| | |
|---|---|
| **STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE** | **STATISTICAL OFFICE OF THE EUROPEAN COMMUNITIES (EUROSTAT)** |
| **CONFERENCE OF EUROPEAN STATISTICIANS** | **FOOD AND AGRICULTURAL ORGANISATION (FAO)** |
| **Joint UNECE/EUROSTAT/FAO/OECD Meeting on Food and Agricultural Statistics in Europe** **(Rome, 29 June-1 July 2005)** | **ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD)** |

## INCOME DISTRIBUTION AND POVERTY

Invited paper submitted by the Task Force
on Statistics for Rural Development and Agriculture Household Income*

## I. THE ASSESSMENT OF POVERTY

1.      A major reason for requiring statistics on the income of agricultural households is to explore the extent to which there is a problem that requires government intervention. Particular attention is paid within policy aims to the problems associated with low incomes.

---

      *      This paper is to be included as chapter XI in the Handbook on Rural Household, Livelihood and Well-Being: Statistics on Rural Development and Agriculture Household Income.  The Task Force is comprised of experts from the following national agencies, universities and international organizations: Statistics Canada, Hungarian Central Statistical Office, National Statistical Institute of Italy (ISTAT), Swedish Board of Agriculture, Dept. for Environment, Food and Rural Affairs (United Kingdom), Economic Research Service (United States), Imperial College (United Kingdom), University of Verona (Italy), University of Pescara (Italy), Food and Agriculture Organization of United Nations (FAO), World Bank, Statistical Office of the European Communities (Eurostat), Organization for Economic Co-operation and Development (OECD) and the United Nations Economic Commission for Europe (UNECE).

In less developed countries this may be a lack of ability to meet basic needs (food, shelter etc.). In more developed economies these needs may be met but there will still be disparities between groups that raise concern on grounds of equity – low income households may be regarded as suffering deprivation.

2.      There are a variety of grounds on which society might wish to act because it feels that deprivation exists - social, cultural or educational disadvantage perhaps. What is meant by the term "deprivation" depends on the context (Bradley, Lowe, Wright, 1986)[1] but it is nevertheless a potent concept in justifying policy action. Within the agricultural sector of industrialised countries it will commonly be found that various forms of deprivation go together - an inadequate income will tend to be associated with isolation on a small farm, where the family is locked into a restricted set of social contacts and has only a narrow range of access to the facilities provided for society in general. Nevertheless these additional forms of deprivation are separate from (but may be linked with) what we can describe as economic deprivation - poverty or, put another way, situations where people have an insufficient command over the resources needed for living and are excluded from the socio-economic system.

3.      In order to turn this inexact notion of insufficiency into a measure, which can be used to guide practical policy some standards have to be set for what is deemed sufficient. One way of doing this is to establish a *poverty line.* This has two distinct roles (Ravallion 1998). One is to determine what the minimum level of living is before a person is no longer deemed to be "poor". The other is to make comparisons between families to tell observers what expenditures are needed in each set of circumstances to ensure that the minimum level of living needed to escape poverty is reached. It would be possible to establish a poverty level in terms of a combination of characteristics - for example income plus leisure - so that two people of identical income but one having more leisure than the other might be classified differently. Rather than referring to a poverty 'line' such a situation should use the term 'boundary'. However, it is more usual to simplify the relevant variables to one - that of income. When tackling low incomes in agriculture a monetary poverty line is can be a very useful yardstick against which the circumstances of farm households, families or individuals can be compared.


## II.      WAYS OF MEASURING THE INCIDENCE OF POVERTY AMONG HOUSEHOLDS

4.      Of course, poverty is associated with one end of the income distribution. Distributions are important because an otherwise satisfactory level of average or median income can nevertheless contain cases where incomes are sufficiently low as to constitute a policy problem. Thus when considering poverty among households it is necessary to put this in the more general context of how the spread of incomes can be described. The Canberra Group report (2001), which has been a major foundation of the methodology outlined in this Handbook, is quite reticent in its treatment of how distributions should be described, without a specific section dealing with them as a tool in economic and social analysis. But it is first necessary to set out the basis on which poverty lines might be set. Later we will turn to some of the practical issues in their application.

5.      Poverty lines are by their nature impossible to set without involving value judgements, explicitly or hidden in the assumptions behind what may appear to be objective methodologies.  A variety of approaches to defining a poverty line have been used or proposed.  Two polar positions can be taken - that the poverty line can be set in absolute terms, in which case it would be possible to totally eliminate poverty if every one could be lifted above the poverty line, or that poverty is a relative phenomenon, in which case poverty will never be removed (Hagenaars and van Praag 1985; Hagenaars *et al,* 1994, Ravallion 1998).[2]  At its most extreme, an absolutist view of poverty would be a situation of deprivation of certain basic goods and services necessary for maintaining physical subsistence.  This makes no reference to the well-being of the rest of society.  A poverty line under such an approach would correspond to the income required to allow the acquisition of these basic means.  This was basically the approach of the seminal work on poverty by Rowntree (1901) and Booth (1902) and is particularly suited to the circumstances of less developed countries.  Of course, if income (rather than consumption) is used as the criterion on which the line is drawn, then it becomes important to ensure that income is adequately measured, especially income taken in kind from own-production of food and other domestic requirements.

6.      A less rigid attitude might set a line somewhat above this subsistence-consumption level to reflect the view of society of what is a minimum acceptable income for its members.  Both are absolute figures, though in the latter case the level takes into account more than physical necessities.  As Atkinson (1975)[3] points out "It is misleading to suggest that poverty may be seen in terms of an absolute standard which may be applied to all countries and at all times, independent of the social structure and level of development.  A poverty line is necessarily defined in relation to social conventions and the contemporary living standards of a particular society".  Though a subsistence poverty line may have the appearance of objectivity, the *choice* to define poverty in this way is as subjective as any other based on less clear physical requirements.

7.      The other extreme in poverty line definitions is represented by those which set the line at some percentage of the society's average personal income or at some point in the distribution of incomes- at some percentage of the median income or the lowest decile.  Expressed in such a way, poverty will never be eliminated.  But this too imposes the judgement of the observer on the measure of poverty.  In an attempt to strive for greater objectivity, exercises have been conducted to extract from a representative cross-section of people, using surveys, the assessment of society of where the poverty line lies (Hagenaars and van Praag, 1985).  Different representatives perceive poverty according to their circumstances, though suitable weighting can be employed to achieve poverty levels, which reflect the mix of views in society.   This has been termed a "subjective" view of poverty (Forster 1994)[4], providing a third variation on the absolute and relative approaches.  But to adopt a poverty line derived in this way presupposes that society in general is the best assessor of poverty; this is not self-evident.  Table XI.3.1 summarises the situation.

Table XI.3.1

Three different approaches to defining low income (poverty lines implied)

|  | **Absolute approach** | **Relative approach** | **Subjective approach** |
|---|---|---|---|
| **Method** | - Define an absolute subsistence minimum in terms of basic needs. The aggregate cost constitutes the low income line | - Define low income as a fraction of average or median income (*e.g.* 50% of median) | - Incorporate a minimum income question in household surveys |
| **Examples** | - US Social Security Administration Poverty Index | - International comparative studies often use this method | - Very few regular surveys adopt this approach |
| **Advantages** | - Permit analysts to quantify easily the effects of social programmes | - Allow cross-country comparisons because of its independence of a specific country's definition of basic needs | - Can avoid the problem of the arbitrary choice of basic needs |
| **Difficulties** | - Arbitrary nature of the choice as to what constitute basic needs<br>- Difficulty in cross-country comparisons | - Relationship between low income and poverty is less clear | - Cross-country comparison is extremely difficult |

Source: Förster (1994), pp.7-10 cited in OECD (2001).


8.      The OECD in its work on low incomes in agriculture (OECD 2001)[5] has outlined was of measuring poverty among agricultural households in its Member countries, based on international practice and taking evidence from the Luxembourg Income Study (LIS) database for the mid-1990s to make comparisons of the degree of "low-income" in farm households compared to other households in the different countries. Twenty-one countries provided data, including thirteen of EU-15; Portugal and Greece were unfortunate omissions arguably, low incomes among agricultural households are particularly problematic there. Both "broad" and "narrow" definitions of an agricultural household were applied (in the sense that there was some self-employment agriculture for household income or where it is the main income).[6] The sources of data for this LIS database are principally household (family) budget surveys or panel surveys. Unfortunately such general surveys have well-known deficiencies; they usually have few agricultural cases and the quality of income data is sometimes suspect, including gaps in coverage in components of income that prevent full comparability between farm and other households; for these reasons Eurostat so far declined from using them to generate microeconomic statistics on agricultural households. The improvement of the data situation is, of course, one purpose of assembling this present handbook. Nevertheless the OECD's descriptions of statistical presentations of low incomes are entirely valid and can form template for application in situations where suitable data exist.

<u>Low-income rate (cumulative proportions below percentiles of the median)</u>

9.      The first method of presentation often adopted in international comparisons is to ask what proportion of the population is below specified percentages of the median. This proportion is often called the *low-income rate*.  Though the results must be treated with caution (because of the quality of basic data) some of the main features of the OECD/LIS analysis are worth noting.  If 50 percent of median income of all households was taken as a standard of low income, and if the "broad" definition of an agricultural household was adopted, the incidence of low-incomes was much higher in farm households than in other households in nine countries (Australia, Denmark, France, Hungary, Ireland, Italy, Netherlands, Poland, Spain). The largest low-income figures were recorded in Hungary (33.8%), Australia (25.4%) and Ireland (24.6%). Largest differences between the percentages of farm households and non-farm households in the low income group were recorded in Hungary, Poland, Ireland and Australia. The lowest were recorded in the Czech republic Canada and Finland; in each case the percentage of agricultural households in the low income group was smaller than the percentage of non-agricultural households.  However, if the "narrow" definition was taken, the results were different. In most of the countries except for Hungary, the Netherlands and the UK, the low-income rate was higher than with the "broad" definition.  With this definition, the low-income rate was higher among farm households than among non-farm households in 13 countries.

<u>The low income gap</u>

10.     The cumulative proportions below a given percentiles of the median, i.e. the low-income rate provides useful information on the incidence of low-income but does not capture the intensity, i.e. how far the low-income households fall below a given cut-off line. The average low-income gap (ALG) is commonly used as an indicator of this intensity, which is defined as the difference between the average income of the low-income households and the low-income line, as a percentage of that low-income line:

$$\text{ALG} \;=\; \frac{z - \overline{y}_q}{z}$$

where

z    = low-income threshold

$\overline{y}_q$ = average income of the low-income population

11.     Taking the results as indicative, the OECD analysis found that the low-income gap was bigger in farm households than in non-farm households in all the countries where data were available. That means the intensity of poverty was higher among farm households. Comparisons between the income gaps calculated using the two definitions of an agricultural household found that the "narrow" definition produced a bigger low-income gap in all countries, though the extent of the widening gap varied.

Relative income level by percentile

12.     Low-income rates, presented above, indicated the share of the population below specified percentages of the median. An alternative way to examine a distribution of income is to compare the income of households at selected percentiles with the median income.

13.     For example, in Australia in 1994/95 the median income, adjusted by household size, per household for all households was AS$ 16 708. The equivalent income for farm households at the lower quartile, i.e. 25 per cent up from the bottom, was AS$ 8 282 and expressed as a percentage of the median, was 49.6 per cent.[7] The corresponding figure for non-farm households was 59.3 per cent. These results can be interpreted as follows; the farm household income at its lower quartile (i.e. 25 per cent up from the bottom) was about half of the median income of all households and about 10 per cent below that of non-farm households at the same quartile.

14.     In the OECD/LIS analysis, if the lower quartile of both farm households and non-farm households were compared, less than half of the countries had farm household income below that of non-farm households.  If the "narrow" definition was taken, the number of countries which had inferior farm household incomes at the lower quartile increased from seven to eleven.

Cumulative decile shares - lorenz curve

15.     *Relative income level per percentile* reveals relative income levels of households at certain percentiles compared to the median income. In order to understand the concentration of incomes, it is useful to know cumulative shares of total income.[8] The Lorenz curve is a familiar construction to illustrate graphically the concentration of incomes. It plots cumulative proportions of the population, from the poorest upwards, against the cumulative shares of income that they receive. If all incomes were identical, this would trace a diagonal 45$^o$-line ("line of perfect equality").  In the other extreme case - if the richest unit received all the income - the Lorenz curve would lie along the horizontal axis, and then along the vertical axis at the 100 per cent income share ("line of perfect inequality").

16.     The Lorenz curve allows for an unambiguous comparison of the relative distribution in cases where the curves do not intersect. One distribution is unambiguously more equal than the other if every point on its Lorenz curve lies inside (upper-left) the other (The first has Lorenz superiority to the second.). If two Lorenz curve cross, it is not possible to say which curve represents a more equal distribution of income.

17.     In the OECD/LIS analysis, unambiguous comparisons between farm households and non-farm households were not always possible because curves crossed.  However, where this was not encountered, the pictures emerging from either the "broad" or "narrow" household definitions were mixed; in some countries farm households had Lorenz superiority over non-farm households and in other the situation was reversed.  If the results from broad and narrow definitions were compared, an unambiguous comparison is possible for nine countries,. But here again which was Lorenz-superior varied.

Gini coefficient

18.     A derived summary statistic used to characterise the distribution of incomes is the Gini coefficient which is defined as the area between the Lorenz curve and the 45° line as a ratio to the area of whole triangle. The Gini coefficient is 0 - when all incomes are distributed equally - and 1 (or 100 if expressed in a form more comparable with other indices) - when there is perfect inequality. The Gini coefficient may by calculated from the formula:

$$G = \frac{2}{n^2 \bar{y}} \sum_{i=1}^{n} i \left( y_i - \bar{y} \right)$$

where

n       = total population

$\bar{y}$       = average income

$y_i$       = income of the ith household

19.     In the OECD/LIS analysis a mixed pattern emerged, both between countries and when using the broad and narrow definitions.  In some countries the Gini coefficient was lower in farm households than in non-farm households, i.e. incomes were distributed more equally in farm households.  For others, incomes were distributed less equally in farm households compared to non-farm households. If the results from the broad and the narrow definitions were compared, the Gini coefficient using the narrow definition was the higher in most countries, suggesting that distribution of farming-dependent households is usually less equal than when all households having some income from agriculture are included.  (See Appendix D of Ashok *et al.* (2002) for making adjustments to Gini coefficient calculations to allow for negative incomes). [9]

Sen index

20.     Finally, as an alternative summary measure, the Sen index can be considered.  This was, developed by Sen to combine the three indicators, already presented in the previous sections, into a single indicator of poverty for a given poverty line:

i)       *Low-income rate - Cumulative proportions below percentiles of median*: a proportion of the population is below specified percentages of the median;

ii)      *The average low-income gap*: the difference between the average income of the low-income households and the low-income line (specified percentages of the median), as a percentage of that low income line; and

iii)     *Gini coefficient*: area between the Lorenz curve and the 45° line as a ratio of the whole triangle that represents a degree of inequality in the distribution of income.

21.     The measure consists of the head-count ratio multiplied by the income-gap ratio augmented by the Gini coefficient of the poor weighted by the ratio of the mean income of the poor to the poverty-line income level, and multiplied by 100 to be in a form comparable with other indicators. The Sen index is thus defined in the following way (Förster (1994), p.21):

$$S = LIR\left[ALG + \frac{\overline{y_q}}{z}G_p\right]$$

$$= LIR\left[ALG + (1 - ALG)G_p\right]$$

where

LIR     = low-income rate (head-count ratio)

ALG     = average low-income gap

$\overline{y_q}$     = average income of the low-income population

z       = poverty line

$G_p$     = Gini coefficient of income inequality among the low-income population.

22.     In short, the Sen index can be interpreted as a weighted sum of poverty gaps of the poor. The values for the Sen index lie in the closed interval, with S = 0 if everyone has an income above the poverty line, and S = 1 (or 100) if everyone has zero income. The Sen index is a useful measure for cross-country comparisons of poverty, because it combines the incidence, the intensity and the distribution of low incomes in a single indicator. [10]

23.     According to the OECD/LIS analysis, if the Sen indices of farm households ("broad" definition) and non-farm households were compared (<50% of median), the Sen index was generally higher for farm households, i.e. degree of poverty was greater.  If the "narrow" definition was taken, the Sen index was higher in farm households in all the countries where the data were available.  For most of the countries, the Sen index using the broad definition was lower than that using the narrow definition, i.e. the degree of poverty among farm households was higher when using the narrow definition of a farm household.

Warning in the interpretation of coefficients

24.     Though the Canberra Group (2001) report does not offer much detailed advice on the use of ways of measuring poverty or inequality, it makes some valuable comments on the care with which changes in coefficients over time (such as the Gini coefficient) have to be treated. The problems that may arise when attempting to identify trends include:

- *Two point trends*. Comparable household income microdata may only be available for two periods. Having two periods permits the user to estimate the change between them, but it may convey a misleading impression of the underlying trend. There is considerable danger in taking a very small number of years (two as a minimum) to extrapolate long-run trends.

- *Business cycle effects*. Because of cyclical variations in inequality, trends based on an arbitrary time period (e.g., 1980 to 1995) might produce misleading comparisons if its fit with the business cycle differs between nations. If trends in inequality is pro-cyclical - as is the case in the United States - peak (year) to trough (year) trend estimates are biased downwards; trough to peak trends are biased upwards. The opposite holds if inequality trends are counter-cyclical. Comparing peak-to-peak or trough-to-trough provides the least biased estimates and this requires a lengthy time series of estimates.

- *Mixing datasets and definitions*. The only 'time series' available may have been constructed using several income definitions and/or several datasets over time. In general, mixing cursorily different datasets to form a single trend is not recommended as the trend will reflect *both* the "real" inequality change *and* differences across datasets.

## III.   POVERTY LINES AND INEQUALITY MEASURES IN PRACTICE IN AGRICULTURE

25.    All poverty lines are arbitrary. The choice of method of their determination depends essentially on the problem in hand and the dominant social values.  The absolutist approach is now less in favour because of rising general levels of consumption and changed public perceptions of poverty.  Bare physical subsistence criteria have been replaced by ones relating to the ability to participate acceptably in the social system (Van Slooten and Coverdale, 1977).[11]  Another set of value judgements is involved when equivalence scales are used to apply poverty lines to families of different sizes and compositions.  If the marginal needs of additional household members are given a low rating, then poverty among elderly single-person households is emphasised more strongly and family poverty is emphasised less.  On the other hand, a high rating will make poverty appear more "rural" and, in the European context, more "southern".  Ultimately the setting of a poverty line is not an economic decision but a political one (Madden, 1974).[12]

26.    For practical purposes many countries utilise a poverty line in their general welfare policies, though it may not be labelled bluntly as such. Its practical implementation may involve measuring the cost of some single parameter, such as the necessary family expenditure on food, and extrapolating from this to the total income requirement to cover all purposes at the poverty level.  The US has a poverty line developed from the USDA's Low Cost Food Plan, the poverty line income being three times this on the grounds that average food expenditure comprised about one third of the typical family's budget (the Orshansky index[13]). This was clearly inappropriate for farm families which produced more of their own food than the typical US family, so the poverty line for farm families was set initially at

60 per cent of the standard line (Bryant, Bawden and Saupe, 1981)[14]. Criticism that, while food costs of farmers were lower, this did not necessarily apply to the other components in family budgets, resulted in the gradual narrowing of the farm/non-farm poverty lines to 85 per cent in 1969 and its total elimination in 1981 (which remain the current situation)(see Fisher 1992, 1997)[15]. In Australia the 1973 Henderson Poverty Enquiry (Vincent 1976[16]) used a farmer poverty line 20 per cent below that for all families. In Canada the similar "low income cut-off" is defined differently for rural and non-rural households (OECD 1995).[17]

27.     The danger of using a too-narrow income base when assessing the extent of poverty, especially rural poverty, is illustrated by the impact on the numbers of US rural families classed as poor by widening the concept of income from annual money income (used in US official statistics) to include unrealised capital gains and the value of non-market services provided by owner-occupied housing, home-grown food and do-it-yourself activities, all of which are probably more important for farm households than for non-farm ones and especially for poor ones (Gardner 1975).[18] The "full income" approach attempted to estimate the purchasing power available for consumption and saving in a normal year. In the absence of reliable data by which piecemeal corrections could be made to income data, Gardner used an intricate method based on rates of return on the factors (land, capital and human) used on farms. Because of this, substantial errors were probably involved, but the methodology gives a first approximation of the importance of taking a wider income view. In 1969, on conventional income measurement 20 per cent of rural farm families were below the poverty line; taking a full-income approach reduced this to the range 5 to 14 per cent, dependent on assumptions. A reduction of some 7 to 8 per cent was attributable to a more equal distribution of farm incomes and about 5 per cent to a higher average income.

28.     Poverty lines are easier to use where incomes are stable. The random variation in agricultural incomes from year to year, principally weather-related, means that in some years a farm family could find itself below the line and in others above it. Classification on a single year's income, as is common in income distribution statistics, would be foolish. Evidence from Australia, Denmark and Germany (see Chapter IX.5) suggests that a distinction should be drawn between the core of farm households that are in a persistent low income situation and those who suffer temporary low incomes. While the former are likely to constitute a welfare problem requiring intervention with public funds, the latter are not. How far low incomes have to fall and for how long before government action is justified is, of course, a matter of political judgement.

29.     Despite methodological difficulties, one might have supposed that the importance of low incomes to agricultural policy would have engendered a substantial effort by official statisticians to assess the number of farm families who fall below poverty lines. This is not the case. Only in the US are figures for farmers who are in poverty are published regularly, and even there these do not seem to have been of major importance in shaping agricultural policy. Other countries have occasional studies or pieces of research, though these are not numerous. The Australian use of a poverty line for farm families, referred to above, was part of a special investigation that has not been repeated. The OECD study of low incomes in agriculture (OECD 2001) mentions only Belgium, Canada, Czech Republic, Ireland, New Zealand and Turkey as having national studies that have considered the distribution of incomes (household or individual), though poverty lines do not often form part of the

methodology. In most of the EU Member States the information by which such an exercise could be carried out is either not co-ordinated or simply not collected. One of the exceptions is Ireland where there are not only periodic studies of income distributions for farmers based on the household budget survey (which links with the National Farms Survey to improve data quality) but also special welfare payments for landholders whose incomes fall below specified thresholds (the so-called farmers' dole), for which some 20 to 25 per cent of holders seemed to qualify in the 1980s.

30.     In the absence of basic data the matter of how best to calculate and use the poverty line and measures of inequality that may be of policy interest shrink to irrelevance. So too do the more modest ways outlined by the Canberra Group report (graphical presentations, medians, quantiles and Gini coefficients). Nevertheless, it is to be hoped that developments in such directions will be possible once data sources are in a more satisfactory state.

31.     This Handbook recommends the calculation of the basic statistical characteristics of the distribution of incomes of agricultural households, including medians and quartiles, and measures of inequality and of poverty based on them.

32.     The use of poverty lines is encouraged, with comparisons drawn over time, geographically and between agricultural households (variously defined) and other socio-professional group, suitable attention being given to hazards in these comparisons. At present no particular methodology is preferred, though accounts of the method used should be readily available.

**NOTES**


1       Bradley, T., Lowe, P. and Wright, S. (1986), 'Rural Deprivation and the Welfare Transition.' in Lowe, P., Bradley, T. and Wright, S. (1987*), Deprivation and Welfare in Rural Areas*, Geobooks, Norwich.

2       Hagenaars, A. J. M. and Van Praag, B. M. S. (1985), 'A Synthesis of Poverty Line Definitions', Rev. of Income and Wealth, 31(2), 139-54.
Hagenaars, A. J. M., de Vos, K. and Zaidi, M. A. (1994), Poverty Statistics in the Late 1980s: Research based on micro-data, Theme 3 Series C, Eurostat, Luxembourg.
Ravallion, M. (1998) Poverty Lines in Theory and Practice. Living Standards Measurement Study Working Paper No. 133.  The World Bank, Washington.

3       Atkinson, A. B. (1975), The Economics of Inequality, Oxford University Press, Oxford.
Atkinson, A. B. (ed)(1980), Wealth, Income and Inequality, Oxford University Press, Oxford.

4       Förster. M. F. (1994) Measurement of low incomes and poverty in a perspective of international comparisons.  OECD Labour Market and Social Policy Occasional Paper No. 14. Organisation for Economic Cooperation and Development, Paris.

5       OECD (2001) Low incomes in agriculture in OECD countries.
AGR/CA/APM(2001)19/FINAL.  Organisation for Economic Cooperation and Development, Paris.

6       For the purpose of household classification, n the broad definition, a farm household was "a household whose farm self-employment income is not zero". The narrow definition was "a household whose farm self-employment income is more than 50% of total household income". For the purpose of income measurement at the household level, disposable income was used, adjusted for household size (equivalence elasticity = 0.55) (see Förster.1994). The low-income threshold was 50 per cent of the median (disposable) income of all households.

7       This figure represents the upper-bound value of the lower quartile.

8       When drawing Lorenz curves "bottom coding" may be necessary in order to avoid bias in the Lorenz curve.  If the adjusted disposable income of a household is negative, its income is adjusted to zero, and if the income is lower than 10 per cent of the upper bound value of the first decile, it is adjusted to that value (10 per cent of the upper bound value of the first decile).    For example, if the upper bound value of the first decile in a country (adjusted disposable income basis) is $2 000, all the adjusted disposable incomes lower than $200 (10% of $2000) may be adjusted to $200. (see Atkinson, A. B., Rainwater, L. and Smeeding, T. M. (1995) 'Income Distribution in OECD Countries: Evidence frotm eh Luxembourg Income Study', *Income Distribution in OECD Countries*. OECD Social Policy Studies No. 18, Organisation for Economic Co-operation and Development, Paris.  The same adjustment is done for the Gini coefficients in the next section.

9       Ashok K. Mishra, Hisham S. El-Osta, Mitchell J. Morehart, James D. Johnson, and Jeffrey W. Hopkins (2002)  *Income,Wealth, and the Economic Well-Being of Farm Households.*  Agricultural Economic Report No. 812.  Farm Sector Performance and Well-Being Branch, Resource Economics Division, Economic Research Service, U.S. Department of Agriculture.

10       Unfortunately because of a problem of sample size, a Sen index could not be calculated for several countries.

11.      Van Slootan R., and Coverdale, A. G. (1977), 'The Characteristics of Low Income Households', Economic Trends, 8, 26-39.

12       Madden, J.P. (1975), 'Poverty measures as indicators of social welfare', in Wilber, G.L (ed) Poverty: new perspectives., University of Kentucky Press, Lexington.

13       Orshansky, M. (1963) 'Children of the Poor", Social Security Bulletin, 26: 3-29.

14       Bryant, W. K., Bawden, D. L. and Saupe, W. E. (1981), 'The Economics of Rural Poverty - a Review of the Post-World War II United States and Canadian Literature', in Martin, L. (1981), A Survey of Agricultural Economics Literature  - Volume 3. Economics of Welfare, Rural Development, and Natural Resources in Agriculture, 1940s to 1970s, University of Minnesota Press, Minneapolis.

15       Fisher, G. M (1997) The Development and History of the U.S. Poverty Thresholds – A Brief Overview.  GSS/SSS Newsletter [Newsletter of the Government Statistics Section and the Social Statistics Section of the American Statistical Association], Winter 1997, pp6-7. Washington.  Also Fisher. G. M. (1997) Poverty Lines and Measures of Income Inadequacy in the United States Since 1870: Collecting and Using a Little-Kohn Body of Historical Material. Paper to the 22nd Meeting of the Social Science History Association, Washington, D.C., Also Fisher, G. M. (1992) 'The Development and History of the Poverty Thresholds', Social Security Bulletin, Vol. 55, No. 4, pp 3-14.

16       Vincent, D.P. (1976), 'Economic Aspects of Farm Poverty', *Australian J. agric. Econ*., 20(2), 103-118.

17       OECD (1995), A Review of Household Income in OECD Countries: Notes by Country, (OECD/GD/(95)97), Background paper to Adjustment in OECD Agriculture: Issues and Policy Responses, Organisation for Economic Co-operation and Development, Paris.

18       Gardner, B. L. (1975), A Full Income Approach to the Measurement of Rural Poverty, Economics Research Report No. 34, , Department of Economics and Business, North Carolina State University, Raleigh.

---