QUANTITATIVE POVERTY ANALYSIS

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1. INTRODUCTION

Poverty is a complex human phenomenon associated with unacceptably low standard of living. It has multiple dimensions, manifestations and causes (World Bank, 2000). Poverty analysts from a variety of disciplines have been constantly asking questions about this phenomenon, sometimes out of curiosity, but often with the aim of providing information that can be used to overcome it. Quantitative methods help provide answers to particular questions about poverty and, can only provide partial information about it. Needless to say, no single approach to poverty appraisal can capture all the essential aspects of poverty. Choice of methods of poverty analysis is dictated by issues of interest to a researcher and his research skills.

Because of the complexity of the poverty phenomenon, researchers have come to appreciate the need to *specialize* in acquiring skills that are necessary for understanding only certain aspects of poverty, and consequently the need to concentrate their work on areas of poverty appraisal in which they have comparative advantage in skill endowments. As Barrett (2001) has correctly observed, the type of poverty appraisal that has been undertaken over the past decades has been subject-driven, and researcher-directed. This is of course no accident. The economic concept of comparative advantage suggests that there is much efficiency (in advancing knowledge about poverty) to be gained from specializing in certain approaches to poverty appraisal. *Quantitative poverty analysis* is a particular area of poverty research in which investigators with quantitative skills specialize.

In view of tremendous efficiency gains from specialization, it is noteworthy that recent literature has strongly advocated *mixing* of qualitative and quantitative skills in poverty appraisal (Kanbur, 2001). Two types of mixing have been suggested, namely, *sequential* and *simultaneous* mixing. Sequential mixing is consistent with the idea of specialization in poverty appraisal along disciplinary lines because it entails separate applications of quantitative and qualitative skills in an attempt to understand the same or different aspect of poverty. The outcome of sequential mixing of quantitative and qualitative skills is essentially a comparative appraisal of poverty, whereby results from different approaches are compared and synthesized. This would be precisely the outcome of comparing or synthesizing results from specialized poverty research across disciplines.

As already argued, the advantage of specialization is a better understanding of a particular dimension of poverty. The disadvantage of specialization is that it facilitates only a superficial understanding of the overall poverty phenomenon. To a certain extent, simultaneous mixing overcomes this problem by providing different perspectives on the same dimension of poverty or a better perspective on different dimensions. Simultaneous mixing is another way of saying that researchers have *convex* preferences over quantitative and qualitative approaches to poverty appraisal. That is, researchers consider a combination of quantitative and qualitative methods to be more effective than specialized methods in the analysis of poverty. As a positive matter, view is not an accurate description of the practice of poverty analysis. Wherever it is found, simultaneous mixing is often a case of incomplete or imperfect specialization. In practice, the dominant mode of poverty analysis is either quantitative or qualitative. The enormous advantage

of comparative advantage dictates that simultaneous mixing occur only at the extreme ends of the qualitative-quantitative spectrum.

However, there is the question as to whether a practice of poverty appraisal in quantitative and qualitative methods where the two approaches are used in equal proportions should be encouraged by public policy despite its failure to evolve autonomously. In view of the existing disciplinary divide (Kanbur, 2001), created by the necessity to specialize in certain aspects of poverty research, such a policy would be difficult to implement. Its theoretical foundation also appears weak, in view of the gains from specialization.

In what follows, I outline questions or issues that can best be addressed by quantitative or predominantly quantitative methods.

2. QUESTIONS RELATED TO POVERTY MEASUREMENT

Quantitative approaches are best suited to answering questions related to poverty measurement. These are inherently quantitative issues, in the sense that they require to be addressed using numerical information derived from large scale, representative population samples. Moreover, such data are analyzed using statistical techniques, with the interpretation of the results being guided by a discipline-specific perspective, rather than by a broad social science model (see Kanbur, 2001). Although qualitative (non-numerical) data can also be used to supplement the work of poverty measurement, they are not the main focus in this type of poverty analysis. Further, even when such data are collected, they are often converted into numerical data, amenable to statistical analysis.

The key questions related to poverty measurement include the following:

- What is the magnitude of poverty in the population?
- What is the trend of this magnitude over time?
- Who in the population is most vulnerable to poverty?
- Given that the determinants of poverty are known (perhaps through qualitative approaches), to want extent would poverty change if each of the determinants were to be modified, preferably by public policy?
- Who would benefit from particular antipoverty programs, and to what extent?

These and similar questions are best addressed using statistical techniques applied to data derived from probability household sample surveys. The key to answering the above questions quantitatively, lies in the choice of a convenient metric for measuring the standard of living, and in using the same metric to devise a yardstick for determining who is poor and not poor. Economists use income as the preferred metric of standard of living so that a person with a higher income is deemed to enjoy a higher standard of living, ceteris paribus. A cutoff level of income, e.g., one dollar a day, is typically chosen as the *poverty line* to differentiate between the poor and the non-poor, with persons falling below this line being classified as poor.

The setting of the poverty line provides an excellent example of *simultaneous mixing* of qualitative and quantitative methods in poverty analysis, and probably in equal proportions.

Although the poverty line is a *numerical* parameter, calculated using statistical methods, it is *subjectively* chosen. For example, value judgments are used to declare that a standard of living based on *less* than *one* dollar a day is socially unacceptable. The same value judgements can be used to rule that *two* dollars a day constitute the poverty line. However, beyond this, the rest of the work in poverty measurement is inherently quantitative, in the sense that numerical data and statistical techniques are heavily used. To concretize the discussion, I briefly review the main statistical approaches to poverty measurement in relation to specific questions raised above.

Among the various methods of quantifying poverty, the FGT formula (Foster, Greer and Thorbecke, 1984), is the most widely used. The formula has been successful in providing a quantitative description of the spread, the depth and severity of income poverty in populations. The inter-temporal trends in these various measures of poverty indicate in a simple way, the changes in a population's the standard of living over time. The spatial and social profiles of poverty measures show regions and social groups that are most vulnerable to poverty, and thus suggest appropriate targets for antipoverty programs.

In addition to describing poverty, researchers and policy makers are interested in understanding the causes of poverty, and in isolating the main causes. Econometric techniques are appropriate for this purpose. Using these methods, lack of human capital has been identified as the main source of poverty in Kenyan communities (Kimalu et al., 2001). Although qualitative methods can also successfully identify human capital as the main determinant of poverty status of individuals and communities, econometrics has the advantage of being able to show the contribution of improving human capital to poverty reduction. Thus, for example, econometric results can be used to simulate how provision of free education or social health insurance would affect poverty in various regions and social groups, controlling for effects of other poverty determinants.

Policy makers and researchers are also interested in comparing trends in poverty of various social groups, e.g., of rural and urban populations. Dominance methods of poverty analysis are very helpful in providing this information (Sahn and Younger, 2000). Although the quantitative methods discussed here have mainly been applied to analyze income poverty, they have been recently extended to analyze nutrition and health poverty (Sahn, 2003). With well chosen assumptions, quantitative methods can be used to provide valuable information about non-income dimensions of poverty, including those that appear to be inherently qualitative, such as ill-health, malnutrition, and lack of capabilities (powerlessness and voicelessness).

3. CONCLUSION

Quantitative poverty appraisal is one of the many specializations in the field of poverty research. The specialization exists because of the complexity of the poverty phenomenon, as well as the complexity of the methods for its analysis. Whereas in Adam Smith, specialization is driven by the size of the market, its driver here is complexity. Because of the complexity of the poverty phenomenon, researchers must specialize in methods for its analysis, with any simultaneous mixing of the methods occurring only at the margin. No single researcher can fully master all the techniques required to analyze the various dimensions of poverty. As a consequence, poverty

analysis will continue to be subject-driven and researcher-directed. However, since complexity-based specialization may not yield the same efficiency gains as the gains from the market-based specialization, there may be a need for sequential mixing of approaches, an issue that is outside the scope of this note.

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