

Uncovering Africa's Inequality Problem: Growth, poverty and inequality in the last two decades

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Abstract:

Poverty reduction is jointly determined by economic growth, by the initial shape of the income/consumption distribution, and by how this distribution changes during the growth process. In Sub-Saharan Africa (SSA), evidence regarding the interactions between these processes presents a puzzle: While growth has been robust in recent decades, the growth elasticity of poverty has remained very low. This suggests that high and growing inequality has dampened the pro-poor effects of growth. However, when using standard inequality measures there is little evidence of high and growing inequality in SSA. We argue that inequality mismeasurement is responsible for this paradox, and that there are two reasons for this mismeasurement: First, consumption-based measures miss important information at the top end of the consumption distribution, leading to underestimation of inequality. Second, standard inequality measures are not sensitive to certain patterns of distributional change which are relevant to poverty reduction – in particular, to processes of consumption polarisation. In this paper, we propose solutions to both these measurement problems, and argue that, by re-evaluating the importance of distributional issues in SSA, the need becomes apparent for refreshing the research agenda on African development in such a way that the interaction between poverty and inequality becomes a core concern.

Introduction:

Over the last twenty years, Sub-Saharan Africa (SSA) has experienced an unprecedented resurgence of economic growth. While this growth is encouraging for the prospects of SSA's economic development, a debate is ongoing regarding its nature and outcomes. In particular, scholars have questioned the extent to which this growth has been driven by the structural transformation of African economies away from agriculture and into services and manufacturing, or, alternatively, by fortuitous and potentially temporary favourable external conditions (Diao et al., 2018; Rodrik, 2016). To the extent that growth has been driven by external conditions such as a rise in commodity prices and low interest rates, there are concerns that SSA underperformed in translating growth into positive development outcomes such as poverty reduction (Beegle et al., 2016; World Bank, 2018).

It is now generally agreed that, while most countries in SSA have experienced reductions in poverty, this progress has been relatively slow compared to other non-African developing countries experiencing similar growth rates (Thorbecke and Ouyang, 2018). An intuitive explanation for this sub-optimal performance is given by the abundant literature on growth non-inclusiveness in SSA (inter alia Christiansen et al, 2013; Cornia, 2015; Odusola et al., 2017). In a nutshell, economic growth, when driven by a resource boom and presided over by extractive institutions, disproportionately benefits a country's ruling elite rather than the poor (Sala-i-Martin and Subramanian, 2003; Robinson et al, 2006; Devarajan et al., 2013).

As long as growth is not evenly distributed but is concentrated in the top deciles of the distribution, this determines a rise in inequality and a limited trickle-down effect on the poor. In this regard, Bourguignon (2004), through a simple arithmetic identity, shows how poverty reduction is fully determined by growth, the shape of the initial consumption distribution, and changes in the

shape of this distribution. If growth occurs alongside an anti-equality change in the shape of the consumption distribution, then the poverty reducing effects of growth will be compromised.

From the above, we would expect that high and increasing inequality is the immediate culprit for SSA's comparatively poor record in translating growth into poverty reduction over the last twenty years. However, the evidence in this regard is rather scattered and ambiguous. While SSA is frequently said to rival Latin America as the most unequal region in the world, this is driven by the few exceptionally unequal countries in the continent's Southern cone (Cornia et al., 2017). Excluding the Southern cone, inequality in SSA is not high by developing country standards. Evidence of recent trends in inequality-i.e. during the SSA's growth miracle- is also mixed – no clear pattern emerges which could hold generally across the continent.

Pinhovskiy and Sala-i-Martin (2014) show that the recent SSA growth spurt was, in fact, accompanied by a generalized decrease of inequality. Beegle et al. (2016) find that, of 23 countries where data is available to track changes in inequality, half can be shown to have experienced increases in inequality, while the other half experienced decreases. Cornia et al. (2017) also find a bifurcation in inequality trends in SSA: 17 countries experienced declining inequality, whereas 12 countries, predominantly in Southern and Central Africa recorded an inequality rise. Therefore, there is no reason to suggest that inequality (either regarding trends or initial conditions) is a sufficient explanation for SSA's poor performance in reducing poverty commensurately with growth. However, this poses a puzzle: under Bourguignon's growth-inequality-poverty (GIP) nexus, if growth fails to translate effectively into poverty reduction, this is determined mechanically by either high initial inequality or by pro-inequality distributional changes occurring alongside growth.

Searching for possible explanations for this conundrum, our recent and ongoing research has focused on the standard empirical toolkit used by researchers to investigate poverty and inequality in

SSA. A motivating concern is our belief that this toolkit might be biased towards measuring poverty and be less accurate in investigating other distributional problems on the continent. Correcting these measurement issues, we argue, may help resolve the GIP puzzle identified above – as well as motivate a refreshed interest in distributional issues on the continent and in the relationship between inequality and poverty.

This paper formulates two hypotheses pointing to possible explanations for the fact that the available data does not seem to be able to provide a sensible account of the interaction between growth, poverty and inequality in SSA in the last two decades. First, we argue that, while consumption as a proxy for wellbeing is well-suited to measuring poverty, it is less well-suited to measuring inequality when important socio-economic transformations have taken place. In particular, the creation or consolidation of national middle classes in SSA, we argue, calls for adjusting the way we measure welfare in the region. Second, we question the capacity of standard measures of inequality (such as the ubiquitous Gini-coefficient) to reflect those distributional changes occurring in SSA which are most relevant to poverty reduction. We show that these distributional changes had a clear inegalitarian pattern throughout the region and reduced the pro-poor impact of growth, and yet are only detected when using methods that are more sensitive to changes across the entire distribution, and go largely unobserved when using standard inequality summary measures.

Section 1: The paradox

The role of economic growth in driving poverty reduction has been the subject of extensive study, and there is now “a general consensus that income growth is the main engine for poverty reduction globally” (Fosu, 2018: 94; Dollar and Kraay, 2002, Ravallion, 2001). However, it has also been shown that the distributional changes which accompany growth represent a crucial mediating

factor affecting the translation of growth into effective poverty reduction (Ravallion, 1997; Bourguignon, 2004). Poverty reduction is thus “fully determined by the rate of growth of the mean income of the population and *the change in the distribution of income*” (Bourguignon, 2004:2, emphasis added). In terms of achieving poverty reduction, it is sufficient to look at the rate of growth, the initial distribution of income/consumption, and the distributional changes which accompany this growth process. This relationship has been labelled the “growth-inequality-poverty (G-I-P) nexus”.

This nexus brings into focus the fact that “the real challenge to establishing a development strategy for reducing poverty lies in the interactions between distribution and growth” (Bourguignon, 2004: 2). This is evident if we consider that if positive (negative) growth occurs alongside anti-equality (pro-equality) distributional changes, it is not clear *a priori* which process will dominate, and hence whether an increase or decrease in poverty will be experienced. In addition, the shape of the initial consumption distribution (i.e. capturing initial levels of poverty and inequality) plays a role in determining the effectiveness with which growth is translated into poverty reduction (Fosu, 2015; Fosu, 2018; Thorbecke and Ouyang, 2018; Thorbecke, 2013). This is intuitively apparent – if inequality is initially high in a given society, there may be a high concentration of the population whose consumption falls far below the poverty line. Compared to a more equal society with the same mean consumption, in the more unequal society there may be a relatively smaller concentration of people whose consumption falls below but close to the poverty threshold. Comparing these two cases, distributional-neutral growth will result in less poverty reduction in the more unequal society than in the less unequal society.

Thus, from the observation that any change in poverty is fully captured as a function of growth, initial distribution and a change in the distribution, we can see that, to isolate the relative

contribution of growth and inequality to poverty reduction, we need to be able to identify appropriate and accurate indicators for all three vertices of this G-I-P triangle.

Growth can be measured using changes in GDP per capita from national accounts, or can be measured as the percentage change in mean welfare level (income or consumption) from household surveys. Using either measurement, it has been shown that over the past two decades, SSA has experienced robust and sustained growth in GDP per capita of approximately 3.5 per cent per annum, roughly equivalent or higher than the growth experienced in Latin America over the same period. This has led several observers to characterise the past two decades as a “growth resurgence” (Fosu, 2018) or even as a “growth miracle” (Young, 2012; McMillan & Harttgen, 2014).

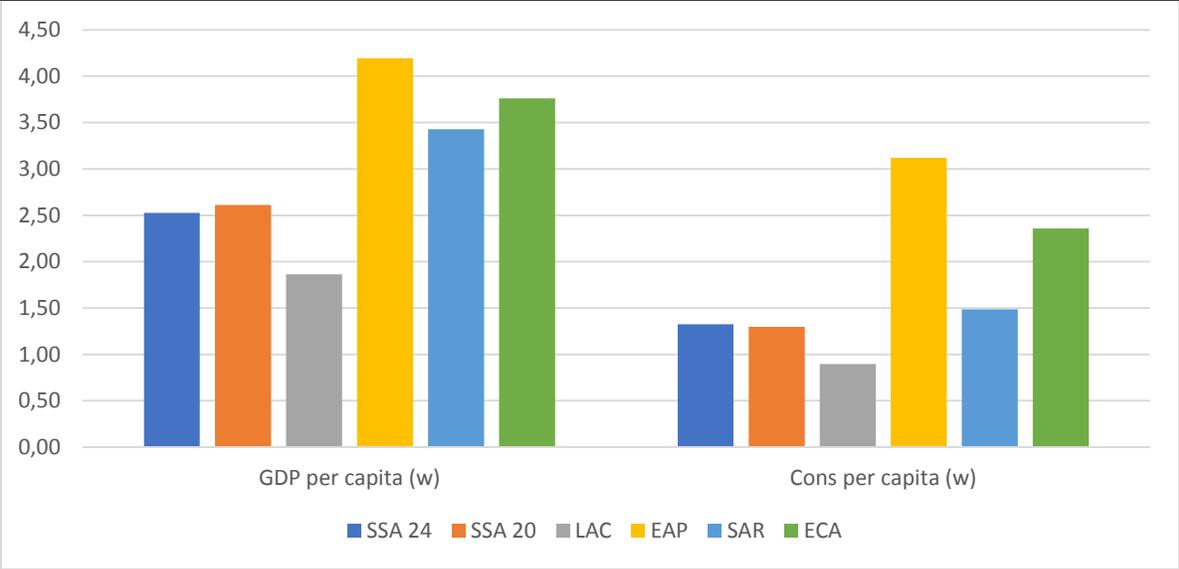
There are, however, scholars that question the reliability of GDP growth figures in SSA, at least in part because recent efforts to include the informal sector may have led to an overestimation of growth (Devarajan, 2013; Jerven, 2015). However, the severity of this potential underestimation and its implications for understanding changes in poverty can be indicated by the discrepancy between GDP and consumption growth estimates. Figure 1 compares the average annual GDP per capita growth and average consumption¹ growth from available household surveys; consumption is the welfare measure typically used to calculate poverty rates and therefore its growth is the factor that matters most for poverty reduction (Adams, 2004; McKay, 2013). For SSA we present consumption figures for 24 countries (SSA 24) that have over the last two decades two comparable surveys (Beegle et al., 2016). We also report estimates for the same countries while excluding the four very unequal countries² located in the Southern cone (Cornia et al., 2017). This restricted group is identified as SSA 20 in Figure 1 below.

¹ For Latin America we computed average income growth for the household surveys.

² South Africa, Botswana, Namibia and Zambia

Two elements are worth noting. First, the discrepancy between GDP per capita growth and household consumption growth (Figure, 1) is not higher in SSA than in the rest of the developing world. Indeed, there might be some problems in GDP figures in SSA but the gap between GDP and consumption figures is similar to that of other regions. Second, in terms of mean per capita consumption growth, SSA’s growth over this period has not been dramatically different from other developing countries, falling somewhere between the slightly higher growth of South Asia, and the slightly lower growth in Latin America.

Figure 1: GDP per capita and household consumption growth rates: population weighted regional averages 1999-2014



Source: World Development indicators and Povcalnet

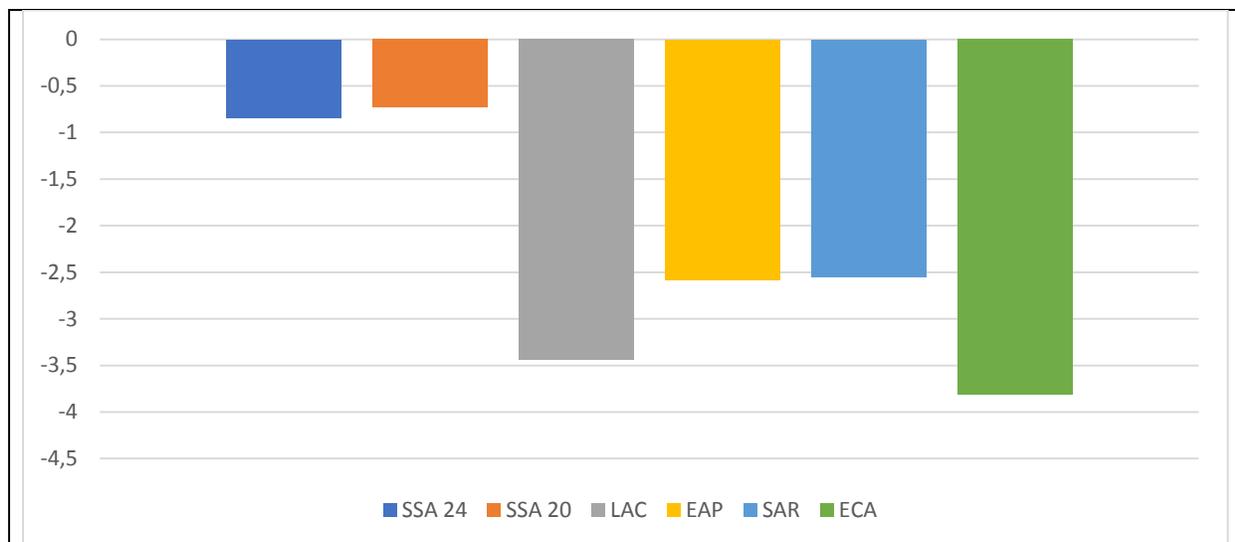
Therefore, even considering some measurement problems with GDP, it is widely accepted that SSA has experienced sustained and robust economic growth in the last two decades. At the same time, however, there is also a broad consensus that “while economic growth in Africa has

resurged substantially since the mid-to-late 1990s, the amount of poverty reduction seems much less spectacular” (Fosu, 2018, 92).

A simple way of looking at the relationship between growth and poverty reduction is to compare the growth elasticity of poverty³ in SSA to other developing countries (Figure 2). A 1 percent per capita GDP growth in SSA reduces poverty by 0.8 percentage points; if we exclude the Southern cone, the elasticity drops to 0.73. Africa’s growth elasticity to poverty falls well below the global norm - regions outside of Africa experienced an average growth elasticity of poverty of between 2.5 and 3.8 over the same period. Similar results are obtained by Thorbecke and Ouyang (2017) although they consider a much longer time-span, from 1982 to 2007. Fosu (2018) further shows that, using the family of Foster-Greer-Thorbecke poverty measures which are sensitive to the “spread” and “depth” of poverty, we find that progress in SSA in terms of reducing the depth of poverty is even less impressive than progress in terms of reducing the incidence (as measured by the headcount ratio).

Figure 2: Growth elasticity to poverty in developing world: 1999-2014

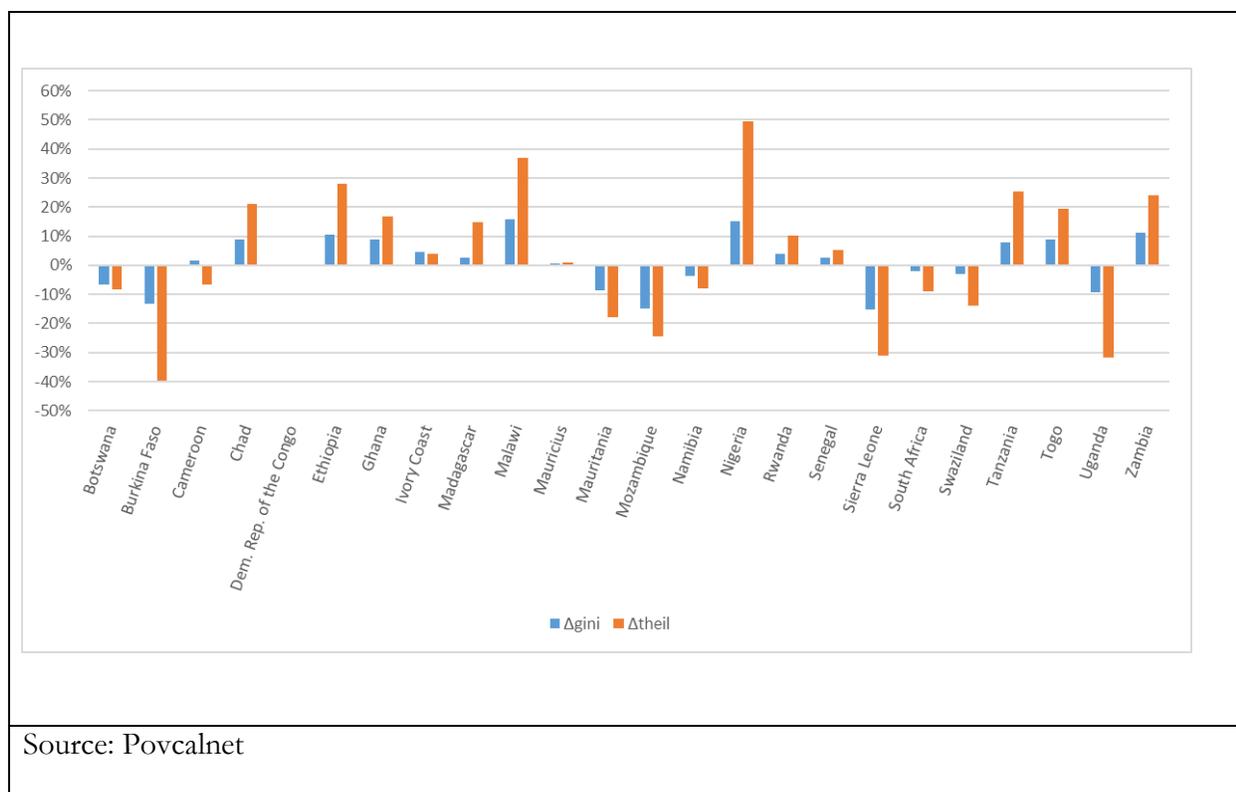
³ Growth elasticity of poverty (GEP) is the percentage reduction in poverty rates associated with a percentage change in mean (per capita) income. Generally, increases in per capita income tend to decrease the poverty rate, hence the elasticity is positive. Standard estimates of GEP for developing countries range from 1.5 to 5, with an average estimate of around 3. This implies that a 1% increase in per capita income is associated with a 3% decrease in the poverty rate.



Source: World Development indicators and Povcalnet

As it appears, growth in SSA has failed to translate effectively into poverty reduction; considering, thus, Bourguignon’s G-I-P nexus discussed above, it follows naturally that we would expect high and/or rising inequality to explain this elasticity puzzle. Unfortunately, this hypothesis is not borne out in the data. When measured with standard indicators like the Gini, there is no clear evidence of an increase in inequality in the last two decades (Figure 3). It is also relevant to note that if we exclude the high-inequality Southern cone from the analysis (Figure 2), the elasticity puzzle of high growth and sub-optimal poverty reduction remains. That is, perhaps unexpectedly, the low growth elasticity of poverty reduction applies also (and perhaps especially) in the relatively *low* inequality countries in West, Central and East Africa (Oduola et al., 2017).

Figure 3: Gini and Theil (%) variation in selected SSA countries



These simple figures point indeed to a formidable puzzle. If the arithmetic laws of Bourguignon’s G-I-P identity are upheld, we would expect that robust growth which fails to translate effectively into poverty reduction would be explained by distributional factors which “filter” the transmission of the benefits of growth to the poor. These distributional factors may either be high initial levels of inequality, or an increase in inequality accompanying growth. The fact that we find no reason to believe that either of these distributional factors sufficiently explain the elasticity puzzle suggests that we may be facing a measurement problem. In this particular puzzle, where exactly is measurement of inequality going wrong? It is to this that we now turn.

Section 2: Where is measurement going wrong?

A development goal which is related to but distinct from poverty reduction is the aim of creating a national middle class. As a development goal, growing the size of the middle class is related to the aim of poverty reduction insofar as growing the middle class necessitates pulling households out of poverty as a first step. However, these aims are distinct in the sense that a meaningful definition of the middle class does not simply classify all non-poor households as middle class. Rather, the middle class is seen as a class which is distinct in terms of consumption behaviour, political participation, social norms, and economic empowerment and stability. These criteria are not automatically met when a poor household's income moves above the poverty line. Acknowledging this, many meaningful definitions of the middle class distinguish the middle class from a non-poor but "vulnerable" group situated between the middle class and the poor (Lopez-Calva & Ortiz-Juarez, 2014; Zizzamia et al., 2016; Schotte et al., 2018; Rodas et al., 2015).

How does the discussion on the middle class matter for inequality measurement in SSA? To see why it does, in this section we discuss how consumption becomes an unsuitable tool for measuring the welfare of the middle-class in SSA. We first describe the size of middle class in SSA, its salient characteristics and then discuss how they cause consumption-based welfare measures to underestimate inequality.

Unlike in developed countries where the middle class literally straddles the middle of the income distribution, recent research in Latin America and South Africa, (Lopez-Calva and Ortiz-Juarez, 2014; Ferreira et al., 2013; Zizzamia et al., 2016, Visagie and Posel, 201*) has consistently shown that, in these developing countries, less than 30 percent of households qualify as middle class and that this group generally lies between the 70th and 99th percentiles in the national income or consumption distribution. Therefore, being middle class in the developing world often indicates a privileged position.

These distinctions are crucial for the purpose of this paper: Given an understanding of the middle class which implies the existence of an intermediate class which buffers the middle class from the poor, we may observe a growth in the middle class which is not, however, driven by poverty reduction but rather by the transfer of households from the intermediate “vulnerable” class to the middle class. This may be characterised by a process of “hollowing out the middle” of the welfare distribution, leading to an increased concentration of households in the tails of the distribution.

A recent report produced by the African Development Bank (AfDB, 2011) attempts to estimate the size of middle class in the continent. In the report, the AfDB made a key distinction between the “floating” middle class and the stable middle class. The floating middle class includes those households with per capita daily consumption between \$2 and \$4 (2005 PPP), and remain at the edge of falling back into poverty. The stable middle class – which accords more closely with the “meaningful” middle class definition discussed above – are defined as those with daily consumption above \$4. Depending on whether the “floating” middle class is included in the middle class definition or not, in 2010 between 34.3 to 14.3 percent of African households could be classified as middle class.

While there is broad agreement that the African middle class has grown in the last two decades, two important open questions remain: First, there is no broad consensus whether middle class growth has occurred in the “stable” middle class, or only in the “vulnerable” or “floating” middle class. While the AfDB report suggests that the growth in the size of the African middle class from 27 percent in 1990 to 34.3 percent in 2010 accrued almost exclusively to growth in the “floating” middle class and was driven by poverty reduction, others have suggested that growth has also occurred in the “stable” middle class (Shimeles and Ncube, 2014; Rodas et al., 2018).

The second open question is whether the concentration of economic power (wealth, consumption or income) in the hands of the middle class has increased along with the growth process - even if the population share of the middle class has remained stable. If this is the case, then the increased concentration of income/consumption among the middle class may off-set the poverty reducing effects of growth, even if the middle class does not increase its population share.

When looking at salient characteristics of the middle class, it is worth noting that middle classes in developing and developed countries tend to be very different in terms of their size and relative position in the national welfare distribution; there are, however, at least three important similarities if we limit ourselves to the socio-economic sphere. (Rodas et al., 2018)

First, middle class members tend to have formal employment (*inter alia* Geithman, 1974; Goldthorpe, 1987; Visagie and Posel, 2013), in either the public or private sector, live in urban areas, and work in non-farm activities. Because income from these sources tends to be less volatile and less affected by seasonality than agricultural incomes, these middle class members will enjoy a greater degree of economic security than those relying primarily on informal employment and their incomes will naturally be much “smoother” (Zizzamia et al., 2016). In SSA, the share of formal employment in total ranges between 10 to 20 percent (International Monetary Fund, 2012; Golub and Hayat, 2014)

Second, formal jobs enable middle class members to have access to similar financial tools as their peers in developed countries. Because of this, African middle class members can save in the form of financial assets or money deposited in bank accounts. Since the marginal propensity to consume declines with higher welfare levels, middle-class households are more likely than poor people to save or invest in financial activities. According to recent estimates in SSA⁴, the number of

⁴ World Development Indicators, <http://data.worldbank.org/data-catalog/world-development-indicators>.

depositors with commercial banks increased threefold between 2004 and 2015, from 50 every 1,000 adults to 155 every 100 adults. It is significant that consultancies, multinational corporations and banks have led the optimistic celebrations of SSA's rising middle class as consumers of goods and financial products (Standard Bank, 2014; CFAO, 2017; McKinsey, 2016). Deloitte (2012) for example, optimistically declaring "the rise and the rise of the African middle class", claimed that the African middle class had tripled in the last three decades.

Finally, the new African middle class seems to have Western-style consumption patterns (McKinsey, 2016). Middle class households not only have spending power but also enjoy a degree of economic security which allows them to diversify their expenditures away from basic needs towards more durable goods (home appliances, computers, smart-phones, cars), luxury goods, entertainment (restaurants, movies, travels), and, in some cases, properties.

These three characteristics – access to formal employment and regular income, an increased propensity to save, and a propensity to consume a more diversified basket of goods – all have repercussions in terms of the suitability of consumption as a proxy for welfare at the top end of the welfare distribution.

To see why, it should first be clear why consumption is preferred to income as a welfare indicator in SSA in the first place. Consumption is generally regarded as easier to measure than income in low-income economies (Deaton and Zaidi, 2002) and among lower strata of the population. While middle class households derive most of their income from wages and returns on capital investments (such as profits and rents), poorer households rely on informal incomes such as those coming from agricultural production (both for selling and for own-consumption) and from informal activities.

How these incomes translate into economic wellbeing is typically easier to capture via consumption expenditure because the latter is naturally smoother (Friedman, 1957) while income from agriculture and informal activities routinely exhibit great seasonal variations (Tarozzi, 2007). At the current stage of most African countries' development, income data are still not representative for the bulk of households' welfare, because of the prevalence of the informal sector and farm activities. In any case, in many African countries income data is not even collected.⁵ Overall, since consumption reflects welfare derived from income as well as welfare transfers, interpersonal transfers and informal income (Meyer and Sullivan, 2004), it is still the best available measure for most of the population.

While consumption is preferable to income as a welfare measurement tool for the purpose of poverty analysis, the same may not hold true for the measurement of inequality. When it comes to inequality measurement, consumption data show several limitations compared to income. While consumption is more informative than income for the bottom of the distribution (for the reasons given above) , data on consumption at the very top the distribution could seriously under-estimate welfare because the marginal propensity to consume declines as household welfare increases (McCarthy, 1995; Dynan et al., 2004; Jappelli and Pistaferri, 2014; Gandelman, 2017). Therefore, in this part of the distribution, household income is expected to be greater than consumption and, as pointed out by Milanovic (2010) in the case of income, the high end of the distribution would also be more elongated.

One can now begin to see how, in the presence of a middle class with the three characteristics discussed above, consumption-based inequality measures may be biased downwards. First, the primary motivation for preferring consumption over income data is that consumption is

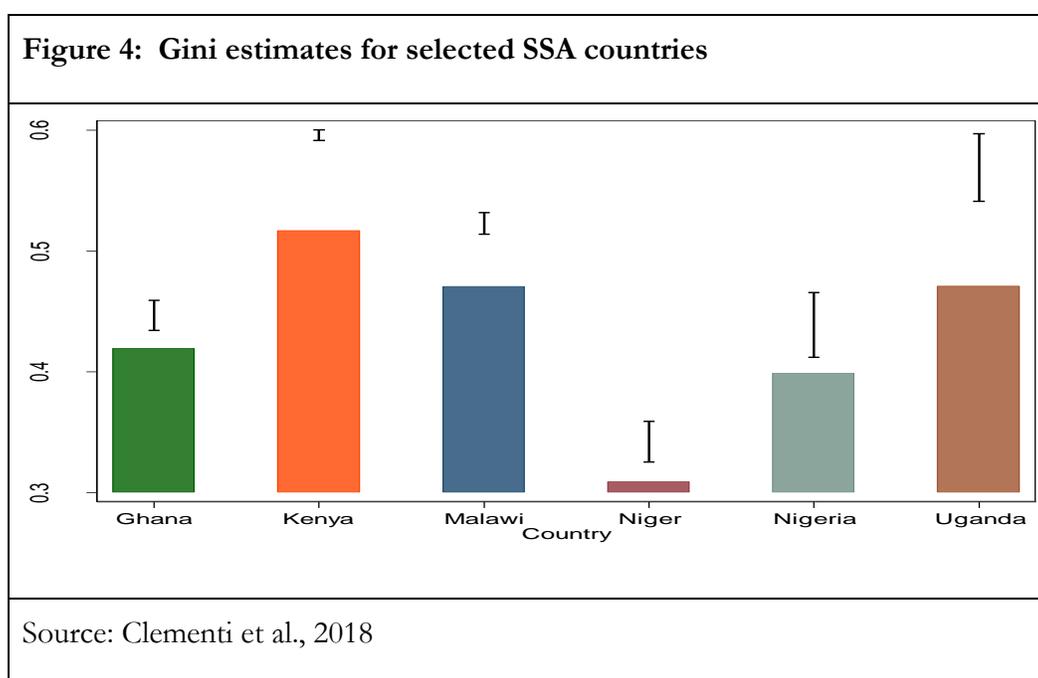
⁵ An exception is the Riga project etc

naturally smoother than income. However, in the case of middle class households whose income is primarily derived from regular and stable wage employment, this volatility is less of a problem. Second, since the propensity and ability to save is greater among middle class households, consumption may underestimate this class's true economic power compared to an income measure which does not reflect the value of savings. Third, consumption inequality measures are generally biased downward if the set of goods in the consumption measure does not include items consumed by the middle class (luxury goods, vacations, as well as irregularly purchased consumer durables) (inter alia, Beegle et al. 2016). In general, questionnaires measuring consumption in SSA collect information on a basket of items that is typically consumed by the poor because the purpose of these surveys is focussed on measuring poverty. Expanding the questionnaires to consider consumption patterns of the middle class can have big trade-offs in terms of time and costs that can be counterproductive. The advantage of income in this specific case is that it just measures the power to purchase items, and is thus not affected by this form of under-reporting.

Because of these reasons, using consumption data for the entire distribution may underestimate inequality.

To sum up, the first hypothesis regarding the SSA puzzle points at an inequality measurement problem. An increase in inequality was not consistently observed throughout the region because the way inequality is measured hindered this possibility. Consumption could not detect a big part of the welfare increase that the top 10-20 percent (SSA's middle class) of the distribution experienced over these two decades of economic growth. Thus, using standard consumption measures, inequality is not observed to increase – even during a time in which poverty reduction was not commensurate to growth and this growth was overwhelmingly recognised as non-transformational (World Bank, 2018, Rodrik, 2018) and non-inclusive (Bigsten, 2018).

An initial response to this problem comes from some recent work (Clementi et al., 2018) that applies the methodologies used by the top incomes literature (inter alia Atkinson et al., 2011; Leigh et al., 2009, Alvaredo, 2010, and Sanhueza and Mayer, 2011) to this specific issue. In a nutshell, Clementi et al's approach is to recalibrate the consumption figures for the middle-class segment⁶ using the information coming from the shape of the income distribution⁷ of the same households. For several SSA countries, the FAO-RIGA project calculates household income data using the same methodology.



The top cap of the spikes denotes the multiple-imputation point estimate derived using a minimum threshold of \$4 per day, whereas the bottom cap shows the estimate for each of the three indices derived using an absolute definition of the middle class with per capita daily consumption greater than \$10.

Figure 4 displays the simulation results by country using \$4 and \$10 middle class thresholds: with the more conservative \$10 threshold the re-calibration of consumption data applies to a smaller group of households than with the \$4 threshold. The estimated inequality using the \$4 threshold is

⁶ Two different cut offs are used: above 4 \$ PPP and 10 \$ \$PPP

⁷ For income data are used yearly data obtained from the Rural Income Generating Activities (RIGA) database, a collaborative effort of the Food and Agriculture Organization (FAO) of the United Nations, the World Bank, and the American University. It is composed of a series of constructed variables about rural and urban income-generating activities created from the original consumption data sources. Only for selected countries these data are available.

clearly higher since more information is taken from the income distribution and income tends to have higher variability than consumption.

These preliminary results indicate that, in all six countries, inequality measures ought to be adjusted upwards substantially; depending on the threshold used, the Gini increases on average by 20 percent compared to the original figures. It worth noting that, in four out of the six countries analyzed, inequality levels reach those estimated⁸ for the traditionally highly unequal countries of the Southern cone (South Africa and neighbours).

Clementi et al. (2018) suggest a compelling resolution to the inequality underestimation problem in a cross-sectional setting. However, the perhaps more insidious manifestation of this problem is dynamic – that is, the downward bias in the measurement of inequality may be exacerbated as inequality increases. More specifically, in the language used in this chapter, the downward bias in the measurement of inequality increases as economic growth leads to growth in either the size or in the economic power of the middle class. Specifically, as more people are pushed into the middle class segment of the distribution, they increasingly enter an area of the distribution where standard consumption measures tend to underestimate their welfare. Therefore, the very process which drives an increasing disparity between those at opposite poles of the consumption distribution can also compromise the ability of consumption to capture the extent of these disparities.

However, as alluded to earlier in this section, whether the middle class in SSA has increased in size or in economic power remains largely an open question. While Clementi et al. provide a means of resolving the issue of cross-sectional inequality underestimation, the more pressing concern is with understanding how this measurement issue interacts with distributional change –

⁸ Without the kind of imputations proposed by Clementi et al. (2018).

that is, we need to understand how distributional changes which accompany growth interact with this measurement issue in a dynamic sense.

Section 3: Have we chosen an inappropriate indicator for distributional change in the first place? An alternative

As discussed in Section 1, it is difficult to identify a generalizable pattern among SSA countries in terms of inequality trends over time. It remains possible, however, that important and generalizable distributional changes occurred over the last two decades, and yet went largely undetected by standard inequality measures such as the Gini index. If this was the case, then it is also possible that these distributional changes affected trends in poverty reduction.

Since the Gini index is a summary measure of the overall dispersion of a distribution, in practice this means that a pro-inequality change in one part of the distribution may be compensated by a pro-equality change in another part of the distribution. Since changes in poverty incidence are primarily affected by distributional changes in the bottom of the distribution, the fact the Gini does not discriminate between distributional changes in different parts of the distribution may render it a blunt tool for distributional analysis which is concerned specifically with the relationship between growth, inequality and poverty.

In light of these limitations, the present section discusses the second hypothesis formulated as a possible resolution to the growth-inequality-poverty puzzle - that is, that distributional changes simply went undetected when using standard summary measures such as the Gini, but could (and should) be identified by undertaking polarization analysis as an alternative tool for investigating distributional dynamics (Handcook and Morris, 1998).

Polarisation provides an appealing alternative indicator to inequality as a measure of changes in the consumption distribution. While inequality, as standardly measured, provides an indication of the overall dispersion of a distribution, polarisation considers how distributional changes affect the income or consumption distribution between subgroups of society. More specifically, our interest focuses on so called bi-polarisation, a dynamic process leading to a “hollowing out of the middle”, as the size of the group of people in the centre of the consumption distribution shrinks relative to the size of the (two) groups on both extreme tails of the distribution. It is worth noting that, as discussed in Section 2 above, this may be the same distributional process leading to middle class growth – and the inequality measurement issues associated with this.

Following Roope et al. (2018), two characteristics of polarisation measures can be used to illustrate both their similarities and differences with inequality measures. Polarisation measures satisfy both “non-decreasing spread” and “non-decreasing bipolarity” criteria, while inequality measures satisfy the former but not the latter. “Non-decreasing spread” requires that redistributing consumption from the middle of the distribution to the tails weakly increases bipolarisation. Since this criterion is also required in inequality measurements, a transfer of consumption from the middle to the tails of a distribution will therefore increase both inequality and polarisation. On the other hand, non-decreasing bipolarity requires that increasing the clustering of consumption below or above the median weakly increases polarisation. That is, reducing the gaps between the consumption of households above (or below) does not diminish polarisation. This criterion is not met in most standard inequality measures (Fields, 1979), with the consequence that increasing clustering of consumption below or above the median may cause inequality measures to decrease at the same time as polarisation measures increase.

In this way, polarisation analysis reveals salient facts regarding distributional changes which are relevant to changes in poverty, but are *not* captured by standard inequality measures. Framing the problem using Duclos et al.'s (2004) formulation, we may observe increasing “identification” (that is, decreasing inequality) within groups that occurs alongside increasing “alienation” between groups (that is, increasing intergroup inequality). Using standard indicators such as the Gini, “alienation” and “identification” compensate for one another and thus would have an ambiguous effect on inequality. For example, if identification prevails over alienation, then the Gini will fall, despite increasing polarisation between groups. In polarization analysis, however, “identification” and “alienation” is the core of the phenomenon being studied – and these clustering effects will unambiguously increase polarisation measures.

Crucially, as we discuss henceforth, this illustrates how polarization (as the combination of identification and alienation) represents a distributional change which can off-set the poverty-reducing effects of growth, and yet *not* be captured by standard inequality measures.

In a recent paper, Clementi et al. (2018) gauge the patterns of distributional changes in the last two decades in SSA. To measure polarization, the authors use the relative distribution method (Morris et al., 1994; Handcock and Morris, 1998) and household survey data from 24 SSA countries between the late 1990s and early 2010s. The results indicate that in the last two decades, in 19 out of 24 SSA countries, the process of polarization has been significant and that it has been driven by so called lower polarization, that is, a clustering in the lower tail of the consumption distribution of the bottom 30-40 percent. In relative terms, this indicates that the poorest are getting (compared to the top 60) poorer, while it is still unclear what is going on in the rest of the distribution.

The fact that we see this relative impoverishment but no significant change in the Gini (that is centred on the mean) might suggest that in the top 60 percent there has been some pro-equality

changes that offset or partially offset the pro-inequality change in the bottom part. In other words, we are facing an increase in identification (reduction in inequality within groups) prevailing over or at least compensating for alienation (increase in inequality between groups). As result, total inequality either declines or doesn't change, despite the occurrence of a distributional shift that can reasonably be understood as being pro-inequality.

In addition, Clementi et al. (2018) investigate the drivers of poverty reduction over the period, decomposing these changes to isolate two distinct components determining poverty reduction: First, they isolate the distribution-neutral growth component, representing changes in median consumption, and, second, the redistribution component, representing changes in the shape of the distribution of consumption. By doing so, Clementi et al. (2018) are able to determine the extent to which growth and distributional changes influenced poverty reduction outcomes and how these processes either complemented each other, or worked in opposite directions. Their results indicate that, in 13 of the 19 countries in which polarization took place, these distributional changes undermined poverty reduction by 5-6 percentage points over the period examined.

These findings illustrate that, in attempting to investigate the G-I-P nexus, a potential explanation for the puzzle we are faced with in the African case is that standard inequality measures are not adequately sensitive to those distributional shifts which are most relevant for explaining changes in poverty incidence. Changing the indicator used for the “distribution” vertex of the G-I-P triangle from the Gini index to measures of polarisation may thus provide a way forward towards resolving the African G-I-P puzzle.

Section 4: Discussion, conclusion, and some open questions

In summary, we have laid out a puzzle in the relationship between growth, inequality and poverty in SSA and suggested that an inequality measurement problem lies at the heart of this

puzzle. There are two sources of this measurement issue: First, consumption-based inequality measures miss important information at the top end of the welfare distribution, leading to an underestimation of inequality. Second, standard inequality measures are not sensitive to certain patterns of distributional change which are relevant to poverty reduction, in particular, to processes of consumption polarisation. Drawing on our recent and ongoing research, we foresee some interesting developments in tackling these issues. First, by using information from the income distribution to recalibrate the top end of the consumption distribution, we propose a practical solution to the first measurement problem. Second, we show that polarisation analysis using relative distribution methods represents a promising alternative to standard inequality measures in that it is sensitive to certain distributional shifts which increase poverty and yet may go undetected by inequality measures.

We conclude, however, on a more speculative note – posing several open questions which we hope will contribute to framing a research agenda centred on the revaluation of distributional issues and their relationship to poverty in SSA.

A first open question is narrow in its scope, and directly related to the substantive issues covered in this paper. Specifically, it concerns understanding how the two inequality measurement issues discussed above relate to and reinforce each other. We have discussed in some detail how a process of identification (decreasing within-group inequality) may compensate for alienation (increasing between-group inequality) when using standard inequality measures, and in this way misleadingly underestimate the severity of inegalitarian distributional trends. Polarisation analysis is less likely to produce misleading results in cases characterised by both identification and alienation. As discussed in Section 2, Clementi et al. (2018) find that, in 19 out of 24 African countries where comparable data is available, distributional shifts over time were characterised by identification and

alienation which led most strikingly to so called “lower polarisation” – that is, a clustering in the lower tail of the consumption distribution. For the majority of African countries, Clementi et al. (2018) also observe substantial, but slightly lower, “upper polarisation”, or a clustering in the upper tail of the consumption distribution. That is, they observe increasing inequality between the upper group (here characterised as the middle class) and the rest of society, while at the same time decreased inequality *within* this group.

The question which requires answering is how this observed process of upper polarisation is related to the consumption-inequality underestimation issues discussed in Section 2. Since we have shown that consumption-based measures of inequality are often unreliable because of a loss of information at the top end of the consumption distribution, we might expect the very same issue to affect the nature of upper polarisation we observe when undertaking polarisation analysis using consumption. Since we know that consumption is a blunt instrument as a proxy for the welfare of those at the top of the distribution (the African middle class), a reasonable hypothesis would be that using consumption expenditure in polarisation analysis spuriously inflates the degree of “identification” within the middle class while at the same time underestimating the degree of “alienation” between this group and the rest of society. That is, since consumption’s likelihood of underestimating welfare increases as a function of welfare even within the middle class, we would expect to observe a spuriously high degree of welfare homogeneity within the middle class group, leading to high “identification”. At the same time, since the mean consumption of the middle class as a group is also likely to be underestimated using consumption, we also would expect the degree of alienation between the middle class and the rest of society to be biased downwards.

If this hypothesis can be demonstrated to be true, and if these consumption-based measurement issues can be corrected (i.e. using the procedure proposed by Clementi et al. (2018)),

the implications of this correction for upper polarisation are unclear a priori, since the increase in alienation will offset the decrease in identification. However, the implications of the correction for inequality are unambiguous – readjusting alienation upwards and readjusting identification downwards would both increase measured inequality across the distribution.

This has two important implications: First, it suggests that, for researchers concerned with inequality and poverty in Africa, where the data allows, correcting for the issues relating to consumption-based inequality measures through recalibration using income data will be most important as a first step, since the initial downward bias in inequality measurement will be corrected in the same direction as polarisation analysis. In these cases, polarisation analysis will still provide useful confirmation of the direction of this initial downward bias, and provide more granular detail regarding the poverty-effect of shifts in distributional shape. Second, in those cases where income data is unavailable or inadequate, polarisation analysis is preferable to standard inequality measures for two reasons: First, as discussed in Section 3, it is more sensitive to distributional processes which are relevant to poverty reduction and which are overlooked in standard summary measures of inequality. Second, it appears less vulnerable than standard inequality measures to the distortions related to consumption-based welfare measurements, for the reasons given above.

The second, and broader, open question relates to the implications that a reappraisal of distributional issues has for academic and policy debates on development in Africa. What appears on the surface as a somewhat technical measurement issue in fact has implications which go far deeper than this.

In this paper we have argued that the standard empirical toolkit available to development economists working on SSA has limited our ability to appreciate the role that distributional issues play in the persistence and reproduction of poverty on the continent. We hope that, by beginning a

process of refining and expanding this toolkit to improve our ability to understand the interactions between poverty and inequality, we will have contributed to putting in motion a process which will overcome what we believe is a technical bottleneck to understanding the effects of inequality on poverty reduction in SSA.

We hope that refocussing attention on inequality in SSA will have an effect in both academic and policy spaces. In the world of academic research, we hope to see more attention being placed on the collection and analysis of data which is able to illuminate the nature, evolution, and consequences of inequality in SSA. However, while it will be important to improve our understanding of inequality in Africa, we also believe that we already have enough evidence to be confident that inequality is playing a key role in the persistence and reproduction of poverty in SSA. With this in mind, researchers will need to dedicate attention to the distributional patterns of the growth process itself, and to ways to increase the inclusivity of these processes.

In addition to issues of distribution and growth, the research agenda which emerges will also need to dedicate attention to understanding the scope for post-outcome redistribution. This research agenda will be of interest to those in the policy sphere. The issue of taxation as a means of resource redistribution, in particular, will need to be informed by a clearer understanding of the scope for expanding the fiscal space through progressive taxation. This, in turn, will require more evidence than that which we currently have on the wealth held and income captured by top earners, much of which currently goes untaxed (Alstadsætera et al., 2014). Ultimately, a focus on the nexus between distribution and poverty may illuminate what potential Africa has for endogenous poverty alleviation, rather than a reliance on aid which, to the extent that it has led to poverty alleviation, has done so without a concomitant structural transformation necessary for sustained poverty reduction and inclusive growth.

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