



Population Ethics, Social Choice Theory, and Two problems in the Measurement of Economic Poverty

By/Par | **Sreenivasan Subramanian* & Aparajay****
*ICSSR National Fellow, Madras Institute of Development Studies
ssubramaniecon@gmail.com
** Madras Institute of Development Studies, Madras University;
aparajay@gmail.com

ABSTRACT

The headcount ratio and the aggregate headcount are alternative headcount measures of money-metric poverty, of which the first is by far and away the more widely employed index in the poverty measurement literature. The two indices can present conflicting judgements on poverty in both cross-section and time-series comparisons involving variable populations. The headcount ratio, it turns out, can also violate an intuitively appealing 'vector dominance' requirement in poverty comparisons. The present essay traces some of these difficulties to issues in population ethics and principles of social choice. The simple point of the essay is that apparently innocuous and widely observed conventions in the measurement of poverty are actually compatible with problems of both logical coherence and normative appeal.

Keywords: population ethics, Constituency Principle, Focus Axiom, social choice theory, Pareto Principle, Axioms of Subgroup Unanimity, aggregate headcount, headcount ratio

RÉSUMÉ

Les ratios par tête et total sont des mesures monétaires alternatives de la pauvreté, dont le premier est de loin l'indice le plus largement utilisé dans la littérature sur la mesure de la pauvreté. Les deux indices, impliquant des variables de populations, peuvent présenter des jugements contradictoires sur la pauvreté à la fois en coupe transversale et en comparaisons chronologiques. Le taux de pauvreté peut également constituer une violation d'une exigence intuitivement attrayante de « vecteur dominance » dans les comparaisons de la pauvreté. Le présent essai retrace certaines de ces difficultés relatives aux questions d'éthique liées à la population et aux principes de choix social. Le point essentiel de l'essai est que les conventions apparemment inoffensives et largement observées dans la mesure de la pauvreté sont en fait compatibles avec des problèmes de cohérence à la fois logique et normative.

Mots clés : Éthique des populations, Principe de circonscription, Axiome de concentration, Théorie du choix social, principe de Pareto, axiome d'unanimité de sous-groupe

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INTRODUCTION

Four strands of analytical enquiry which stand at the intersection of economics and philosophy are the following:

(i) John Broome's (1996) '*Constituency Principle*', which was advanced as a principle that ought to guide the ethical comparison of alternative histories of the world. Broome proposed the principle as a part of a systematic effort at formally examining some of the problems in population ethics that were thrown up by Derek Parfit's (1984) explorations of the subject in his book *Reasons and Persons*;

(ii) Kenneth Arrow's (1963) formulation of a problem in preference aggregation that has since come to be known as the General Possibility Theorem. Of particular salience to the concerns of this paper is the principle of social choice known as the *Pareto Principle*.

(iii) The relative claims of the *numbers* and the *proportions* of people in poverty as constituting the appropriate headcount in a reckoning of the magnitude of economic (money-metric) poverty in a society. Aspects of this problem (or related ones) have been investigated by, among others, Eduardo Arriaga (1970), S. Subramanian (2002, 2005, 2012), Julia Paxton (2003), Satya Chakravarty, Ravi Kanbur and Diganta Mukherjee (2006), Nicole Hassoun and S. Subramanian (2012), and N. Hassoun (2014), and

(iv) The possibility that the headcount ratio of poverty could display trends in the parts of the whole which are negated by the trend in the whole. This problem could be seen to pertain to the larger issue of sub-group aggregation (or subgroup decomposition) of poverty. The theme of intra- and inter-sectoral decomposition has been explored by Huppi and Ravallion (1991); and the problem is directly addressed in Elayaraja and Aparajay (2014).

On the face of it, there appears to be no reason why the fields of enquiry outlined above should bear any relation to one another. Yet, and as this paper demonstrates, aspects of these seemingly disparate lines of investigation actually converge on certain problems in social indicators measurement. In what follows, we make an effort to elucidate the links between issues (i) and (iii) mentioned in the listing above, and likewise the links between issues (ii) and (iv). It turns out that the Constituency Principle in population ethics and the Pareto Principle in social choice theory do have implications for certain identifiable problems in the measurement of economic poverty.

1. SUGGESTIVE EMPIRICAL EXAMPLES FROM THE MEASUREMENT OF POVERTY

1.1 The Aggregate Headcount and the Headcount Ratio: Contradictory Behaviours

The headcount ratio of poverty is the proportion of a population in poverty (typically, the proportion below a threshold level of income identified as the 'poverty line'), while the aggregate headcount is the absolute numbers of the population in poverty. While both headcount measures have been employed in the literature, it is the ratio rather than the aggregate which has been overwhelmingly popular in conceptual and applied work. Of interest to the concerns of this paper is the fact that the two headcount measures can issue

contradictory messages when we are engaged in variable population poverty comparisons. This can happen with both cross-section and time-series comparisons. Tables 1 and 2 furnish examples of this phenomenon, and are taken from Subramanian (2005) wherein the problem is examined with much greater directness. Table 1 suggests that the poverty rankings of three States of the Indian Union in 1987-88 are wholly different for the aggregate headcount and the headcount ratio. Table 2 suggests that if we were to rank poverty in the State of West Bengal over the years 1973-74, 1977-78 and 1983-84, the ranking according to the headcount ratio would precisely invert the ranking according to the aggregate headcount. We shall revisit this issue in more abstract terms in Section 2.

Table 1: A Cross-Section Example from Indian Data on Contradictory Rankings of Poverty by the Aggregate Headcount and the Headcount Ratio (Orissa, West Bengal, Tamil Nadu: 1987-88)

State	Aggregate Headcount (in millions) A	Headcount Ratio H	Ranking in descending order according to A	Ranking in descending order according to H
Orissa	17.49	0.579	3	1
West Bengal	21.05	0.335	2	3
Tamil Nadu	21.92	0.407	1	2

Source: This table is based on Table 1 of Subramanian (2005), in which data on A and H are from the *Report of the Expert Group on Estimation of Proportion and Number of the Poor*, Planning Commission (Government of India), 1993.

Table 2: A Time-Series Example from Indian Data on Contradictory Rankings of Poverty by the Aggregate Headcount and the Headcount Ratio (West Bengal, India: 1973-74, 1977-78, 1983)

Year	Aggregate Headcount (in millions) A	Headcount Ratio H	Ranking in descending order according to A	Ranking in descending order according to H
1973-74	25.69	0.545	3	1
1977-78	26.69	0.520	2	2
1983	27.78	0.479	1	3

Source: This table is based on Table 4 of Subramanian (2005), in which data on A and H are from the *Report of the Expert Group on Estimation of Proportion and Number of the Poor*, Planning Commission (Government of India), 1993.

1.2 Anomalous Behaviour of the Headcount Ratio

The headcount ratio, as noted earlier, is one of the most elementary and widely-used measures of poverty – and, indeed, of various other social indicators of achievement (or deprivation), such as (il)literacy, (un)employment, urbanization, and so on. It is just the proportion of a population experiencing the particular social outcome whose magnitude we are interested in measuring.

Suppose we were to partition a population into a set of mutually exclusive and completely exhaustive subgroups (on the basis, say, of gender or age or caste or race). On the face of it, it seems reasonable to require that, given the poverty (or unemployment, etc.) levels of all other subgroups, if the poverty (or unemployment, etc.) level of any one subgroup increases, then so should the level of aggregate poverty (or unemployment, etc.). It would be reasonable, *a fortiori*, to require that if the poverty levels of *all* the subgroups should increase, then this ought to be reflected in an increase in the aggregate level of poverty. The ‘anomalous’ behavior of the headcount ratio, referred to in the subsection heading, is that the ratio does not always satisfy the two requirements just described. An empirical example from Indian data on headcount rates of work participation (see also Elayaraja and Aparajay, 2014), summarized in Tables 3 and 4, verifies this proposition.

Table 3: Headcount Ratios of Work Participation Among Agricultural Main Workers by Sector of Origin: India 2001 and 2011

Year	2001	2011	Direction of Change
Rural Headcount Ratio	71	71	No Change
Urban Headcount Ratio	6	7	Increase
Aggregate Headcount Ratio	53	50	Decline

Source: Calculated from *Primary Census Abstract Table, Census of India (2001 and 2011)*.

Table 4: Headcount Ratios of Work Participation Among Male Agricultural Main Workers by Sector of Origin: India 2001 and 2011

Year	2001	2011	Direction of Change
Rural Headcount Ratio	68	69	Increase
Urban Headcount Ratio	5	6	Increase
Aggregate Headcount Ratio	50	47	Decline

Source: Calculated from *Primary Census Abstract Table, Census of India (2001 and 2011)*.

For a partitioning of the population into two subgroups (constituted, respectively, by the rural and the urban sectors), Tables 3 and 4 provide information on subgroup and aggregate headcount ratios of work participation in India (for, respectively, agricultural and male agricultural main workers) in the years 2001 and 2011 (The work participation rates are presented as the nearest integer approximations). Table 3 indicates that though the headcount ratio for the urban sector rises in 2011 vis-à-vis 2001, with the headcount ratio for the rural

sector remaining unchanged over this period, the aggregate headcount ratio *declines* from 2001 to 2011. Table 4 indicates that despite an increase in *both* subgroups' headcount ratios from 2001 to 2011, the aggregate headcount ratio actually declines over this period.

This 'anomalous behaviour', on some inspection, stands explained in terms of over-time changes in the population weights of the subgroups. Huppi and Ravallion (1991) clearly underline the nature of the problem when they advance a procedure for the decomposition of a change in the value of a poverty index into a change attributable inherently to changes in the values of the subgroup indices, and a change attributable to changes in the subgroup population shares. Why the headcount ratio behaves as it does is therefore amenable, on some reflection, to a fairly easy explanation; but the fact that anomalous behavior can be easily explained does not, for that reason, make that behavior non-anomalous.

The contradictory and anomalous behaviours presented in the preceding discussion are sought to be examined further, in what follows, in terms of some axiomatic principles underlying the phenomena under review.

2. POPULATION ETHICS, THE CONSTITUENCY PRINCIPLE, AND POVERTY MEASUREMENT

Derek Parfit (1984, p.381) addressed the 'awesome question': 'how many people should there ever be?' This question is related to the one, raised by Jan Narveson (1967), among others, of the moral basis for justifying the creation of an additional life. The ability to answer these questions in population ethics may depend on the ability to accurately identify *whose* interests and preferences must be consulted in arriving at an answer. John Broome (1996) suggests that the constituency of individuals that must be consulted in addressing these questions is the constituency of individuals who exist in all of the histories of the world under comparison. In particular, the relevant constituency must exclude people who are no longer alive or who are yet to be born in the histories being evaluated – extinct and potential people, in short. This leads to a general principle underlying the welfare comparison of alternative states of the world, which Broome calls the *Constituency Principle*. The principle, stated loosely and in a general way, requires that in judging the relative 'goodness' of any two alternative states of the world, the judgement must depend only on the views of an identified relevant constituency whose distinguishing hallmark is that it is members of this constituency alone that have a legitimate and justifiable interest in the outcomes of the two states of the world under comparison.

Interestingly, there exists a specific application of the Constituency Principle in the poverty measurement literature. This is constituted by what Amartya Sen (1981) called the '*Focus Axiom*'. The Focus Axiom reflects the view, as Sen (1981, p.186) puts it, that '...the poverty measure is a characteristic of the poor, and not of the general poverty of the nation'. Arising from this, Sen postulated, in his Focus Axiom, that increases in the non-poor incomes of a society ought not to make any difference to the extent of measured poverty – since it is the poor, and only the poor, who form the constituency that must be consulted in the poverty comparisons of alternative states of the world.

Without enquiring into the substantive merits of the axiom, one may yet ask if those who subscribe to the Income Focus Axiom are not also obliged to defer to what one may call a

Population Focus Axiom (Hassoun and Subramanian, 2012). The Population Focus Axiom requires that, other things equal, additions to the non-poor *population* ought not to make any difference to the extent of measured poverty. The moral reasoning underlying the Population Focus Axiom is exactly the same as that underlying the Income Focus Axiom – namely, that the only relevant constituency that must be consulted in poverty comparisons of alternative states of the world is the constituency of the *poor* – entailing, therefore, that the magnitude of poverty should be invariant with respect to increases in non-poor incomes *and* non-poor populations alike. Subscription to the Income Focus Axiom would therefore appear to warrant subscription, in the interests of consistency, to the Population Focus Axiom as well – or, in general, to what one may call a *Comprehensive Focus Axiom* (Subramanian, 2012) which requires that, other things equal, if two societies are identical with respect to the distribution of poor incomes, then they must be judged to have the same extent of poverty,

An interesting but little remarked fact is that both the Income Focus Axiom and the headcount ratio have been widely accepted as unexceptionable elements of the economics literature on poverty measurement. Yet, if Income Focus entails deferral also to Population Focus, then the headcount ratio cannot really be seen as an admissible measure of poverty. For note that additions to the non-poor population, other things equal, will cause the headcount ratio of poverty to decline, which clearly falls foul of the Population Focus Axiom. The aggregate headcount, in contrast, always respects the Comprehensive Focus Axiom.

Of further interest is the fact that coalitional decisiveness as an ingredient in the normative aspect of collective decision-making is very much a feature of the principles informing social choice theory. In what follows, we briefly review one such principle of social choice – the Pareto Principle – and indicate how the headcount ratio could violate an analogous principle that could be formulated within the context of poverty comparisons.

3. THE PARETO PRINCIPLE IN SOCIAL CHOICE THEORY AND POVERTY MEASUREMENT

3.1 The Pareto Principle and Analogous Sub-Group Unanimity Principles for Poverty Measurement

Social choice theory, which is concerned with the aggregation of individual preferences over alternative states of the world into a collective preference, offers at least one example of a coalition of individuals to whom it seems natural to accord decisiveness in the collective ranking of social states. The example is constituted by the *Pareto Principle*, due to Vilfredo Pareto, and formulated in social choice-theoretic terms by Kenneth Arrow (1963). The Pareto Principle simply accords decisiveness in social choice over every pair of alternatives to the grand coalition of all individuals constituting society: it requires respect for unanimity, namely that for any pair of social states (x,y) , if every person in society prefers x to y , then so should society. This is what one may call the *Weak Pareto Principle* (Sen, 1970). The *Strong Pareto Principle* requires that for any pair of social states x and y , if at least one person strongly prefers x to y with the rest of society weakly preferring x to y , society should strongly prefer x to y . The Weak and Strong Pareto Principles can be employed as models for

what one may call the *Weak and Strong Unanimity of Subgroup Poverty Principles* in the measurement of poverty. To see what is involved, some investment in notation is helpful.

An income distribution is a vector $\mathbf{x} = (x_1, \dots, x_i, \dots, x_n)$, where $x_i (\geq 0)$ is the income of person i in a community of n individuals. \mathcal{N} is the set of positive integers, and \mathcal{R} the set of positive real numbers. For every $n \in \mathcal{N}$, \mathbf{X}_n is the set of n -dimensional vectors, so that the set $\mathbf{X} \equiv \cup_n \mathbf{X}_n$ is the set of all conceivable income distributions. The *poverty line* z is a positive level of income such that all persons with incomes less than z are certified to be poor. For every $\mathbf{x} \in \mathbf{X}$, we shall let $q(\mathbf{x})$ stand for the number of poor people in \mathbf{x} , and $n(\mathbf{x})$ for the size of the total population in \mathbf{x} . Suppose the population is partitioned into K ($1 \leq K \leq n$) mutually exclusive and completely exhaustive subgroups. *In everything that follows, we shall take both z and K to be given and fixed.* We shall let \mathbf{x}_g stand for the income vector of subgroup g ($g = 1, \dots, K$). Any income vector \mathbf{x} can also be written as $\mathbf{x} = (\mathbf{x}_1, \dots, \mathbf{x}_g, \dots, \mathbf{x}_K)$. Given z and K , a poverty measure can be written as a mapping $P: \mathbf{X} \rightarrow \mathcal{R}$ such that, for every $\mathbf{x} \in \mathbf{X}$, P specifies a real number which is supposed to signify the extent of poverty in the distribution \mathbf{x} . Two elementary headcount indices are the *Aggregate Headcount* A and the *Headcount Ratio* H , given, for all $\mathbf{x} \in \mathbf{X}$, by, respectively:

$$A(\mathbf{x}) \equiv q(\mathbf{x}); \text{ and}$$

$$H(\mathbf{x}) \equiv q(\mathbf{x}) / n(\mathbf{x}).$$

We can now present a couple of ‘subgroup unanimity’ axioms for poverty comparisons which are analogous to the Weak and Strong Pareto Principles in social choice theory (we reiterate that, in everything that follows, z and K are taken to be given and fixed, and we assume that $K \geq 2$):

Weak Unanimity of Subgroup Poverty Axiom (Axiom U). For all $\mathbf{x} = (\mathbf{x}_1, \dots, \mathbf{x}_g, \dots, \mathbf{x}_K), \mathbf{y} = (\mathbf{y}_1, \dots, \mathbf{y}_g, \dots, \mathbf{y}_K) \in \mathbf{X}$

if

$$P(\mathbf{x}_g) > P(\mathbf{y}_g) \forall g \in \{1, \dots, K\}$$

then

$$P(\mathbf{x}) > P(\mathbf{y}).$$

Strong Unanimity of Subgroup Poverty Axiom (Axiom D). For all

$$\mathbf{x} = (\mathbf{x}_1, \dots, \mathbf{x}_g, \dots, \mathbf{x}_K), \mathbf{y} = (\mathbf{y}_1, \dots, \mathbf{y}_g, \dots, \mathbf{y}_K) \in \mathbf{X}$$

if

$$P(\mathbf{x}_j) > P(\mathbf{y}_j)$$

for some $j \in \{1, \dots, K\}$ and

$$P(\mathbf{x}_g) \geq P(\mathbf{y}_g) \forall g \neq j$$

$$\text{then } P(\mathbf{x}) > P(\mathbf{y}).$$

That is, Axiom U demands that, given any pair of income distributions \mathbf{x} and \mathbf{y} , if every subgroup in \mathbf{x} has more poverty than in \mathbf{y} , then \mathbf{x} should be judged to have more poverty than

\mathbf{y} . The strong version of Axiom U, Axiom D, demands that, given any pair of income distributions \mathbf{x} and \mathbf{y} , if at least one subgroup in \mathbf{x} has more poverty than in \mathbf{y} while the remaining subgroups all have at least the same extent of poverty in both distributions, then \mathbf{x} should be judged to have more poverty than \mathbf{y} .

Axiom D is reminiscent of a property of poverty indices which Foster and Shorrocks (1991) have called *Subgroup Consistency* (Axiom S). Axiom D is in fact a strengthened version of Axiom S which demands that, given any pair of income distributions \mathbf{x} and \mathbf{y} , if at least one subgroup in \mathbf{x} has more poverty than in \mathbf{y} while the remaining subgroups all have the same extent of poverty in both distributions and if, additionally, each subgroup has the same dimensionality in both distributions, then \mathbf{x} should be judged to have more poverty than \mathbf{y} . Axiom D, that is, drops the requirement of subgroup-dimensional equality in the statement of the antecedent of Axiom S.

3.2 Headcount Measures of Poverty and the Subgroup Unanimity Axioms

In what follows, we consider some elementary results on how the Aggregate Headcount measure (A) and the Headcount Ratio measure (H) fare in respect of the two subgroup unanimity axioms of poverty we have presented in the preceding subsection.

Let \mathcal{P}^D be the set of all poverty indices which satisfy Axiom D, and \mathcal{P}^U the set of all poverty indices which satisfy Axiom U. Then, the following Claims are true.

Claim 1. $\mathcal{P}^D \neq \Phi$; and, in particular, $A \in \mathcal{P}^D$.

Proof. Let \mathbf{x} and \mathbf{y} be two distributions satisfying the antecedents in the statement of Axiom D. Let $A(\mathbf{x}_g)$ and $A(\mathbf{y}_g)$ be the aggregate headcounts for subgroup g in the distributions \mathbf{x} and \mathbf{y} respectively, for all $g \in \{1, \dots, K\}$. Clearly, $A(\mathbf{x}) = \sum_{g=1}^K A(\mathbf{x}_g)$, $A(\mathbf{y}) = \sum_{g=1}^K A(\mathbf{y}_g)$, and since $\exists j \in \{1, \dots, K\} : A(\mathbf{x}_j) > A(\mathbf{y}_j) \ \& \ A(\mathbf{x}_g) \geq A(\mathbf{y}_g) \ \forall g \neq j$, one must have: $A(\mathbf{x}) > A(\mathbf{y})$. ■

Since Axiom D implies Axiom U, it follows that the aggregate headcount A also satisfies Axiom U.

The headcount ratio, unlike the aggregate headcount, does not fare well with respect to the subgroup unanimity axioms, which is the substance of Claim 2.

Claim 2. $H \notin \mathcal{P}^U$.

Proof. A counterexample should suffice. Let the poverty line be z , and let there be two subgroups A and B which are mutually exclusive and jointly exhaustive. Let \mathbf{x} and \mathbf{y} be two distributions such that $\mathbf{x} = (\mathbf{x}_A, \mathbf{x}_B)$ and $\mathbf{y} = (\mathbf{y}_A, \mathbf{y}_B)$, with the following features:

$$\mathbf{x}_A = (x_0, \dots, x_0; x_1, \dots, x_1); 0 < x_0 < z; z < x_1 < \infty; q(\mathbf{x}_A) = 100; n(\mathbf{x}_A) = 201;$$

$$\mathbf{y}_A = (x_0, \dots, x_0; x_1, \dots, x_1); q(\mathbf{y}_A) = 99; n(\mathbf{y}_A) = 198;$$

$$\mathbf{x}_B = (x_0, \dots, x_0; x_1, \dots, x_1); q(\mathbf{x}_B) = 1; n(\mathbf{x}_B) = 100;$$

and

$$\mathbf{y}_B = (x_0, \dots, x_0; x_1, \dots, x_1); q(\mathbf{y}_B) = 2; n(\mathbf{y}_B) = 103.$$

Then,

$$H(\mathbf{x}_A) = q(\mathbf{x}_A) / n(\mathbf{x}_A) = 100 / 201 = 0.4975;$$

$$H(\mathbf{y}_A) = q(\mathbf{y}_A) / n(\mathbf{y}_A) = 99 / 198 = 0.5000; H(\mathbf{x}_B) = q(\mathbf{x}_B) / n(\mathbf{x}_B) = 1 / 100 = 0.0100;$$

$$H(\mathbf{y}_B) = q(\mathbf{y}_B) / n(\mathbf{y}_B) = 2 / 103 = 0.0194.$$

Further,

$$H(\mathbf{x}) = q(\mathbf{x}) / n(\mathbf{x}) = 101 / 301 = 0.3356;$$

and

$$H(\mathbf{y}) = q(\mathbf{y}) / n(\mathbf{y}) = 101 / 301 = 0.3356.$$

To summarize, and given the values of the various headcount ratios just provided, we have:

$$H(\mathbf{x}_A)(= 0.4975) < H(\mathbf{y}_A)(= 0.5000)$$

and

$$H(\mathbf{x}_B)(= 0.0100) < H(\mathbf{y}_B)(= 0.0194),$$

but

$$H(\mathbf{x}) = H(\mathbf{y})(= 0.3356),$$

in violation of Axiom U. (We could think of A and B as two countries constituting the world. Then \mathbf{y} can be seen to have been derived from \mathbf{x} by the migration of one poor person and of two non-poor persons from A to B. While this raises the headcount ratio in each country, the overall headcount ratio for the world remains unchanged, since all that has happened is migration from one country to another.) ■

Since Axiom U is implied by Axiom D, it follows that the headcount ratio also violates Axiom D.

4. CONCLUDING OBSERVATIONS

We have argued in this note that there are plausible reasons that can be derived from population and preference-aggregation ethics which render the widely-employed headcount measure of poverty, the headcount ratio, an unappealing measure. In particular, the headcount ratio – unlike the aggregate headcount – violates a version of the Constituency Principle in population ethics, and a version of the Pareto Principle in social choice theory. This should provide grist to the mill of commentators such as Hassoun (2014), who tend to argue against the headcount ratio in favour of the aggregate headcount. There are, however, difficulties with the aggregate headcount as well, which will not be reviewed here (see Subramanian, 2005, though). In view of these difficulties, there may be a case for employing an ‘intermediate’ headcount measure, one which combines the ratio and the aggregate in a ‘compromise candidate’ (on which see, for example, Arriaga, 1970; Subramanian, 2005; and

Chakravarty, Kanbur and Mukherjee, 2006). Alternatively, there may be a case for measuring poverty without going through the usual 'identification-cum-aggregation' routine, so that no resort is had to any headcount assessment at all: Kaushik Basu's (2001, 2006) 'quintile income statistic' – or average income of the income-poorest 20 per cent of a population – is a possible candidate. These larger issues are beyond the purview of the present essay, whose principal concern has been to submit that the widely prevalent practice of employing the headcount ratio as an acceptable indicator of poverty must be subjected to question. The headcount ratio could well be just one more example of the practice of measurement inspired by what Anthony Shorrocks (2005) calls 'network' and 'externality' effects, and Serge-Christophe Kolm (1976) calls considerations of 'convenience'.

REFERENCES

- Arriaga, E. E. (1970). 'A New Approach to the Measurement of Urbanization'. *Economic Development and Cultural Change*, 18(2): 206-218.
- Arrow, K. J. (1963). *Social Choice and Individual Values* (Second Edition). New York: Wiley.
- Basu, K. (2001). 'On the Goals of Development', in G.M. Meier and J.E. Stiglitz (eds), *Frontiers of Development Economics: The Future in Perspective*. New York: Oxford University Press.
- Basu, K. (2006). 'Globalization, Poverty, and Inequality: What is the Relationship? What Can Be Done?'. *World Development*, 34(8): 1361-73.
- Basu, K. (2013). 'Shared Prosperity and the Mitigation of Poverty: In Practice and in Precept', World Bank Research Working Paper 670. World Bank: Washington, D. C.
- Broome, J. (1996). 'The Welfare Economics of Population'. *Oxford Economic Papers*, 48(2): 177-193.
- Chakravarty, S., S. R. Kanbur and D. Mukherjee (2006). 'Population Growth and Poverty Measurement'. *Social Choice and Welfare*, 26(3): 471-483.
- Elaya Raja, G. and Aparajay (2014). 'Growth in Proportion of Non-Farm Main Workers in India: A Paradox?'. Paper presented at the Census Data Dissemination Workshop, Madras Institute of Development Studies, Chennai, December 2014. *Mimeo*.
- Foster, J. E. and A. F. Shorrocks (1991). 'Subgroup Consistent Poverty Indices'. *Econometrica*, 59(3): 687-709.
- Hassoun, N. (2014). 'An Aspect of Variable Population Poverty Comparisons: Does Adding a Rich Person to a Population Reduce Poverty?' *Economics and Philosophy*, 30(2): 163-174
- Hassoun, N. and S. Subramanian (2012). 'An Aspect of Variable Population Poverty Comparisons'. *Journal of Development Economics*, 98(2): 238-241.
- Huppi, M. and M. Ravallion (1991). '[The sectoral structure of poverty during an adjustment period: Evidence for Indonesia in the mid-1980s](#)'. *World Development*, 19(12): 1653-1678.
- Kolm, S. Ch. (1976a). 'Unequal Inequalities I'. *Journal of Economic Theory*, 12(3): 416-454.
- Narveson, J. (1967). 'Utilitarianism and New Generations'. *Mind*, 76 (301): 62-72.

- Parfit, D. (1984): *Reasons and Persons*. Oxford: Clarendon Press.
- Paxton, J. (2003). 'A Poverty Outreach Index and its Application to Microfinance'. *Economics Bulletin*, 9(2): 1-10.
- Sen, A. (1970). *Collective Choice and Social Welfare*. San Francisco: Holden-Day.
- Sen, A.K. (1981). *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford: Clarendon Press.
- Shorrocks, A. F. (2005). 'Inequality Values and Unequal Shares', UNU-WIDER, Helsinki. Available at <http://www.wider.unu.edu/conference/conference-2005-5/conference-2005.5.htm>
- Subramanian, S. (2002). 'Counting the Poor: An Elementary Difficulty in the Measurement of Poverty'. *Economics and Philosophy*, 18(2): 277-285.
- Subramanian, S. (2005). 'Fractions *versus* Whole Numbers: On Headcount Comparisons of Poverty Across Variable Populations'. *Economic and Political Weekly*, 40(43): 4625-4628.
- Subramanian, S. (2012). 'The Focus Axiom and Poverty: On the Co-existence of Precise Language and Ambiguous Meaning in Economic Measurement'. *Economics: The Open-Access, Open-Assessment E-Journal*, 6, 2012-8. <http://dx.doi.org/10.5018/economics-ejournal.ja.2012-8>