IS POVERTY IN AFRICA MOSTLY CHRONIC OR TRANSIENT?

EVIDENCE FROM SYNTHETIC PANEL DATA

Hai-Anh H. Dang
Andrew L. Dabalen

April 2017
ABSTRACT

Absent actual panel household survey data, this paper constructs, for the first time, synthetic panel data for more than 20 countries accounting for two-thirds of the population in Sub-Saharan Africa. In this process, the analysis employs repeated cross sections that span, on average, a six-year period for each country. The analysis suggests that all these countries as a whole have had pro-poor growth. One-third of the poor population escaped poverty during the studied period, which is larger than the proportion of the population that fell into poverty in the same period. The region also saw a 9 percent reduction in poverty and a 28 percent increase in the size of the middle class. However, chronic poverty remains high, and a considerable proportion of the population is vulnerable to falling into poverty. There is some limited evidence that most resource-rich and middle-income countries have more upward mobility than downward mobility. Post-secondary education is especially strongly associated with higher upward mobility and less downward mobility, which holds to some extent for female-headed and urban households.

This paper is a product of the Poverty and Equity Global Practice Group. It is part of a larger effort by the World Bank to provide open access to its research and contribute to development policy discussions around the world. The authors may be contacted at hdang@worldbank.org and adabalen@worldbank.org.

The Poverty & Equity Global Practice Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

– Poverty & Equity Global Practice Knowledge Management & Learning Team

This paper is co-published with the World Bank Policy Research Working Papers.
Is Poverty in Africa Mostly Chronic or Transient?
Evidence from Synthetic Panel Data

Hai-Anh H. Dang and Andrew L. Dabalen*

JEL: C15, D31, I31, O10, O57

Key words: welfare dynamics, poverty, vulnerability, middle class, pro-poor growth, synthetic panel, household surveys, Africa

---

* Hai-Anh Dang (hdang@worldbank.org) and Andrew Dabalen (adabalen@worldbank.org) are respectively Economist with the Survey Unit, Development Data Group, and Manager, Global Poverty Practice, the World Bank. We are grateful to Kathleen Beegle, Luc Christiaensen, Francisco H.G. Ferreira, Tomoki Fuji, Isis Gaddis, Yoseph Getachew, Stephan Klasen, Peter Lanjouw, Michael Lokshin, Jacques Morisset, Erik Thorbecke, and participants at the CSAE conference (Oxford), workshops and seminars at Singapore Management University and the World Bank for helpful discussions on earlier versions. We thank Rose Mungai, Vasco Molini, Shinya Takamatsu, and Ayago Wambile for their help with the data. We would further like to thank the UK Department of International Development for funding assistance through its Strategic Research Programs.
I. Introduction

Static poverty measures fail to distinguish between an individual who has been in poverty all her life, and another who happens to have had a small misfortune for the year the measurement was carried out. But these distinctions matter. The forces that conspire to condemn some individuals to remain stuck in poverty for years are generally somewhat different from those that randomly drag them down for a brief period. The latter group may need only some temporary relief—perhaps only some short-term employment insurance till they secure the next decent-paying job—while the former would also need longer-term interventions aimed at breaking the persistence of poverty. Indeed, the longer people spend in poverty, the lesser tends to be their chance of exiting it. As living standards in Africa continue to rise, has its poverty remained mainly chronic, or has it become more transient?

Researchers interested in understanding welfare dynamics in Africa now have access to an emerging collection of nationally representative panel surveys, which represents a vast improvement over the situation just a decade ago.¹ However, data coverage remains low—data are available for only seven countries—and the time periods spanned by these panel surveys are mostly limited to short periods of three years or less. We attempt to overcome these obstacles by applying recently developed statistical methods to construct synthetic panels from cross sectional surveys (Dang et al., 2014; Dang and Lanjouw, 2013), which are far more widely available. We construct these synthetic panels for 21 countries with at least two comparable cross sectional surveys accounting for two-thirds of the Sub-Sahara African population and spanning on average six years. Thus by covering the largest number of countries and the longest time periods for Sub-

---

¹ See, for example, the Living Standards Measurement Study–Integrated Surveys on Agriculture (LSMS-ISA) that are financed by the Bill and Melinda Gates Foundation, but implemented by the World Bank and member countries.
Saharan Africa compared to the existing literature, our paper provides the most comprehensive, to
date, study of welfare dynamics for the region as a whole.\textsuperscript{2}

In addition to generating newer and more data, this synthetic panels approach also enables us
to offer a more consistent measurement of poverty dynamics since it applies the same methodology
and employs the same standard and welfare measure for all countries, which is not the case in most
existing studies that use panel surveys. Furthermore, since synthetic panel data are constructed
from cross sectional surveys, these data are also exempt from issues that usually plague panel data
quality such as attrition.

Our findings suggest that on average—that is when all the 21 countries are taken together—
the region experienced pro-poor growth. Even though chronic poverty remains high, one-third of
those considered poor in the first period moved out of poverty in the second period, which exceeds
the proportion of the population that fell into poverty in the same period. The region also saw a 9
percent (or a five percentage points) reduction in poverty and a 28 percent increase in the size of
the middle class, albeit from a somewhat low base. However, the vulnerable category also grew
by 12 percent. Our pro-poor growth definition suggests that countries with positive growth are
Mauritania, Ethiopia, Togo, Swaziland, Malawi, Chad, Botswana, Ghana, Uganda, Congo DRC,
Mozambique, Rwanda, Tanzania, and Sierra Leone. On the other hand, countries with growth that
is not pro-poor are Burkina Faso, Zambia, Madagascar, Cote d’Ivoire, Cameroon, Senegal, and
Nigeria. There is also some indicative evidence that most resource-rich and middle-income
countries have more upward mobility than downward mobility. Post-secondary education is

\textsuperscript{2} Similar analyses using synthetic panel data have been done for other regions such as Latin America (e.g., Ferreira et
al., 2013; Vakis et al., 2016) or Middle East and North Africa (Dang and Ianchovichina, 2016). For an analysis of
poverty based on asset indexes for 11 countries in Africa in the 1990s, see Sahn and Stifel (2000); but also see, e.g.,
Harttgen et al. (2013) who argue that asset indexes may not be able to capture the trends in welfare over time as
consumption-based measures do.
especially strongly associated with higher upward mobility and less downward mobility, which holds true to some extent for households with a female household head and urban residence.

This paper consists of four sections. We provide a brief overview of the analytical framework, including the synthetic panel method and our definitions of vulnerability and shared prosperity, and data in the next section. We discuss estimation results regarding welfare dynamics in Section III, before offering concluding remarks and some policy recommendations in Section IV.

II. Analytical Framework

We provide in this section a brief overview of the methods that will be employed to construct the synthetic panels, as well as some simple but useful decomposition formulae for poverty mobility (Section II.1). We then describe our definitions of vulnerability and shared prosperity (Section II.2), which have a strong pro-poor growth focus. We discuss the data in the last subsection (Section II.3).

II.1. Constructing Synthetic Panels and Decomposing Poverty Mobility

We apply recent statistical methods developed by Dang et al. (2014) and Dang and Lanjouw (2013) to construct synthetic panel data from repeated cross sections. These methods essentially decompose the change in poverty (or welfare) into two components: one that is due to time-invariant individual characteristics (e.g., ethnicity, religion, place of birth, or completed education), and the other due to unobserved time-varying factors (e.g., unexpected shocks to household consumption). Certain deterministic variables such as age can also be included in the first component, since given its value in one survey round, age can then be determined given the time interval between the two survey rounds. Similarly, time-varying household characteristics

---

3 Validation exercises were implemented for the synthetic panel methods using both synthetic panel data and actual panel data for several different countries in the cited papers. Other recent applications (and validations) include Ferreira et al. (2013) and Cruces et al. (2015) for Latin American countries, Dang et al. (2017) for Senegal, and Dang and Lanjouw (in press) for India, the United States, and Vietnam.
can also fall under the first component if retrospective questions about the values of such characteristics in the first survey round are asked in the second round. An overview of these methods is provided in Appendix 1.

To reduce spurious changes due to changes in household composition over time, we follow the literature on pseudo-panel analysis and restrict the estimation samples to household heads age 25 to 55 in the first cross section and adjust this age range accordingly in the second cross section. This restriction also helps ensure certain variables such as heads’ education attainment remain relatively stable over time (assuming most heads are finished with their schooling). This age range is usually used in traditional pseudo-panel analysis but can vary depending on the cultural and economic factors in each specific setting. Population weights are then employed to provide estimates that represent the whole population.

Then let $y_{ij}$ and $z_j$ respectively represent household consumption (income) and the poverty line in survey round $j$, $j=1$ or $2$, we are interested in knowing such quantities as

\[ P(y_{i1} < z_1 \text{ and } y_{i2} > z_2) \]  \hspace{1cm} (1a)

which represents the percentage of households that are poor in the first survey round (year) but non-poor in the second survey round, or

\[ P(y_{i2} > z_2 \mid y_{i1} < z_1) \]  \hspace{1cm} (1b)

which represents the percentage of poor households in the first round that escape poverty in the second round. In other words, for the average household, quantity (1a) provides the joint (unconditional) probability of household poverty status in both years, and quantity (1b) the

---

4 While household heads may still increase their education achievement in theory, this rarely happens in practice.
5 Note that quantities (1a) and (1b) respectively represent the probability that household $i$ is poor in the first survey round (year) but nonpoor in the second survey round and the probability that the poor household $i$ (in the first round) escapes poverty in the second round. At the population level, these quantities can also be interpreted as percentages of the population groups of interest as discussed above.
conditional probability of household poverty status in the second year given their poverty status in
the first year. For convenience, we also refer to (1a)-type quantities and (1b)-type quantities
respectively as the unconditional measure and the conditional measure of poverty mobility.

Some straightforward decompositions are useful for interpretation of results. Note that the
following equality holds for the unconditional probabilities

\[ P(y_{i1} < z_1 \text{ and } y_{i2} < z_2) + P(y_{i1} < z_1 \text{ and } y_{i2} > z_2) = P(y_{i1} < z_1) \]  

(2a)

where the first and second terms on the left-hand side respectively represent chronic poverty (i.e.,
the percentage of households that are poor in both years) and upward mobility (i.e., the percentage
of households that are poor in the 1st year but escape poverty in the 2nd year). These two terms
together make up the percentage of the population that are poor in the 1st year (i.e., the headcount
poverty rate in the 1st year). Thus given the same (headcount) poverty rate, Equation (2a) implies
an inverse relationship between chronic poverty and upward mobility.

We can have a similar decomposition for the poverty rate in the 2nd period by simply reversing
the inequality signs in the 2nd term in the left-hand side, which results in

\[ P(y_{i1} < z_1 \text{ and } y_{i2} < z_2) + P(y_{i1} > z_1 \text{ and } y_{i2} < z_2) = P(y_{i2} < z_2) \]  

(2b)

The 2nd term on the left-hand side now represents downward mobility (i.e., the percentage of
households that are non-poor in the 1st year but slide into poverty in the 2nd year), which together
with chronic poverty (the 1st term on the left-hand side) sums up to the poverty rate in the 2nd
period.

Equations (2a) and (2b) provide the unconditional versions of poverty mobility, which do not
take into account the information that is offered by a household’s poverty status in any given year.
We can further extend these equalities by conditioning on household poverty status in either period
to obtain the conditional versions. In particular, dividing all terms in Equations (2a) and (2b) by the right-hand side, we have the conditional versions of these equalities

\[
P(y_{i1} < z_1 \text{ and } y_{i2} < z_2 \mid y_{i1} < z_1) + P(y_{i1} < z_1 \text{ and } y_{i2} > z_2 \mid y_{i1} < z_1) = 1 \quad (3a)
\]

\[
P(y_{i1} < z_1 \text{ and } y_{i2} < z_2 \mid y_{i2} < z_2) + P(y_{i1} > z_1 \text{ and } y_{i2} < z_2 \mid y_{i2} < z_2) = 1 \quad (3b)
\]

It is useful to note that since there are two different components on the left-hand side of Equation (3a), there is not necessarily a correlation between either of these two components and their total. A similar result applies for Equations (2a), (2b), and (3b). Put differently, there may be, for instance, no correlation between (unconditional) chronic poverty and the headcount poverty rate.6 This further indicates that analyzing panel data can reveal dynamic patterns that are masked by cross-sectional data. We return to this interesting result in the empirical analyses.

Yet, another conditional version of Equations (2a) and (2b) can be obtained by further decomposing poverty mobility, conditional on household poverty status in both periods

\[
P(y_{i1} < z_1 \text{ and } y_{i2} < z_2 \mid y_{i1} < z_1 \text{ or } y_{i2} < z_2) + P(y_{i1} < z_1 \text{ and } y_{i2} > z_2 \mid y_{i1} < z_1 \text{ or } y_{i2} < z_2) + \]

\[+ P(y_{i1} > z_1 \text{ and } y_{i2} < z_2 \mid y_{i1} < z_1 \text{ or } y_{i2} < z_2) = 1 \quad (4)
\]

In Equation (4), the first term on the left-hand side represents the proportion of the population that are chronic poor out of those who were ever poor (i.e., the conditional chronic poverty for those who were ever poor). Similarly, the second term on the left-hand side represents upward mobility, and the third term on the left-hand side downward mobility, both terms conditional on those who were ever poor. Compared to Equations (3a) and (3b), Equation (4) is more general and considers as the denominator a larger set of the poor population—the ever-poor—that include not just the poor in either period 1 or period 2, but in both periods. Put differently, the decomposition

---

6 But chronic poverty should always be less than or equal to headcount poverty as shown by Equations (2a) and (2b).
in Equation (4) offers an analysis of mobility that takes into account both the transientsly poor and the chronically poor.

To keep our presentation more concise, unless otherwise noted, hereafter when discussing poverty mobility we refer to the conditional versions (including chronic poverty, upward mobility, and downward mobility).

II.2. Defining Vulnerability and Shared Prosperity

Vulnerability

Using the given poverty lines \(z_j\), Equalities (1a) and (1b) classify the population into two groups, one is poor and the other non-poor. But we can obtain richer analysis by further identifying an additional group out of the latter, the vulnerable that are defined as those that are non-poor but still face a significant risk of falling into poverty. Clearly, poverty reduction can be achieved by not just lifting those who are currently poor out of poverty, but also by providing safety net programs to shield the vulnerable from sinking into this undesirable outcome. Once the vulnerable group is identified, we can (loosely) define as the middle class the remaining population that have higher consumption levels and much lower risk of falling into poverty.

Building on the literature that studies vulnerability to poverty, Dang and Lanjouw (in press) derives the vulnerability line from a specified vulnerability index \(P\). While sharing a similar conceptual approach with existing studies on vulnerability (such as Pritchett et al., 2000; Chaudhuri, 2003, or Christiaensen and Subbarao, 2005), this approach is notably different in several respects. First, it explicitly provides a framework to estimate the vulnerability line that was not discussed in previous studies. This vulnerability line is associated with a vulnerability index that can in turn be derived in various ways including budgetary planning, (ideal or desirable) social welfare objectives, or relative concepts of well-being. For example, if the available resources for
social protection programs can only be deployed to assist a certain proportion (say, 20 percent) of the vulnerable population, this proportion can be a good starting point to derive the vulnerability index. Second, and perhaps more importantly, this approach allows the vulnerability line (and index) to be estimated using cross sectional household surveys, or the synthetic panels that are constructed from these cross sections.\(^7\)

Given a vulnerability line \(v_i\), we can extend Equality (1a) to analyze the dynamics for these three categories: poor, vulnerable, and middle class. For example, the percentage of poor households in the first period that escape poverty but still remain vulnerable in the second period (joint probability) can be calculated using the following quantity \(P(y_{i1} < z_1 \text{ and } z_2 < y_{i2} < v_2)\).

Table 1 shows a range of values of the vulnerability line that correspond to different vulnerability indexes for all countries. The vulnerability index falls within the range [10, 33], which is comparable to those for India or countries in the Middle East and North Africa region, but higher than that for the United States and Vietnam (Dang and Ianchovichina, 2016; Dang and Lanjouw, in press, forthcoming).\(^8\) The vulnerability line ranges from $2.1 to $9.3 dollars per day, in 2011 PPP prices. We will employ a vulnerability index of 15 percent and the associated vulnerability line of $4.3 for our welfare analysis in the next section.

*Shared Prosperity*

To provide a summary measure of the different growth rates for the three welfare groups, we employ a simple typology of growth scenarios (Dang and Lanjouw, 2016). This typology has a

\(^7\) In addition, other differences are that the target population consists of the currently non-poor households rather than all households; and this approach employs simpler non-parametric estimation methods to estimate vulnerability as a function of consumption alone. See Dang and Lanjouw (in press) for a more detailed comparison of this approach with existing studies. See also Hoddinott and Quisumbing (2010) for a recent review of other approaches to measuring vulnerability.

\(^8\) All numbers are in 2011 PPP dollars per capita per day.
strong pro-poor growth focus, and offers a ranking of the different growth scenarios. For the case of the three welfare categories, there are in total six possible growth scenarios depending on whether (the population share for) each of the three categories is expanding or shrinking. The first three scenarios relate to the reduction of the lowest income category, while the remaining three scenarios concern the expansion of this category. Thus, by our pro-poor definition, these first three scenarios indicate positive pro-poor growth, and the remaining scenarios suggest negative pro-poor growth. The growth of the middle income category helps further determine the rate of pro-poor growth, for example, whether pro-poor growth is more positive or simply positive.

Table 2.1 shows this typology. The most positive pro-poor growth scenario is one where both the low-income and middle-income categories decrease while the top income category expands (Scenario 1). This is also the best general economic growth scenario, as everyone—regardless of their welfare category—is on average better off. The opposite happens with the worst pro-poor growth scenario (Scenario 6) where both the low-income and middle-income categories expand while the top income category shrinks. Put differently, everyone on average is worse off under this scenario. All the remaining scenarios fall in between these two extremes and can be classified based on the changes in the sizes of the three welfare categories.

Some remarks are in order for this simple typology. First, consistent with a pro-poor criterion, pro-poor growth is considered strongest when the two lower income groups are reduced. Second, the ranking provided in Table 2.1 provides a strong focus on the low-income groups, rather than the mean of the distribution. From this perspective, a growth scenario where the whole economy

---

9 Since these three groups add up to 100 percent, two other scenarios of either expanding or shrinking for all these groups as shares of the population are out of the question. In other words, the increases and decreases in the population shares of the three groups should cancel out each other in the total.
may grow on average but poor households become poorer is less desirable than another where the economy can slightly contract but poor households are better off.

Finally, the typology provided in Table 2.1 is general enough to be employed with different (absolute or relative) definitions of welfare categories, as well as different welfare outcomes including objective measures and subjective measures. As proposed in Dang and Lanjouw (2016), the cutoff points delineating the different income groups can also be obtained using a variety of approaches, such as employing a range of fixed percentiles of the income distribution (say, between the 40th and 80th percentiles as in Alesina and Perotti, 1996) or some absolute cutoff thresholds such as between $2 and $10 PPP dollars (Banerjee and Duflo, 2008).

We also show for supplementary analysis estimates that employ the World Bank’s definition of shared prosperity, which is growth in mean consumption for the bottom 40 percent of the income distribution (see, e.g., Basu, 2013; Jolliffe et al., 2015). But note that this definition is perhaps more relevant for anonymous growth analysis, where the consumption level for the bottom 40 percent, rather than for the poor population, in each period is tracked. Our typology is more explicitly related to pro-poor growth analysis, where we track welfare of the different population groups over time.

II.3. Data
Construction of the synthetic panel requires a country to have at least two cross sectional surveys. These two surveys should preferably be comparable: that is, they are nationally representative, are conducted around the same time in the calendar year (e.g., to avoid seasonality), and the reporting period and instruments (diary or recalled consumption) are consistent in both surveys. This follows from Equations (1), where it is assumed that to obtain the counterfactual

---

10 In a slight abuse of notation, we use the pairs of terms “income” and “consumption” interchangeably in this paper.
welfare measure (e.g. consumption for the second period), the actual welfare distributions conditional on observable characteristics should be identical. This (somewhat strong) assumption implies that the distributions (for both the welfare measure and the observable characteristics) should be drawn from the same population. It also implies that the variables, especially the welfare measure, must have been collected in the same way—that is, the survey design should be the same. If the two distributions are not comparable, the counterfactual distributions would not be deemed to come from the same data generating process or model; the resultant mobility estimates would be incorrect as a result.

Between 1990 and 2012, at least 148 multi-topic surveys that collected consumption data were completed across countries in Sub-Saharan Africa. More recently, more than half of the countries have conducted a consumption survey between 2011 and 2015 (see Beegle, Christiaensen, Dabalen and Gaddis, 2016). However, only 27 of the 48 countries in Sub-Saharan Africa had at least two comparable household surveys for the period between 1990 and 2012. Among these 27 countries, we are able to use two survey rounds for each of 21 countries to create synthetic panels. These countries and their surveys, which are listed in Table 2, represent around two-thirds of the population of the region and an even higher fraction of its poor population. Nearly all the surveys were conducted in the 2000s, and the two survey rounds in each pair are, on average, separated by about 6 years. Notably, this was also a period of sustained economic growth for the region.

Table 2 shows the estimated poverty rate for each country for each of the two periods, and the net changes in poverty between the two periods. Most of the countries witnessed a downward trend in poverty. More than three-fourths (i.e., 16 out of 21) of the countries saw poverty reduction that ranges from around one percentage point (e.g., Nigeria and Togo) to 12 percentage points (e.g., Botswana, Mozambique, and Uganda). Almost half of the countries – 10 of 21 – had a poverty
reduction rate of 6 percentage points or larger. At the regional level, the (unweighted) regional poverty rate declined by almost five percentage points, or 9 percent (= 4.7/50.4).

The estimates in Table 2 are cross sectional estimates, meaning that the poor in each period are anonymous. They only show the net change in poverty over time, but not the composition of the change as measured by quantities (1a) and (1b). Analysis of the latter provides insights into the dynamic process of poverty mobility, but would require panel data that track households (or individuals) over time as discussed earlier. However, panel data are more often than not affected by various issues such as attrition, measurement errors, and sample selection bias which can severely reduce the accuracy of estimates. In addition, even though more household panel surveys have been implemented in recent years with the introduction of the LSMS-ISA program, most of the panel surveys in Africa (which are not part of the LSMS-ISA) are not nationally representative.\textsuperscript{11} We turn next to the analysis that is based on the synthetic panels.

III. Welfare Analysis Using the Synthetic Panels

We discuss in this section the results on poverty mobility (Section III.1) before discussing the results on welfare dynamics. While the former focuses on two-by-two transition matrixes (i.e., by cross cutting a household’s poor/non-poor status in the 1\textsuperscript{st} period against its poor/non-poor status in the 2\textsuperscript{nd} period), the latter concerns the more general two-by-two transition matrixes (i.e., by cross cutting the household’s poor/vulnerable/middle-class status in the 1\textsuperscript{st} period against its poor/non-poor status in the 2\textsuperscript{nd} period).

III.1. Poverty Mobility

\textsuperscript{11} Reviewing studies that use the existing panel data for African countries, Beegle et al. (2016) find much variation in the estimates for chronic poverty and transient poverty. Furthermore, chronic poverty estimates for the same country, and in some cases using the same data sets, could also vary widely depending on the method being used. How much of this poverty mobility is due to measurement errors is still a matter of debate. Some researchers argue that up to 50 percent of the transitory poverty may be accounted for by measurement error in income or consumption (Derecon and Krishnan, 2000; Glewwe, 2012; Lee et al., 2016).
Using Equations (2a) and (2b), we decompose the headcount poverty rate in the second period and show the estimates in Table 3. The headcount poverty rate (column 4) is decomposed into two components: unconditional chronic poverty (i.e., the incidence of those who remain poor in both periods; column 5) and unconditional downward mobility (i.e., those who were non-poor in the first period but became poor in the second period; column 6). Similarly, the poverty rate in the first period (column 3) can also be decomposed into (unconditional) chronic poverty (column 5) and unconditional upward mobility (i.e., those who were poor in the first period but who became non-poor in the current period; column 7). We rank countries in an increasing order of the headcount poverty in the most recent period. For comparison, the net change in poverty (column 8) is obtained by simply subtracting the poverty rate in the first period from that in the second period. As discussed earlier, we have to restrict the estimation samples to household heads age 25-55 in the first survey; consequently, while the poverty estimates in Table 3 are similar to those in Table 2, they are not identical.

Table 3 reveals three interesting aspects of unconditional poverty dynamics in Africa, considering the two survey periods together. First, one-third of the population in Africa is chronically poor (column 5). About 17 percent of the population emerged from poverty (that is, were poor in the first period but not the second; column 7), which is slightly higher than the proportion of the population that fell into poverty (13 percent. column 6). Still, this group could be considered vulnerable to falling back into poverty. Second, countries that are similar in terms of poverty rates may be dissimilar in terms of poverty dynamics. For instance, Swaziland and Uganda both show a similar headcount poverty rate that hovers just above 40 percent in the most recent period (column 2), but the chronic poverty rate in the former (18 percent, column 5) is almost half of that in the latter (32 percent, column 5). Similarly, a country may have both more
headcount poverty and less chronic poverty than another at the same time. For example, Tanzania has a poverty rate that is 10 percentage points higher than Senegal (i.e., 48.8 percent versus 39 percent), but its chronic poverty is 2 percentage points lower than that of Senegal.

This provides supportive evidence for our earlier theoretical finding that there can be no correlation between poverty dynamics and the headcount poverty rate. Consequently, for an alternative interpretation of the data that focuses on the poverty dynamics, we graph in Figure 1 the results in Table 3, but we rank countries in an increasing order of unconditional chronic poverty in this figure.

As discussed earlier with Equations (2a) and (2b), the unconditional poverty dynamics does not take into account the information that is offered by a household’s poverty status in any given year. The decomposition offered by Equations (3a) and (3b) allows us to detect mobility patterns that control for a household’s poverty status. For example, even though Mauritania has the lowest poverty rate in both periods, its conditional chronic poverty out of the headcount poverty in the 2nd period is as large as 62 percent (i.e., divide column 5 by column 4), pushing it down to the middle on this ranking. Another notable example is Madagascar which, despite being the poorest country in the 2nd period, also ranks in the middle in terms of conditional chronic poverty in the same period.

But overall, the 21 countries as a whole show a reasonable performance in terms of poverty mobility. (Conditional) chronic poverty was high at 72 percent (i.e., divide column 5 by column 4). One-third of the poor in the first period moved out of poverty in the second period (i.e., divide column 7 by column 3 to get 33 percent), which is higher than the downward mobility rate of 28 percent (i.e., divide column 6 by column 4).
The estimation results in Table 3 consider the mobility of those who are poor in either period 1 or period 2. We extend this analysis by adding to this population those who are poor in both periods such that the population under investigation now includes the ever poor—that is composed of the transiently poor and the chronically poor (see Equation (4)). We plot the results in Figure 2, which ranks all countries in a decreasing order of conditional chronic poverty. For this larger population, the conditional chronic poverty and upward mobility rates for all countries are unsurprisingly lower, at 51 percent and 27 percent respectively (compared with the corresponding figures of 72 percent and 33 percent in Table 3). Still, even by this measure, the considerable proportion of chronic poverty suggests that greater efforts can be made to help lift the “poorest of the poor” out of this undesirable welfare status.

III.2. Welfare Dynamics

We now extend the analysis to include the vulnerable population and the middle class and show estimation results in Table 4. The changes in the share of each of the three welfare categories (the poor, the vulnerable, and the middle class) are shown in columns 3 to 5. The corresponding pro-poor growth scenarios to these changes are shown in column 6 in a decreasing order, so that countries with more positive growth rank higher. Countries that fall in the same growth scenario are then ranked in an increasing order for their poverty and vulnerability reduction, so that countries with more poverty reduction are ranked higher. For richer analysis and also for comparison purposes, we also show the growth in the mean consumption for the bottom 40 percent in column 7.

The region as a whole experienced pro-poor growth, with a 5 percent reduction in poverty and a 28 percent increase in the size of the middle class (Table 4, last row). However, the vulnerable category also grows by 12 percent, suggesting that this expansion may be driven by (some of)
those who escaped poverty. The average consumption level for the bottom 40 percent also increases by 11 percent, which provides further supportive evidence for more growth for the poorer population in the region. The five countries that have the most positive pro-poor growth are Mauritania, Ethiopia, Togo, Swaziland, and Malawi. The countries with more positive pro-poor growth include Chad, Botswana, Ghana, Uganda, Congo DRC, Mozambique, Rwanda, and Tanzania, which is followed by Sierra Leone which has positive pro-poor growth. Countries with more negative pro-poor growth are Burkina Faso, Zambia, Madagascar, Cote d’Ivoire, and Cameroon, which are followed by Senegal and Nigeria, which have the most negative pro-poor growth.

As discussed earlier, our definition of pro-poor growth has a stronger focus on the poor than the growth in the consumption of the bottom 40 percent. Table 4 provides several useful illustrations of this nuanced difference. For example, Congo DRC has a quite impressive growth rate of 75 percent for the consumption of the bottom 40 percent, which is the largest growth rate for all countries; however, while its poverty reduction is also quite good at 14 percent, this figure is still lower than several other countries. Furthermore, the vulnerable population of Congo DRC expands significantly by around one and a half times rather than contracts, which can raise concerns about sustainable poverty reduction. As a result, this country has a more pro-poor growth scenario.

It can also be useful to compare the growth scenario of Congo DRC with Chad. While the latter has much lower increase in the consumption of the bottom 40 percent, it has much higher poverty reduction and a smaller growth of the vulnerable population, which combined together ranks it higher in our definition of pro-poor growth. Clearly, a country can have both good poverty and vulnerability reduction and growth in the consumption of the bottom 40 percent; Mauritania stands
out as a country that meets all these criteria and ranks highest out of all countries for pro-poor growth. The opposite situation can also happen, where Senegal and Nigeria rank lowest in term of pro-poor growth because of an expansion in their poor and vulnerable population; these countries also have negative growth in the consumption of the bottom 40 percent.12

While Table 4 focuses on the increase or decrease of the population size across (of) each welfare groups, Table 5 extends this analysis by probing more deeply into the dynamics among the groups. For the region as a whole, 14 percent of the population moves up one or two welfare categories (i.e., the sum of the upper off-diagonal cells), which is almost half a times higher than the percent of the population that who move down one or two welfare categories (i.e., 10 percent, or the sum of the lower off-diagonal cells). Still, a large degree of immobility exists in the region where as much as 76 percent (=100-14-10) of the population remains in the same welfare category in both periods.13

III.3. Profiling Countries and Population Groups

Following the classification employed in the recent World Bank’s regional report on poverty in Africa (Beegle et al., 2016), we probe more deeply into mobility patterns by dividing countries into four groups: fragile situations, landlocked, resource-poor, and income status. These classifications have also been employed by earlier studies to investigate poverty in the region. For example, Bloom and Sachs (1998) argue that landlocked countries perform worse than coastal countries because of lower competitiveness and fewer trading activities due to higher transport

---

12 In addition, rows 2 to 5 (Table 4) also show that poverty reduction can occur with reduced consumption for the bottom 40 percent. More generally, Table 4 illustrates our earlier discussion that the bottom 40 percent can comprise a wide variety of poverty situations and thus their growth scenarios. Also note that Table 4 provides a discussion of the dynamics of the different welfare categories over time; see Figure 2.1 in the Appendix for the decomposition of these categories in the most recent period. See also Dang et al. (2017) for a more detailed analysis for Senegal.

13 We provide the specific estimates for upward and downward mobility for each country in Table 2.3 in the Appendix. This table also offers estimates for the transitions between the vulnerable group and the middle class.
costs which impede trade. Frankel (2010) offers a comprehensive survey of the relationship between resources and economic growth for countries around the world. We provide the definitions of these classifications and the detailed list of the countries in Table 2.4 in the Appendix.

We show in Figure 3 the transitions across the three categories for countries, conditional on the welfare status in the 1st period, in each classification. In particular, we plot for each country upward mobility (i.e., the percentage of the population that moves up one or two welfare categories in the 2nd period) against downward mobility (i.e., the percentage of the population that moves down one or two welfare categories in the 2nd period). To help with interpretation, we plot a 45-degree line that separates countries into two groups: one group with more upward mobility, and the other group with more downward mobility (or less upward mobility); those in the former group are thus graphed above this line and the latter group below this line. We use the plus (+) symbol to mark the countries that are in fragile situation (Panel A), landlocked (Panel B), resource-poor (Panel C), and low-income (Panel D).

Several observations are in order for Figure 3. First, there appears to be no clear relationship between being in a fragile situation or being landlocked and economic mobility (Panels A and B), since the countries are scattered rather evenly above and below the 45-degree line. Second, resource-rich and middle-income countries mostly have more upward mobility than downward mobility. Indeed, Figure 3 indicates that out of these two groups, only Zambia—a resource-rich and middle-income country—has more downward mobility (Panels C and D). Finally, notable

---

14 We plot a similar graph for economic mobility versus pro-poor growth and show results in Figure 2.2. Interestingly, several countries remarkably have both more (or most) positive pro-poor growth scenarios and more upward mobility than downward mobility. These countries include Botswana, Chad, Mauritania, Ghana, Uganda, Sierra Leone, Congo DRC, Ethiopia, and Rwanda. On the other hand, two countries, Zambia and Madagascar, also stand out as having both negative pro-poor growth scenarios and more downward mobility.
examples in all the groups stand out. For example, three countries with much higher upward mobility than downward mobility, including Botswana, Mauritania, and Ghana, are also countries that are mostly on the favorable side of the classifications (i.e., being non-fragile, coastal, resource-rich and middle-income). On the other hand, Madagascar is the country with the most downward mobility, which is also on the unfavorable side of the classification except for being coastal. The remaining countries are found somewhat in between these two extremes. For example, Burkina Faso has a good performance with more upward mobility than downward mobility, but this country for most part is on the unfavorable side of the classification except for being non-fragile. Another good performer, Cote d’Ivoire has an equal share of both sides with being coastal and resource-rich but fragile and low-income.

We turn next to examining mobility for different population groups. Figure 4 depicts the population characteristics that are associated with upward mobility (Panel A) and downward mobility (Panel B). Factors that have a stronger-than-average correlation with upward mobility include higher education achievement, having a female household head, and urban residence. These are also the characteristics that are more strongly associated with preventing downward mobility. Out of these factors, attaining (some) tertiary education, including post-secondary technical education, is remarkably strongly associated with more upward (less downward) mobility.¹⁵

¹⁵ These results are mostly similar to those in other contexts including countries in Latin America (Vakis et al., 2016), Middle East and North Africa (Dang and Ianchovichina, 2016), and India (Dang and Lanjouw, forthcoming). One exception is that secondary education achievement is associated with less upward (more downward) mobility for Sub-Saharan Africa than other regions. One reason can be that those with secondary education have a higher unemployment rate than those with no education (represented by the “Other education” group in Figure 4) or primary education, perhaps because of higher job expectations (see, e.g., African Development Bank, 2012; ILO, 2015). As such, the former group are more likely to be classified as poor.
IV. Conclusion

In this paper we provide an analysis of welfare dynamics in the Sub-Saharan Africa region. In the absence of actual panel data, we construct synthetic panel data from cross sectional surveys using recently developed statistical methods that can offer insights into welfare dynamics for the region. Our findings generally point to strong performance for the region in terms of pro-poor growth and upward mobility. We find that one-third of the poor population escaped poverty, and the size of the middle class increased by 28 percent, albeit from a low base. Chronic poverty, however, still remains high for a number of countries. Furthermore, while many escaped poverty, they remain vulnerable, as is evident from the 12 percent increase in the share of the vulnerable population.

We also find some limited evidence suggesting that resource-rich and middle-income countries mostly have more upward mobility than downward mobility, and that (some) tertiary education is strongly associated with higher upward mobility and less downward mobility, which holds true to some extent for households with a female household head and urban residence.

These mostly positive outcomes were possible because of favorable global economic conditions from which many African countries benefited in the 2000s. However, the circumstances are changing and domestic economic conditions have deteriorated for many African countries. Although the long-term goal is to increase upward mobility, or exit from poverty, the immediate and medium term goals may be to protect the incomes of the poor and to minimize downward mobility, especially for the vulnerable. Some of the policies that have been shown to achieve these goals include safety net programs and building the assets (especially human capital – education and health) of the poor and the vulnerable, such as investments in early years of the children of the poor, and providing a basic package of health services.
The policy implications of our findings are subject to the caveat that these relationships between welfare dynamics and the country classifications or population characteristics should be interpreted as associational rather than causal. Furthermore, these results should be interpreted with respect to the specific countries that we study in this paper, and may not be extrapolated to other countries in the region or elsewhere. A fertile direction for research is thus deeper research into specific country contexts, which promises more granularities to policy advice than the regional analysis attempted in our study.
References


<table>
<thead>
<tr>
<th>No</th>
<th>Vulnerability index (%)</th>
<th>Vulnerability line (SPPP)</th>
<th>Increase (%)</th>
<th>Pop. share with consumption above poverty line but less than V-line (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>33</td>
<td>2.10</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>32</td>
<td>2.18</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>31</td>
<td>2.26</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>30</td>
<td>2.32</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>29</td>
<td>2.40</td>
<td>26</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>28</td>
<td>2.48</td>
<td>31</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>27</td>
<td>2.58</td>
<td>36</td>
<td>14</td>
</tr>
<tr>
<td>8</td>
<td>26</td>
<td>2.64</td>
<td>39</td>
<td>15</td>
</tr>
<tr>
<td>9</td>
<td>25</td>
<td>2.74</td>
<td>44</td>
<td>17</td>
</tr>
<tr>
<td>10</td>
<td>24</td>
<td>2.84</td>
<td>49</td>
<td>18</td>
</tr>
<tr>
<td>11</td>
<td>23</td>
<td>2.92</td>
<td>54</td>
<td>19</td>
</tr>
<tr>
<td>12</td>
<td>22</td>
<td>3.02</td>
<td>59</td>
<td>21</td>
</tr>
<tr>
<td>13</td>
<td>21</td>
<td>3.16</td>
<td>66</td>
<td>22</td>
</tr>
<tr>
<td>14</td>
<td>20</td>
<td>3.28</td>
<td>73</td>
<td>24</td>
</tr>
<tr>
<td>15</td>
<td>19</td>
<td>3.44</td>
<td>81</td>
<td>26</td>
</tr>
<tr>
<td>16</td>
<td>18</td>
<td>3.62</td>
<td>91</td>
<td>28</td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>3.78</td>
<td>99</td>
<td>29</td>
</tr>
<tr>
<td>18</td>
<td>16</td>
<td>4.06</td>
<td>114</td>
<td>32</td>
</tr>
<tr>
<td>19</td>
<td>15</td>
<td>4.30</td>
<td>126</td>
<td>34</td>
</tr>
<tr>
<td>20</td>
<td>14</td>
<td>4.74</td>
<td>149</td>
<td>37</td>
</tr>
<tr>
<td>21</td>
<td>13</td>
<td>5.20</td>
<td>174</td>
<td>39</td>
</tr>
<tr>
<td>22</td>
<td>12</td>
<td>5.88</td>
<td>209</td>
<td>42</td>
</tr>
<tr>
<td>23</td>
<td>11</td>
<td>7.00</td>
<td>268</td>
<td>46</td>
</tr>
<tr>
<td>24</td>
<td>10</td>
<td>9.30</td>
<td>389</td>
<td>51</td>
</tr>
</tbody>
</table>

**Note:** Vulnerability lines are in 2011 PPP dollars per capita per day. The relative increases of the vulnerability line from the poverty line is shown under the column "Increase" (column 4). All numbers are estimated with synthetic panel data and weighted with population weights. The incremental value for iteration is 0.02 dollars.
## Table 2: Survey Years and Headcount Poverty by Country (percentage)

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>Survey name</th>
<th>Survey years</th>
<th>Headcount poverty 1st period</th>
<th>Headcount poverty 2nd period</th>
<th>Net change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Botswana</td>
<td>Botswana Core Welfare Indicators Survey (BCWIS)</td>
<td>2002-2009</td>
<td>29.8</td>
<td>18.2</td>
<td>-11.6</td>
</tr>
<tr>
<td>2</td>
<td>Burkina Faso</td>
<td>Enquête burkinabé sur les conditions de vie des ménages (EBCVM)</td>
<td>2003-2009</td>
<td>57.3</td>
<td>55.3</td>
<td>-2.0</td>
</tr>
<tr>
<td>3</td>
<td>Cameroon</td>
<td>Enquete Camerounaise Aupres des Menages (ECAM)</td>
<td>2001-2007</td>
<td>23.1</td>
<td>29.3</td>
<td>6.2</td>
</tr>
<tr>
<td>4</td>
<td>Chad</td>
<td>Enquête sur la consommation des ménages et le secteur informel au Tchad (ECOSIT)</td>
<td>2003-2011</td>
<td>62.9</td>
<td>38.4</td>
<td>-24.5</td>
</tr>
<tr>
<td>5</td>
<td>Congo, Dem. Rep.</td>
<td>Enquête 1-2-3 sur l'Emploi, le Secteur Informel et les Conditions de Vie des Ménages (E123)</td>
<td>2004-2012</td>
<td>91.2</td>
<td>77.2</td>
<td>-14.0</td>
</tr>
<tr>
<td>6</td>
<td>Cote d'Ivoire</td>
<td>Enquête sur le Niveau de Vie des Ménages</td>
<td>2002-2008</td>
<td>23.0</td>
<td>29.0</td>
<td>6.0</td>
</tr>
<tr>
<td>7</td>
<td>Ethiopia</td>
<td>Household Income Consumption Expenditure Survey (HICES)</td>
<td>2004-2010</td>
<td>36.3</td>
<td>33.5</td>
<td>-2.8</td>
</tr>
<tr>
<td>8</td>
<td>Ghana</td>
<td>Ghana Living Standards Survey (GLSS)</td>
<td>1998-2005</td>
<td>33.8</td>
<td>25.1</td>
<td>-8.7</td>
</tr>
<tr>
<td>9</td>
<td>Madagascar</td>
<td>Enquêtes Périodiques auprès des Ménages (EPM)</td>
<td>2005-2010</td>
<td>74.1</td>
<td>81.8</td>
<td>7.7</td>
</tr>
<tr>
<td>10</td>
<td>Malawi</td>
<td>Integrated Household Survey (IHS)</td>
<td>2004-2010</td>
<td>73.6</td>
<td>70.9</td>
<td>-2.7</td>
</tr>
<tr>
<td>11</td>
<td>Mauritania</td>
<td>Enquête permanente sur les conditions de vie des ménages</td>
<td>2004-2008</td>
<td>14.4</td>
<td>10.9</td>
<td>-3.5</td>
</tr>
<tr>
<td>12</td>
<td>Mozambique</td>
<td>Inquérito Sobre Orçamento Familiar (IOF)</td>
<td>2002-2008</td>
<td>80.6</td>
<td>69.1</td>
<td>-11.5</td>
</tr>
<tr>
<td>13</td>
<td>Nigeria</td>
<td>General Household Survey-Panel (GHS)</td>
<td>2011-2013</td>
<td>20.4</td>
<td>20.2</td>
<td>-0.2</td>
</tr>
<tr>
<td>14</td>
<td>Rwanda</td>
<td>Integrated Household Living Conditions Survey (EICV)</td>
<td>2005-2010</td>
<td>68.7</td>
<td>60.4</td>
<td>-8.3</td>
</tr>
<tr>
<td>15</td>
<td>Senegal</td>
<td>Enquête de Suivi de la Pauvreté au Sénégal (ESPS)</td>
<td>2005-2011</td>
<td>37.6</td>
<td>38.0</td>
<td>0.4</td>
</tr>
<tr>
<td>16</td>
<td>Sierra Leone</td>
<td>Sierra Leone Integrated Household Survey (SLIHS)</td>
<td>2003-2011</td>
<td>58.6</td>
<td>52.3</td>
<td>-6.3</td>
</tr>
<tr>
<td>17</td>
<td>Swaziland</td>
<td>Household Income and Expenditure Survey (HIES)</td>
<td>2000-2009</td>
<td>48.4</td>
<td>42.0</td>
<td>-6.4</td>
</tr>
<tr>
<td>18</td>
<td>Tanzania</td>
<td>Household Budget Survey (HBS)</td>
<td>2007-2011</td>
<td>55.1</td>
<td>49.0</td>
<td>-6.1</td>
</tr>
<tr>
<td>19</td>
<td>Togo</td>
<td>Questionnaire Unifie Des Indicateurs de base du Bien-etre (QUIBB)</td>
<td>2006-2011</td>
<td>55.6</td>
<td>54.2</td>
<td>-1.4</td>
</tr>
<tr>
<td>20</td>
<td>Uganda</td>
<td>Uganda National Household Survey (UNHS)</td>
<td>2005-2009</td>
<td>53.2</td>
<td>41.5</td>
<td>-11.7</td>
</tr>
<tr>
<td>21</td>
<td>Zambia</td>
<td>Living Conditions Monitoring Survey (LCMS)</td>
<td>2006-2010</td>
<td>60.5</td>
<td>64.4</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Note: Authors' calculation based on household survey data. Poverty rates are estimated without any age restriction. The poverty line is set at $1.90/day in 2011 PPP dollars for both periods. Countries are sorted in an alphabetic order. The regional average is a simple average (unweighted).
<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>Headcount poverty in 1st period</th>
<th>Headcount poverty in 2nd period</th>
<th>Decomposition</th>
<th>Upward mobile</th>
<th>Net change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>Chronic poverty</td>
<td>Downward mobile</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mauritania</td>
<td>14.6</td>
<td>10.5</td>
<td>6.5</td>
<td>4.0</td>
<td>8.1</td>
</tr>
<tr>
<td>2</td>
<td>Botswana</td>
<td>25.1</td>
<td>17.6</td>
<td>8.9</td>
<td>8.7</td>
<td>16.2</td>
</tr>
<tr>
<td>3</td>
<td>Nigeria</td>
<td>19.8</td>
<td>21.5</td>
<td>11.7</td>
<td>9.8</td>
<td>8.1</td>
</tr>
<tr>
<td>4</td>
<td>Ghana</td>
<td>33.1</td>
<td>26.1</td>
<td>20.4</td>
<td>5.7</td>
<td>12.7</td>
</tr>
<tr>
<td>5</td>
<td>Cote d'Ivoire</td>
<td>23.5</td>
<td>28.5</td>
<td>17.3</td>
<td>11.2</td>
<td>6.2</td>
</tr>
<tr>
<td>6</td>
<td>Cameroon</td>
<td>21.5</td>
<td>29.6</td>
<td>13.9</td>
<td>15.7</td>
<td>7.6</td>
</tr>
<tr>
<td>7</td>
<td>Ethiopia</td>
<td>38.8</td>
<td>37.2</td>
<td>28.6</td>
<td>8.6</td>
<td>10.2</td>
</tr>
<tr>
<td>8</td>
<td>Senegal</td>
<td>37.2</td>
<td>39.0</td>
<td>29.5</td>
<td>9.5</td>
<td>7.7</td>
</tr>
<tr>
<td>9</td>
<td>Chad</td>
<td>64.2</td>
<td>40.7</td>
<td>24.8</td>
<td>15.9</td>
<td>39.4</td>
</tr>
<tr>
<td>10</td>
<td>Swaziland</td>
<td>44.2</td>
<td>43.0</td>
<td>18.0</td>
<td>25.0</td>
<td>26.2</td>
</tr>
<tr>
<td>11</td>
<td>Uganda</td>
<td>54.5</td>
<td>43.4</td>
<td>32.4</td>
<td>11.0</td>
<td>22.1</td>
</tr>
<tr>
<td>12</td>
<td>Tanzania</td>
<td>54.1</td>
<td>48.8</td>
<td>27.6</td>
<td>21.2</td>
<td>26.5</td>
</tr>
<tr>
<td>13</td>
<td>Togo</td>
<td>54.3</td>
<td>53.4</td>
<td>41.1</td>
<td>12.3</td>
<td>13.2</td>
</tr>
<tr>
<td>14</td>
<td>Sierra Leone</td>
<td>58.4</td>
<td>53.5</td>
<td>37.8</td>
<td>15.7</td>
<td>20.6</td>
</tr>
<tr>
<td>15</td>
<td>Burkina Faso</td>
<td>54.6</td>
<td>56.9</td>
<td>47.6</td>
<td>9.3</td>
<td>7.0</td>
</tr>
<tr>
<td>16</td>
<td>Rwanda</td>
<td>68.9</td>
<td>62.0</td>
<td>50.8</td>
<td>11.2</td>
<td>18.1</td>
</tr>
<tr>
<td>17</td>
<td>Zambia</td>
<td>58.7</td>
<td>63.5</td>
<td>45.1</td>
<td>18.4</td>
<td>13.6</td>
</tr>
<tr>
<td>18</td>
<td>Mozambique</td>
<td>80.8</td>
<td>69.9</td>
<td>51.1</td>
<td>18.8</td>
<td>29.7</td>
</tr>
<tr>
<td>19</td>
<td>Malawi</td>
<td>73.5</td>
<td>72.5</td>
<td>54.1</td>
<td>18.4</td>
<td>19.4</td>
</tr>
<tr>
<td>20</td>
<td>Congo, DRC</td>
<td>91.7</td>
<td>78.0</td>
<td>72.8</td>
<td>5.2</td>
<td>18.9</td>
</tr>
<tr>
<td>21</td>
<td>Madagascar</td>
<td>74.3</td>
<td>82.3</td>
<td>59.9</td>
<td>22.4</td>
<td>14.4</td>
</tr>
<tr>
<td></td>
<td>Regional average</td>
<td>49.8</td>
<td>46.6</td>
<td>33.3</td>
<td>13.2</td>
<td>16.5</td>
</tr>
</tbody>
</table>

**Note:** Authors' calculation based on household survey data. Household heads' age is between 25 and 5 in the first survey round and adjusted accordingly for the second survey round. The poverty line is set at $1.9/ day in 2011 PPP dollars for both periods. Estimates for chronic poverty are based on the synthetic panels. Countries are ranked in an increasing order of poverty in the 2nd period. Columns 5 and 6 add up to column 4, and columns 5 and 7 add up to column 3. Column 8 is obtained by subtracting column 4 from column 3. The regional average is a simple average (unweighted).
Table 4: Change in Poverty and Shared Prosperity for Each Country (percentage)

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Poor</td>
<td>Vulnerable</td>
<td>Middle class</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mauritania</td>
<td>-27.7</td>
<td>-18.8</td>
<td>34.7</td>
<td>***</td>
<td></td>
<td>13.2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ethiopia</td>
<td>-3.9</td>
<td>-1.2</td>
<td>26.7</td>
<td>***</td>
<td></td>
<td>-4.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Togo</td>
<td>-1.4</td>
<td>-4.5</td>
<td>14.9</td>
<td>***</td>
<td></td>
<td>-7.8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Swaziland</td>
<td>-1.3</td>
<td>-1.3</td>
<td>4.0</td>
<td>***</td>
<td></td>
<td>-7.4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Malawi</td>
<td>-1.0</td>
<td>-3.8</td>
<td>28.4</td>
<td>***</td>
<td></td>
<td>-8.1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Chad</td>
<td>-36.1</td>
<td>42.6</td>
<td>192.1**</td>
<td></td>
<td>35.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Botswana</td>
<td>-28.7</td>
<td>6.6</td>
<td>12.5</td>
<td>**</td>
<td></td>
<td>28.9</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ghana</td>
<td>-20.7</td>
<td>4.4</td>
<td>21.7</td>
<td>**</td>
<td></td>
<td>14.9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Uganda</td>
<td>-19.1</td>
<td>26.3</td>
<td>24.9</td>
<td>**</td>
<td></td>
<td>21.3</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Congo, DRC</td>
<td>-13.5</td>
<td>149.7</td>
<td>249.4**</td>
<td></td>
<td>75.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Mozambique</td>
<td>-12.6</td>
<td>70.0</td>
<td>30.9</td>
<td>**</td>
<td></td>
<td>20.9</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Rwanda</td>
<td>-8.7</td>
<td>19.3</td>
<td>24.4</td>
<td>**</td>
<td></td>
<td>27.0</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Tanzania</td>
<td>-6.7</td>
<td>10.5</td>
<td>3.6</td>
<td>**</td>
<td></td>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Sierra Leone</td>
<td>-6.5</td>
<td>16.6</td>
<td>-6.7</td>
<td>*</td>
<td></td>
<td>14.9</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Burkina Faso</td>
<td>6.3</td>
<td>-4.4</td>
<td>-18.0</td>
<td>--</td>
<td></td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Zambia</td>
<td>7.8</td>
<td>-12.0</td>
<td>-12.1</td>
<td>--</td>
<td></td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Madagascar</td>
<td>9.5</td>
<td>-32.5</td>
<td>-23.6</td>
<td>--</td>
<td></td>
<td>-5.6</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Cote d'Ivoire</td>
<td>15.1</td>
<td>-5.3</td>
<td>-5.6</td>
<td>--</td>
<td></td>
<td>-3.4</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Cameroon</td>
<td>34.5</td>
<td>-12.3</td>
<td>-8.9</td>
<td>--</td>
<td></td>
<td>-5.7</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Senegal</td>
<td>0.9</td>
<td>3.3</td>
<td>-7.9</td>
<td>---</td>
<td></td>
<td>-3.1</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Nigeria</td>
<td>5.5</td>
<td>1.4</td>
<td>-6.4</td>
<td>---</td>
<td></td>
<td>-1.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regional average</td>
<td>-5.2</td>
<td>12.1</td>
<td>27.6</td>
<td>**</td>
<td></td>
<td>11.0</td>
<td></td>
</tr>
</tbody>
</table>

Note: Authors' calculation based on household survey data. Household heads' age is between 25 and 55 in the first survey round and adjusted accordingly for the second survey round. The poverty line and vulnerability line are respectively set at $1.9/day and $4.3/day in 2011 PPP dollars for both periods. Pro-poor growth scenarios are based on the classification provided in Table 1.3 in Appendix 1. Countries are ranked first in a decreasing order of pro-poor growth scenario, and then in an increasing order of growth in the population share of poverty and vulnerability. The regional average is a simple average (unweighted).
Table 5: Transition Dynamics among the Three Welfare Groups, All Countries (percentage)

<table>
<thead>
<tr>
<th>First year</th>
<th>Second year</th>
<th>Poor</th>
<th>Vulnerable</th>
<th>Middle class</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>35.9</td>
<td>8.0</td>
<td>0.1</td>
<td>44.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.1)</td>
<td>(0.0)</td>
<td>(0.0)</td>
<td>(0.1)</td>
<td></td>
</tr>
<tr>
<td>Vulnerable</td>
<td>5.2</td>
<td>22.3</td>
<td>5.7</td>
<td>33.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0)</td>
<td>(0.0)</td>
<td>(0.0)</td>
<td>(0.0)</td>
<td></td>
</tr>
<tr>
<td>Middle class</td>
<td>0.1</td>
<td>4.3</td>
<td>18.4</td>
<td>22.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0)</td>
<td>(0.0)</td>
<td>(0.1)</td>
<td>(0.1)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>41.2</td>
<td>34.6</td>
<td>24.2</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.1)</td>
<td>(0.0)</td>
<td>(0.1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Authors' calculation based on household survey data. Bootstrap standard errors in parentheses are estimated with 1,000 bootstraps. Household heads' age is between 25 and 55 in the first survey round and adjusted accordingly for the second survey round. The poverty line and vulnerability line are respectively set at $1.9/day and $4.3/day in 2011 PPP dollars for both periods, with the latter corresponding to a vulnerability index of 0.15. Estimates are obtained with synthetic panel data and weighted with population weights where the second survey round is used as the base year. Estimation sample size of the base year is 149,820 households.
Figure 1: Decomposition of Unconditional Poverty Mobility

[Bar chart showing the percentage of chronic poor, downwardly mobile, upwardly mobile, and never poor in various countries.]
Figure 2: Proportions of Chronic Poverty, Downward Mobility, and Upward Mobility out of Those Who Were Ever Poor
Figure 3: Upward Mobility and Downward Mobility by Country Groupings

Panel A: Fragile vs. Non-fragile
Panel B: Landlocked vs. Coastal
Panel C: Resource-poor vs. Resource-rich
Panel D: Low-income vs. Middle-income

Note: ‘+’ represents countries that are fragile, landlocked, resource-poor or low-income in Panels A, B, C, and D respectively.
Figure 4: Upward Mobility and Downward Mobility by Population Groups

Panel A: Upward mobility
Panel B: Downward mobility

Note: dashed lines represent the regional averages for upward mobility & downward mobility respectively.
Appendix 1: Overview of Synthetic Panel Methods

We provide an overview of the methods that construct synthetic panels and vulnerability lines developed by Dang et al. (2014) and Dang and Lanjouw (2013) in this appendix. Let \( x_{ij} \) be a vector of household characteristics observed in survey round \( j \) (\( j = 1 \) or \( 2 \)) that are also observed in the other survey round for household \( i \), \( i = 1, \ldots, N \). These household characteristics can include such time-invariant variables as ethnicity, religion, language, place of birth, parental education, and other time-varying household characteristics if retrospective questions about the round-1 values of such characteristics are asked in the second-round survey. To reduce spurious changes due to changes in household composition over time, we usually restrict the estimation samples to household heads age, say 25 to 55 in the first cross section and adjust this age range accordingly in the second cross section.\(^{16}\)

Then let \( y_{ij} \) represent household consumption or income in survey round \( j \), \( j = 1 \) or \( 2 \). The linear projection of household consumption (or income) on household characteristics for each survey round is given by

\[
y_{ij} = \beta_j' x_{ij} + \varepsilon_{ij} \tag{1.1}
\]

Let \( z_j \) be the poverty line in period \( j \). We are interested in knowing the unconditional measures of poverty mobility such as

\[
P(y_{i1} < z_1 \text{ and } y_{i2} > z_2) \tag{1.2}
\]

which represents the percentage of households that are poor in the first survey round (year) but nonpoor in the second survey round, or the conditional measures such as

\[
P(y_{i2} > z_2 | y_{i1} < z_1) \tag{1.3}
\]

which represents the percentage of poor households in the first round that escape poverty in the second round.

If true panel data are available, we can straightforwardly estimate the quantities in (1.2) and (1.3); but in the absence of such data, we can use synthetic panels to study mobility. To operationalize the framework, we make two standard assumptions. First, we assume that the underlying population being sampled in survey rounds 1 and 2 are identical such that their time-invariant characteristics remain the same over time. More specifically, coupled with equation (1), this implies the conditional distribution of expenditure in a given period is identical whether it is conditional on the given household characteristics in period 1 or period 2 (i.e., \( x_{i1} = x_{i2} \) implies \( y_{i1} | x_{i1} \) and \( y_{i1} | x_{i2} \) have identical distributions). Second, we assume that \( \varepsilon_{i1} \) and \( \varepsilon_{i2} \) have a bivariate normal distribution with positive correlation coefficient \( \rho \) and standard deviations \( \sigma_{\varepsilon_1} \) and \( \sigma_{\varepsilon_2} \) respectively. Quantity (1.2) can be estimated by

\[
P(y_{i1} < z_1 \text{ and } y_{i2} > z_2) = \Phi_2 \left( \frac{z_1 - \beta_1' x_{i2}}{\sigma_{\varepsilon_1}}, -\frac{z_2 - \beta_2' x_{i2}}{\sigma_{\varepsilon_2}}, -\rho \right) \tag{1.4}
\]

where \( \Phi_2(.) \) stands for the bivariate normal cumulative distribution function (cdf) (and \( \phi_2(.) \) stands for the bivariate normal probability density function (pdf)). Note that in Equation (1.4), the estimated parameters obtained from data in both survey rounds are applied to data from the second cross section.

---

\(^{16}\) This age range is usually used in traditional pseudo-panel analysis but can vary depending on the cultural and economic factors in each specific setting.
survey round \((x_2)\) (or the base year) for prediction, but we can use data from the first survey round as the base year as well. It is then straightforward to estimate quantity (1.3) by dividing quantity (1.2) by \(\Phi\left(\frac{z_1 - \beta_1' x_{i2}}{\sigma_{e_1}}\right)\), where \(\Phi(.)\) stands for the univariate normal cumulative distribution function (cdf).

In Equation (1.4), the parameters \(\beta_j\) and \(\sigma_{e_j}\) are estimated from Equation (1), and \(\rho\) can be estimated using an approximation of the correlation of the cohort-aggregated household consumption between the two surveys \((\rho_{y_{i1}y_{i2}})\). In particular, given an approximation of \(\rho_{y_{i1}y_{i2}}\), where \(c\) indexes the cohorts constructed from the household survey data, the partial correlation coefficient \(\rho\) can be estimated by

\[
\rho = \rho_{y_{i1}y_{i2}} \frac{\sqrt{\text{var}(y_{i1}) \text{var}(y_{i2})} - \beta_1' \text{var}(x_i) \beta_2}{\sigma_{e_1} \sigma_{e_2}}
\]

Note that the standard errors of estimates based on the synthetic panels can in fact be even smaller than that of the true (or design-based) rate if there is a good model fit (or the sample size in the target survey is significantly larger than that in the base survey; see Dang and Lanjouw (2013) for more discussion).

Equation (1.4) can be extended to the more general case of vulnerability. For example, we can estimate the percentage of poor households in the first period that escape poverty but still remain vulnerable in the second period (joint probability) as

\[
P(y_{i1} < z_1 \text{ and } y_{i2} < z_2) = \Phi_2\left(\frac{z_1 - \beta_1' x_{i2}}{\sigma_{e_1}}, \frac{z_2 - \beta_2' x_{i2}}{\sigma_{e_2}}, \rho\right) - \Phi_2\left(\frac{z_1 - \beta_1' x_{i2}}{\sigma_{e_1}}, \frac{z_2 - \beta_2' x_{i2}}{\sigma_{e_2}}, \rho\right)
\]

Other formulae and more detailed derivations for other measures of vulnerability dynamics are provided in Dang and Lanjouw (in press).

We provide in Table 1.1 below a sample of the regression parameters and the estimates for chronic poverty with their standard errors.
### Table 1.1: Household Consumption Models

<table>
<thead>
<tr>
<th>Country</th>
<th>Cote d'Ivoire</th>
<th>Mozambique</th>
<th>Malawi</th>
<th>Senegal</th>
<th>Togo</th>
<th>Zambia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head is female</td>
<td>0.054** 0.029</td>
<td>0.097*** 0.099***</td>
<td>0.024 0.096***</td>
<td>0.099*** 0.262***</td>
<td>0.196*** 0.157***</td>
<td>0.066*** 0.123***</td>
</tr>
<tr>
<td></td>
<td>(0.024) (0.022)</td>
<td>(0.023) (0.021)</td>
<td>(0.018) (0.020)</td>
<td>(0.017) (0.025)</td>
<td>(0.022) (0.029)</td>
<td>(0.016) (0.016)</td>
</tr>
<tr>
<td>Head's age</td>
<td>-0.011*** -0.008***</td>
<td>0.002 0.005***</td>
<td>-0.005*** 0.007***</td>
<td>-0.010*** -0.003***</td>
<td>-0.007*** 0.001</td>
<td>-0.010*** -0.004***</td>
</tr>
<tr>
<td></td>
<td>(0.001) (0.001)</td>
<td>(0.001) (0.001)</td>
<td>(0.001) (0.001)</td>
<td>(0.001) (0.001)</td>
<td>(0.001) (0.001)</td>
<td>(0.001) (0.001)</td>
</tr>
<tr>
<td>Head has less than primary school</td>
<td>0.147*** 0.154*</td>
<td>0.288*** 0.090***</td>
<td>0.142*** 0.253***</td>
<td>0.060*** 0.077***</td>
<td>0.137*** 0.255***</td>
<td>0.169*** -0.000</td>
</tr>
<tr>
<td></td>
<td>(0.032) (0.083)</td>
<td>(0.024) (0.024)</td>
<td>(0.018) (0.022)</td>
<td>(0.021) (0.036)</td>
<td>(0.025) (0.034)</td>
<td>(0.026) (0.028)</td>
</tr>
<tr>
<td>Head completes primary school</td>
<td>0.184*** 0.188***</td>
<td>0.693*** 0.368***</td>
<td>0.232*** 0.362***</td>
<td>0.141*** 0.226***</td>
<td>0.216*** 0.354***</td>
<td>0.327*** 0.150***</td>
</tr>
<tr>
<td></td>
<td>(0.023) (0.022)</td>
<td>(0.047) (0.035)</td>
<td>(0.023) (0.027)</td>
<td>(0.022) (0.034)</td>
<td>(0.029) (0.039)</td>
<td>(0.043) (0.042)</td>
</tr>
<tr>
<td>Head completes secondary school</td>
<td>0.399*** 0.428***</td>
<td>1.231*** 0.879***</td>
<td>0.570*** 0.715***</td>
<td>0.423*** 0.444***</td>
<td>0.403*** 0.520***</td>
<td>0.688*** 0.472***</td>
</tr>
<tr>
<td></td>
<td>(0.025) (0.022)</td>
<td>(0.052) (0.042)</td>
<td>(0.023) (0.028)</td>
<td>(0.025) (0.039)</td>
<td>(0.022) (0.030)</td>
<td>(0.027) (0.028)</td>
</tr>
<tr>
<td>Head completes college</td>
<td>0.977*** 0.896***</td>
<td>2.068*** 1.742***</td>
<td>1.414*** 1.448***</td>
<td>0.753*** 0.908***</td>
<td>0.897*** 1.179***</td>
<td>1.585*** 1.421***</td>
</tr>
<tr>
<td></td>
<td>(0.035) (0.044)</td>
<td>(0.078) (0.064)</td>
<td>(0.050) (0.046)</td>
<td>(0.031) (0.053)</td>
<td>(0.042) (0.055)</td>
<td>(0.031) (0.030)</td>
</tr>
<tr>
<td>Urban</td>
<td>0.375*** 0.451***</td>
<td>0.408*** 0.366***</td>
<td>0.514*** 0.707***</td>
<td>0.561*** 0.482***</td>
<td>0.760*** 0.617***</td>
<td>0.729*** 0.655***</td>
</tr>
<tr>
<td></td>
<td>(0.018) (0.018)</td>
<td>(0.022) (0.020)</td>
<td>(0.020) (0.023)</td>
<td>(0.015) (0.023)</td>
<td>(0.019) (0.024)</td>
<td>(0.015) (0.015)</td>
</tr>
<tr>
<td></td>
<td>(0.044) (0.048)</td>
<td>(0.047) (0.056)</td>
<td>(0.035) (0.047)</td>
<td>(0.037) (0.062)</td>
<td>(0.044) (0.063)</td>
<td>(0.039) (0.042)</td>
</tr>
<tr>
<td>σ</td>
<td>0.77 0.78 0.75 0.77</td>
<td>0.59 0.67 0.62 0.670</td>
<td>0.61 0.69 0.78 0.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.20 0.18 0.29 0.24</td>
<td>0.28 0.35 0.28 0.26</td>
<td>0.43 0.34 0.47 0.46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>0.87 0.75 0.66 0.78</td>
<td>0.82 0.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>7976 8417 6171 6735</td>
<td>7627 6870 8811 4076</td>
<td>5431 3845 14360 13837</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** *p<0.1, **p<0.05, ***p<0.01. Standard errors are in parentheses. Household heads’ ages are restricted to between 25 and 55 for the first survey round and adjusted accordingly for the second survey round.
## Appendix 2: Additional Tables and Figures

### Table 2.1: Typology of Welfare Transition Dynamics over Two Periods

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Pro-poor Growth</th>
<th>Welfare Category</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1st group</td>
<td>2nd group</td>
</tr>
<tr>
<td>1</td>
<td>Strongest/ Most positive</td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td>2</td>
<td>More positive</td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td>3</td>
<td>Positive</td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td>4</td>
<td>Negative</td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td>5</td>
<td>More negative</td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td>6</td>
<td>Weakest/ Most negative</td>
<td>Low</td>
<td>Middle</td>
</tr>
</tbody>
</table>

Note: The signs (-) and (+) respectively stand for decrease and increase. Pro-poor growth is defined as the dynamics that are most beneficial to the different categories in this order: Lowest Income, Middle Income, and Top Income. This typology is modified based on Dang and Lanjouw (2016).
Table 2.2: Change in Shared Prosperity for Each Country (percentage)

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>Growth in the population share of each welfare category</th>
<th>Growth in mean consumption for all groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Poor</td>
<td>Vulnerable</td>
</tr>
<tr>
<td>1</td>
<td>Congo, DRC</td>
<td>-13.5</td>
<td>149.7</td>
</tr>
<tr>
<td>2</td>
<td>Chad</td>
<td>-36.1</td>
<td>42.6</td>
</tr>
<tr>
<td>3</td>
<td>Mozambique</td>
<td>-12.6</td>
<td>70.0</td>
</tr>
<tr>
<td>4</td>
<td>Uganda</td>
<td>-19.1</td>
<td>26.3</td>
</tr>
<tr>
<td>5</td>
<td>Rwanda</td>
<td>-8.7</td>
<td>19.3</td>
</tr>
<tr>
<td>6</td>
<td>Ghana</td>
<td>-20.7</td>
<td>4.4</td>
</tr>
<tr>
<td>7</td>
<td>Mauritania</td>
<td>-27.7</td>
<td>-18.8</td>
</tr>
<tr>
<td>8</td>
<td>Malawi</td>
<td>-1.0</td>
<td>-3.8</td>
</tr>
<tr>
<td>9</td>
<td>Tanzania</td>
<td>-6.7</td>
<td>10.5</td>
</tr>
<tr>
<td>10</td>
<td>Togo</td>
<td>-1.4</td>
<td>-4.5</td>
</tr>
<tr>
<td>11</td>
<td>Ethiopia</td>
<td>-3.9</td>
<td>-1.2</td>
</tr>
<tr>
<td>12</td>
<td>Sierra Leone</td>
<td>-6.5</td>
<td>16.6</td>
</tr>
<tr>
<td>13</td>
<td>Nigeria</td>
<td>5.5</td>
<td>1.4</td>
</tr>
<tr>
<td>14</td>
<td>Botswana</td>
<td>-28.7</td>
<td>6.6</td>
</tr>
<tr>
<td>15</td>
<td>Senegal</td>
<td>0.9</td>
<td>3.3</td>
</tr>
<tr>
<td>16</td>
<td>Swaziland</td>
<td>-1.3</td>
<td>-1.3</td>
</tr>
<tr>
<td>17</td>
<td>Zambia</td>
<td>7.8</td>
<td>-12.0</td>
</tr>
<tr>
<td>18</td>
<td>Burkina Faso</td>
<td>6.3</td>
<td>-4.4</td>
</tr>
<tr>
<td>19</td>
<td>Cote d'Ivoire</td>
<td>15.1</td>
<td>-5.3</td>
</tr>
<tr>
<td>20</td>
<td>Cameroon</td>
<td>34.5</td>
<td>-12.3</td>
</tr>
<tr>
<td>21</td>
<td>Madagascar</td>
<td>9.5</td>
<td>-32.5</td>
</tr>
<tr>
<td></td>
<td><strong>Regional average</strong></td>
<td><strong>-5.2</strong></td>
<td><strong>12.1</strong></td>
</tr>
</tbody>
</table>

Note: Authors' calculation based on household survey data. Household heads' age is between 25 and 55 in the first survey round and adjusted accordingly for the second survey round. The poverty line and vulnerability line are respectively set at $1.9/day and $4.3/day in 2011 PPP dollars for both periods. Pro-poor growth scenarios are based on the classification provided in Table 1.3 in Appendix 1. Countries are ranked first in a decreasing order of mean consumption for all the three groups, and then the Poor, the Vulnerable and the Middle Class.
Table 2.3: Transition Dynamics among the Three Welfare Groups for Each Country (percentage)

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>(1) Proportion of the vulnerable</th>
<th>(2) Proportion of the middle class</th>
<th>(3) remained in vulnerability</th>
<th>(4) moved to middle class</th>
<th>(5) fell to vulnerability</th>
<th>(6) remained in middle class</th>
<th>(7) Overall downward mobility</th>
<th>(8) Overall upward mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Botswana</td>
<td>37.1</td>
<td>53.1</td>
<td>9.8</td>
<td>89.3</td>
<td>10.4</td>
<td>53.9</td>
<td>44.5</td>
<td>10.4</td>
</tr>
<tr>
<td>2</td>
<td>Chad</td>
<td>41.5</td>
<td>29.3</td>
<td>36.8</td>
<td>46.7</td>
<td>36.2</td>
<td>41.6</td>
<td>38.9</td>
<td>14.6</td>
</tr>
<tr>
<td>3</td>
<td>Swaziland</td>
<td>34.6</td>
<td>30.8</td>
<td>29.8</td>
<td>51.1</td>
<td>41.6</td>
<td>28.9</td>
<td>31.8</td>
<td>23.1</td>
</tr>
<tr>
<td>4</td>
<td>Mauritania</td>
<td>59.2</td>
<td>34.6</td>
<td>10.9</td>
<td>89.0</td>
<td>8.9</td>
<td>38.9</td>
<td>29.1</td>
<td>14.6</td>
</tr>
<tr>
<td>5</td>
<td>Ghana</td>
<td>55.4</td>
<td>30.8</td>
<td>15.1</td>
<td>84.5</td>
<td>14.6</td>
<td>31.8</td>
<td>28.9</td>
<td>14.6</td>
</tr>
<tr>
<td>6</td>
<td>Nigeria</td>
<td>60.0</td>
<td>22.7</td>
<td>28.9</td>
<td>69.5</td>
<td>23.1</td>
<td>28.9</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>7</td>
<td>Uganda</td>
<td>56.3</td>
<td>25.0</td>
<td>22.6</td>
<td>76.0</td>
<td>20.5</td>
<td>28.1</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>8</td>
<td>Sierra Leone</td>
<td>64.5</td>
<td>17.0</td>
<td>36.8</td>
<td>61.7</td>
<td>22.7</td>
<td>25.8</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>9</td>
<td>Burkina Faso</td>
<td>72.4</td>
<td>22.6</td>
<td>8.1</td>
<td>91.9</td>
<td>5.7</td>
<td>24.5</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>10</td>
<td>Senegal</td>
<td>60.4</td>
<td>20.7</td>
<td>23.9</td>
<td>75.3</td>
<td>20.8</td>
<td>23.5</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>11</td>
<td>Cameroon</td>
<td>62.9</td>
<td>18.9</td>
<td>22.8</td>
<td>76.4</td>
<td>20.9</td>
<td>22.6</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>12</td>
<td>Cote d'Ivoire</td>
<td>63.7</td>
<td>19.3</td>
<td>17.7</td>
<td>81.9</td>
<td>17.6</td>
<td>20.9</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>13</td>
<td>Congo, DRC</td>
<td>61.0</td>
<td>33.7</td>
<td>10.1</td>
<td>89.9</td>
<td>5.8</td>
<td>19.8</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>14</td>
<td>Rwanda</td>
<td>66.3</td>
<td>17.0</td>
<td>20.7</td>
<td>78.9</td>
<td>18.1</td>
<td>19.0</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>15</td>
<td>Ethiopia</td>
<td>73.7</td>
<td>15.7</td>
<td>18.4</td>
<td>81.6</td>
<td>12.7</td>
<td>18.9</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>16</td>
<td>Tanzania</td>
<td>60.4</td>
<td>12.4</td>
<td>37.4</td>
<td>60.1</td>
<td>32.2</td>
<td>17.6</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>17</td>
<td>Mozambique</td>
<td>52.4</td>
<td>14.0</td>
<td>35.3</td>
<td>59.9</td>
<td>35.5</td>
<td>16.1</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>18</td>
<td>Zambia</td>
<td>47.3</td>
<td>15.9</td>
<td>29.5</td>
<td>64.9</td>
<td>36.1</td>
<td>15.6</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>19</td>
<td>Malawi</td>
<td>47.7</td>
<td>13.0</td>
<td>33.0</td>
<td>61.7</td>
<td>39.1</td>
<td>14.4</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>20</td>
<td>Togo</td>
<td>60.5</td>
<td>12.6</td>
<td>28.7</td>
<td>70.1</td>
<td>27.9</td>
<td>13.2</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td>21</td>
<td>Madagascar</td>
<td>50.6</td>
<td>5.2</td>
<td>48.0</td>
<td>47.7</td>
<td>45.6</td>
<td>6.4</td>
<td>25.8</td>
<td>23.1</td>
</tr>
<tr>
<td></td>
<td><strong>Regional average</strong></td>
<td>56.6</td>
<td>22.1</td>
<td>25.0</td>
<td>71.8</td>
<td>23.6</td>
<td>25.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Authors’ calculation based on household survey data. Household heads’ age is between 25 and 55 in the first survey round and adjusted accordingly for the second survey round. The poverty line and vulnerability line are respectively set at $1.9/day and $4.3/day in 2011 PPP dollars for both periods. Countries are ranked in a decreasing order of overall upward mobility. Overall downward mobility (column 7) represents the proportion of the population that moved up one or two income categories from the Poor and Vulnerable groups. Overall upward mobility (column 8) represents the proportion of the population that moved down one or two income categories from the Vulnerable and Middle Class groups. The regional average is a simple average (unweighted).
<table>
<thead>
<tr>
<th>No</th>
<th>Country Name</th>
<th>Country code</th>
<th>Fragile Situations</th>
<th>Landlocked</th>
<th>Income grouping</th>
<th>Resource-poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Botswana</td>
<td>BWA</td>
<td>No</td>
<td>Yes</td>
<td>Middle Income</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Burkina Faso</td>
<td>BFA</td>
<td>No</td>
<td>Yes</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Cameroon</td>
<td>CMR</td>
<td>No</td>
<td>No</td>
<td>Middle Income</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Chad</td>
<td>TCD</td>
<td>Yes</td>
<td>Yes</td>
<td>Low Income</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>Congo, Dem. Rep.</td>
<td>ZAR</td>
<td>Yes</td>
<td>No</td>
<td>Low Income</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>Cote d'Ivoire</td>
<td>CIV</td>
<td>Yes</td>
<td>No</td>
<td>Middle Income</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>Ethiopia</td>
<td>ETH</td>
<td>No</td>
<td>Yes</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>Ghana</td>
<td>GHA</td>
<td>No</td>
<td>No</td>
<td>Middle Income</td>
<td>Yes</td>
</tr>
<tr>
<td>9</td>
<td>Madagascar</td>
<td>MDG</td>
<td>Yes</td>
<td>No</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Malawi</td>
<td>MWI</td>
<td>No</td>
<td>Yes</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>Mauritania</td>
<td>MRT</td>
<td>No</td>
<td>No</td>
<td>Middle Income</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>Mozambique</td>
<td>MOZ</td>
<td>No</td>
<td>No</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Nigeria</td>
<td>NGA</td>
<td>No</td>
<td>No</td>
<td>Middle Income</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>Rwanda</td>
<td>RWA</td>
<td>No</td>
<td>Yes</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>Senegal</td>
<td>SEN</td>
<td>No</td>
<td>No</td>
<td>Middle Income</td>
<td>Yes</td>
</tr>
<tr>
<td>16</td>
<td>Sierra Leone</td>
<td>SLE</td>
<td>Yes</td>
<td>No</td>
<td>Low Income</td>
<td>No</td>
</tr>
<tr>
<td>17</td>
<td>Swaziland</td>
<td>SWZ</td>
<td>No</td>
<td>Yes</td>
<td>Middle Income</td>
<td>Yes</td>
</tr>
<tr>
<td>18</td>
<td>Tanzania</td>
<td>TZA</td>
<td>No</td>
<td>No</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>19</td>
<td>Togo</td>
<td>TGO</td>
<td>Yes</td>
<td>No</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>20</td>
<td>Uganda</td>
<td>UGA</td>
<td>No</td>
<td>Yes</td>
<td>Low Income</td>
<td>Yes</td>
</tr>
<tr>
<td>21</td>
<td>Zambia</td>
<td>ZMB</td>
<td>No</td>
<td>Yes</td>
<td>Middle Income</td>
<td>No</td>
</tr>
</tbody>
</table>

**Note:** Resource-rich countries include countries that had average rents from natural resources (excluding forests) that exceeded 10 percent of GDP in 2006–11 and countries with diamonds (Botswana). Fragile countries are countries that appear on the World Bank’s 2015 harmonized list of fragile situations, which classifies countries as fragile if they (a) had an average Country Policy and Institutional Assessment (CPIA) rating of 3.2 or less or (b) hosted a UN or regional peace-keeping or peace-building mission in the previous three years. Country income categories are from World Development Indicators. These classifications are based on Beegle et al. (2016).
Figure 2.1: Proportions of the Poor, the Vulnerable, and the Middle Class in Most Recent Year

- Mauritania
- Botswana
- Nigeria
- Ghana
- Cote d'Ivoire
- Cameroon
- Senegal
- Ethiopia
- Chad
- Swaziland
- Uganda
- Tanzania
- Togo
- Sierra Leone
- Burkina Faso
- Rwanda
- Zambia
- Mozambique
- Malawi
- Congo, DRC
- Madagascar
- All countries

Percentage (%)

- Poor
- Vulnerable
- Middle Class
Figure 2.2: Upward Mobility, Downward Mobility and Pro-poor Growth

Note: pro-poor growth scenarios are represented by circles (most positive), diamonds (more positive), squares (positive), triangles (more negative), and crosses (most negative). Positive and negative growth scenarios are depicted in orange and blue respectively.
The Poverty & Equity Global Practice Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

This series is co-published with the World Bank Policy Research Working Papers (DECOS). It is part of a larger effort by the World Bank to provide open access to its research and contribute to development policy discussions around the world.

For the latest paper, visit our GP’s intranet at http://POVERTY.

1 Estimating poverty in the absence of consumption data: the case of Liberia
   Dabalen, A. L., Graham, E., Himelein, K., Mungai, R., September 2014

2 Female labor participation in the Arab world: some evidence from panel data in Morocco

3 Should income inequality be reduced and who should benefit? redistributive preferences in Europe and Central Asia
   Cojocaru, A., Diagne, M. F., November 2014

4 Rent imputation for welfare measurement: a review of methodologies and empirical findings
   Balcazar Salazar, C. F., Ceriani, L., Olivieri, S., Ranzani, M., November 2014

5 Durable goods and poverty measurement
   Amendola, N., Vecchi, G., November 2014

6 Inequality stagnation in Latin America in the aftermath of the global financial crisis

7 Born with a silver spoon: inequality in educational achievement across the world
   Balcazar Salazar, C. F., Narayan, A., Tiwari, S., January 2015

8 Long-run effects of democracy on income inequality: evidence from repeated cross-sections
   Balcazar Salazar, C. F., January 2015
9 Living on the edge: vulnerability to poverty and public transfers in Mexico

10 Moldova: a story of upward economic mobility
Davalos, M. E., Meyer, M., January 2015

11 Broken gears: the value added of higher education on teachers’ academic achievement
Balcazar Salazar, C. F., Nopo, H., January 2015

12 Can we measure resilience? a proposed method and evidence from countries in the Sahel

13 Vulnerability to malnutrition in the West African Sahel

14 Economic mobility in Europe and Central Asia: exploring patterns and uncovering puzzles
Cancho, C., Davalos, M. E., Demarchi, G., Meyer, M., Sanchez Paramo, C., January 2015

15 Managing risk with insurance and savings: experimental evidence for male and female farm managers in the Sahel

16 Gone with the storm: rainfall shocks and household well-being in Guatemala
Baez, J. E., Lucchetti, L., Genoni, M. E., Salazar, M., January 2015

17 Competition in Kenyan markets and its impact on income and poverty: a case study on sugar and maize
Argent, J., Begazo Gomez, T. P., January 2015

18 Handling the weather: insurance, savings, and credit in West Africa
De Nicola, F., February 2015

19 The distributional impact of fiscal policy in South Africa

20 Interviewer effects in subjective survey questions: evidence from Timor-Leste
Himelein, K., March 2015

21 No condition is permanent: middle class in Nigeria in the last decade
Corral Rodas, P. A., Molini, V., Oseni, G. O., March 2015

22 An evaluation of the 2014 subsidy reforms in Morocco and a simulation of further reforms
Verme, P., El Massnaoui, K., March 2015

23 The quest for subsidy reforms in Libya
Araar, A., Choueiri, N., Verme, P., March 2015
The (non-) effect of violence on education: evidence from the “war on drugs” in Mexico
Márquez-Padilla, F., Pérez-Arce, F., Rodriguez Castelan, C., April 2015

“Missing girls” in the south Caucasus countries: trends, possible causes, and policy options
Das Gupta, M., April 2015

Measuring inequality from top to bottom
Diaz Bazan, T. V., April 2015

Are we confusing poverty with preferences?
Van Den Boom, B., Halsema, A., Molini, V., April 2015

Socioeconomic impact of the crisis in north Mali on displaced people (Available in French)

Inequality of outcomes and inequality of opportunity in Tanzania

How unfair is the inequality of wage earnings in Russia? estimates from panel data

Fertility transition in Turkey—who is most at risk of deciding against child arrival?
Greulich, A., Dasre, A., Inan, C., June 2015

The socioeconomic impacts of energy reform in Tunisia: a simulation approach

Energy subsidies reform in Jordan: welfare implications of different scenarios

How costly are labor gender gaps? estimates for the Balkans and Turkey
Cuberes, D., Teignier, M., June 2015

Subjective well-being across the lifespan in Europe and Central Asia

Lower bounds on inequality of opportunity and measurement error
Balcazar Salazar, C. F., July 2015

A decade of declining earnings inequality in the Russian Federation
Posadas, J., Calvo, P. A., Lopez-Calva, L.-F., August 2015

Gender gap in pay in the Russian Federation: twenty years later, still a concern
Atencio, A., Posadas, J., August 2015

Job opportunities along the rural-urban gradation and female labor force participation in India Chatterjee, U., Rama, M. G., Murgai, R., September 2015

Multidimensional poverty in Ethiopia: changes in overlapping deprivations
Yigezu, Biratu., Ambel, A. A., Mehta, P. A., September 2015
41 Are public libraries improving quality of education? when the provision of public goods is not enough

42 Understanding poverty reduction in Sri Lanka: evidence from 2002 to 2012/13
Inchauste Comboni, M. G., Ceriani, L., Olivieri, S. D., October 2015

43 Exploring the sources of downward bias in measuring inequality of opportunity
Lara Ibarra, G., Martinez Cruz, A. L., October 2015

44 Women’s police stations and domestic violence: evidence from Brazil
Perova, E., Reynolds, S., November 2015

45 From demographic dividend to demographic burden? regional trends of population aging in Russia
Matytsin, M., Moorty, L. M., Richter, K., November 2015

46 Hub-periphery development pattern and inclusive growth: case study of Guangdong province
Luo, X., Zhu, N., December 2015

47 Unpacking the MPI: a decomposition approach of changes in multidimensional poverty headcounts
Rodriguez Castelan, C., Trujillo, J. D., Pérez Pérez, J. E., Valderrama, D., December 2015

48 The poverty effects of market concentration
Rodriguez Castelan, C., December 2015

49 Can a small social pension promote labor force participation? evidence from the Colombia Mayor program
Pfutze, T., Rodriguez Castelan, C., December 2015

50 Why so gloomy? perceptions of economic mobility in Europe and Central Asia
Davalos, M. E., Cancho, C. A., Sanchez, C., December 2015

51 Tenure security premium in informal housing markets: a spatial hedonic analysis
Nakamura, S., December 2015

52 Earnings premiums and penalties for self-employment and informal employees around the world

53 How equitable is access to finance in Turkey? evidence from the latest global FINDEX
Yang, Judy., Azevedo, J. P. W. D., Inan, O. K., January 2016

54 What are the impacts of Syrian refugees on host community welfare in Turkey? a subnational poverty analysis

55 Declining wages for college-educated workers in Mexico: are younger or older cohorts hurt the most?
Sifting through the Data: labor markets in Haiti through a turbulent decade (2001-2012)
Rodella, A.-S., Scot, T., February 2016

Drought and retribution: evidence from a large-scale rainfall-indexed insurance program in Mexico
Fuchs Tarlovsky, Alan., Wolff, H., February 2016

Prices and welfare
Verme, P., Araar, A., February 2016

Losing the gains of the past: the welfare and distributional impacts of the twin crises in Iraq 2014
Olivieri, S. D., Krishnan, N., February 2016

Growth, urbanization, and poverty reduction in India
Ravallion, M., Murgai, R., Datt, G., February 2016

Why did poverty decline in India? a nonparametric decomposition exercise

Robustness of shared prosperity estimates: how different methodological choices matter

Is random forest a superior methodology for predicting poverty? an empirical assessment
Stender, N., Pave Sohnesen, T., March 2016

When do gender wage differences emerge? a study of Azerbaijan's labor market

Second-stage sampling for conflict areas: methods and implications
Eckman, S., Murray, S., Himelein, K., Bauer, J., March 2016

Measuring poverty in Latin America and the Caribbean: methodological considerations when estimating an empirical regional poverty line
Gasparini, L. C., April 2016

Looking back on two decades of poverty and well-being in India
Murgai, R., Narayan, A., April 2016

Is living in African cities expensive?

Ageing and family solidarity in Europe: patterns and driving factors of intergenerational support
Albertini, M., Sinha, N., May 2016

Crime and persistent punishment: a long-run perspective on the links between violence and chronic poverty in Mexico
71 Should I stay or should I go? internal migration and household welfare in Ghana
Molini, V., Pavelesku, D., Ranzani, M., July 2016

72 Subsidy reforms in the Middle East and North Africa Region: a review
Verme, P., July 2016

73 A comparative analysis of subsidy reforms in the Middle East and North Africa Region
Verme, P., Araar, A., July 2016

74 All that glitters is not gold: polarization amid poverty reduction in Ghana
Clementi, F., Molini, V., Schettino, F., July 2016

75 Vulnerability to Poverty in rural Malawi
Mccarthy, N., Brubaker, J., De La Fuente, A., July 2016

76 The distributional impact of taxes and transfers in Poland
Goraus Tanska, K. M., Inchauste Comboni, M. G., August 2016

77 Estimating poverty rates in target populations: an assessment of the simple poverty scorecard and alternative approaches

78 Synergies in child nutrition: interactions of food security, health and environment, and child care
Skoufias, E., August 2016

79 Understanding the dynamics of labor income inequality in Latin America

80 Mobility and pathways to the middle class in Nepal

81 Constructing robust poverty trends in the Islamic Republic of Iran: 2008-14

82 Who are the poor in the developing world?

83 New estimates of extreme poverty for children
Newhouse, D. L., Suarez Becerra, P., Evans, M. C., October 2016

84 Shedding light: understanding energy efficiency and electricity reliability
Carranza, E., Meeks, R., November 2016

85 Heterogeneous returns to income diversification: evidence from Nigeria

86 How liberal is Nepal’s liberal grade promotion policy?
Sharma, D., November 2016
CPI bias and its implications for poverty reduction in Africa

Building an ex ante simulation model for estimating the capacity impact, benefit incidence, and cost effectiveness of child care subsidies: an application using provider-level data from Turkey
Aran, M. A., Munoz Boudet, A., Aktakke, N., December 2016

Vulnerability to drought and food price shocks: evidence from Ethiopia
Porter, C., Hill, R., December 2016

Job quality and poverty in Latin America
Rodriguez Castelan, C., Mann, C. R., Brummund, P., December 2016

With a little help: shocks, agricultural income, and welfare in Uganda
Mejia-Mantilla, C., Hill, R., January 2017

The impact of fiscal policy on inequality and poverty in Chile

Conditionality as targeting? participation and distributional effects of conditional cash transfers
Rodriguez Castelan, C., January 2017

How is the slowdown affecting households in Latin America and the Caribbean?

The impact of mining on spatial inequality recent evidence from Africa
Boly, A., Mveyange, A., Addison, T., February 2017

Are tobacco taxes really regressive? evidence from Chile
Fuchs Tarlovsky, A., Meneses, F. J., March 2017

Design of a multi-stage stratified sample for poverty and welfare monitoring with multiple objectives: a Bangladesh case study

For India’s rural poor, growing towns matter more than growing cities
Murgai, R., Ravallion, M., Datt, G., Gibson, J., March 2017

Leaving, staying, or coming back? migration decisions during the northern Mali conflict
Hoogeveen, J. G., Sansone, D., Rossi, M., March 2017

Arithmetics and Politics of Domestic Resource Mobilization
Bolch, K. B., Ceriani, L., Lopez-Calva, L.-F., April 2017

Can Public Works Programs Reduce Youth Crime? Evidence from Papua New Guinea’s Urban Youth Employment Project
Oleksiy I., Darian N., David N., Sonya S., April 2017

Is Poverty in Africa Mostly Chronic or Transient? Evidence from Synthetic Panel Data
Dang, H.-A. H., Dabalen, A. L., April 2017
To Sew or Not to Sew? Assessing the Welfare Effects of the Garment Industry in Cambodia
Mejía-Mantilla, C., Woldemichael, M. T., May 2017

Perceptions of distributive justice in Latin America during a period of falling inequality
Reyes, G. J., Gasparini, L. C., May 2017

How do women fare in rural non-farm economy?
Fuje, H. N., May 2017

Rural Non-Farm Employment and Household Welfare: Evidence from Malawi

Datt, G., June 2017

But … what is the poverty rate today? testing poverty nowcasting methods in Latin America and the Caribbean
Caruso, G. D., Lucchetti, L. R., Malasquez, E., Scot, T., Castaneda, R. A., June 2017

Krishnan, N., Olivieri, S., Ramadan, R., June 2017

Beyond Income Poverty: Nonmonetary Dimensions of Poverty in Uganda
Etang Ndip, A., Tsimpo, C., June 2017

Education and Health Services in Uganda: Quality of Inputs, User Satisfaction, and Community Welfare Levels
Tsimpo Nkengne, C., Etang Ndip, A., Wodon, Q. T., June 2017

Rental Regulation and Its Consequences on Measures of Well-Being in the Arab Republic of Egypt
Lara Ibarra, G., Mendiratta, V., Vishwanath, T., July 2017

The Poverty Implications of Alternative Tax Reforms: Results from a Numerical Application to Pakistan
Feltenstein, A., Mejia-Mantilla, C., Newhouse, D. L., Sedrakyan, G., August 2017

Tracing Back the Weather Origins of Human Welfare: Evidence from Mozambique?
Baez Ramirez, J. E., Caruso, G. D., Niu, C., August 2017

Many Faces of Deprivation: A multidimensional approach to poverty in Armenia
Martirosova, D., Inan, O. K., Meyer, M., Sinha, N., August 2017

Natural Disaster Damage Indices Based on Remotely Sensed Data: An Application to Indonesia
Skoufias, E., Strobl, E., Tveit, T. B., September 2017

For the latest and sortable directory, available on the Poverty & Equity GP intranet site. http://POVERTY

WWW.WORLDBANK.ORG/POVERTY

Updated on September 12, 2017 by POV GP KL Team | 8