marzo (2015) report that in Africa over one out of two poor lives in households where the head is occupied in agriculture. Productivity improvements in the agricultural sector might therefore bear large impacts on poverty reduction through mainly three channels. First, higher productivity may have a direct effect on poverty by raising yields and income of those working in agriculture. Second, agricultural growth lowers food prices, which particularly benefits the poor segments of the population (Dercon and Gollin, 2014). Third, improvements in agricultural productivity may allow resources to be released to other more productive activities. Examining data for 62 countries during 1960-1990, Gollin et al. (2002) find that countries experiencing rises in rural productivity were able to release labor from agriculture into other sectors of the economy.

There is however evidence that enhancements of agricultural productivity in Africa have often not impacted poverty headcounts. For example in Malawi, Muhome-Matita and Chirwa (2011) find that productivity improvements due to important fertilizer subsidies had small effect on the livelihoods of the poor. Equitable land distribution plays a key role in this sense (Thirtle et al., 2003): if distribution of land and income is greatly uneven, then the gains in agricultural productivity do not reach the poor. Moreover, access to markets and the extent of commercialization may also be important factors in the differential impact of agricultural productivity growth on poverty reduction between Sub-Saharan Africa and other regions of the world. In fact, Africa is mostly formed by smallholder farmers with little incentive to trade, whilst the numerous commercially-oriented farmers in Latin America and East Asia have exploited productivity gains in order to increase their volume of trade, thereby triggering a virtuous circle. At the

same time, if technological advances occurred in capital-intensive activities, such as biofuels, this had little pro-poor impact. Consequently, our second hypothesis to test is whether agricultural productivity growth did not affect poverty in SSA as much as in the ROW.

Hypothesis 3. Some studies stress that in several low-income countries poverty is not associated with unemployment and a lack of job opportunities, but rather with low returns to labor in specific activities (Gutierrez et al., 2009). Countries that manage to diversify away from agriculture and other traditional products are systematically those that are able to drastically reduce their poverty rates (McMillan et al., 2014). In fact, as labor shifts from the traditional sector to more productive activities, overall productivity rises and income expands. Important shifts of labor out of agriculture have been the main driving forces behind the economic take off of both advanced nations in the post-WWII (Jorgenson and Timmer, 2011), BRICs in the 1990s (De Vries et al., 2012) and several developing countries more recently (McMillan et al., 2014).

However there is evidence that over the last two decades in Africa poor individuals moved away from agriculture to work in similarly unproductive activities, such as the informal service sector, with no effect on poverty reduction (Darko Osei and Jedwab, 2013). On the other hand, it may be well the case that overall movements towards high-productive manufacturing *did* take place in Africa, but they did not contribute to poverty reduction as the poorest individuals are notably not employed in manufacturing. Hence, in this paper we put forward a new twofold hypothesis that may explain the smaller growth elasticity of poverty in Sub-Saharan Africa: labor movements out of agriculture or labor movements into manufacturing did not reduce African poverty as much as in the rest of the world.

4. Data

In order to assess the linkages between growth, poverty and structural transformations, we combine three sets of unique data together. Information on poverty headcount (the share of population living below the poverty line) and Gini index (the extent to which income/consumption distribution within an economy deviates from a perfectly equal distribution) are taken from the World Bank's PovCalNet database.[4] This source provides poverty data from primary household surveys, half of which are based on consumption expenditure, whilst approximately the other half reports income and its distribution (see Dollar et al.,

[4] Available at: http://iresearch.worldbank.org/PovcalNet/ (accessed 03/17/2016).

2015, for a description of the data).[5] To our knowledge, this is the first study estimating the growth elasticity of poverty with the newly-released $1.90 a day poverty line. In fact, in an attempt at updating poverty numbers to current real purchasing power, the World Bank has recently raised the poverty line from $1.25 (in 2005 PPPs) to $1.90 (in 2011 PPPs). The consequences of this revision on global poverty incidence have been carefully documented by Ferreira et al. (2015).

Employment information are taken from the International Income Distribution Dataset (I2D2), a unique dataset compiled by the World Bank harmonizing over 600 nationally-representative household surveys for 120 countries. Despite of the obvious limitations of such a large harmonization effort (e.g. comparability issues due to different survey designs, conversion of local-into-international currencies, etc.), the I2D2 dataset is the largest available source of micro-level individual characteristics.[6] In particular, the database includes four sets of harmonized variables: demographics, education, labor force, and household per capita consumption (Gindling and Newhouse, 2014). For each available survey we collapse total employment, employment by sector, population, and working age population, and we then sum them separately for Sub-Saharan Africa and for the rest of the world. In such way, we obtain precise and reliable information on the number of employees by sector for every available country and year.

Finally value-added data, necessary for the analysis of structural transformations, come from the United Nations Statistics Division. Specifically, we exploit information on national GDP breakdown by industry, and, accordingly to our aforementioned hypotheses, we aggregate it in two new categories, agricultural versus non-agricultural value added. It is worth to note that in order to maintain internal consistency, we transform 2005 prices in national currency into 2011 PPP GDP (international dollar) values by using the PPP conversion factor provided by the World Development Indicators (WDI).

As the objective of this paper is firstly to assess the elasticity of poverty with respect to growth, and then to test several hypothesis behind the lower elasticity for Sub-Saharan Africa, we calculate annualized changes for each of the main variables of interest X (poverty headcount, Gini Index, GDP per capita, etc.). We hence construct annualized changes as following:

$$\dot{X} = \left(\frac{X_t}{X_{t-\tau}}\right)^{\frac{1}{t-(t-\tau)}} - 1 \qquad (1)$$

[5] As argued by Adams (2004), few issues can be raised regarding the comparability of poverty data across the world. For example, there may exist differences on how income and expenditure data are collected and recorded in the underlying household surveys, or concerns about the conversion of nominal values into real terms. Nonetheless, at present the Povcalnet data are the only available source of cross-country poverty and inequality information covering sufficiently enough observations for the present analysis of growth elasticity of poverty.

[6] A detailed description of the source can be found in Olinto et al. (2013).

Clearly, countries with a single point in time will not be able to be taken into consideration in the estimation. We also restrict the analysis to data from 1990 onwards, in order to focus on the most recent waves of economic growth as well as comparing data points not too distant in time. Once merging all databases together, we end up with a total sample of 267 spells distributed heterogeneously among 56 developing countries, a third of which is located in Sub-Saharan Africa.[7]

5. Empirical Strategy

As standard in the literature (see Bourguignon, 2003, Kalwij and Verschoor, 2007, Christiaensen et al., 2014 among others), our empirical strategy relies on a country fixed effect specification (eliminated through first differencing) including initial conditions and interaction terms. The benchmark regression is:

$$\dot{P} = \alpha + \beta_1 \dot{y} + \beta_2 \dot{y} * SSA + \gamma_1 \dot{G} + \gamma_2 \dot{G} * SSA + \delta SSA + \theta C + \varepsilon \quad (2)$$

In equation (2), $\dot{P}$ is the annualized change in poverty headcount for country *i* during the spell $t - \tau$ (subscripts are omitted for simplicity), whilst $\dot{y}$ is the annualized income per capita growth and $\dot{G}$ is the change in Gini index. Throughout the whole analysis, we interact our variables of interest with a dummy being 1 if the observation belongs to a Sub-Saharan African country (SSA). Consequently, β_1 represents the independent effect of annual per capita income growth on poverty for the rest of the world, while $(\beta_1 + \beta_2)$ is the growth elasticity of poverty for SSA. In addition, to control for initial conditions, we also include income per capita, poverty, and inequality levels at the beginning of the spell (at time τ), C. Regressions are estimated using ordinary least squares with standard errors clustered at country level.

Hypothesis 1. In order to test hypothesis 1, that is job creation in Africa did not contribute to poverty reduction to the same extent than in the rest of the world, we start by decomposing per capita GDP (y) into its components:

$$y = \frac{Y}{N} = \frac{Y}{E} * \frac{E}{A} * \frac{A}{N} \quad (3)$$

where *Y* is the total value added, *E* is the total employment, *A* is the total population of working age, whilst *N* is the total population. Thus, per capita GDP growth $(\dot{y})$ can be decomposed into growth associated with changes in output per worker, in employment rates, and in the size of working age

[7] Following Christiaensen et al. (2014), we apply the "Bacon" procedure in order to remove outliers and correct for few unlikely wide fluctuations in the variables of interest. The procedure is implemented by Weber (2010). Overall, only 4 observations are dropped in SSA and 30 in the rest of the world. See Table A1 in Appendix for the final list of countries and spells included in the analysis.

population. Following Gutierrez et al. (2009), if we let $\frac{\overline{Y}}{E}$, $\frac{\overline{E}}{A}$, and $\frac{\overline{A}}{N}$ denote the fraction of growth linked to each component, then the total growth of an economy can be expressed as:

$$\dot{y} = \frac{\overline{Y}}{E} * \dot{y} + \frac{\overline{E}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y} \quad (4)$$

where $\frac{\overline{E}}{A} * \dot{y}$ reflects the amount of growth consistent with a scenario in which output per worker and the share of population of working age had remained constant.

Replacing equation (4) into equation (2) gives the final estimation specification:

$$\dot{P} = \alpha + \beta_1 \left(\frac{\overline{Y}}{E} * \dot{y} + \frac{\overline{E}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y}\right) + \beta_2 \left(\frac{\overline{Y}}{E} * \dot{y} + \frac{\overline{E}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y}\right) * SSA + \gamma_1 \dot{G} + \gamma_2 \dot{G} * SSA + \delta SSA + \theta C + \varepsilon \quad (5)$$

If our first hypothesis is correct, we expect the coefficient $(\beta_1 + \beta_2)$ of $\frac{\overline{E}}{A} * \dot{y}$ to be significantly smaller for SSA than for the rest of the world.

Hypothesis 2. In order to test hypothesis 2, that is agricultural productivity growth contributed less to poverty reduction in SSA than in the rest of the world, we need to further decompose output per worker in equation (4) by sector (agriculture versus non-agriculture):

$$\dot{y} = \frac{\overline{Y^{agr}}}{E^{agr}} * \dot{y} + \frac{\overline{Y^{nonagr}}}{E^{nonagr}} * \dot{y} + \frac{\overline{E}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y} \quad (6)$$

Again we replace equation (6) into our benchmark equation (2) and obtain the following:

$$\dot{P} = \alpha + \beta_1 \left(\frac{\overline{Y^{agr}}}{E^{agr}} * \dot{y} + \frac{\overline{Y^{nonagr}}}{E^{nonagr}} * \dot{y} + \frac{\overline{E}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y}\right) + \beta_2 \left(\frac{\overline{Y^{agr}}}{E^{agr}} * \dot{y} + \frac{\overline{Y^{nonagr}}}{E^{nonagr}} * \dot{y} + \frac{\overline{E}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y}\right) * SSA + \gamma_1 \dot{G} + \gamma_2 \dot{G} * SSA + \delta SSA + \theta C + \varepsilon \quad (7)$$

According to our thesis, we expect the coefficient $(\beta_1 + \beta_2)$ of the annualized change in agricultural productivity to be smaller for SSA than for the ROW.

Hypothesis 3. Similarly, testing hypotheses 3 requires decomposing equation (4) into:

$$\dot{y} = \frac{\overline{Y}}{E} * \dot{y} + \sum_{s=1}^{S} \frac{\overline{E^s}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y} \quad (8)$$

where sector *s* can represent either agriculture/non-agriculture or manufacturing/non-manufacturing – according to whether we want to assess the contribution to poverty reduction of shifts of labor out of agriculture or employment rate growth in manufacturing.

Replacing equation (8) into equation (2), we get the final specification:

$$\dot{P} = \alpha + \beta_1 \left(\frac{\overline{Y}}{E} * \dot{y} + \sum_{s=1}^{S} \frac{\overline{E^s}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y} \right) + \beta_2 \left(\frac{\overline{Y}}{E} * \dot{y} + \sum_{s=1}^{S} \frac{\overline{E^s}}{A} * \dot{y} + \frac{\overline{A}}{N} * \dot{y} \right) * SSA + \gamma_1 \dot{G} + \gamma_2 \dot{G} * SSA + \delta SSA + \theta C + \varepsilon \quad (9)$$

6. Econometric Results

Throughout the paper, four models are compared against each other. Firstly, we present the naïve estimation of regressing observed changes in poverty on per capita income growth. The second model, instead, estimates our benchmark specifications – Equations (2), (5), (7), and (9) respectively – and includes changes in income inequality as well as additional controls. The third model excludes Europe and Central Asia (ECA) countries from the analysis. In fact, the collapse of the Soviet Union brought several state-owned firms and enterprises to bankruptcy, leading poverty rates to jump from nearly zero to as high as 20 percent in certain areas in only few years (see Adams, 2004, and Olinto et al., 2014). Finally, our fourth model restricts the focus to the period from 2000 onwards, which has been often dubbed the "African Growth Miracle" (McMillan et al., 2014). Indeed only recently Africa has reaped the benefits of economic and political reforms, which, in addition to the rise in commodity prices that began in the early 2000s, triggered the strongest growth rates in three decades.

The OLS estimation of the linear relationship in Figure 5 is reported in column 1 of Table 1. Confirming our graphical findings, a rise in GDP per capita is correlated with a global reduction in poverty, although the effect is much smaller for Africa (-1.30 versus -0.18).[8] As stressed by Christiaensen et al. (2014), important factors behind such a large difference in elasticities are: (i) the respectively much higher and lower levels of poverty and income levels of SSA compared to those of the rest of the world,

[8] A possible source of bias is the violation of the common support condition: comparing the incomparable must be avoided (Caliendo and Kopeinig, 2008). Indeed, it may be well the case that growth and poverty patterns have been so different in Sub-Saharan Africa and in the rest of the world that there is no overlap between the two groups. In order to reject this hypothesis, we first show descriptive statistics and t-test for different means for our main variables of interest (Table A2 in Appendix). Clearly, there appears to be no significant difference between SSA and the ROW, except for demographic change, which is a peculiarity of Africa that we have already stressed in Section 2. However, despite of equality in means, there may still be differences in the overall distribution. We hence check the overlap and the region of common support by running a probit regression of the probability of being in the treatment group regressed on our main variables of interest. We then calculate the predicted probabilities and remove all observations whose propensity score is smaller than the minimum and larger than the maximum in the opposite group (see Caliendo and Kopeinig, 2008, for detailed description of the approach). Overall, only 6 observations appear to be outside the common support region and discarded from the analysis. As a robustness check, we re-run all the specifications in this paper for the subset of the comparison group that is comparable to the treatment group, and find similar results. Estimates are available upon request from the authors.

which arithmetically reduce the growth elasticity of poverty; (ii) the relatively high initial income inequality of Africa.

Controlling for the two aforementioned factors in column 2, the elasticity gap between SSA and the ROW reduces although it remains remarkable. The estimation of our benchmark specification suggests that, for all the developing world except Sub-Saharan Africa, the growth elasticity of poverty is -1.06, which means that, on average, a country with a 1 percent growth rate and 50 percent of its population below the poverty line has its poverty headcount lowered by 0.53 (=1.06*0.50) percentage points to 49.47 percent. Conversely, the elasticity drops to -0.33 for SSA, suggesting that the same 1 percent per capita GDP growth in a similar African country with also a poverty rate of 50 percent reduces poverty by just 0.16 percentage points to 49.84 percent.[9]

It is worth noting the key role played by income inequality in impacting poverty headcount. For instance, throughout all models changes in the Gini index are highly associated with rises in poverty rates. In absolute terms, inequality elasticities are always greater than growth ones, suggesting that income inequality is one of the main determinants of poverty. However, consistently with Fosu (2009) and Fosu (2015), the inequality elasticity of poverty is almost four times greater in the rest of the developing world than in Sub-Saharan Africa (2.08 versus 0.53). It implies that reduction in inequality are correlated with smaller poverty reduction rates in SSA, mainly because more individuals, especially those at the margin, are likely to fall below the poverty line in very low-income countries. At the same time, initial conditions are also important: countries that are poorer and more unequal in first place face lesser poverty reduction over time. Results are robust to the exclusion of Europe and Central Asia countries (column 3) and to the restriction to 2000 onwards (column 4). Remarkably similar to the benchmark specification in column 2, the growth elasticity of poverty for SSA is respectively -0.35 and -0.33. In sum, our preliminary findings confirm the common perception that economic growth is less poverty reducing in Africa.

Hypothesis 1. In order to better understand why this is the case, we now pass at testing the three hypothesis discussed in section 3. We first start by assessing whether job creation contributed less to poverty reduction in Sub-Saharan Africa than in the rest of the world. Following the methodology proposed in the previous section, we decompose per capita income growth in changes in: (i) employment rate, (ii) value added per worker, and (iii) share of population of working age. If our hypothesis is correct, we expect the coefficient of employment rate change for SSA to be smaller than in the rest of the world.

[9] For easy readability, we report the elasticities of the variables of interest for both the rest of the world and Sub-Saharan Africa in Table 6. In particular, we report the coefficients of β_1 for the ROW and $(\beta_1 + \beta_2)$ for SSA from the different benchmark models in the second columns of the various tables. Significance levels for African coefficients are obtained thought a t-test of differences in means.

On the contrary, if the interaction term between employment rate change and the SSA dummy is not significant, our hypothesis has to be rejected, as there is no difference across the world.

Table 2 presents the results of hypothesis 1. Interestingly, employment rate change turns out to be the main driver of poverty reduction in the rest of the world for the period 1990-2012, with an elasticity of poverty of -1.53. Productivity changes also matter for poverty reduction (but with a smaller elasticity of -0.89), whilst the coefficient of changes in the share of population of working age is negative but not significant. A different picture stands out for Sub-Saharan Africa, for which demographic change appears to have been the leading determinant of poverty reduction on the last two decades, with a large elasticity of -3.76, whilst productivity changes have played a much smaller role (-0.36).[10] Confirming our initial hypothesis, the employment rate change elasticity of poverty is significantly smaller in SSA than in the ROW. Although the elasticity of -0.54 suggests that somehow growth in employment rates has contributed to lifting people out of poverty in Africa, the effect is almost three times smaller than in the rest of the world, requiring further analysis at sectoral level in order to understand why employment in Africa did not matter for poverty reduction as much as elsewhere.

Hypothesis 2. We start our analysis at sectoral level by looking at the differential impact that growth of agricultural productivity had on poverty reduction in SSA and in the ROW (hypothesis 2). As seen in Table 3 both increases in agricultural and non-agricultural output per worker reduced poverty in the rest of the world between 1990 and 2012. Looking at our benchmark specification in column 2, it appears that this effect has been very similar across sector (-0.29 for agricultural productivity change and -0.33 for non-agriculture). In line with our hypothesis, instead, the elasticity of poverty for agricultural productivity change has only been -0.09 in Sub-Saharan Africa, stressing that agricultural productivity gains in the region did not go in favor of the poor during the last years. The findings are robust across all specifications.

Hypothesis 3. We now turn at testing our third hypothesis, that shifts of labor out of agriculture did not contribute to poverty reduction to the same extent than other regions. Remarkably, while in the rest of the world non-agricultural employment growth contributed to poverty reduction with an elasticity of -1.07, the effect less than halved for SSA (-0.50) (column 2 of Table 4). As aforementioned, some commenters argue that what matters for poverty reduction is a movement into manufacturing jobs, rather than a general shift out of agricultural employment, since manufacturing is clearly one of the most productive sectors which contributed in large part to the economic success of East and South Asia. Therefore Table 5 replicates the latter analysis replacing the distinction agriculture/non-agriculture

[10] As mentioned in the previous footnote, elasticities for Sub-Saharan Africa and their significance level can be found in Table 6.

employment rate change with manufacturing/non-manufacturing. Results are very instructive. In fact, estimates suggest that on average growth in manufacturing employment played a significant, albeit small, role in poverty reduction all around the world, except in Sub-Saharan Africa (the elasticity is -0.17 for ROW, while it is only -0.01 for SSA and it is not statistically significant).[11]

7. The Way Ahead

Results from the previous section can be exploited to speculate on future trends in poverty and sectorial growth. We focus on the subsample of 17 Sub-Saharan African countries included in our dataset and project the 2012-2020 poverty rate based on our estimated elasticities.[12] More specifically, we use the IMF World Economic Outlook (WEO) forecasts on future GDP and per capita GDP, and our estimates of the growth elasticity of poverty (η),[13] and calculate the projected annual change in poverty headcount as such:

$$\dot{P_{forecast}} = \dot{G_{forecast}} * \eta$$

Making use of the 2012 poverty estimates by the World Bank as starting point, we are then able to calculate the projected poverty rate for the period 2012-2020 based on, alternatively, GDP growth and per capita GDP growth. As shown in Figure 6, demographics matters: keeping other else constant, the poverty reduction associated to the forecasted GDP per capita growth is estimated to be only 0.2 percent between 2012 and 2020. Conversely, poverty reduction associated to aggregate GDP growth is threefold, stressing that high fertility rates and demographic pressure are likely to dampen the positive effects of economic growth on poverty. Nonetheless, it is worth noting that, even without taking into consideration demographics, economic growth would play only a very small role in poverty reduction over the next few years: poverty headcounts for our sample of 17 African countries are forecasted to drop from an average of 45.1 in 2012 to 44.5 in 2020.

[11] The small and slightly significant ROW coefficient of manufacturing employment change throughout all specifications is likely due to the specific composition of countries in our sample. In fact, as shown in Table A1 in Appendix, our dataset faces an overrepresentation of Latin American and Caribbean countries, which are often considered a special case when discussing manufacturing patterns. In fact, following several 1990s policy reforms, a severe industry rationalization took place in Latin America, with the least productive firms exiting the market and the other firms shedding excess labor (McMillan et al., 2014). As a result, displaced workers found themselves either employed in less productive activities or unemployed, fostering a unique pattern of structural change in which labor moved from high to low productive sectors.

[12] For a full list of countries included in the analysis see Table A1 in Appendix.

[13] Respectively we use the elasticity for per capita GDP from Table 1 (-0.326) and the elasticity for overall GDP from the authors' calculation (-0.866). Results available upon request.

It is therefore interesting to study the extent of structural transformations needed to reduce poverty by a more significant percentage between 2012 and 2020. We can again exploit our previous econometric estimates in order to provide some indicative directions on the way ahead. For instance, let us assume we want to keep poverty reduction equal to the trend over the previous period (1990-2012), that is an annual poverty change of roughly -0.02 percent. Following this trend, poverty would decline from 45.1 in 2012 to 39.23 in 2020 (dashed line in Figure 6). In order for this to occur, we would need an annual growth of agricultural productivity of around 0.2 percent. Given that the average annual growth of agricultural productivity in Sub-Saharan Africa between 1990 and 2012 was 0.1 percent, if the region wants to keep reducing poverty at the same rate of the last two decades, a twofold effort in increasing agricultural productivity would be needed in the years to come.

Even more effort should be put in fostering labor shifts out of agriculture. In fact, the average annual rate at which non-agricultural employment grew between 1990 and 2012 was 0.03 percent. However, in order to maintain poverty reduction at the previous pace, a remarkable 0.9 percent annual growth in non-agricultural employment is needed. With such different annual growth rates of structural transformation between the ones of the past and the ones needed in the future to maintain sustained poverty reduction, the question on how to encourage transformations should come at the forefront of the policy debate.

8. Conclusions

Sub-Saharan Africa's disappointingly low rates of poverty reduction over the last decades are reflected in a very small growth elasticity of poverty. A general argument on the difficulty of poverty reduction is based on either the lack of sustained growth episodes, pervasive income inequality or socio-economic conditions of the population that influence the degree to which output growth helps reduce poverty. In this paper we apply standard growth decomposition techniques to offer a complementary approach and identify three additional potential drivers of such low growth elasticities of poverty in Africa.

Firstly, we find that a one percent increase in employment rate was correlated to a drop in poverty of about 0.5 percent in Sub-Saharan Africa during the period 1990-2012, whilst the effect was almost threefold in the rest of the world. This confirms our initial hypothesis that in Africa employment rate growth contributed to a smaller extent to poverty reduction. Secondly, our results confirm the claim of a very small impact of productivity gains in agriculture on African poverty. It appears clear that

transformations to increase output per worker did not involve the poorest segments of the population: a one percent increase in agricultural productivity reduced poverty by only 0.09 percent in SSA against a 0.3 percent poverty reduction in the rest of the world. We also find that employment shifts out of agriculture have played an important role in poverty reduction in Africa, although the effect has been less than half the one experienced in the other parts of the world. On the contrary, labor movements towards manufacturing have not been a fundamental driver of poverty reduction in Sub-Saharan Africa in the last two decades, probably due to the fact that poor cannot typically land a manufacturing job in Africa.

Overall our findings shed new light on the mechanisms behind the less poverty reducing impact of economic growth in Africa. Analyzing structural transformations has revealed critical differences in the growth patterns between Sub-Saharan Africa and the rest of the world. However, our study did not discuss the important heterogeneities existing at country level. Further analysis at micro level is hence required in order to understand how structural transformations affected poverty rates within African countries.

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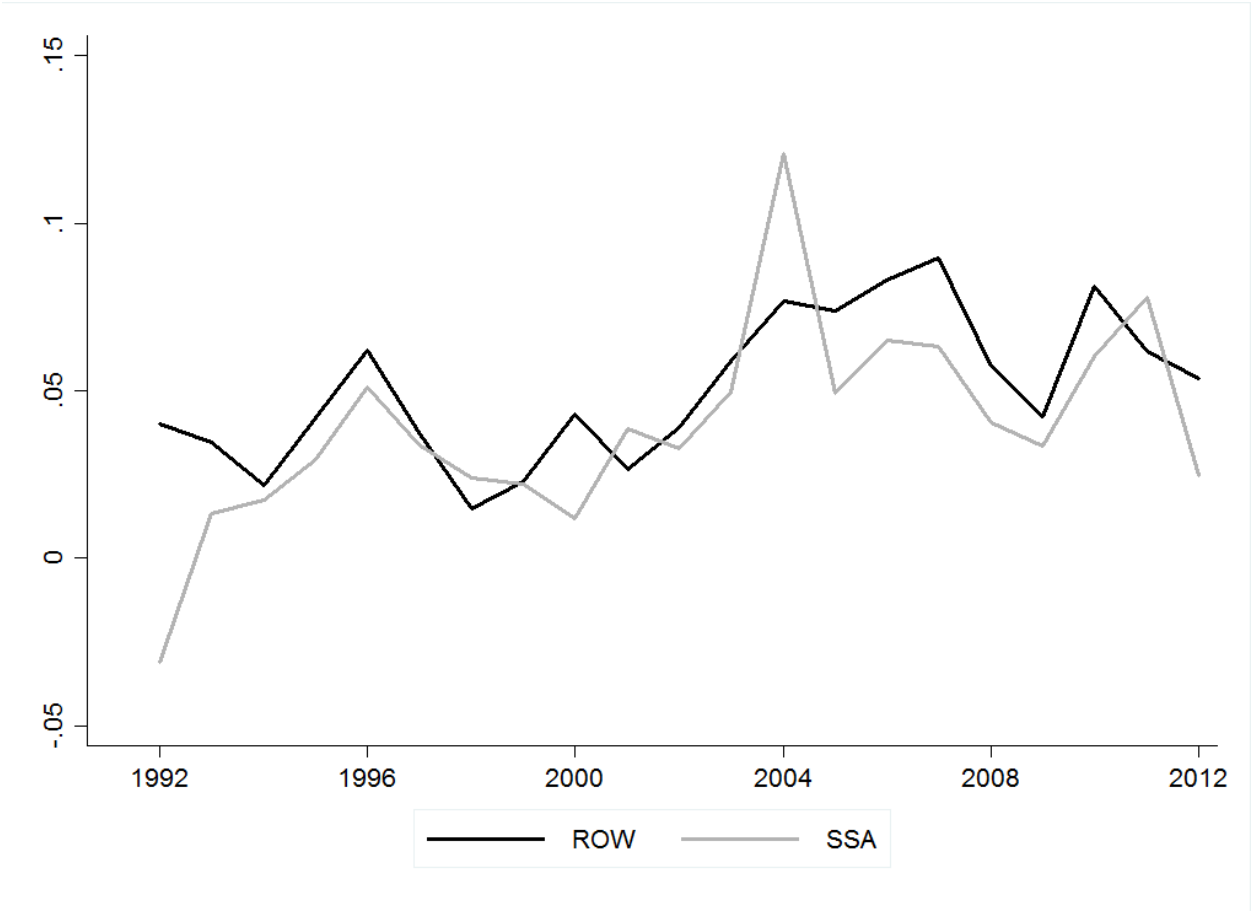
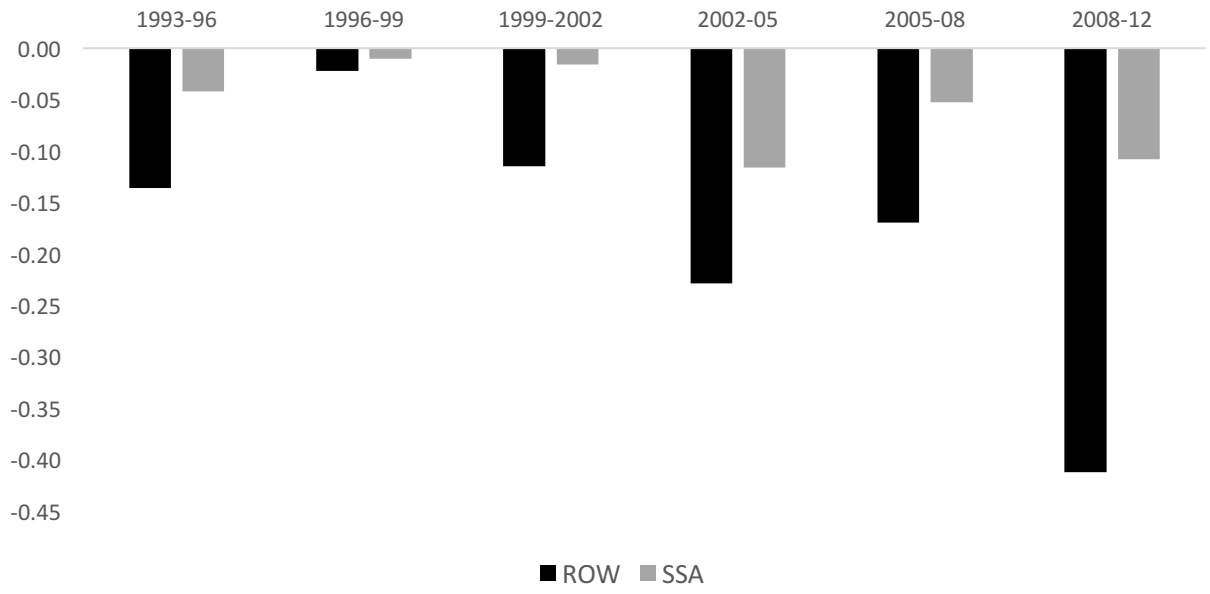
Figure 1: GDP growth (PPP, constant 2011 international $), Sub-Saharan Africa and rest of the World



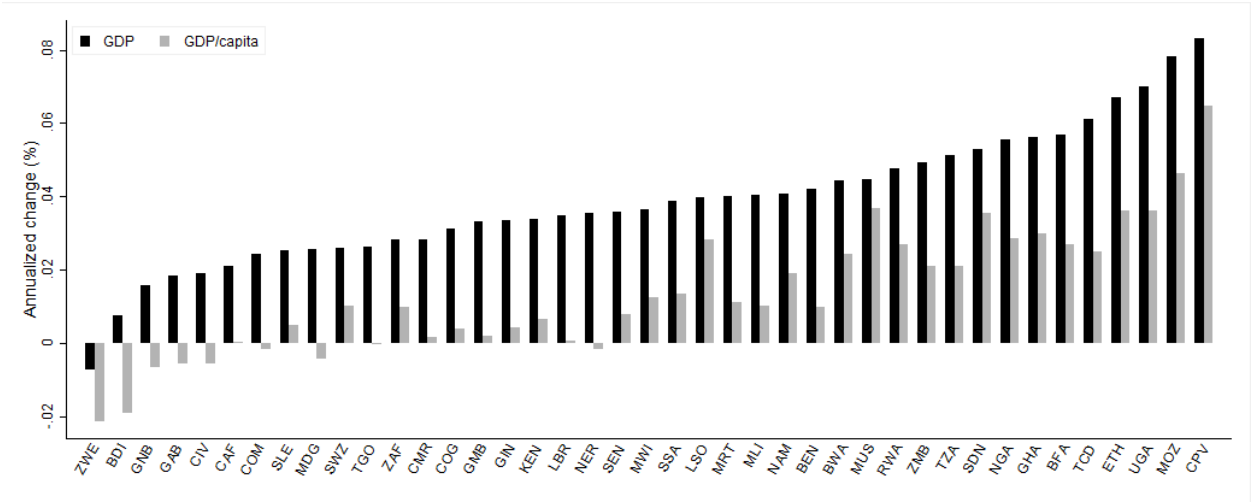
Source: WDI, authors' calculations

Figure 2: Poverty reduction ($1.90), Sub-Saharan Africa and rest of the World



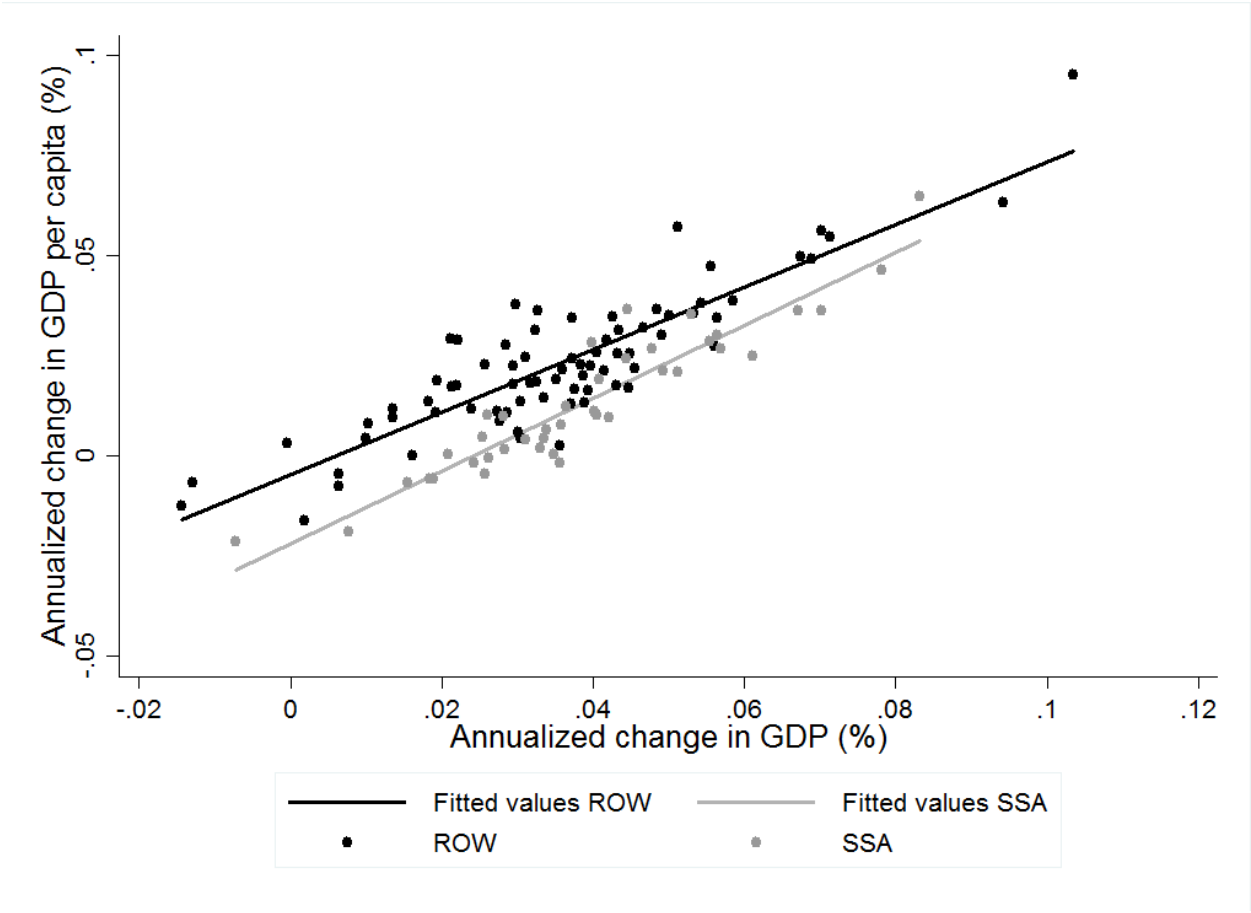
Source: Povcalnet, authors' calculations

Figure 3: Annualized GDP and GDP per capita growth rates, Sub-Saharan Africa 1990-2012



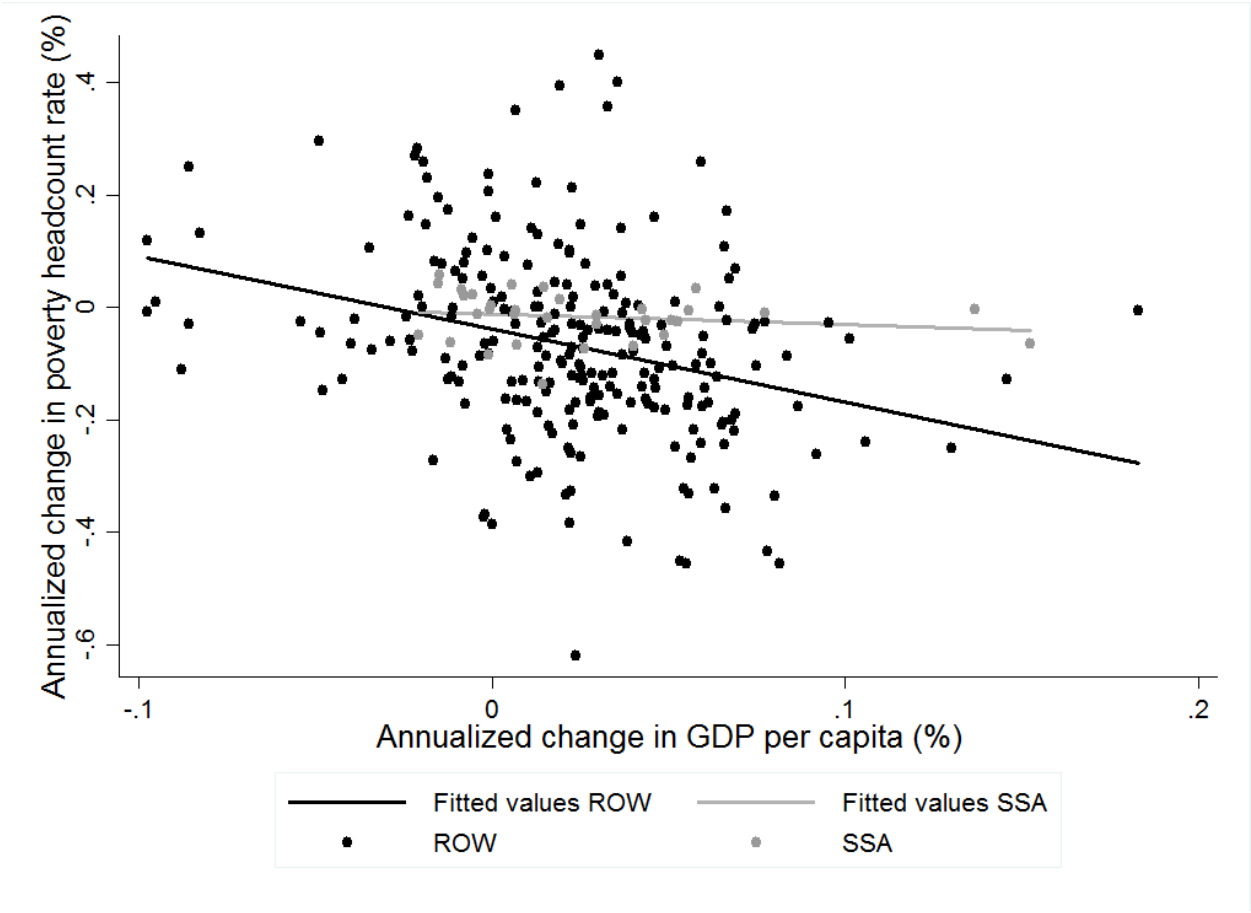
Source: WDI, authors' calculations

Figure 4: Correspondence between GDP and GDP per capita growth, Sub-Saharan Africa and rest of the World 1990-2012



Source: WDI, authors' calculations

Figure 5: The relationship between poverty and growth in a sample of growth spells



Source: Povcalnet and WDI, authors' calculations

Table 1: The evolution of poverty across growth spells

	(1) Naïve	(2) Benchmark	(3) No ECA	(4) 2000 onwards
GDPpc change	-1.296***	-1.064***	-0.991***	-0.956***
	(0.208)	(0.213)	(0.217)	(0.271)
GDPpc change * SSA	1.111***	0.738***	0.645**	0.631**
	(0.251)	(0.250)	(0.260)	(0.309)
SSA	0.026**	0.058***	0.057***	0.061***
	(0.013)	(0.016)	(0.017)	(0.018)
Gini change		2.078***	2.023***	2.197***
		(0.282)	(0.282)	(0.367)
Gini change * SSA		-1.553***	-1.497***	-1.669***
		(0.287)	(0.289)	(0.373)
Initial GDPpc		-0.002**	-0.002**	-0.002*
		(0.001)	(0.001)	(0.001)
Initial Gini		0.095**	0.086**	0.086**
		(0.037)	(0.038)	(0.039)
Initial poverty		-0.008	-0.006	-0.006
		(0.011)	(0.013)	(0.011)
Constant	-0.038***	-0.353**	-0.319*	-0.335*
	(0.009)	(0.158)	(0.168)	(0.167)
Observations	267	267	256	209
R-squared	0.101	0.295	0.285	0.270

Notes: (1) ***, **, * denotes significance at 1, 5, 10 percent level respectively. (2) Standard errors clustered at country level in parenthesis. (3) All values are in 2011 PPPs, and the poverty line is $1.90 a day. (4) Sources: Own calculations using data from Povcalnet, I2D2, and UNStats.

Table 2: HP 1 – Poverty changes and the total employment intensity of growth

	(1) Naïve	(2) Benchmark	(3) No ECA	(4) 2000 onwards
% of population of working age change (A/N)	-1.843	-1.042	-0.609	-0.575
	(1.114)	(1.099)	(1.175)	(1.394)
Employment rate change (E/A)	-1.682***	-1.533***	-1.451***	-1.613***
	(0.350)	(0.338)	(0.363)	(0.431)
Value added per worker change (Y/E)	-1.122***	-0.887***	-0.830***	-0.885***
	(0.207)	(0.189)	(0.201)	(0.250)
A/N * SSA	1.135	-2.720	-2.956	-3.590*
	(1.543)	(1.926)	(1.978)	(2.112)
E/A * SSA	1.646***	0.989**	0.872*	0.834
	(0.384)	(0.451)	(0.486)	(0.578)
Y/E * SSA	1.077***	0.525*	0.444	0.398
	(0.243)	(0.294)	(0.314)	(0.361)
Observations	267	267	256	209
R-squared	0.097	0.319	0.312	0.305

Notes: (1) ***, **, * denotes significance at 1, 5, 10 percent level respectively. (2) Standard errors clustered at country level in parenthesis. (3) All values are in 2011 PPPs, and the poverty line is $1.90 a day. (4) Sources: Own calculations using data from Povcalnet, I2D2, and UNStats.

Table 3: HP 2 – Poverty changes and the agricultural productivity intensity of growth

	(1) Naïve	(2) Benchmark	(3) No ECA	(4) 2000 onwards
Y/E Agr change	-0.364***	-0.292***	-0.268***	-0.334***
	(0.084)	(0.087)	(0.088)	(0.109)
Y/E non-Agr change	-0.317***	-0.327***	-0.311***	-0.334***
	(0.090)	(0.081)	(0.084)	(0.098)
Y/E Agr change * SSA	0.263***	0.204**	0.184**	0.243**
	(0.075)	(0.078)	(0.078)	(0.097)
Y/E non-Agr change * SSA	-0.084	-0.178	-0.179	-0.161
	(0.113)	(0.153)	(0.153)	(0.164)
Controls	No	Yes	No	Yes
Observations	267	267	256	209
R-squared	0.067	0.306	0.299	0.300

Notes: (1) ***, **, * denotes significance at 1, 5, 10 percent level respectively. (2) Standard errors clustered at country level in parenthesis. (3) All values are in 2011 PPPs, and the poverty line is $1.90 a day. (4) Additional controls are not presented but included in the specification. (5) Sources: Own calculations using data from Povcalnet, I2D2, and UNStats.

Table 4: HP 3 – Poverty changes and employment shifts out of agriculture

	(1) Naïve	(2) Benchmark	(3) No ECA	(4) 2000 onwards
E/A Agr change	-0.040	-0.110*	-0.113**	-0.118*
	(0.063)	(0.057)	(0.055)	(0.070)
E/A non-Agr change	-1.194***	-1.071***	-1.020***	-1.238***
	(0.226)	(0.250)	(0.257)	(0.280)
E/A Agr change * SSA	-0.247***	-0.183**	-0.179**	-0.259***
	(0.080)	(0.069)	(0.070)	(0.077)
E/A non-Agr change * SSA	0.717***	0.575**	0.543**	0.480**
	(0.242)	(0.216)	(0.218)	(0.224)
Controls	No	Yes	No	Yes
Observations	267	267	256	209
R-squared	0.109	0.315	0.309	0.312

Notes: (1) ***, **, * denotes significance at 1, 5, 10 percent level respectively. (2) Standard errors clustered at country level in parenthesis. (3) All values are in 2011 PPPs, and the poverty line is $1.90 a day. (4) Additional controls are not presented but included in the specification. (5) Sources: Own calculations using data from Povcalnet, I2D2, and UNStats.

Table 5: HP 4 – Poverty changes and employment shifts towards manufacturing

	(1) Naïve	(2) Benchmark	(3) No ECA	(4) 2000 onwards
E/A Man change	-0.134	-0.170*	-0.082	-0.180**
	(0.128)	(0.089)	(0.078)	(0.089)
E/A non-Man change	-1.065***	-1.183***	-1.326***	-1.276***
	(0.323)	(0.302)	(0.298)	(0.380)
E/A Man change * SSA	0.077	0.165*	0.097	0.067
	(0.140)	(0.095)	(0.083)	(0.103)
E/A non-Man change * SSA	0.253	0.176	0.283	0.124
	(0.274)	(0.207)	(0.199)	(0.228)
Controls	No	Yes	No	Yes
Observations	267	267	256	209
R-squared	0.068	0.312	0.313	0.299

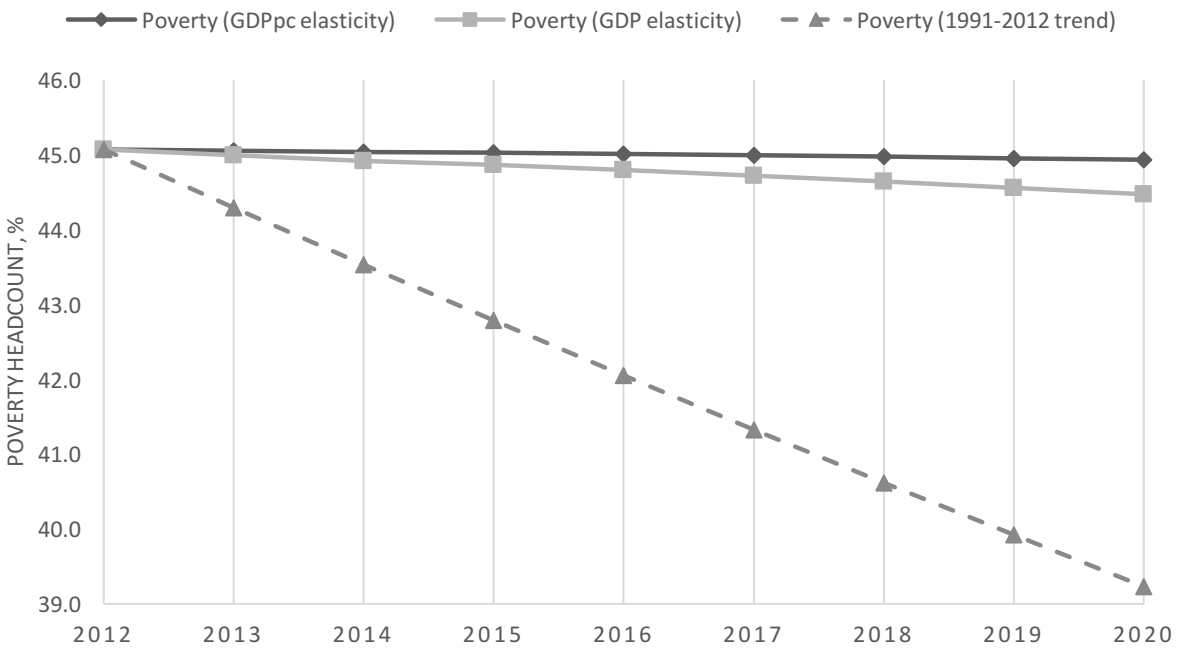
Notes: (1) ***, **, * denotes significance at 1, 5, 10 percent level respectively. (2) Standard errors clustered at country level in parenthesis. (3) All values are in 2011 PPPs, and the poverty line is $1.90 a day. (4) Additional controls are not presented but included in the specification. (5) Sources: Own calculations using data from Povcalnet, I2D2, and UNStats.

Table 6: The impact of growth and its component on poverty change by region

	(1) ROW	(2) SSA
Table 1		
GDPpc change	-1.064***	-0.326***
Gini change	2.078***	0.525***
Table 2		
A/N change	-1.042	-3.762***
E/A change	-1.533***	-0.544**
Y/E change	-0.887***	-0.362**
Table 3		
Y/E Agr change	-0.292***	-0.088***
Table 4		
E/A non-Agr change	-1.071***	-0.496***
Table 5		
E/A Man change	-0.170*	-0.005

Notes: (1) ***, **, * denotes significance at 1, 5, 10 percent level respectively. (2) Standard errors clustered at country level in parenthesis. (3) All values are in 2011 PPPs, and the poverty line is $1.90 a day. (4) Additional controls are not presented but included in the specification. (5) Sources: Own calculations using data from Povcalnet, I2D2, and UNStats.

Figure 6: Projected poverty rates based on GDP and GDP per capita growth, Sub-Saharan Africa



Source: Authors' calculations

Appendix

Table A1: Coverage of the data set

Country	ISO3	Survey years
Albania	ALB	2002, 2005
Argentina	ARG	1992, 1993, 1994, 1996, 1997, 1999, 2000, 2003, 2005, 2006, 2007, 2008, 2009, 2010, 2012
Burkina Faso	BFA	1994, 1998, 2003, 2009
Bangladesh	BGD	2000, 2005, 2010
Belize	BLZ	1993, 1994, 1996, 1997, 1998, 1999
Bolivia	BOL	1993, 1999, 2000, 2002, 2005, 2006, 2007, 2008, 2009, 2011
Brazil	BRA	1992, 1993, 1995, 1996, 1997, 1998, 1999, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2012
Bhutan	BTN	2003, 2007
Cameroon	CMR	1996, 2001, 2007
Colombia	COL	1996, 1999, 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011
Costa Rica	CRI	1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009
Dominican Republic	DOM	1996, 1997, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012
Ecuador	ECU	1994, 1995, 1998, 1999, 2000, 2003, 2004, 2005, 2008, 2009, 2010, 2011, 2012
Ethiopia	ETH	1995, 1999, 2004
Guinea	GIN	1994, 2002
Guatemala	GTM	2000, 2002, 2003, 2004, 2006, 2011
Honduras	HND	1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011
Haiti	HTI	2001, 2012
Indonesia	IDN	1993, 1999, 2002, 2005, 2008
India	IND	1993, 2009
Jamaica	JAM	1996, 1999
Kenya	KEN	1997, 2005
Cambodia	KHM	2004, 2007, 2008, 2012
Sri Lanka	LKA	1995, 2002, 2006
Lesotho	LSO	2002, 2010
Moldova	MDA	1998, 2002, 2005
Madagascar	MDG	1993, 1997, 1999, 2001, 2010
Mexico	MEX	1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012
Macedonia	MKD	2003, 2005
Mongolia	MNG	2002, 2010, 2011
Mozambique	MOZ	1996, 2002, 2008
Mauritania	MRT	2000, 2004, 2008
Malawi	MWI	1997, 2004, 2010
Niger	NER	2005, 2007, 2011
Nicaragua	NIC	1993, 1998, 2001, 2005, 2009
Nepal	NPL	1995, 2003, 2010
Pakistan	PAK	1996, 2001, 2004, 2005, 2010
Panama	PAN	1991, 1995, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012
Peru	PER	1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012
Philippines	PHL	1997, 2003, 2006, 2009
Paraguay	PRY	1995, 1997, 1999, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2012
Romania	ROM	1994, 2002, 2006, 2007
Rwanda	RWA	2000, 2005, 2010
Senegal	SEN	2001, 2005, 2010

Sierra Leone	SLE	2003, 2011
El Salvador	SLV	1991, 1995, 1996, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2008, 2009
Serbia	SRB	2008, 2010
Sao Tome and Principe	STP	2000, 2010
Togo	TGO	2006, 2011
Thailand	THA	1994, 2002, 2006, 2009, 2010
Tunisia	TUN	2005, 2010
Turkey	TUR	2002, 2004, 2005, 2006, 2007, 2010
Tanzania	TZA	2000, 2007, 2011
Uganda	UGA	2002, 2005
Ukraine	UKR	2002, 2005
Venezuela	VEN	1992, 1995, 1998, 1999, 2001, 2003, 2004, 2005, 2006
Vietnam	VNM	1992, 2002, 2004, 2006, 2010
West Bank and Gaza	WBG	2004, 2005
Zambia	ZMB	1998, 2002, 2010

Notes: (1) Sources: Povcalnet, I2D2, and UNStats.

Table A2: Descriptive statistics

	ROW	SSA	t-test
Poverty change	-0.0677	-0.0172	(-1.73)
GDPpc change	0.0226	0.0255	(-0.39)
% of population of working age change (A/N)	0.0060	-0.0002	(4.12)***
Employment rate change (E/A)	-0.0001	0.0109	(-0.96)
Value added per worker change (Y/E)	0.0207	0.0249	(-0.25)
Y/E Agr change	0.0261	0.0997	(-1.64)
E/A non-Agr change	0.0089	0.0296	(-1.54)
E/A Man change	-0.0001	0.0310	(-1.10)
N	234	33	

Notes: (1) Sources: Povcalnet, I2D2, and UNStats.