

ISSUES AND CHALLENGES IN MEASURING NATIONAL INCOME,
WEALTH, POVERTY, AND INEQUALITY IN SUB-SAHARAN
AFRICAN COUNTRIES: AN INTRODUCTION

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INTRODUCTION

By all indications, the economic and human development performance of Sub-Saharan Africa has been very positive for the past ten years. Per capita growth was higher than average global growth (and much higher than in industrialized countries), income poverty rates have fallen substantially, and high mortality rates are finally coming down (Demombynes and Trommlerova, 2012; Chen and Ravallion, 2013; Harttgen *et al.*, 2013). This is all excellent news for Africa and the world, as the success of the Millennium Development Goals will largely depend on such positive developments in Sub-Saharan Africa.

The operative words for this Special Issue are, however, "by all indications." Unfortunately, the state of measuring income, wealth, poverty, and inequality in Sub-Saharan Africa is currently so poor that all statements about economic and social progress there are highly uncertain and come with large margins of errors. Clearly, the *measurement* of economic and social performance has not kept pace with the apparent drastic improvements in that performance in recent years. Instead, as argued by one contribution to this volume (Jerven, 2013a), Sub-Saharan African statistical systems have still not fully recovered from the cuts in public spending that accompanied the era of structural adjustment of the 1980s and 1990s. And two contributions (Devarajan, 2013; Jerven, 2013a) argue that donors' efforts have often not helped and sometimes hurt the sustainable development of statistical capacity.

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To analyze this state of affairs in Sub-Saharan Africa, the International Association for Research in Income and Wealth (IARIW), in conjunction with Statistics South Africa, organized a special conference in 2011 in Cape Town, South Africa. As with other IARIW conferences, the hallmark of this meeting was also to bring together researchers and practitioners from the national statistical offices and other government agencies in Sub-Saharan Africa with academics working on measurement questions at the micro and macro level.¹ The issues covered ranged from measurement issues related to national accounts, social accounting matrices, input–output tables, productivity, and related macro statistics as well as the measurement of poverty, inequality, mobility, and well-being using household surveys or other micro data. Apart from focusing on measurement issues, some of the papers were also on substantive analyses on poverty, inequality, mobility, and well-being, thereby trying to close key research gaps with data that are available in the Sub-Saharan African context. These papers focus on new ways to study well-being, for example using happiness as well as anthropometric data, as well as using innovative methods to analyze drivers of inequality.

This Special Issue presents selected papers from this special conference. They were selected to highlight the key measurement challenges in Sub-Saharan Africa and suggest appropriate solutions. In addition, several high-quality substantive analyses are included that examine trends and drivers in poverty, inequality, and well-being in Africa using innovative data and methods. In this short introduction, we provide a brief overview of the papers. In the next section, we will first focus on papers related to measurement of income, wealth, and poverty in Sub-Saharan Africa. The following section will discuss papers analyzing important drivers of changes in well-being, using innovative ways to measure well-being or innovative approaches to study its determinants. The final section offers some conclusions and policy implications.

MEASUREMENT ISSUES

The first contribution, “Africa’s Statistical Tragedy,” is based on the keynote address by Shantayanan Devarajan, then Chief Economist of the Africa Region at the World Bank (Devarajan, 2013). It starts on a positive note by asserting that GDP growth is currently “averaging 5–6 percent a year, and the poverty rate is declining at about one percentage point a year, with the absolute number of poor people falling by 9 million between 2005 and 2008.” But he then went on to proclaim a “Statistical Tragedy”—namely that “we cannot be sure of either of these phenomena.”

He lists several problems with national accounts but notes that population statistics are not much better, with many African countries falling well short of the decennial population count recommended by the United Nations. If we can have little faith in total GDP and population figures, the per capita estimates may be even worse. He went even further with his criticism of poverty statistics—surveys are often out of date and successive surveys use different standards, thus

¹The conference program and all papers presented can be viewed at <http://iariw.org/c2011.php>.

preventing comparisons over time—and concludes that we really know little about the levels and trends of poverty in much of the continent.

He lists the well-known proximate causes—lack of survey funds, diffusion of responsibility for statistics, and uncertain budgets leading to poor morale—but then looks deeper to find the politics beneath the statistical tragedy. Surveys are undertaken and results published to suit an electoral calendar, and powerful donors pressure governments to collect statistics that serve their own purposes. One route he suggests is to use a National Statistical Development Strategy (NSDS) as the framework for statistical work: only programs that are directly linked to the NSDS will be carried out regardless of the source of the funds. A second requirement is wider publication of each country's statistics so that they are open to public scrutiny. Lastly, he suggests that donor programs should be evaluated for their impact on statistics—a suggestion that would also ask the World Bank to change its ways.

The second paper, by Jerven (2013a), follows up on these issues and focuses particularly on the comparability of GDP estimates in Sub-Saharan Africa. The author starts by noting that the Ghana Statistical Services recently revised its 2010 GDP estimate by over 60 percent, thereby moving the country from a low income country to a middle income country overnight. Jerven's paper, and his book that followed it (Jerven, 2013b), have had repercussions well beyond the conference room. The international organizations that publish African GDP statistics are asking themselves that if Ghana could have got it so wrong, what other surprises may be in store?

Jerven compares the three main international sources for African GDP statistics—the Penn World Tables (Heston *et al.*, 2006), Angus Maddison's long-run historical database (Maddison, 2003), and the World Bank's World Development Indicators (World Bank, 2007). Differences in GDP estimates, supposedly for the same year and in the same currencies, are large and unexplained, although the author points out that for many countries the GDP figures did not originate in the countries concerned but were made by the managers of these different databases. Among the methodological problems he lists are the use of outdated base years for constant price estimates, lack of resources for data collection from households, industry, and agriculture, and departures—often un-noted—from the international standards. Donor agencies must also shoulder some of the blame: during the 1980s and 1990s their preoccupation with structural adjustment shut off the supply of reasonably reliable records from state managed enterprises, and national statistical offices struggled, and often failed, to persuade private operators to give them the data they needed. More recently, the international focus on the Millennium Development Goals is diverting scarce statistical resources from economic to social areas—further starving the national accounts of their essential underpinnings.

The two papers by Devarajan and Jerven offer a disquieting view on the state of African statistics, as good statistics, particularly national accounts, are the essential input for analysis and policy recommendations for the reduction of poverty and inequality.

Doubts about the reliability of conventional measures of economic development in Africa have led researchers to seek alternative ways to gauge economic

growth and poverty reduction. Chief among these has been the use of “asset indices,” which summarize household ownership of consumer durables together with desirable features of dwellings such as piped water and flush toilets. Some of these asset indices claim to have discovered a growth miracle in Africa which inadequate national accounts and unreliable data on household incomes have failed to uncover. The paper by Harttgen, Klasen, and Vollmer (2013) takes a skeptical view and concludes that the rise in asset ownership is unlikely to be a reliable proxy for economic growth and poverty reduction.

The authors explain the discrepancy between ownership of durable goods and housing quality on the one hand and per capita GDP on the other (a discrepancy which they term “asset drift”) by changes in relative prices, people’s tendency to retain durables even when they are no longer much used, and government programs for electrification and piped water. They support their argument by constructing an asset index using data from *Demographic and Health Surveys* which have been carried out in over 60 countries in Africa and Asia since 1990. They conclude that “. . . it appears difficult to infer any clear statement that would link asset changes to per capita consumption or income changes.” Even though conventional GDP measures and other economic statistics may be weak in Africa, the authors find no evidence that asset indices perform better.

The authors are by no means dismissive of asset indices and note that they provide useful information about relative living standards in a country at one point in time; but they are less useful as proxies for changes in incomes over time. Their main message though is that African countries should continue to improve their conventional measures of economic progress including the national accounts and—especially—the survey data on which they are based.

The last paper that focuses mainly on measurement issues is by Wittenberg (2013); it also considers an innovative proxy of economic performance: the body mass index of adults in Southern Africa. In the paper, the authors show that body mass increases with economic resources among most Southern Africans, although not all. Among Black South Africans the relationship is non-decreasing over virtually the entire range of incomes/wealth. Furthermore, in this group other measures of “success” (e.g., employment and education) are also associated with increases in body mass. This is true in both 1998 (Demographic and Health Survey) and 2008 (National Income Dynamics Survey). A similar relationship holds among residents of Lesotho, Swaziland, Mozambique, Malawi, and Namibia. This suggests that body mass can be used as a crude measure of well-being. This also allows researchers to examine the vexed question in South African labor economics of to what extent the very high unemployment in South Africa is involuntary. The fact that the unemployed are lighter than the employed, even when one controls for household fixed effects, suggests that they are not choosing this state.

DRIVERS OF WELL-BEING IN SUB-SAHARAN AFRICA

A second set of papers in this Special Issue focus more on substantive questions regarding drivers of economic well-being in Sub-Saharan Africa. As a

result the focus is particularly on trying to find causal explanations for trends in well-being and inequality. At the same time, measurement issues do figure prominently in all papers, highlighting both current gaps and ways to overcome them using innovative approaches.

The first two papers deal with drivers of occupational mobility in Sub-Saharan Africa. Occupational mobility is, of course, an important element of overall social and economic mobility. In this sense, analyses of occupational mobility allow insights into the larger question of overall inter-generational social and economic mobility.

The first paper, by Bossuroy and Cogneau (2013), conceptualizes inter-generational occupational mobility between the farm and non-farm sectors in five Sub-Saharan African countries, measures it using nationally representative household survey data, and analyzes its determinants through a comparative method based on pooled logit regressions. It first analyzes intergenerational gross mobility. Until the end of the 1980s, intergenerational flows toward the non-farm sector are high in Côte d'Ivoire and Guinea, flows toward the farm sector are more often observed in Ghana and Uganda, and Madagascar displays less mobility in either direction. The pace of change in occupational structures and the magnitude of labor income dualism between the farm and non-farm sectors appear to explain those differences. The paper then nets out structural change across generations and provides for the first time for the measurement of intergenerational net mobility in those five African countries. Ghana and Uganda stand out as relatively more fluid societies. Côte d'Ivoire and Guinea come next, while Madagascar shows a particularly high reproduction of occupations. Educational mobility accounts for the Madagascar exception to a large extent, but not for the differences between the other countries. Spatial dualism of employment, i.e. the geographic segregation of farm and non-farm jobs, accounts for most of those remaining differences. The paper argues that the main determinants of intergenerational mobility, namely income and employment dualisms, likely reflect a historical legacy of different colonial administrations.

Occupational mobility is also the topic of the paper by Keswell, Girdwood, and Leibbrandt (2013), focusing particularly on the case of South Africa. The authors analyze the role of educational opportunity in shaping inequality in the distribution of occupations in the long run. They start by modeling the probability that a child occupies the same or a different rung on the occupational ladder as his or her parents, controlling for both the educational attainment of the child, as well as the level of educational opportunity of the child. These conditional probabilities are then used to construct separate transition matrices by level of educational opportunity, race, and gender, which in turn are used to compute the steady-state distribution of occupations. Finally, they use the timing of political events in the history of the struggle to end *apartheid* to devise an identification strategy that permits a causal interpretation of the role of educational opportunity. They find evidence that educational opportunity has a strong conditioning effect on the distribution of occupations in the steady state. In particular, African female children who inherit the same level of educational opportunity as their parents are 6 percent more likely to be in the bottom of the occupation distribution than if they were exposed to better educational opportunities. An alternative identification

strategy suggests that this figure is approximately 10 percent for younger cohorts of African female children.

Both papers together thus point to the important role of policy, colonial policies in the case of Bossuroy and Cogneau (2013), and South Africa's *apartheid* policies in the case of Keswell *et al.*, on influencing the patterns of inter-generational occupational mobility.

Another policy, though of a different kind, is also the focus of the contribution by Dedehouanou, Swinnen, and Maertens (2013). They examine the move toward contract-farming in developing countries where farmers are contracting directly with export companies to supply agricultural produce for export. The welfare consequences for farmers in Sub-Saharan Africa are discussed controversially in the literature.

In this paper, the authors use a subjective well-being approach to evaluate the welfare impact of contract-farming. They analyze the impact of contract-farming on self-reported happiness using original panel data from a farm-household survey in the *Niayes* region in Senegal. They use different econometric techniques and show that, when correcting for time invariant unobserved heterogeneity, contract-farming has a positive effect on subjective well-being. They find diverging effects for different types of contracts, suggesting that contract-farming contributes more to farmers' subjective well-being under certain conditions and contract designs. Their main finding corroborates earlier findings from empirical studies using cross-sectional data and income-based measures of welfare. In line with earlier results from the subjective well-being literature, they also find that absolute income has a positive but decreasing effect on subjective well-being, while relative income (compared to a comparison group) has a negative effect.

Lastly, the paper by Aron and Muellbauer (2013) examines the drivers of consumption in South Africa, studying particularly the role of wealth in affecting consumption. They develop a wealth and income model to explain fluctuations in the ratios of consumption and household debt to income from 1971 to 2005. The paper uses a time series on financial and non-financial wealth of South African households published earlier (Aron and Muellbauer, 2006). At the present time, there is no similar dataset on household wealth for any country in Sub-Saharan Africa. The authors point out that in the absence of accounting data on household wealth, other researchers have been forced to use proxies such as stock market prices, house prices, or broad money, but only a detailed series on household assets and liabilities can show the impact on consumption of shifts in the composition of net wealth.

The period covered includes the ending of *apartheid* with the release of Nelson Mandela in 1990 but, surprisingly perhaps, the authors find that this had only a temporary impact on household consumption. They write that the jump in household expenditure recorded in the first quarter of 1990 "looks anomalous, suggesting a kind of temporary euphoria. . . . [but] by 1992 Q2, the model is back on track." More significant were the various measures undertaken to liberalize credit markets. An innovative feature of their model is that it includes a credit conditions index: a particularly useful chart shows the events underlying the rapid easing of credit conditions, and the rise of their index, from 1981 up to the 1997–98 banking

crisis and the subsequent tightening of credit conditions over the next five years. The authors argue that without explicit measurement of credit conditions, the effect on consumption of housing wealth or its use as collateral is likely to be overestimated.

CONCLUSIONS

The papers in this Special Issue all support two important conclusions for measurement and research. First, challenges in the measurement of income, wealth, consumption, poverty, and inequality remain huge in Sub-Saharan Africa. While the sheer amount of data on these issues has multiplied in recent years, reliable and inter-temporally and internationally consistent information on many basic economic and social variables remains scarce in Sub-Saharan Africa. Given the improvement in the economic resource base of these economies, the opportunity for Sub-Saharan African countries to improve the current state of affairs is there, but requires consistent and long-term investment in the build-up of statistical capacity. Also, international support for these ventures must switch from project-based approaches to conduct individual surveys to longer-term programs to support the build-up of statistical capacity. In this sense, the call by the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda (United Nations, 2013) for a “data revolution” is timely and might provide the required impetus to tackle this problem in a comprehensive manner.

Second, as the papers on the drivers of development and inequality in this Special Issue show, there is much potential for exciting and important academic and policy-relevant research in Sub-Saharan Africa. As Sub-Saharan Africa is clearly a continent on the move, the potential and the need to accompany these developments is great and rewarding from both an academic as well as a policy perspective.

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