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Inequality in sub-Saharan Africa: A Review Paper

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Abstract
Very little attention has been paid to African inequality dynamics in high-profile international discussions of changing global inequality despite the fact that African dynamics will become increasingly important to the global inequality discussion. Within the continent, recent years have seen distributional issues becoming more central because of the importance of inequality in inclusive growth. Therefore, the review takes stock of what we can say about African inequality both to promote better analysis and better policymaking in addressing inequality in Africa. Our assessment of the drivers of inequality in Africa paid particular attention to the themes of intra-household inequality and gender and also inequality of opportunity and social mobility in Africa. The complexities of household formation and composition, for example the high frequency of polygamous households in some countries, sit right at the heart of access to resources and of the accurate assessment of inequality in any African context. African inequality analysis always requires that analytic attention be devoted to both rural and urban contexts and the linkages between them.

Keywords
Inequality, measurement, social mobility, gender, Africa

Classification JEL
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Résumé
Très peu d'attention a été accordée à la dynamique des inégalités en Afrique dans les discussions internationales de haut niveau sur l'évolution des inégalités dans le monde, alors que la dynamique africaine va prendre une importance croissante dans le débat sur les inégalités dans le monde. Au sein du continent, ces dernières années ont vu les questions de répartition devenir plus centrales en raison de l'importance des inégalités dans la croissance inclusive. C'est pourquoi cette étude fait le point sur ce que nous pouvons dire sur les inégalités en Afrique, à la fois pour promouvoir une meilleure analyse et une meilleure élaboration des politiques pour lutter contre les inégalités en Afrique. Notre évaluation des facteurs d'inégalité en Afrique a accordé une attention particulière aux thèmes de l'inégalité intra-ménage et du genre, ainsi que de l'inégalité des chances et de la mobilité sociale en Afrique. Les complexités de la formation et de la composition des ménages, par exemple la fréquence élevée des ménages polygames dans certains pays, sont au cœur de l'accès aux ressources et de l'évaluation précise des inégalités dans tout contexte africain. L'analyse des inégalités en Afrique exige toujours qu'une attention analytique soit accordée aux contextes ruraux et urbains et aux liens qui existent entre eux.

Mots-clés
Inégalités, mesures, mobilité sociale, genre, Afrique

Introduction

The study of inequality has, in recent years, gained significant momentum. Debates around inequality have entered the popular consciousness with the publication of several acclaimed books on global inequality within the last few years (for instance, Stiglitz, 2012, Bourguignon, 2015, Piketty, 2014, 2020, Atkinson, 2015, Dorling, 2014, Scheidel, 2017, Milanovic, 2016, 2019). It is clear that, over the last 20 to 30 years, the global income distribution has undergone deep distributional shifts. Under the assumption that global inequality should be measured by pooling world citizens into a "world as one country", Bourguignon (2015) and Milanovic (2016) carefully spell out why it is a near consensus that global inequality has decreased. When one pools world population in this way, recent positive real income changes within China, India and elsewhere in Asia dominate changes to the world income distribution. They contribute the elephant's body in Milanovic's famous elephant curve of real income growth (Milanovic, 2016). Alongside meagre growth of real incomes for the middle classes in many developed countries, these are the changes that have driven the reduction in world inequality. So, this reduction has primarily been driven by the reduction in *between* country inequality. The only source of rising global inequality is an elephant's trunk of very sharply rising real incomes at the very top of world income distribution. Although global inequality has fallen this has coincided with increased disparities between the global rich and the global poor.

Pooling global incomes in this way looks past what has been happening to inequality within countries. Such within-country inequality change is a mixed picture. Many countries have experienced rising inequality. Most tellingly, these include India and China, where the real incomes of the upper deciles of their income distributions have risen far more sharply than the rest of the population, pushing up within-country inequality as these people move into the middle and upper-middle sections of the global distribution. Similarly, as exemplified by the United States, in many developed countries rising poverty, no growth and low growth of real incomes of the poor and middle classes and the very rapid increases in top-end incomes has led to rapidly rising inequality.

Unfortunately, very little attention has been paid to African inequality dynamics in these grand narratives of changing global inequality. This is despite the fact that Sub-Saharan Africa (SSA) hosts seven of the world's ten most unequal countries (Odusola et al., 2017). There are two main reasons for this: First, data quality in SSA has lagged behind that of other regions in the world. Second, the development agenda for SSA, led by institutions such as the World Bank, has focussed primarily on poverty reduction, and only secondarily on distributional issues.

Only in recent years have distributional issues become more central in development discourse in Africa, through the push for "inclusive growth" and the inclusion of "Reduced Inequalities" in the Sustainable Development Goals of 2015. Furthermore, while several African countries have experienced stable and sustained growth, this growth has not translated into rapid poverty reduction. Compared to other regions in the developing world, the growth elasticity of poverty in SSA has been low, due primarily to the reliance on a limited basket of raw materials, the benefits of which have often been captured by those the top of the distribution (Clementi et al, 2019). This observation adds to the growing body of evidence supporting the move toward focussing on the role that inequality plays in translating growth into poverty reduction in SSA (Clementi et al, 2019). As we will show in this review, understanding inequality dynamics is key to sustainable anti-poverty policy, leveraging the maximum anti-poverty benefit out of economic growth and making growth more inclusive.

Several large and rigorous reports on inequality in SSA have been published in the past years including a report by the UNDP (Odusola et al., 2017) and the World Bank (Beegle et al., 2016). The release in 2018 of a Special Issue on African Inequality in the Journal of African Economies has also formed a core cluster of papers which has guided this review. Other recent reports on global inequality, such as the World Inequality Report (Alvaredo et al., 2018) have also proven to be invaluable in beginning to understand both African inequality as well as how SSA's inequality landscape compares with and fits into the global inequality context.

That said, taken together, these reports show that there is not a quick coherence to this story of African inequality. The aim of this paper is to respond to the need for a synthesis and assessment of the most important recent work on inequality and its many dimensions in SSA. To advance the research being undertaken on African inequality we need an understanding of the major challenges being faced, what research is being produced, where the biggest knowledge gaps are, and how this meshes with where the research on African inequality is (or perhaps ought to be) moving. To guide this review, the research being discussed is limited to papers, reports and working papers which have been published in approximately the last five years – from 2015 onwards.

This is not meant to be an exhaustive review, but rather an exercise in connecting the dots in our collective understanding of the nature of African inequality, and the direction in which inequality research on (and in) Africa is moving. It takes a step towards sensibly splicing African inequality dynamics into the discussion of global inequality. These African dynamics will become increasingly important to the global inequality discussion. As Lam et al. (2019) make clear, between 2020 and 2100 the world population is expected to grow by 3.1 billion people, including 1.4 billion working-age population. Almost all of the additional working-age people will be added in Sub-Saharan Africa.

This is a dramatic change from previous decades, when the growth of the working-age population was concentrated in Asia. Thus, African inequality dynamics will come to dominate global trends in the same way that China and India have dominated the recent dynamics; and this in context that contains more than half of the world's most unequal countries. Then there is the fact that Africa is the world's poorest continent. The World Bank (World Bank, 2018) estimates that nine out of ten of the world's extreme poor will reside in Africa by 2030. So, in the most consequential and policy relevant senses possible, understanding the dynamics at the bottom end of the global income distribution will require a confronting of African inequality. Moreover, this African inequality might have specificities, stemming from the countries' institutional and historical features, which can bring a different perspective to the world discussion and in this paper we will try to highlight some of them.

The review is organised as follows: The lack of attention to African inequality is often blamed on a lack of data and the limitations of available data. Therefore, Section 2 takes stock of these issues before summarising what can be said with confidence about African inequality from the available data.

Section 3 then summarises and assesses research that has been done using these data on the drivers of inequality. In an effort to bring out the texture of inequality in African contexts, particular attention is paid to the themes of intra-household inequality and gender and also inequality of opportunity and social mobility in Africa. There are important overlaps between these categories. Where appropriate, these interconnections are highlighted. Section 4 concludes by summarising what has been learnt in the review and reflecting on priority directions and avenues for future research, particularly with regard to requirements to undergird effective policymaking to overcome inequality. It also draws out the key dimensions that need consideration in the analysis of African inequality. Many of these are not given the attention that they warrant in the international literature and so, giving greater weight to African dynamics in the global inequality discussion would allow this substantive contribution from Africa. This is not to deny the importance of regional and country-level heterogeneities within Africa. But, even here, the specific configurations of these dimensions in each context are key to understanding the heterogeneities in levels and persistence of inequality across the continent.

1. Measuring levels and trends in inequality in Africa

Data and data limitations

The ability of researchers to study inequality in SSA is severely constrained by the availability, quality, and comparability (both over time and space) of data in SSA. For instance, in the World Income Inequality Database (WIID) there are only five high quality country-year observations of distributional indicators for Sub-Saharan Africa from 1900 to 2006, compared to 65 for Central and South America and 719 for Western Europe.

While the lack of data poses a problem to inequality measurement along a number of non-monetary dimensions (education, health, access to services, assets, etc.), in this section we focus on measurement issues pertaining to the monetary dimensions of inequality. Since in SSA consumption is typically preferred as a proxy for welfare, much of the discussion in this section applies primarily to consumption data. An overview of the primary databases currently in use to analyze inequality can be found in Annex 2. It is these data sets that are used in nearly all of the recent work on African inequality. All rely on survey data, which is demonstrably poor at representing top income and wealth levels and therefore inequality. Combining administrative tax data with survey data is a reliable way of overcoming this bias – tax records give a more complete and accurate picture of the distribution of income and wealth among the rich. These corrections allow for more accurate estimates of both point estimates as well as more accurate analysis of inequality trends. However, because of tax evasion, even administrative tax data is likely to underestimate inequality, so should also be considered a lower-bound estimate of inequality. Fiscal data is also typically available over a longer time-period than survey data.

Only the WID gathers such tax data. It depends crucially on the availability of reliable income, consumption or wealth data for the top 10 percent. This is a demanding requirement in many African countries. Indeed, in the recent World Inequality Report (WIR)'s (Alvaredo et al., 2018) that uses WID, data for SSA on the income share of the top 10 percent at any point since 1990 is available only for South Africa and Mauritius. Until more and higher quality income and wealth data is collected for SSA, the WID remains very limited in the analysis of African inequality.

Certainly, growing attention to wealth inequality also provides an impetus for improvements in the collection of wealth data. Since wealth is not taxed directly in most countries, fiscal data on wealth is not straightforwardly useable. This requires compiling data from several sources: Billionaire rankings, income tax data, and inheritance tax data. Furthermore, the increasing stock of wealth in tax havens makes it necessary also to take wealth held in offshore financial centres into account – meaning that wealth measurement increasingly needs to be undertaken at the global level.

Challenges facing distributional analysis in the African context

Here we summarise and discuss the key challenges in welfare measurement for inequality analysis in SSA which are listed by Cornia and Martorano (2017) in a recent UNDP report (Odusola et al., 2017). An overarching concern which they raise is that if welfare measurements differ in quality over time, then this will affect the dynamic measurement of poverty, and especially (since noise in the data affects the distribution of welfare measures) inequality dynamics and trends. Since the quality of African welfare data *is* changing over time, this is a problem for the dynamic measurement of inequality.

1. **Differences in survey design over time *within* countries**

Improvements in survey design ought to be encouraged and celebrated. However, improvements do also limit the comparability of surveys within countries over time. This compromises the ability to analyse inequality trends over time.

2. **Differences in survey instruments, statistical assumptions and data harmonisation *between* countries.**

This constrains comparability of data between countries. In order for this challenge to be overcome, there needs to be a coordinated effort to ensure comparability in survey data across countries – both in terms of survey design, collection and data curation.

3. **Undersampling of top incomes**

The undersampling of top incomes is a perennial issue in household surveys. In Africa as elsewhere, this leads to an underestimation of inequality when using the Gini index. As attempted in the WID discussed above, this issue can be corrected by using data from tax returns – though the availability of this data is also restricted in most African contexts.

4. **Overlooking assets held abroad by African nationals**

In the presence of substantial foreign asset holdings and capital flight, survey data provides an incomplete picture of wealth and income when some of this is held or income is accrued on foreign assets – especially for the rich in Africa. Again, ignoring the value of these assets has the consequence of underestimating inequality.

5. **Failing to account for the distributional implications of when the food price index (FPI) is different from the consumer price index (CPI)**

Inequality measures assume that prices paid for goods are constant across the distribution, and that price dynamics affect the entire distribution in the same way. However, the poor often (almost always) pay more for food than the non-poor and are more negatively affected by seasonal price fluctuations because of lack of access to credit, liquidity constraints and storage capacity. Further, since the poor spend more of their income on food, if the food price index is higher than the CPI, then inequality will be underestimated.

For countries where both FPI and CPI are available, and assuming reasonable food consumption shares across quantiles, an adjusted Gini taking these differences into account can be calculated according to a method proposed by Cornia and Martorano (2017).

6. Failing to account for the distributive impact of differences in the provision of social benefits

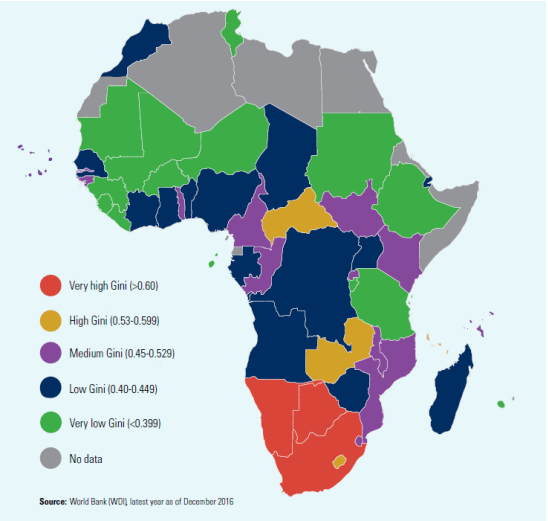
Distributional analysis of income/consumption does not take into account the value of in-kind services provided by the state – and crucially, how these vary across countries. Both through the value of these services, and by virtue of the fact that part of consumption has to be dedicated to the private provision of services in the absence of public provision, these cross-country differences will bias both within and between country inequality analyses.

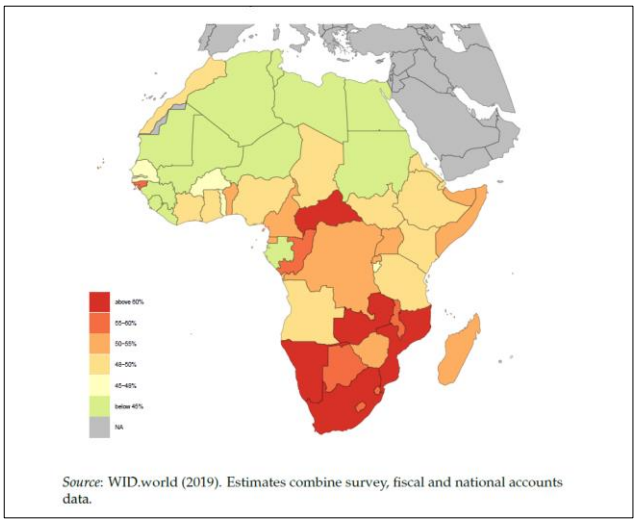
Levels and trends – what do we know?

Despite the difficulties listed above in terms of measuring inequality, figures from various sources of data and reports can give us an idea of the magnitude of inequality across Africa and how this has changed over the recent past. These data are sufficient to yield an important consensus; namely, that the continent is not usefully characterized as having a homogenous inequality level or a homogenous trend in inequality over recent years.

With regard to levels of inequality, Odusola et al. (2017) and Chancel et al. (2019), using different indicators for inequality, find a similar picture of the level of inequality in Africa: a concentration of high inequality in Southern Africa, which dwindles towards the Sahara and the north of the continent. The latest update of the WID database estimates that, on average in Africa, the richest decile received 50% of total income, this percentage reaching 65% in South Africa (Robilliard, 2020).

Figure 1. Inequality levels in African countries according to various





The heterogeneity across the continent appears also in terms of the evolution of inequality. Cornia (2019) shows that over the period 1991-2011, 17 African countries saw their inequality levels decline, while 12 saw an increase in inequality. We cannot say that inequality increased or decreased in Africa during the last decades, as sub-regions, and sometimes countries within the sub-regions, witnessed both increases and decreases in inequality over the period 1995 to 2015. Cornia stresses the role played by the transformations in the countries output structure, but also that one of the limits of the analysis is the lack of data on the distribution of assets and land. Together with the issue of the shortage of wealth data, insufficient information on the concentration of land hampers the understanding of inequality in Africa.

Income and wealth inequality

As already noted, most research on inequality in SSA uses consumption data as a proxy for welfare. The reason for this is that SSA's consumption data, collected in household surveys, is more common, and of a higher quality, than its income or wealth data. The reason for this, in turn, is that consumption is generally regarded as easier to measure than income in low-income economies and among lower strata of the population. This makes it a sharper tool for poverty measurement, which has hitherto been priorisited in SSA.

Increasingly, however, researchers are turning to income and wealth as supplementary and/or alternative indicators of wellbeing for inequality measurement. Clementi et al. (2018b), for instance, argue that using consumption data, the welfare of those at the top of the distribution could be seriously under-estimated because the marginal propensity to consume declines as household incomes increase. This may lead to an underestimation of inequality when using consumption data.

The pioneering 2018 World Inequality Report (Alvaredo et al., 2018) relies primarily on income and wealth to measure inequality. Alvaredo et al., (2018) also prefer indicators which are even more intuitive than the commonly used Gini index: They rely primarily on reporting the top 0.01, 1 and 10% income/wealth shares and comparing these shares to the bottom 50% income/wealth share. Much of this work relies on income data from tax records, which is reported with substantially less error than income data from household surveys, at least at the top end of the income distribution.

Unfortunately, as discussed above, income data from tax records remains difficult to access in much of SSA. One recent exception in this regard is South Africa, and this case illustrates the value in collecting and analysing fiscal records: Bassier and Woolard (2020) combine data from the Post-Apartheid Labour Market Series (PALMS) with tax statistics from the South African Revenue Service (SARS) in order to overcome the well-known issues with using survey data to study top incomes. Using these combined datasets, they show how the income growth of the top 5% of the South African income distribution "experienced a large real compounded average growth rate (CAGR) of about four to five per cent, with real income nearly doubling over [2003 to 2016] and income shares increasing steadily" (p. 10). This despite the fact that there was a recession in South Africa in 2008, and despite the fact that the growth of the "middle class" of income earners – those between the 75th and 95th

percentile – remained stagnant, at 1 to 2% CARG. Thus, despite South Africa's rhetorical commitment to "inclusive growth", the growth process remains inequality enhancing, with disproportionate gains accruing to the already rich. Whereas Credit Suisse in 2016 estimated that there were about 45,000 USD millionaires in the country, Bassier and Woolard (2018) put the number much higher, at about 182,000.

This focus on capital income and top-end income dynamics meshes with a need to measure wealth inequality. In spite of its importance, wealth inequality remains underresearched. This is mostly because of the lack of access to data on wealth, especially the tax data that researchers use in other contexts to research wealth, as well as the challenge of tracking capital flows across different countries. There is a small literature in South Africa that makes an important start. Orthofer (2016) shows that while the South African income Gini coefficient is around 0.67, for wealth this index is at least 0.9–0.95. Both of these values are higher than in any other major economy of the globe for which such data exist. Chatterjee et al. (2020) triangulated survey data and tax data with national accounts data, to derive estimates of the distribution of personal wealth in South Africa. Even after recognising that these data might still underestimate the value of capital, they find that South Africa has 'unparalleled' levels of wealth concentration:

> The top 10 per cent own 86 per cent of aggregate wealth, and the top 0.1 per cent close to one-third of aggregate wealth. The top 0.01 per cent of the distribution (3,500 individuals) own 15 per cent of household net worth, more than the bottom 90 per cent as a whole. Such high levels of inequality can be accounted for in all forms of assets, including housing, pension funds, and other financial assets. (Chatterjee et al., 2020, p. 2).

The expansion of household surveys across Africa, and panel surveys in particular, opens up new possibilities in the study of inequality on the continent – including the ability to deliver fresh insights into the relationship, both static and dynamic, between income and wealth inequality. The intuition here is that wealth and consumption are both functions of income. Wealth can be seen as a stock concept which is either inherited or built up through the accumulation of income. In this sense, there is a channel of transmission between the income and wealth distributions. De Magalhães and Santaeulàlia-Llopis (2018) use the Integrated Surveys of Agriculture (ISA), a panel study from Uganda, Malawi and Tanzania, to study these mechanisms of transmission. In the absence of fiscal data, they rely on survey data to analyse the relationship between wealth, income and consumption. They compare the transmission of income to wealth inequality in SSA to that seen in the US, and compare rural to urban SSA.

Their findings are revealing about how a cross sectional perspective on income inequality conceals dynamic patterns which are relevant to wealth inequality. They find that there is a very low correlation between income and wealth inequality in Africa compared to the US. In other words, the ratio of income to wealth inequality is much lower in SSA than in USA, signalling an inability to accumulate wealth conditional on income. The same holds true for urban compared to rural households in SSA, where rural households also display a lower transmission of income to wealth inequality compared to their urban counterparts. Put

differently, the top 1 percentile of the income distribution in rural SSA holds a smaller share of wealth than their urban SSA counterparts, and the top 1 percentile of the income distribution in SSA holds a smaller share of wealth than the top percentile in the US.

De Magalhães and Santaeulàlia-Llopis (2018)'s access to the panel dimension of the ISA data allows them to provide a compelling explanation for the differences in the rate of income to wealth transmission. By following the same households over time, they observe that much higher levels of income mobility (both upward and downward) in SSA compared to the US (and in rural compared to urban SSA) means that the income rich do not remain rich long enough to accumulate wealth. In other words, higher relative levels of income mobility in SSA (and rural SSA especially) breaks down the channel through which income inequality is transmitted to wealth inequality. Over time, income volatility is thus a great leveller – the effects of which are revealed in cross-sectional wealth inequality, but not in cross-sectional income inequality.

These findings pose important questions: While we may have an aversion to high inequality of outcomes and (especially) inequality of opportunity, high levels of income volatility which prevent the transmission of income to wealth is also apparently undesirable. Apart from the fact that volatility is itself welfare reducing for households (Cafiero and Vakis, 2006), economic growth is also held back by the inability of households to accumulate wealth. Thus, while we ought to be concerned with reducing inequality, we ought also to focus on reducing income volatility – even though this might *increase* wealth inequality. These considerations also highlight the importance of collecting panel data in SSA for the insights it can reveal into the dynamics of inequality.

2. Drivers

Universal drivers of inequality

The driving forces of inequality are a mix of historical factors, institutional factors that have ensued and policy decisions (or lack thereof). The colonial past, with is concentration of productive assets and limited mobility, and 'path-dependency' are often pointed out as the main driver of current inequality in Africa (Walle, 2009, Cornia 2019, Alvaredo et al. 2020). The structure of African economies and the nature of their economic growth are another driver that has been extensively investigated. Cornia (2019) points to the shifts in the percentage structure of value added shares from low-inequality to high-inequality sectors and vice-versa as one of the drivers of inequality in Africa. The relative importance of the extractive sectors is also determinant of high inequality as it has a low value added in terms of employment (Bhorat et al. 2017) and can have a detrimental impact on investments in other sectors (Papyrakis and Gerlagh, 2005).

A consensus is emerging in the literature that globalisation has been a driving force behind rising inequalities, be it at the global level (Egger et al., 2019, Basco and Mestieri, 2019) or within countries (Dix-Carneiro and Kovak, 2015). Kai and Hamori (2009) show empirical evidence for this relationship for Sub-Saharan Africa using the channel of financial depth, while Anyanwu et al. (2016) show that trade liberalization increased inequality in West-African countries.

The acceleration in the pace of technological change witnessed over the past decades led to increasing returns to high skills and thus an increase in wage inequalities. While Cogneau et al. (2007) have found heterogeneous effects across African countries, the high levels of informality across the continent suggest that technological change could play a significant role in shaping inequality in Africa. This effect might be even stronger in the absence of strong institutions governing the labour market.

Demographic dynamics, going from the variation in household size and dependency rates to increased life expectancy and patterns of households' composition, have been shown to shape inequality, but the relationship between fertility and income inequality is complex (Lam, 1986). The global decline in fertility rates is expected to lower inequality, as it might entail higher investment in children's human capital. However, these effects are still to be closely investigated in Africa, where fertility rates remain high, especially in Western Africa. Klasen (2016) suggests that the stall in African fertility rates might increase inequality in the long run.

Finally, discrimination which results in unequal access to opportunities for marginalized segments of the population is also an important driver of inequality. There discriminations are often the result of social and cultural norms which are internalized by individuals and thus result in behavioural changes reproducing inequalities. Gender inequalities are the result of such social and cultural norms and, in SSA, they are strongly correlated with high income inequality (Hakura et al., 2016).

Intra-household inequalities and gender

In all of the research discussed until this point, and indeed in the vast majority of research on poverty and inequality, the household is typically used as the primary unit of analysis. Inequalities in the distribution of income, consumption and wealth are analysed *between* households while it is assumed that the distribution of resources *within* households is perfectly egalitarian. However, poverty and inequality measures are also intended to be meaningful at the individual level. As long as the intra-household distribution of resources is unequal and is not taken into account when estimating overall inequality, inter-personal inequality will be underestimated (De Vreyer and Lambert, 2018). Often these inequalities of intra-household distribution occur along gender lines – and therefore overlooks another crucial and relevant aspect of gender-based inequality.

In general, the analysis of poverty and inequality is either undertaken at the individual level, or at the group level. When undertaken at the group level, this may be for instrumental reasons – i.e. how better to target measures which are ultimately aiming at improving individual outcomes – or might be underwritten by an intrinsic ethical motivation – i.e. inequality of opportunity between groups. The household unit is seldom thought of as a group in the same sense. However, there is nothing to stop intra- and inter- household analysis of poverty and inequality to be treated any differently than from other groups. By doing so, we can still calculate within and between group decompositions, and discuss the consequences for policy between and within groups.

Whether for households or other groups, between group inequality is calculated by assigning the mean income or consumption value of the group to each group member. The within-group component of inequality is calculated as the residual difference between total inequality calculated off the back of individual-level income/consumption values and between group inequality. Thus,

$$I_W = I - I_B \tag{1}$$

where I_W represents the within group component of total inequality, I_B represents between-group component of total inequality, and I represents total inequality. In this way, we can see that, assigning each household member the mean income of the household will always underestimate both poverty and inequality – the interesting questions then become: By how much? And, with what consequences?

However, a challenge in estimating the within-household inequality term in this basic framework is that household surveys typically collect (as the name suggests) income and consumption only at the household level. In order to measure intra-household resource distribution, an individual-level indicator is needed in order to calculate total inequality I as in equation (1) above.

There are two broad options for getting around this:

First, other measures contained in existing surveys may be used as proxies for welfare rather than income or consumption. For instance, BMI has been used for this purpose by Sahn & Younger (2009). There are a number of advantages to BMI in this regard: It is individually measured, simple to measure, errors are likely to be random, and reflects both food consumption and other health indicators.

Second, purpose-designed surveys may be used to collect information on consumption at a more granular level than the household. For instance, Haddad and Kanbur (1990) in a purposefully designed study in the Philippines, found that poverty and inequality is underestimated by upwards of 30% when intra-household inequality is not taken into account. De Vreyer and Lambert's (2018) recent attempt to use a purpose-designed survey to understand intra-household inequality and poverty in the African context deserves special attention. They use a purposefully conducted survey of a representative sample of 1728 households in Senegal, in which consumption information was conducted at both the household level and at the intra-household "cell" level. In the context of large, complex and polygamous Senegalese household structure "cells" are defined as sub-household units through which household resources flow and consumption is determined.

De Vreyer and Lambert confirm, unsurprisingly, that the assumption of equal intra-household distribution is violated, and that intra-household inequalities contribute substantially to overall inequality. The Gini of consumption when intra-household inequalities are taken into account is 0.48 rather than the inter-household Gini of 0.40. That is, intra-household inequalities account for 14% of total inequality. These findings are robust to measurement error. While this is lower than in other contexts and other studies, it is still substantial (Haddad and Kanbur, 1990). These two effects – upward adjustment of mean consumption and upward adjustment of inequality – have an a priori ambiguous effect on poverty. De Vreyer and Lambert find that the overall impact on the number of poor is small. The effect on inequality, however, is unambiguous – both theoretically and empirically.

While De Vreyer and Lambert produce robust empirical evidence and confirm the hypothesis that household survey data typically underestimates inter-personal inequality, their study is also an illustration of the fact that a precise estimate of the degree of this underestimation requires intensive and purposive surveys. Since collecting individual level data at a large scale is both conceptually fraught and practically unfeasible, it is not obvious what the lessons of De Vreyer and Lambert and others are for future inequality research. Kanbur (2016) suggests the following strategy, which could be fruitfully applied in the African context. First, we should continue to conduct small and specific studies (both money and non-money metric) of intra-household inequality, so as to get a grasp of the scale of the underestimation of overall inequality. Second, drawing on these studies to update our estimates, we should use conservative "rule of thumb" adjustments to inequality measures to account for within-household inequality. Kanbur, drawing on several studies (Sahn and Younger, 2009; Haddad and Kanbur, 1990; Lise and Sietz, 2011) suggests that a conservative estimate might be an upward adjustment of inequality in the region of 30 percent. De Vreyer and Lambert's conservative estimates are somewhat lower than this, which may prompt us to lower the size of the re-adjustment.

In many African contests, household assets are held jointly by men and women, and consumption is measured at the household level. However, not all assets which are held jointly imply equal access or control and household members have competing preferences, do not always pool resources, and bargain over the allocation of production and consumption. However, as Doss and Quisumbing (2018) caution that this does not mean that the household should be seen primarily as a site of conflict rather than as a site of both cooperation and conflict. In each context there is a need to understand better what is "shared" in the household and how/what this means. Research also needs to contribute to our understanding of how decisions are made within households. This approach will allow the framing of interventions in terms of bolstering household welfare for shared gains, incentivizing inter-gender cooperation and opening up avenues which include men in equity enhancing interventions.

This nuance is important but it does not soften the key point that currently there are large gender disparities in the ownership and use of assets in SSA. . There are both normative and efficiency motivations for a more equal gendered distribution of assets and an empirical fact that there are positive economic and social outcomes to increasing women's asset holdings. Doss et al. (2019) investigate ways in which gender disparities in asset holdings might be overcome, by focusing on patterns of accumulation of land assets through the market. However, they show that in many contexts this market solution is not an easy solution as it is imbedded in many gender inequalities and is not an easy route to pursue. For example, in Ghana marriages are characterized by a separation of property marital regime, women do not typically inherit land and the de facto operation of land markets make it very hard for women to acquire property through the market than men.

Another pathway through which egalitarian change may be promoted is through structural change and the growth process itself. Economic development occurs concomitantly with a transformation in the shares of total wealth held in the form of natural, human and physical capital. Low levels of economic development is correlated with a high share of natural capital, and economic growth is associated with an increasing share of physical and human capital. This holds both across countries of varying levels of development and within countries overtime along with the process of development. Oduro and Doss (2018) argue that the gendered patterns of asset holding may also change along with these changing patterns of wealth distribution. While land assets are generally male dominated, the diversification away from land holdings which accompanies structural transformation may lead to a more egalitarian gendered distribution of asset holdings. In this way, economic growth may lift some constraints on women's opportunities to hold assets. As expected, Oduro and Doss (2018) find that in Ghana over the last two decades, land has decreased as a share of total wealth and the relative value of housing has increased, and, as a consequence, women's share of wealth has increased.

Adriano et al. (2018) zoom out and offer an analysis of changes in women's empowerment (proxied for by women's participation in decision-making within household) across SSA, drawing on survey data from 47 Demographic and Health Surveys from 28 SSA countries between 2001 and 2014. Their purpose is to map how women's reported participation in household decision making varies over time and space in SSA. They find that there is substantial variation in women's status, and that in some countries progress in improving

women's status has lagged behind others. In particular, Western African countries were lagging behind compared to Eastern and Southern African countries, with Ghana and the southern parts of Nigeria and Guinea being the only exceptions to this trend. Between-country variation accounts for 43.1% and 63% of the total variation in women's status in the periods 2000–2004 and 2011–2015, respectively. However, only 14.8% of the change in women's status is related to between country variation between 2000–2004 and 2011–2015. The remaining 85% of the change in women's status is accounted for by factors that varied over time within countries – such as changes in educational attainment and urbanisation.

Mobility, inequality of opportunity and horizontal inequalities

There is an intimate conceptual link between inequality of opportunity (IOp) and horizontal inequality, which refers to group-based inequalities. To see how, consider the following expression of inequality of outcomes:

$$y = f(c, e)$$

where y is income (but could also be consumption, wealth, test-scores or any number of other relevant outcome variables), c is circumstance (which is taken to be exogenous to the individual in the sense that the individual has no control over these variables), and e is effort (which is taken to be endogenous to the individual in the sense that this is the result of individual choice). Luck can either be idiosyncratic or circumstantial.

Circumstances are typically determined and defined at the group level – such as region of birth, ethnicity, parental background, age, gender and race. Therefore, we can see that the IOp framework (Roemer, 2008) which decomposes and identifies that component of inequality which is determined by group-level variables, bears a family resemblance horizontal inequality as a concept. Analyses of inequality of opportunity typically attempt to isolate the contribution of circumstantial factors to total inequality. There are both justice and efficiency motivations for isolating and decomposing circumstantial contributions to inequality. The fact that equal effort and ability is not met with equal reward not only violates principles of justice, it also comes with costs in terms of economic growth and efficiency: As Brunori et al. (2016) express it:

> when exogenous circumstances play a strong role in determining individual outcomes, there is a suboptimal allocation of resources and lower potential for growth. To put it differently, the existence of inequality traps, which systematically exclude some groups of the population from participation in economic activity, is harmful to growth because it discourages effort and investment by individuals, provokes a loss of productive potential, and contributes to social and institutional instability. (p. 2)

From this, it is also easy to see how an analysis of the magnitude and determinants of IOp have direct policy implications: If circumstances are discovered to be substantial determinants of inequality of outcomes, and if the relative importance of various determinants can be identified and quantified, then policy may be effectively targeted at reducing the unequal distribution of circumstantial determinants of IOp. Brunori et al. (2016) use nationally

representative survey data from 11 SSA countries[1] to quantify the contribution of IOp to total inequality, and to identify which groups in the respective African countries are most disadvantaged. They use both parametric and non-parametric estimation approaches and estimate that between approximately 30 and 40 percent of total inequality can be attributed to observable exogenous and group-based circumstances. Malawi, Uganda and Tanzania have the highest share of IOp in total inequality, while Rwanda, Madagascar and the Comros have the lowest share of IOp.

It is important to note that these are lower-bound estimates: In every country case there are circumstance variables which go unmeasured, and the omission of these variables inflates the residual component of inequality, hence leading to a downward bias in the estimated contribution of IOp to total inequality. An additional unfortunate consequence of inevitable omitted variable bias is that cross-country comparability is compromised since surveys collect different data on circumstance variables. Furthermore, the extent of omitted variable bias may differ systematically in cases where data quality is correlated with the level of development in a country. Brunori et al. (2016) consider four circumstance variables in their analysis: birthplace, parental occupation, parental education, and ethnicity. Most of the countries studied have information on three out of four of these variables, but none have information on all four.

Brunori et al. (2016) also attempt to identify the main contributors of specific circumstances to IOp. However, this associational analysis is tentative – the fact that omitted variables may be correlated with observable variables means that the strength of associations may be biased, therefore standing in the way of a causal identification. For instance, ethnicity is likely correlated with birthplace in Rwanda – however, the omission of ethnicity in survey data threatens to lead to an overestimation of the effect of birthplace on IOp. With these caveats in mind, Brunori et al. (2016) find that birth location is a primary determinant of IOp in Niger and the Comoros, while birthplace plays a relatively minor role in Malawi. In the Democratic Republic of the Congo and in Uganda ethnicity plays a dominant role in IOp. In Nigeria, Guinea and Rwanda parental education and occupation contribute most to IOp. Each of these findings are suggestive in terms of identifying what on a menu of policy interventions will be most impactful in reducing IOp in these countries.

Anand et al. (2018) examine the role of inequality of opportunity in determining inequality in another dimension – educational outcomes. Specifically, they attempt to isolate the effect that inequalities in household characteristics, differences in schooling quality, and the interaction between these two determinants (the sorting of children from better households into better schools) have on inequality in test scores. Previous attempts at isolating only the effect of household characteristics face the danger of overestimating the effect of these characteristics since they are typically positively correlated with schooling quality through sorting effects.

[1] These countries are: The Comoros, the Democratic Republic of Congo, Ghana, Guinea, Madagascar, Malawi, Niger, Nigeria (for which two waves of data are available), Rwanda, Tanzania (also two waves of data), and Uganda (also two waves of data).

Anand et al. (2018) therefore develop a framework which jointly accounts for the contributions to variation in learning outcomes (in this case the variance of test scores) of both household factors and school quality, as well as their covariance. They apply this framework to rich micro-data covering over one million children in Kenya, Uganda and Tanzania.

They find that, if sorting effects are not considered, household characteristics are estimated to dominate as a determinant of schooling outcomes. However, when taking variance in schooling quality and sorting effects into account, household characteristics actually play a minor role in determining schooling outcomes. This provides evidence that the role of household characteristics in determining schooling outcomes is indirect – and is mediated by how household characteristics determine school choice. Variance in school quality is substantial, and appears to be driving inequality in learning outcomes. This effect is aggravated by sorting of richer children into better schools. Overall, Anand et al. (2018) find that inequality in educational opportunity accounts for almost half of the total variation in test scores.

In terms of policy, these findings provide support for interventions which alter the distribution of schooling quality – especially in improving access to quality schooling to poorer households.

Analyses of inequalities related to economic mobility and inequality of opportunity are often highly data-intensive. For this reason, in-depth country-studies have been limited to contexts in which rich data is available, especially panel data. For this reason, much of this research has focussed on South Africa, which has more and higher quality data than elsewhere in Africa (Piraino, 2015; Finn, Leibbrandt & Ranchhod, 2017; Schotte, Zizzamia & Leibbrandt, 2018; Zizzamia, Schotte & Leibbrandt, 2019). In particular, the availability in South Africa of nationally representative panel data allows for the analysis of both short-run economic mobility as well as intergenerational mobility. The National Income Dynamics Study (NIDS) began collecting data in 2008, and followed this original sample of 28,000 households approximately every two years. The fifth and most recent wave of data collection was completed in 2017.

The availability of this data has allowed researchers to link inequalities in mobility patterns – both short term and intergenerational – to inherited and socially determined individual and household characteristics. For instance, Piraino (2015) and Finn et al. (2017) show that the opportunities available to most South Africans are closely related to the socioeconomic status of their family. There is evidence of this in the unequal chances of finding work dependent on parental earnings, as well as the high level of persistence between the earnings of fathers and sons. While the average degree of intergenerational earnings persistence is comparable to other developing countries with similarly high levels of income inequality, what is particular about South Africa is the exceptionally high degree of persistence at the bottom of the earnings distribution. For instance, Finn et al. (2017) show that, having entered the labour market, nine out of ten children from the poorest families occupy the same place in the earnings distribution as their parents did. This provides strong evidence that disadvantage is being passed on between generations. However, when looking at the top of the distribution, it becomes clear that advantage is also being inherited. Children of top-earning fathers have a 70 per cent chance of also finding themselves at the

very top of the earnings distribution. Interestingly, positions in the middle of the earnings distribution appear to be the least stable, testifying to elevated chances of both upward and downward mobility and a relatively high extent of variability among those in the literal middle of the earnings distribution in South Africa.

It is concerning that there is so little mobility at the bottom of the earnings distribution, even though, since 1994, there has been a rapid increase in average levels of educational attainment in South Africa. Finn et al. (2017) offer two interrelated explanations for this. First, returns to education increase with educational level, and this tendency has been further accentuated since 1994. In other words, an additional year of education has a much higher marginal return at higher levels of education than it does at lower ones – and that the highest returns to education accrue to the small share of South Africans who hold post-secondary qualifications. Second, there appears to be a mismatch between the skills which employers seek, and the content and quality of education that children receive at primary and secondary levels. Therefore, while greater access to tertiary education may be a desirable long-term objective, it has to begin with significant improvements to the quality of schooling. Closing the gap in educational attainment and simultaneously providing more and better employment opportunities for less skilled workers will be essential tools to tackle the intergenerational persistence of poverty and inequality in the country.

The intergenerational persistence in earnings – particularly at the lower and upper extremes of the distribution – should, however, not obscure the substantial extent of volatility that South Africans experience *during* their lives. Income or consumption observed at a point in time can be thought of as being determined by two components -- a structural element which is stable, and a stochastic element which is volatile and reflects random and unpredictable variation. Inequality measured at a cross-section does not distinguish between these two elements of income/inequality. However, since inequality measured over time is arguably a more appropriate welfare concept than inequality measured at a point in time, understanding the relationship between static and dynamic inequality is important (Flinn, 2002; Friesen and Miller, 1983; Paglin,1975).

Taking the dynamics of inequality into account has several implications. If the size of the stochastic component of income or consumption is fairly uniformly distributed across the cross-sectional distribution, intertemporal inequality is likely to be lower than cross-sectional inequality. To see this, imagine that individuals swap places in the income distribution randomly over time and notice how this volatility would smooth out individual differences over time. However, if volatility is correlated with other factors which determine where one is in the cross-sectional distribution, then volatility is not necessarily equalising over time. In the real world, one might expect that higher income individuals are better able to maintain their income over time, while lower income individuals are more exposed to volatility. In addition, since volatility is itself welfare reducing (Cafiero and Vakis, 2006), taking into account the unequal distribution of economic vulnerability within a population is also an important element of the study of inequality.

Incorporating this dynamic element into the study of inequality has remained fairly uncommon in the African, and for the reasons described above, has remained centred on South Africa. Zizzamia and Ranchhod (2020) have produced the first estimates of lifetime earnings inequality in the African context, finding that in South Africa inequality of earnings summed over the lifetime is lower than the inequality of earnings measured at a point in time. While they find that employment dynamics increase inequality measured over time, this effect is dominated by the larger equalising effect of the positive age-earnings profile.

Schotte et al. (2018) focus on the unequal distribution of economic volatility in South Africa by developing a framework of socio-economic stratification that links the in-depth analysis of vulnerability to a demarcation of socio-economic strata. This schema begins from a standard division of society into three socio-economic classes: the poor, the middle class, and the elite. Then, using a model of poverty transitions, which estimates the risk to future poverty given an individual's current poverty status and household characteristics, two further subdivisions are added to this standard class structure. Among the poor, they distinguish those with below average chances of exiting poverty and thus a comparatively high risk of poverty persistence – termed the chronic poor – from those with above average chances of making it out of poverty – the transient poor. Analogously, among the middle class, they distinguish those who face an above average risk of slipping into poverty – referred to as the vulnerable – from the more economically stable and secure 'actual' middle class, who have a below average risk of entering poverty.

Applying this schema to NIDS data, Schotte et al. (2018) sort each individual in the NIDS sample into each of the five classes described above. They find that, between 2008 and 2017, on average about one out of four (24 per cent) South Africans could be classified as stably middle class or elite. Moreover, with a combined share of 26.8 per cent, the transient poor and the vulnerable constitute a considerable share of South Africa's population. For both these groups who straddle the poverty line, income levels are highly volatile and difficult to sustain. The chronic poor made up 50 per cent of the South African population and accounted for 80 per cent of total poverty in South Africa.

Schotte et al. (2018)'s results show that race and rural-urban location remain strong predictors of vulnerability and poverty. Rapid urbanisation has left black Africans on the fringes of urban society – the transient poor and the vulnerable are predominantly urban-located. Despite better prospects in cities, the difficulty in accessing stable labour-market income is a key determinant of high levels of vulnerability. Chronically poor adults (and to a lesser extent, transient poor and vulnerable adults) are far more likely to be economically inactive or unemployed than those in the middle class and elite. As expected, precarious forms of work such as casual employment and employment without a permanent work contract make up the largest share of jobs among the poor and vulnerable.

It comes as no surprise that the nature and the dynamics of labour market insertion are related to structural inequalities in terms of inherited and socially determined individual and household characteristics: Zizzamia and Ranchhod (2019) show that in South Africa, Africans experience more employment volatility than non-Africans, women experience more employment volatility than men, while more highly educated individuals experience less employment volatility than people with lower levels of educational attainment. Youth, in

particular, experience very high levels of employment volatility. The difference between urban and rural sub-populations is mostly in terms of the proportions in either stable employment or non-employment, with the proportion in the rural areas that experience chronic unemployment being more than double the corresponding proportion amongst urban dwellers.

Conclusion: Summary, Research gaps and avenues for future research in support of better analysis and policymaking

We began this review by noting that SSA had been largely invisible in the discussion of global inequality. This omission is often attributed to the absence or patchiness of African data. Nonetheless, the discussion of global inequality has proceeded apace. Africa's people must have been included in the analyses that measure global inequality as "the world as one country". This review paper has not interrogated exactly how this has been done (although this would be well worth doing!). Rather, our focus has been to take stock of what we can say about African inequality with existing data in order to promote better analysis and policymaking in addressing inequality in Africa. This perspective has much to offer the global discussion on inequality and we return to this point at the end of this conclusion.

The first substantive section contains a discussion of African data used in the measurement of African inequality, supplemented with a detailed data appendix. Our candid assessment of the frailties of African data on inequality is not meant to paralyse the discussion of African inequality. Indeed, it is precisely the opposite. For us, the purpose of measuring inequality in Africa is to take stock in order to understand and tackle inequality through better policies and social actions. This review then tells the reader what can be said confidently about African inequality right now. This also allows us to see the key gaps that need to be filled.

From the data review it is clear immediately that there is an urgent need to ensure that there are reliable data on inequality for all African countries. There are a number of African countries who are absent from the profiles of inequality in Africa and, perhaps more importantly, that have no quantitative picture of their inequality to use in framing policy. This is not always due to the absence of data. After all, nearly all African countries have surveys that are used to assess their poverty situations. Consumption data are often used as best practice in these poverty assessments. However, as discussed at some length in this review, such data are less adequate for inequality assessment as this consumption picture often underestimates well-being of those at the top-end of the distribution. It is important to augment this consumption picture with income and even wealth data as the basis for understanding inequality and framing policy. Such data have their own challenges and far fewer African countries have access to adequate income data and only a few to tax data. In sum, whether due to no data or inadequate data, this review makes it clear that the lack of an information base for action and policy is a gap that needs to be filled as a priority.

Each of the major reports on African inequality that we used to distil some big picture lessons on African inequality gave detailed attention to issues of data quality. Based on these interrogations they all made use only of a sub-set of African countries for which they had data. This raises the key point that some data are not always better than no data. A particular concern of these reports was that a flawed data set in a county data series leads to an inaccurate assessment of the trends in inequality in that context. This inaccurate

diagnosis can then lead to inappropriate policy and societal responses. Thus, even countries that regularly gather data on consumption, income, assets and even wealth need to be continually vigilant about the quality of these data.

On the basis of data that each report considers reliable enough to bear the burden of assessing inequality levels and trends, these reports yield an important consensus. The continent is not usefully characterized as having a homogenous inequality level or a homogenous trend in inequality over recent years. There is great variation in the levels of inequality across the continent, with a concentration of high inequality in Southern Africa, which dwindles towards the Sahara and the north of the continent. Taken together, the levels of African inequality are very high by global standards, with Sub-Saharan Africa (SSA) containing seven of the world's ten most unequal countries. There is a heterogeneity too across countries in changes in inequality since the 1990s. We cannot say that inequality increased or decreased in Africa during the last decades, as sub-regions, and sometimes countries within the sub-regions, witnessed both increases and decreases in inequality over this period.

Thus, despite data constraints, much can be said about African inequality on the basis of existing African data. We moved on from this discussion of levels and trends to the analysis of key drivers of inequality in African contexts and were able to distil a picture, with all of its heterogeneities, of the texture of African inequality dynamics. It is certainly no more than a start. We have highlighted key drivers but have not gone much further than this. The tasks of fully understanding Africa's nodes of extreme global inequality and the heterogeneity across the continent lie before the research community as crucial undertakings.

The discussion of drivers of inequality surfaced important African specificities - intersecting factors within households, communities and local and national economies - that have to be grappled with in understanding any African context. We showed that the complexities of household formation and composition, for example the high frequency of polygamous households in some countries, sit right at the heart of a person's access to resources and of the accurate assessment of inequality in any African context. Similarly, our analysis of social mobility and inequality dynamics showed that, as in the developed countries, wealth and assets undergird livelihood and employment opportunities in any African context. However, the specific sources of wealth and assets that are important in African contexts are often not those that dominate the contemporary international inequality literature. For example, access to and ownership of land needs to account for the fact that in some areas land is still communally held. Then the prevailing legal and normative rules around this land and around other assets are key to understanding de facto biases in wealth and access to assets that result in fundamentally different livelihood trajectories and mobility by gender and age.

Moving outwards to look at African contexts from above each country it is clear that Africa's inequality landscape is characterised by a deep urban-rural divide. This correlates with inequalities in many important dimensions of foundational well-being, such as education, health (including child nutrition) as well fundamentally different labour markets. That is, much of the observed difference in rural-urban outcomes are driven by other socio-economic factors, which are in turn associated with urban-rural divides. The key point is that

many Africans are going to reside in rural areas and are going to depend on rural opportunities for the foreseeable future. This is not to deny the growing importance of urbanisation and the need to understand urban contexts. For example, another key African specificity is the need to integrate the informal sector into any analysis of the role of the labour market inequality. However, the point is that African inequality analysis always requires that analytic attention be devoted to both rural and urban contexts and the linkages between them.

The particular nature of inequality in Africa needs to be measured and included in the analysis of African inequality no matter what the international trends in inequality measurement or the demands of global comparison. Of course, some characteristics of African inequality will overlap in important ways with inequality in many developing country contexts and therefore in the global discussion over inequality. Our hope is that this review helps to bring African inequality back into the global discussion and also strengthens the case that developing country specificities warrant central attention in this discussion, assuming that the goal of this discussion is to overcome global inequality and not just to measure it.

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Appendix 1: A note on inequality measures

Whether to use relative, absolute, or "centrist" measures of inequality

Relative measures – that is, measures which satisfy the scale invariance property (such as the Gini, Theil, Mean Log Deviation) – are most commonly used to measure inequality. Scale invariance requires that multiplying each individual's income by a constant does not change inequality. But scale invariance is not immune from critique (Kelley and Klein, 1977; Kolm, 1976): there is an argument to be made in favour of attaching weight to absolute differences in income. For instance, by multiplying everyone's income by a constant, the rich benefit more *in absolute terms* (Allison, 1978). Further, in a globalised world in which information is more freely available than ever before, it is often the *absolute* differences in income which are most conspicuous, and which increase public perceptions of inequality (Niño-Zarazúa et al., 2017). Since economic and political behaviour in response to inequality is driven by these perceptions, a strong argument can be made to consider absolute differences in inequality measures.

Niño-Zarazúa et al. (2017) show that global interpersonal inequality has declined when measured using relative measures. However, using absolute or "centrist" measures – which are sensitive to the absolute differences in incomes which are a consequence even of distribution-neutral growth – global inequality is observed to have increased substantially.

The same general pattern holds for Sub-Saharan Africa. However, in most of the literature discussed in this review, relative measures are preferred. Despite this, strong arguments are increasingly being made to supplement relative measures with absolute measures – a trend which will surely enrich our analysis of distributional change on the continent, and its political implications.

Whether to use synthetic inequality indices or to prefer decile dispersion ratios or to report income shares?

The Gini, Theil etc, are synthetic summary measures of inequality, aimed at distilling the shape and dispersion of a distribution into a single normalised and comparable indicator. The simplicity and comparability (and in the case of the Gini, the intuitive interpretation) has made them appealing tools for communicating information about inequality. However, the simplicity of these summary measures is also their weakness – since an entire distribution is summarised into a single figure, much information is lost. For instance, two distributions (such as the evolution of a distribution over time) with substantially different shapes, may in theory be "boiled down" to an identical inequality index – for instance, if a pro-inequality change in one part of the distribution occurs alongside a countervailing pro-equality change in another part of the same distribution. Some have argued that this property makes synthetic inequality measures blunt tools for much inequality analysis (Clementi et al., forthcoming). Amongst this class of measures, the Gini index has the disadvantage of being a centrist measure, placing more weight to observations in the middle of the distribution than at the top and bottom.

A simple and intuitive alternative approach to synthetic inequality measures is to use consumption shares and consumption share ratios to compare inequality between distributions across space or over time. While these measures do not summarize the *entire* distribution, they have the distinct advantage of being intuitively compelling and of representing features of the consumption distribution which are of primary concern in the analysis of inequality – the concentration of resources among the few compared to the relative lack of resources under the control of the many (Cobham et al., 2016).

Using this approach, one might simply estimate the share of total consumption[2] accruing to the top 10, 1 or 0.01 percent of the consumption distribution and compare these shares across countries or for a single country over time. This can also be compared to the share of consumption being captured by the bottom 50 or 10 percent, for instance. This approach has the advantage of being free of normative assumptions, transparent, easy to understand and easily comparable. For these reasons, this is the approach favoured in the recent World Inequality Report (WIR) (Alvaredo et al., 2018).

Another option is to calculate a "decile dispersion ratio" – the ratio of the average consumption of the top x percent of the population to the average consumption of the bottom X percent. This is often calculated as the ratio of the top decile to the bottom decile (D9/D1), or the top to the median (D9/D5). The Palma Ratio is the ratio between the average consumption of the top decile to that of the bottom four (D9/D1-4).

Unlike synthetic inequality measures, since ratios are computed off only two figures, there is no danger of pro-equality changes at certain parts of the distribution compensating for pro-inequality effects elsewhere. Using the D9/D1 ratio as an example, whatever distributional shifts occur in the center of the distribution, or (crucially) within the top or bottom decile, will not affect the estimated decile dispersion ratio.

While decile dispersion ratios do appear to shed light on this better than synthetic measures, they remain limited in the information they are able to provide on distributional change. In this regard, polarization analysis (Morris et al., 1994; Handcock & Morris, 1998; Duclos et al., 2004) provides an appealing alternative concept to both synthetic and ratio-based inequality measures as an indicator of changes in the consumption distribution. While synthetic inequality measures summarize the dispersion of a distribution, polarization considers how distributional changes affect the consumption distribution between subgroups of society. It also far richer in information about distributional change than simple decile dispersion ratios. However, polarisation analysis has not (yet?) entered the mainstream of distributional analysis, and most of the research reviewed here does not consider polarisation measures in their toolkit of distributional analysis.

[2] Throughout this paper we focus on the consumption distribution. The reason for this is simply that consumption is most commonly used to proxy for wellbeing in SSA. For clarity of exposition, we also refer to consumption in theoretical discussion. Much of this discussion could equally apply to income.

Appendix 2: Inequality databases

United Nation University - World Institute for Development Economics Research (UNU-WIDER)'s World Income Inequality Database (WIID)

This database provides Gini coefficients and decile and quintile distributions for 44 SSA countries. It also includes information on the concepts used, measurement, survey questionnaires and units of observation. Each distributional measure is assessed for quality, and is assigned a quality score ranging from 1 to 4.

Solt's Standardized World Income Inequality Database (SWIID)

As the name suggests, Solt's (2019) SWIID expands the geographical and temporal coverage of WIID by using multiple imputation techniques to fill in values for countries and years where data is missing. Unlike the WIID, the quality or consistency of the data in SWIID is not reported.

However, SWIID is often criticised for the fact that the imputation techniques rely on unjustified and opaque assumptions. Further, because of the high proportion of missing data for SSA countries (which are imputed), Jenkins (2015) argues that WIID is to be preferred over SWIID.

Beegle et al. (2016) note that the SWIID is better at estimating Gini levels than it is in estimating trends in the Gini across countries. However, even Gini point estimates using SWIID are very noisy and highly variable. SWIID is therefore entirely unsuitable to analysing trends in inequality.

World Bank's PovCal database

The World Bank's PovCal database provides Gini coefficients for 45 SSA countries, calculated on decile distributions from survey microdata. These data not harmonised according to standardised criteria before Gini coefficients are calculated and surveys are not assessed on the basis of comparability (Beegle et al. 2016). While the data overlaps with WIID, coverage is more limited (Cornia and Martorano, 2017).

World Bank's International Income Distribution Database (I2D2)

This global database uses data drawn from nationally representative household income and consumption surveys, labour market surveys and living standard measurement surveys which all contain a standard set of education, demographic, labour market, household and welfare variables. Data is heavily curated according to statistical standards designed to correct for measurement and sampling errors and to guarantee comparability. Unlike PovCal, here Gini coefficients are calculated directly on microdata – which mechanically implied higher Gini values than those reported in PovCal.

While the harmonisation of all surveys using these standardised variables facilitates cross-country comparisons, the fact that this harmonisation is stringent means that there are few comparable Gini data points for Sub-Saharan Africa.

UNDP's Integrated Inequality Dataset (IID-SSA)

This dataset, produced for use in the UNDP report on inequality in SSA (2017), is an amalgamation of the above five datasets and selected national datasets for specific countries. The approach of the IID-SSA is to select the best quality data from the above datasets for each country and year for which data is available. In most cases in which there are several datapoints available, WIID data is usually selected as that of highest quality. Data is available for 44 SSA countries and covers the period between 1991 and 2011.

While efforts are made to maximise the comparability of the end product of consumption/income, the statistical conventions used in the production of the data remain out of reach and therefore introduce undetectable noise into the data.

Of the 44 countries included in the IID-SSA dataset, 29 countries in SSA have at least four good quality and well-spaced Gini points, allowing for the analysis of inequality trends over time.

Independent nationally representative surveys

Several researchers prefer not to rely on curated datasets such as the above, but to simply use independent nationally representative surveys directly. For instance, this is the approach taken in Beegle et al.'s 2016 report on poverty and inequality in SSA.

There are two principle challenges in using this type of data:

First, the availability of consumption survey data in South Africa is limited. However, there have been recent improvements in this regard: Since 2011, more than half of SSA countries have fielded a consumption survey.

Second, even if data is available, comparability, both within countries over time, and between countries, remains an issue. Three criteria determine comparability: First, whether or not a survey is nationally representative. Second, seasonality can affect comparability if different surveys are conducted in different months. Third, there may be variation in the survey instrument (recall or diary) and in reporting period.

Beegle et al. (2016) evaluate 148 surveys from 1990 to 2012 available in the World Bank database for comparability according to these criteria. Only 78 of these are comparable to another survey for the purpose of tracking poverty. 27 out of 48 countries in this period conducted two or more comparable surveys. Some countries, for instance have multiple surveys, which are, however, incomparable. There was a generalised improvement in comparability since 2000. Comparability in consumer price index (CPI) data also compromises comparisons across countries or within countries over time.

World Inequality Database (WID.world)

WID is a database on historical evolution of the global distribution of income and wealth – both within and between countries. Unlike the data described above, the focus of WID is on income rather than on consumption. WID was launched in the early 2000s, and now involves over one hundred researchers working on more than 70 countries.

The WID project is motivated by the fact that surveys are based on self-reporting, which, specifically for inequality, is prone to underestimate the variance of income/consumption/ wealth distributions because of underreporting and under-coverage of top incomes. The strategy which WID uses to circumnavigate this issue is to combine data from national accounts, fiscal and wealth data, and household surveys in a transparent, consistent and systematic manner. Data is open access – including computer codes and documentation – and is available on the WID.world website.

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We are building – with our partners – shared solutions, with and for the people of the Global South. Our teams are active in more than 4,000 projects in the field, in the French overseas departments and some 115 countries, including areas in crisis.
We strive to protect the common good – promoting peace, biodiversity and a stable climate, as well as gender equality, health and education. It's our way of contributing to the commitment that France and the French people have made to fulfill the Sustainable Development Goals. Towards a world in common.

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