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Using an Asset Index to Assess Trends in Poverty in Seven Sub-Saharan African Countries

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Summary. — Using comparable, nationally representative surveys and extending the work of [Sahn, D. E., & Stifel, D. C. (2000). Poverty comparisons over time and across countries in Africa. *World Development, 28*(12), 2123–2155], an asset index is used to investigate changes in poverty in seven African countries. Poverty declined in five of the seven countries. Improvements in the asset index are driven by progress in the accumulation of private assets, while access to public services has deteriorated. However, the method has some shortcomings. Assets are slow-changing and discrete. The index therefore may not capture changes in well-being accurately. The poor discrimination ability of the index at the lower end of the scale also makes it an inappropriate tool for studying ultra-poverty.

Key words — poverty, asset index, multiple correspondence analysis, Africa

1. INTRODUCTION

While the conventional approach to the measurement of poverty is money-metric and uses income and/or expenditure data, multidimensional approaches employ several socio-economic indicators to compile these indices. This is done either to simulate income or expenditure poverty measures in the absence of more accurate money-metric information, or alternatively as an attempt to compile a superior measure of deprivation by focusing on additional dimensions of poverty—such as access to public services—that are not captured by money-metric measures. This paper attempts to navigate a third way by incorporating both private assets that approximate money-metric

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measures of poverty and also public assets to supplement the money-metric indicators.

The asset index method is one of the most popular applications of the multidimensional approach. Due to the widespread availability of the demographic and health surveys (DHS) for many of the poorest countries, the absence of money-metric data in these surveys and few alternative surveys containing money-metric data, the asset index method is often applied to this series of data sets (Filmer & Pritchett, 2001; Sahn & Stifel, 2000, 2003; World Bank, 2000a). Sahn and Stifel (2000) employed DHS data in an analysis of poverty in nine African countries using an asset index, while Filmer and Pritchett (2001) analyzed poverty in Indian states. Like Sahn and Stifel (2000), we also apply the asset index to African countries using a collection of DHS.

Our analysis, however, differs from previous studies in important respects. *Firstly*, we employ multiple correspondence analysis (MCA) rather than factor analysis (FA) (used by Sahn & Stifel, 2000) or principal components analysis (PCA) (as in Filmer & Pritchett, 2001; Sahn & Stifel, 2003) to construct the asset index. MCA and FA are more appropriate methodologies for the analysis of categorical rather than continuous variables (all variables in our asset index are categorical). *Secondly*, we investigate the robustness of our conclusions on poverty trends by reporting results using both an asset index based on pooling across countries and indices constructed for each country separately. We test the robustness of our results to sampling and measurement errors and to the choice of poverty lines. *Thirdly*, using some more recent surveys than those used by Sahn and Stifel (2000), allows us to compare poverty over three rather than two periods. Thus, our conclusions regarding trends in poverty in African countries apply to more recent experience and are more stable because they cover a longer time span.

In these three ways, the paper aims to make a contribution to a vital, emergent literature that attempts to use the standardized DHS series to learn more about recent changes in poverty and inequality in African countries. These surveys are an important data source because little is known about changes in poverty over time or differences in poverty between African countries. Although the increased availability of income or expenditure surveys in many African countries over the past two decades has considerably expanded our knowledge of poverty on the continent, Sahn and Stifel (2000, p. 2123) maintain that, "in the vast majority of African countries, we remain unable to make inter-temporal comparisons of poverty," due to problems with the comparability of survey designs and the quality of price deflators. Studies such as these are thus not necessarily intended as a rival to conventional methods of poverty measurement, but rather as a supplement: they can provide estimates to interrogate and triangulate more conventional poverty estimates.

This paper is structured as follows. Section 1 describes the data, while Section 2 elaborates on the method employed in the construction of the asset index and in the poverty analysis. Section 2 also describes aspects of the asset index in more detail, in particular its ability to discriminate adequately between households enjoying different levels of welfare. Section 3 uses the asset index to assess poverty over time and location (urban–rural) in these seven African countries. Section 4 concludes.

2. DATA

More than 70 nationally representative demographic and health surveys (DHS) were conducted in more than fifty countries between 1984 and the late 1990s (Sahn & Stifel, 2000, p. 2127), a number that has increased since (UNFPA, 2002). The standardisation of certain sections and the resulting comparability across specific questions counts as a major strength of these surveys.

The aim is to track changes in poverty over a period of 10–15 years. Consequently, the sample was limited to those Sub-Saharan African countries with at least three demographic and health surveys between the late 1980s and early 2000s: Ghana, Kenya, Mali, Senegal, Tanzania, Zambia, and Zimbabwe. Appendix A lists the sample sizes for each of the surveys and outlines the general characteristics of these DHS surveys, for example, the year, sample size and breakdown by gender and location.

For the purposes of cross-country comparison, surveys are numbered in the order in which they were completed (e.g., Ghana Periods 1, 2, and 3), rather than indicating the survey year. The first period surveys date from the period 1986 to 1992, the second from 1992 to 1996, and the third from 1997 to 2001. Tanzania and Zambia's first period surveys were completed by March 1992, while Senegal's second period survey commenced in November 1992.