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Poverty Persistence in Low-Income Country Contexts: Evidence from Sub-Saharan African Countries

1. Introduction

Reducing poverty is a global priority task. Indeed, the United Nations have most recently set the first goal of the Sustainable Development Goals (SDGs) to eliminate extreme poverty by 2030. Accomplishing this ambitious goal would, however, require new strategies that more effectively target the poorest of the poor. In particular, one promising strategy to achieve this goal is to tackle poverty in regions and countries where it remains most prevalent and entrenched. Another approach that has received increasingly more attention from policy makers, in richer and poorer countries alike, is to shift attention from monitoring and addressing static snapshots of household poverty status at a single point in time to the more nuanced dynamic aspects of poverty (see, e.g., Jenkins, 2011; Dang, Jolliffe, and Carletto, in press).

Africa's economic growth has been mostly stable in past several decades, which enabled the region to steadily reduce its poverty rates for most countries (Beegle et al., 2016). Yet, Sub-Saharan Africa still remains the poorest region in the world, and a substantial proportion of its population continue to live in chronic (persistent) poverty—the most undesirable form of poverty. Depending on the measure that is used, the chronic poverty rate is recently estimated to range from 30 percent to more than 50 percent for the region, and countries such as Congo DRC suffer from a chronic poverty rate as high as more than 70 percent (Dang and Dabalen, in press). This study also finds that certain factors such as a college degree or urban residence is strongly and positively correlated with lifting households out of poverty or preventing them from sliding into poverty. However, while Dang and Dabalen (in press) examine the prevalence of chronic poverty for Sub-Saharan Africa, they do not offer an in-depth investigation into the underlying causal mechanism behind these high chronic poverty rates.

In this paper, we propose to study poverty persistence using newly collected household panel surveys (LSMS-ISA) from six Sub-Saharan African countries, including Ethiopia, Malawi, Niger, Nigeria, Tanzania, and Uganda.[1] Since these panel surveys offer comparable panel data from three survey rounds for each of these countries, they allow us to analyze richer definitions of chronic poverty, as well as apply the latest econometric techniques to probe more rigorously into the factors that drive these dynamics. To our knowledge, we provide the first study that aims to rigorously investigate poverty persistence for a number of countries in a low-income Sub-Saharan Africa context.

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[1] We plan to add data from two other countries, Burkina Faso and Mali, when such data are available. Smaller panel surveys have been implemented for African countries, but these LSMS-ISA panel surveys are larger in scale and have a similar design.

II. Proposed Analysis Plan

For descriptive analysis of dynamic trends and patterns, we will examine several different measures of chronic poverty including the majority-of-years-in-poverty approach that has often been used by governments and international organizations (i.e., chronic poverty is defined as households being in poverty for three survey rounds or more out of four survey rounds; see, e.g., Eurostat, 2002; DWP, 2010; Ferreira et al., 2013) and the permanent income approach (e.g., Rodgers and Rodgers, 1993; Jalan and Ravallion, 2000).[2]

We will re-examine some stylized facts regarding household poverty dynamics such as whether higher education levels, having employment in the non-agricultural sector, or migration to urban areas are negatively correlated with chronic poverty. Furthermore, we will study whether chronic poverty rates vary for different types of households, such as single-generation households versus multiple-generation households, or households with more children or older people. Another interesting feature with household composition in the Sub-Saharan African context is the gender of household heads; for example, Brown and van de Walle (2019) find that female-headed households are on average poorer than their male counterparts. It would be relevant for policy to better understand whether similar patterns hold for chronic poverty. We then proceed to examine more rigorously in a multivariate regression framework the causal impacts of poverty outcomes in past periods. We will apply dynamic random-effects probit models that control for state dependence as in Cappellari and Jenkins (2004) and Biewen (2009), which can also address unobserved heterogeneity and attrition issues. For comparison and robustness checks, we will also employ an alternative modelling approach that relies on solutions to the initial conditions (Wooldridge, 2005; Rabe-Hesketh and Skrondal, 2013; Grotti and Cutuli, 2018).

III. Some Preliminary Results

We provide in Table 1 an overview of the available household panel surveys for the six countries, where the surveys were implemented roughly every two years and mostly from the late 2000s to the mid-2010s. We are still working on connecting the panel households over time as well as standardizing the variables, so the panel data are currently available for at least three survey rounds for four countries (i.e., Ethiopia, Nigeria, Tanzania, and Uganda) and two survey rounds for two countries (i.e., Malawi and Niger), but we aim to work with three or more survey rounds for each country.

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[2] We will also consider a stricter variant of the majority-of-years-in-poverty measure, which use as the denominator the percent of the population that were *ever* poor in any of the three survey rounds, rather than all the population (Dang and Dabalen, in press). For robustness check, we also plan to examine several other approaches that were recently proposed in the literature including Bossert et al. (2012), Duclos, Araar, and Giles (2010), Foster (2009), and Hoy and Zheng (2011).

Table 1 shows that while the average headcount poverty rate for the six countries decreases by four percentage points from 41 percent in the beginning period, countries display different poverty trends over time. Note that estimates for poverty using the LSMS-ISA panel surveys may be different from those based on the national but cross sectional consumption surveys because of the former's focus on collecting panel data.[3]

Table 2 offers a breakdown of the poverty rate in the most recent period into chronic poverty and upward mobility. In particular, for a start, we analyze two survey rounds in the beginning and most recent years (periods), using the following majority-of-years-in-poverty decomposition

$$P(y_{i1} < z_1 \text{ and } y_{i2} < z_2) + P(y_{i1} > z_1 \text{ and } y_{i2} < z_2) = P(y_{i2} < z_2) \quad (1)$$

where the 1st term on the left-hand side and the 2nd term on the left-hand side respectively represent chronic poverty and downward mobility, for household i, $i= 1,…, N$. Put differently, a household is considered chronically poor if it is poor in both survey periods. These two terms together sum up to the poverty rate in the 2nd period. Instead of decomposing poverty in the last period, we can also do this for the beginning period as follows

$$P(y_{i1} < z_1 \text{ and } y_{i2} < z_2) + P(y_{i1} < z_1 \text{ and } y_{i2} > z_2) = P(y_{i1} < z_1) \quad (2)$$

where the 1st term on the left-hand side still represents chronic poverty, but the 2nd term on the left-hand side now represents upward mobility.

Chronic poverty, as defined in Equation (1), is 26 percent for the six countries as a whole (Table 2, Column 5). The downward mobility rate is 12 percent (Column 6), which is less than the upward mobility rate of 16 percent (Column 7).

Equation (1) offers an unconditional version of poverty mobility over the two periods, which does 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 (1) and (2) by the right-hand side, we have the conditional versions of these equalities

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

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

Notably, the unconditional measure of chronic poverty is the same regardless of which period under consideration (i.e., the first terms in Equations (1) and (2) are identical), but the conditional measure can differ depending on the reference period (i.e., the first terms in Equations (3) and (4) are different because of the different conditions or denominators). In

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[3] The LSMS-ISA may also fewer consumption items than the cross sectional national consumption surveys. See Dang and Carletto (2018) for a review.

other words, depending on the reference period, we can have different conditional measures of chronic poverty.

Indeed, Table 2 indicates that the chronic poverty rate ranges from 62 percent for the beginning period (i.e., dividing the last row of Column 5 by that for Column 3) to 68 percent in the most recent period (i.e., dividing the last row of Column 5 by that for Column 4).

These preliminary results based on the latest household panel surveys in the six Sub-Saharan African countries suggest that a significant proportion of their population still live chronic poverty. We will investigate other measures of chronic poverty as well as more rigorously the causal factors for chronic poverty in the proposed paper.