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THE MEASUREMENT AND ANALYSIS OF POVERTY
UNDER AFRICAN CONDITIONS

Contents

INTRODUCTION

1.   Poverty is probably the most distressing and intractable of all human problems and is the subject of a great deal of scientific and other literature. Most of the technical writers have contributed in varying degrees to the development of methodology for measuring and analysing poverty but there are still some questions of a controversial nature.

2.   Malthus in 1798 was probably one of the people to encourage serious thought about population growth and poverty when he suggested that the human population would increase to a size where constraints relating to food and other resources depressed levels of living to bare survival conditions. Many other relevant factors have become apparent since the time of Malthus but the tendency for population to grow excessively still has to be borne in mind as a fundamental issue in all questions relating to levels of living.

3.   Most of the basic ideas about how to measure poverty emerged during the industrial development of Europe in the nineteenth century and they are still reflected in the social security arrangements of industrialized countries. However these arrangements are not necessarily applicable under the more predominantly agricultural conditions of Africa and it is notable that only since the second world war has thought been given to the measurement and analysis of poverty in developing countries.

4.   With so much already written on poverty it is unlikely that many new fundamental ideas will emerge. The obvious need is for improved data collection and analysis, organized in a reasonably flexible manner in the context of the capabilities likely to be available for this purpose in the majority of African countries.

5.   The purpose of the present paper is therefore to look at the essential require-ments for poverty measurement and analysis in order to assess the extent to which they can be met by countries of the region. The operational vehicle which clearly has to be considered in this respect is the African Household Survey Capability Programme (AHSCP) but other sources of data also need to be taken into account.

POVERTY MEASUREMENT AND DATA COLLECTION

General considerations

6.   Everyone can recognise at least extreme cases of poverty and most people have a fairly clear idea of what is meant by differences in levels of living but there are no agreed definitions. From a purely economic viewpoint any definition of poverty has to be based on an arbitrary cut-off point to which it is difficult to relate the situations of individual households. It also has to be borne in mind that there are non-economic considerations in the way people decide on the existence or otherwise of poverty. For example a poor rural peasant has some advantages over the more affluent townsman in terms of a less restricted environment and more time to pursue social and family activities.

7.   The whole position has been examined carefully by the United Nations Research Institute for Social Development (UNRISD) which concludes that poverty should be regarded as a relative rather than absolute concept.   This means essentially that a variety of factors have to be taken into account in determining poverty and the situation of people or households suffering from it has to be considered within an over-all community context.

8.   A very similar view is adopted in the present paper but with one difference.   It is necessary to acknowledge not only that there is a complexity of factors which lead to poverty but also that these factors have to be analysed in an interrelated manner. Analysis of this kind is one of the essential aims of AHSCP.

9.   In summary, this paper contends that it is difficult to formulate an absolute definition of poverty because it is dependent on a complex array of factors.   For the same reason the paper does not recommend that it would be desirable to organize special surveys for the examination of poverty except in limited areas.   In a situation where the condition has to be examined in a rather broad economic and social context, it is clearly necessary that it should be regarded as one of the important but integral elements in any statistical and analytical programme.

10.   From the foregoing considerations it appears that estimates of the absolute numbers of unduly poor households in particular communities are of limited use because of their arbitrary nature.   What is more necessary is a means of assessing changes in the incidence of poverty and its causal factors.   There is then a basis for deciding remedial action and for monitoring the progress of such action.

11.   Some definite suggestions will be made in the subsection below on data collection but it is first useful to examine briefly the three approaches to poverty measurement which have so far been employed.   This is done in the following paragraphs.

Poverty line

12.   As an illustration of the arbitrary distinction between that part of a community which lives in poverty and the remainder, UNRISD quotes the definition given by Rowntree in 1899 which is the "minimum necessary expenditure for maintenance of merely physical health".   The concept is widely applied but has some serious practical dis- advantages.   It is difficult to establish and cost the basic poverty-line budget. Small variations in the level of the poverty line itself can lead to large differences in the estimate of the poverty group within a population.   Households cannot easily confine themselves to a poverty-line kind of budget; there is very often additional expenditure which places households with income above the poverty line below it, leading to the concept of secondary poverty.   More important for Africa, the concept of the poverty line relates mainly to communities where people have to purchase necessities of life with cash.   It is more difficult to apply in an agricultural situation where consumption of household produce may be more important than monetary transactions.   Perhaps the attraction of the poverty-line approach is that it permits comparison of poverty levels between countries and between parts of individual countries provided a reasonably consistent definition can be applied.

13. It also has uses as a basis for social security policy in the sense that it can help to determine which persons or households are eligible for State assistance. However there are no immediate prospects of application under African conditions and it is not certain that the arrangements have been fully effective in industrialized countries.

14. The poverty line has also even defined as the 20 per cent of households with the lowest incomes. This may be useful for some kinds of study but clearly cannot serve for purposes of comparison or as a measure of change.

Indicators

15. Not very long after its establishment the United Nations became involved in the question of international comparison of levels of living. Some of the earlier results are given in the 1954 report on international definition and measurement of standards and levels of living (E/CN.3/179). The committee which produced the report established the following list of components of levels of living:

    (a) Health, including demographic conditions
    (b) Food and nutrition
    (c) Education, including literacy and skills
    (d) Conditions of work
    (e) Employment situation
    (f) Aggregate consumption and savings
    (g) Transportation
    (h) Housing, including household facilities
    (i) Clothing
    (j) Recreation and entertainment
    (k) Social security
    (l) Human freedoms.

16. For each component a set of indicators was proposed and each indicator related to the whole of the population under consideration. The intention was to establish a basis for intercountry comparisons, but the arrangement could be used for comparison between community groups within a country.

17. The committee did not recommend the use of a single unified index. However it did have to recommend the use of "synthetic" indicators as substitutes for missing data on national income, etc.

18. It was acknowledged by the committee that the list of indicators proposed was rather long. It therefore identified the following items as priorities:

    (a) Basic indicators
        (i) Expectation of life at birth
      (ii) Infant mortality rate
     (iii) National average food supplies in terms of calories at the
             "retail" level compared with estimated calory requirements

(iv) Proportion of children 5-14 years of age attending or enrolled in schools
(v) Percentage of population literate, above some appropriate age total and by sex
(vi) Proportion of economically active population unemployed
(vii) Percentage distribution of economically active population by principal industrial and occupational categories
(viii) "Personal consumption" as a proportion of national income and index of changes therein

(b) Synthetic indicators

(i) Macro-economic items related to national income
(ii) The ratio of the index of change in national income (in constant prices) to the index of change in population

(c) Average expectation of life (at birth and) at various ages.

Other recommendations of the committee were devoted to means of improving data on levels of living, e.g. through surveys.

19. The 1954 report is only one example of many which envisage the use of indicators as a means of determining levels of living. Some others are included in the bibliography in annex II. The point of interest is that although most of the relevant factors were identified, no suggestions were made on how the data could be used in an analytical manner.

20. Since the earlier work outline above there has of course been considerable development in the use of indicators but there are no agreed international recommendations. Also it is notable that in the 1970s the United Nations Statistical Commission moved away from the idea of establishing recommendations on economic indicators in favour of encouraging countries to improve basic data.

21. However per capita GNP (or GDP) has come to be used for the intercountry comparison of levels of living in spite of its disadvantages. There have been attempts to contract unified indexes, of which the physical Quality of Life Index based on expectation of life at age one, infant mortality and literacy is probably the best known. In addition ILO has been proposing that indicators should concentrate more on basic needs, i.e. food, shelter and clothing.

Income/expenditure distribution

22. If it is accepted that poverty has to be considered within an over-all community context, a basic means of classifying the whole community is obviously necessary. The normal classifications are income or expenditure of households, but they are useful only if there is sufficient supporting data for their interpretation. To obtain these data at the household level reasonably comprehensive surveys are of course necessary. The choice between income and expenditure is dealt with below.

Data collection

23. Disregarding possible use of the poverty line as a basis for enumerating the very poor, there are two kinds of data that can be employed for the measurement of poverty. Firstly there are the aggregative indicators of the sort discussed above which can provide intercountry and intercommunity comparisons. They are necessarily of a rather superficial nature with only limited analytical possibilities.

24. Secondly there are the more detailed data obtained from household surveys and these are needed for any proper study of the causes of poverty and progress achieved in its amelioration. The first group of data can of course be derived largely from the second but other sources may also be involved. It follows that it is the second group which is the main interest with respect to data collection.

25. It is assumed in this paper that most African countries will wish to examine poverty on a household rather than individual person basis because household members normally have much the same level of living. From the material given above and an inspection of other literature, the main data requirements can be summarized as follows:

    (a) Community level

        (i) Information on the availability of health, education, transport,
                water and other facilities

    (b) Households and household members

        (i)   Housing and facilities
        (ii)   Income and expenditure (with details according to the usual
                    survey classifications)
        (iii) Demographic characteristics
        (iv)   Economic characteristics and activities
        (v)   Education
        (vi)   Nutrition (mainly physical measurements)
        (vii) Land and other possessions.

In some cases additional explanatory information may be needed on changes in wage rates, the structure of unemployment, agricultural cropping patterns, influence of religious and ethnic characteristics, etc.

26. The point of interest is that all these data can be obtained through the continuing national survey capabilities being developed under AHSCP and that nearly all of them are available from income and expenditure surveys which feature regularly in the national programmes. It is only the more detailed demographic and labour force data that come from separate survey operations. The means of interrelating data from income and expenditure, demographic and labour force surveys will be dealt with in the analysis section of this paper.

27. It must be concluded from all that has been said on the subject that a fairly wide range of data is needed for the examination of poverty and levels of living in general. This was the reason for the earlier reservation in the present paper concerning the UNRISD suggestion that special surveys are needed to examine poverty. Clearly if that

were done there would be a great deal of unnecessary duplication with the national survey programmes already being developed. The only real requirement is to keep the reduction of poverty in view as an important consideration when designing all kinds of surveys likely to yield relevant information. This comment does not of course preclude the possible need for special inquiries in areas where poverty is a major problem. The main plea is that the bulk of national data collection activities should be components of a well co-ordinated programme in order to simplify data collection and maximize analytical possibilities.

28. One question left open in the last subsection was whether to choose income or expenditure for the basic classification of households when examining poverty or levels of living more generally. The question has arisen because some people who have analysed surveys in this area believe that household expenditure data are more relevant to levels of living and are usually more accurate. The basic answer is that the question itself is not relevant because any survey dealing with household expenditure should always include income. If this is not done the principal means of checking the validity of records obtained from households is lost. At the analysis stage it is then possible to use income or expenditure, or both, for the basic classification.

29. A more important consideration is the content of household income and expenditure. In the African situation both must include household consumption of its own produce, which is largely agricultural. This is obviously necessary for a satisfactory classification of households according to levels of living and is consistent with the United Nations definition of total household income.

ANALYSIS OF POVERTY DATA

30. Again it is necessary to refer briefly to the two kinds of data likely to be available: indicators and survey records. The former have evolved because people believe them to be a useful although fragmented means of assessing short-term change. Attempts to consolidate them in the form of unified indexes are so far inconclusive, which suggests that indicators have only a limited role in analysis. This remark of course does not apply to the basic data which the indicators represent. Nor should one decry the usefulness of indicators. They exist because they are useful and they are here to stay.

31. Nevertheless it has to be acknowledged that analysis is likely to be dependent mainly on data derived from surveys and possibly some other sources. In the case of poverty and levels of living three kinds of survey have been identified as relevant: income and expenditure, demography and labour force. The first of these normally includes any necessary data on nutrition at a sub-sample level. It should be noted that some demographic and labour force data are usually available from income and expenditure surveys, so the two specialized inquiries may be needed only for supplementary information.

32. The purposes of poverty analysis have already been discussed briefly above. It seems sensible to concentrate on the causes of the condition and changes in incidence rather than to estimate the absolute size of arbitrarily defined population groups suffering from it. Nevertheless a poverty line can be determined and incorporated as part of the over-all analysis.

33. In planning an analysis perhaps the first point which needs to be borne in mind is that the nature and causes of poverty are likely to vary between countries, between regions within countries and between urban and rural areas. It is therefore necessary for the arrangements described below to be applied in the context of a suitable geographical framework. It should also be noted that the arrangements are discussed on the basis of using data from surveys of national coverage because such surveys are being executed or planned by most countries participating in AHSCP. However the incorporation of results from surveys of more limited coverage is certainly possible as already mentioned.

34. In addition it will be recalled from comments above that the central variable envisaged for poverty analysis is either household income or expenditure. The choice between them is of course dependent largely on the quality of the records but income should probably be regarded as the preferred variable because it enables the analysis to take an overview of all kinds of household transactions. An analysis limited to expenditure always leads to some doubts about relevant transactions that may have been omitted. Experience has shown that household income data can be satisfactory quality provided the survey procedure incorporates frequest checks on the balance of income and expenditure for individual households and regular summaries of the over-all results during the course of the fieldwork which, in Africa, normally covers a complete year. However it must be emphasized again that, irrespective of whether income or expenditure is chosen, household consumption of own produce must be included; otherwise the analysis for rural areas and some parts of the urban community will be meaningless. It is also worth repeating here that, even though income may be regarded as the main variable in poverty analysis, it should never be used alone; other variables likely to be relevant to poverty have to be examined at the same time.

35. There is one other point relating to the quality of income and expenditure records which should be mentioned here. Poverty analysis is necessarily concerned with the lower part of the income range and African surveys have often shown an excess of expenditure over income for the poorest households. There are various explanations which include help from better-off relatives and friends, ad hoc work for which the income is not recorded and the use of community savings/insurance schemes. The problem is mainly relevant to improvement in data collection but it is also necessary to check whether it still exists at the analysis stage. Problems of this kind further emphasize the need for surveys to record both household income and expenditure, and to have the quality control procedures noted above.

36. The analysis itself is fairly straightforward and starts with a set of tables. In each table income is regarded as the dependent variable and it is cross-classified with another variable which may to some extent explain income distribution. The tables have to cover the entire income range because a complete picture is necessary for any meaningful interpretation.

37. At this point the question arises of whether to use total or per capita household income in the tables and how to classify households according to these variables. The first part of the question is probably answered most easily by making a preliminary table showing total income against household size. If it suggests a negative correlation in the lower income range, i.e. poor households are poor because they are big, it will probably be desirable to prepare all tables in terms of both total and per capita income.

With regard to the kind of income classification to be used there are two options: decile or similar groups each containing the same number of households, or precisely stated income classes arranged in a convenient manner. The former have been used in poverty analysis because they are a convenient way of handling data but they lose a great deal of basic information. This paper is therefore in favour of precisely stated income classes.

38. The next question concerns the selection of possibly explanatory variables for use in which some of the reasons for poverty are expected to be found. A further example is provided by the ESCAP-World Bank project on income distribution in Asia (1980). This again was mainly an intercountry comparison but it is useful to look at the variables used because they can easily be adapted to the analysis of household data discussed here:

   (a) Demographic measures

      (i)   Average household size
     (ii)   Age distribution of household heads
    (iii)   Share of women among the poor
     (iv)   Differentials in dependency ratios

   (b) Human capital dimensions

      (i)   Illiteracy and educational attainment
     (ii)   School enrolment ratios

   (c) Economic characteristics

      (i)   Labour force participation rates
     (ii)   Incidence of unemployment
    (iii)   Class of worker of the employed (e.g. self-employed
           or family helpers)
     (iv)   Distribution of the employed by occupation and industry.

39. The Asian analysis produced reasonably positive results except with respect to over-representation of women among the poor. Women are apparently not a significant factor.

40. It is of course for individual countries to decide the factors they wish to investigate as possible causes of poverty. A round-up of relevant items has been attempted by the ECA secretariat and is given in annex I in the form of a list of variables to be investigated at the household level.

41. Should it prove necessary to use results from more than one survey, a means of linking the data has to be found. In the case of surveys carried out on the same sample of households there is no problem and the data can be matched directly at the household level but this is not the usual situation. Another possibility is to match aggregated data at one of the earlier sampling stages if the units are common to the surveys concerned. A third method is to have a common set of core variables in all

surveys which can be used as a means of obtaining indirect linkages. For the investigation of poverty it would of course be desirable to have income as a core variable in the relevant surveys but this is not recommended because the income records would be insufficiently accurate in surveys where income is not a main subject of inquiry.

42. The basic set of tables described above should be sufficient to identify the factors most closely related to level of household income, i.e. to poverty. There are then several ways of extending the investigation. The first is through multivariate analysis to permit more comprehensive study of the causal interrelationships. Another is to incorporate the survey results in the national accounts or in a social accounting matrix so that they can be examined in relation to the over-all economic and social situation. In addition it is useful to look at the results in terms of a Lorenz curve and a Gini index of concentration.

43. With regard to changes in the incidence of poverty over time it has already been suggested that estimates of the absolute numbers of persons or households involved are not likely to be very reliable. Comparisons over time are therefore mainly dependent on an examination of changes in the distribution of households according to income and other relevant variables. A poverty-line measure can be incorporated within this context if necessary. Most countries participating in AHSCP are planning to undertake income and expenditure surveys every four or five years which should be sufficiently frequent for the study of poverty.

44. Tables of the kind discussed in this section of the paper are prepared from the micro-data files which contain the records of individual surveys. The functions of these fiels, interlinking of survey data, etc., are considered in more detail in the paper on survey data analysis (E/CN.14/SM/39).

CONCLUSION

45. This paper is broadly in agreement with the view that it is more important to identify the causes of poverty and to measure changes in its incidence over time than to measure the absolute size of the population group affected. Nevertheless, estimates of the population living below a defined poverty line can be included in the analysis. The necessary data for these purposes can be obtained from the continuing programmes of surveys being developed by countries participating in the African Household Survey Capability Programme (AHSCP). In the light of work already undertaken in various parts of the world, suggestions have been made on how these data should be analysed. Because a fairly broad range of information is involved it is believed that poverty should be examined in the context of over-all socio-economic analysis and should not be treated as an isolated issue. Special surveys may however be needed in areas where poverty is a major problem.

46. The main requirement for the future is that plans for all national survey operations should recognize poverty and its causes as an issue which must be kept continuously under review.

List of selected variables relating to poverty to be investigated

at the household level

I. Income and expenditure

   (a) Household income (cash and non-cash sources)

   (b) Household expenditure

   (c) Household size and composition

II. Housing conditions

   (a) Quality of housing

   (b) Density of occupation

   (c) Availability of conveniences and amenities

III. Basic needs

   (a) Possession of productive assets including land

   (b) Access to education, health care, market, transportation,
       recreation and entertainment

IV. Health and nutrition

   (a) Nutritional intake

   (b) Weight for age, height for age and weight for height for children
       aged 1-4

   (c) Mortality and morbidity

   (d) Incidence of infections and parasitic diseases

V. Education

   (a) Literacy

   (b) Levels of education

   (c) Vocational and technical training

VI. Employment, under-employment and unemployment

   (a) Number of working persons (by age, sex and status)

   (b) Number of unemployed persons

   (c) Number of employed persons by economic activities, occupation,
       employment status and hours worked

   (d) The unemployed by duration of unemployment

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