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The Robustness of Poverty Profiles Reconsidered

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There is a lack of consensus on how to measure poverty, even though poverty indices and poverty profiles are increasingly used as guides in targeting resources to reduce poverty. An allocation that is efficient according to one methodology may yield unacceptable results when a different methodology is applied. Conversely, when different methods produce similar poverty measures, policymakers can be more confident that their allocation decisions are robust. This paper uses data from Mozambique to examine methods used to set poverty lines for the measurement of consumption poverty, comparing the Food Energy Intake (FEI) and the Cost of Basic Needs (CBN) approaches. Within these two methods, alternative approaches to specifying region-specific poverty lines are investigated, including comparisons between poverty lines based upon a single national food consumption bundle versus multiple region-specific bundles.

Methodology

The poverty line is said to be *consistent* if it classifies persons with the same living standards equally. For example, if two persons have identical living standards, it would not be consistent to classify one as poor because he lives in an urban area and the other as nonpoor because she lives in a rural area. A poverty line is *specific* if it is based on notions of poverty that are applicable to the communities under consideration. Thus, specificity requires that the consumption patterns underlying a poverty line be consistent with consumption behavior of the poor in that setting. There is often an inherent tension between consistency and specificity, because greater specificity implies more flexibility in consumption patterns, which makes it harder to ensure consistency. Conversely, the appearance of consistency may be only an illusion if the consumption patterns embodied in the poverty line definition are alien to one or more segments of the population.

This paper considers six sets of poverty lines derived from the two FEI and CBN methods, each at three levels of aggregation. They correspond in the FEI approach to the number of unique poverty lines, whereas they reflect the distinct number of food bundles used for the CBN poverty lines. The three levels of aggregation are (1) national, (2) rural/urban area of residence, and (3) 13 geographic regions delineated by rural/urban classification and provincial boundaries.

The variable for total consumption per capita in *nominal* terms is the same throughout for each household. The total consumption measure includes purchases and home consumption of food items, purchases of nonfood goods and services, and imputed use-values for household durables and

owner-occupied housing. An important, but often overlooked, role of poverty lines is to serve as low-income price indices, which translate consumption from nominal to real values. Thus, each of the six sets of poverty lines ranks the sample households differently with respect to welfare levels, as measured by *real* consumption per capita.

The data used are from the Mozambique National Household Survey of Living Conditions, which includes 8,250 households. The survey used a stratified three-stage cluster sampling design intended to be representative at the national and provincial levels, and supports subdivision by rural and urban area of residence.

Mozambique is a large and agroecologically diverse country. The poor state of infrastructure, particularly in rural areas, affects economic and social life in a variety of ways: transport costs are high, regions are isolated, and markets are poorly developed. Considering the diversity and lack of integration of the Mozambican economy, it is not surprising that there are large spatial differences in absolute and relative prices. CBN poverty lines typically incorporate such price variation in the calculation of region-specific poverty lines, but ignore the differences in the composition of the bundle that may result from regional differences in the relative prices of commodities. Here we consider both of these sources of variation in the cost of basic needs.

Poverty Lines and Indices

The CBN food poverty lines suggest that the cost per calorie, and thereby the food poverty lines, tends to decrease as the number of subgroups over which the bundle is allowed to vary increases. The CBN total poverty lines also appear to increase from north to south and rural to urban regions in a reasonable way. The cost of nonfood basic needs is greater in urban areas, and the non-food budget share of the relatively poor is substantially higher in the towns. This rural/urban difference in living costs is not captured well by the FEI approach.

By any measure, poverty is high in Mozambique. The CBN poverty lines based on a single national food bundle produce the highest poverty headcounts, while the three sets of FEI poverty lines yield the lowest. Similar observations apply to the depth and severity of poverty. The spatial distribution of poverty that emerges from the results is clearly not robust to the choice of poverty line approach. All of the CBN estimates indicate that the incidence, depth, and severity of poverty are greater in rural than in urban areas.

Geographical targeting of poverty interventions may be less reliable than targeting based on household characteristics.

The national FEI measure reaches the same conclusion, but rural/urban differences in poverty appear to be much larger. Furthermore, as specificity (the number of subgroups) increases, FEI reverses the rankings, indicating significantly higher urban than rural poverty. We also found that geographic guidelines for targeting poverty alleviation are not robust to method, particularly for the FEI lines. Within the CBN family of poverty lines, however, the results are considerably more robust.

Characteristics of the Poor

Poverty profile comparisons of household characteristics appear to be much more robust than geographical poverty comparisons to the choice of poverty line approach. The poor, on average, have larger families, higher dependency ratios, less land, less education, worse health, and often benefit less from public services. This is an important finding, because it implies that all approaches would point to the same proxy means indicators for poverty, and hence that targeting on household characteristics is much more robust than regional targeting.

Assessing the Evidence

The FEI approach does not perform well in the comparisons undertaken in this paper. In contrast, none of the CBN versions applied here generated results that could be dismissed on a priori grounds. Yet, this immediately leads to more questions. Which version of CBN should be used—fixed or multiple bundles? If one decides in favor of multiple bundles, what is the optimal number of subgroups over which the food bundles should be allowed to vary? How robust is a poverty profile based on CBN to choices regarding subgroups? To answer the last question first, we conclude that the characteristics of the poor are robust to choice of method and that CBN poverty profiles are relatively robust to choice of subgroups.

To assess the optimal number of subgroups under CBN, one needs to consider carefully the food bundles. For consistency, it is important that the CBN multiple bundles

represent comparable standards of living and are not contaminated by differences in real income. In all cases the majority of calories are derived from the basic staples, but there are substantial movements in the composition of the bundles. Careful inspection of the food bundles cannot reveal any clear-cut case where the CBN region-specific food bundles are contaminated by income effects. The differences in the composition of the region-specific food bundles, particularly the varying shares of maize and cassava, are entirely compatible with substitution effects arising from differences in relative prices. Therefore, the region-specific CBN approach appears to have the advantage of specificity without suffering from the drawback of inconsistent comparisons.

Conclusions

Poverty lines can be set in different ways, and policymakers should understand how the underlying poverty measures have been constructed before using the derived poverty profiles to formulate poverty reduction policies. This paper, using data from Mozambique, estimates poverty lines and poverty indices using three variants of the FEI and CBN methodologies. It emerges that rural/urban and regional poverty comparisons are not robust to choice of approach. Overall, considerable variation occurs in geographical poverty rankings. Some of this can be explained by the known weaknesses of the FEI method. In contrast, a fairly high degree of robustness was found within the various versions of the CBN method considered. The CBN approach, therefore, seems to generate fairly robust poverty profiles. Moreover, a CBN approach that allows for region-specific food consumption patterns appears warranted because of substitution effects related to the significant spatial variation in relative prices in Mozambique.

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